THE PATENTABILITY OF INVENTIONS

BY

HENRY CHILDS MERWIN

BOSTON
LITTLE, BROWN, AND COMPANY
1833

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PREFACE.

THE present work is the result of an attempt to supply a great and increasing demand. It concerns the proper subject-matter of a patent, and the right to a patent as between rival or successive inventors. It does not deal with the fate or scope of a patent: the matters of Abandonment, Infringement, and Reissue are therefore excluded. The author is aware that the limit thus set is an arbitrary one; but he believes it to be justified by the importance and difficulty of the main topic which he has undertaken to discuss. In one instance he has departed from it; for in treating of cases involving a Principle, so-called, he has considered the scope of the patent in addition to its validity, — it being impossible entirely to separate the two subjects.

His aim has been to make the book essentially practical, and useful to patent solicitors and to inventors as well as to lawyers. He has avoided mere verbal rules or definitions of patentability, and has relied upon adjudicated illustrations. The work, in fact, consists mainly of Abstracts of Cases. In the Introduction, however, the author has ventured to state certain General Principles as to the nature of Invention and Discovery.

The authorities are carried down through the 13th volume of the "Federal Reporter" and the 106th volume of United States Reports. In the latter part of the book, moreover, many cases in the 14th and 15th volumes of the "Federal Reporter" are cited, and some of them — notably the Telephone cases — are set forth at length.

H. C. M.

BOSTON, June, 1883.

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THE PATENTABILITY OF INVENTIONS.

PATENTABILITY OF INVENTIONS.

INTRODUCTION.

INVENTION AND DISCOVERY.

ACCORDING to the statute, he may have a patent "who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof;"[1] and certain further conditions follow, with which we are not now concerned.

It appears, then, that the subject of a patent must be not only new and useful, but also invented or discovered. The statute does not say simply that any one who has made or caused to be made a new and useful thing may have a patent. It requires that he shall have invented or discovered it.[2]

Before investigating what is meant by invention and discovery, it may be well to notice the two senses in which each of these words is used. "Invention" and "discovery" denote sometimes the mental process of the inventor or discoverer, and sometimes the thing in which that mental process results. Both of these meanings are useful, and indeed necessary; but they are distinctly different. Yet it often happens that a writer has one of these meanings in his mind, whereas the reader thinks of the other.

Sometimes, moreover, in the same argument or opinion, if not in the same sentence, the word "invention" is used, first to signify the act of invention, and then to signify the thing invented, without anything being said to indicate that the word

[1] Revised Statutes of the United States, § 4886.

[2] "Invention or discovery is required as the proper foundation of a patent, and where both are wanting, the applicant cannot legally secure the privilege." Mr. Justice Clifford, in Bray *v.* Hartshorn, 1 Cliff. 538.

was used in two senses. Hence arises infinite confusion, to avoid which we premise that in the following remarks the word "invention" is used to denote the mental act or process that it implies, unless it clearly appears from the context, or is expressly stated, that a different meaning is intended. And so of the word "discovery."

Another use of "invention" is less apt to be mistaken; namely, its use to denote the faculty of invention, or the quality of that intellectual act, as distinguished from the act itself, which results in a patentable thing.

Thus the courts say: "This improvement is not patentable, for there is no *invention* in it."

The word "discovery," however, has no meaning similar to this last-mentioned meaning of "invention,"—a fact not without significance, as we shall presently see.

There is, indeed, a third sense of which "discovery," and a fourth sense of which "invention," is capable, though it need not be insisted upon here. We mean that in which the words are used to indicate or to recall the fact that an invention (or a discovery) has been made; as, for instance, in this sentence: "The invention of gunpowder revolutionized the art of war."

Thus "invention" signifies (1) the mental act of inventing; (2) the thing invented; (3) the fact that an invention has been made; (4) the faculty or quality of invention. And so of "discovery," except that it has not the fourth meaning.

Inventions and Discoveries Contrasted.

It is important also to notice the distinction between inventions and discoveries in the objective, that is, the second, sense of those words. The mental process of invention is, in most cases, very similar to that of discovery, as we shall see further on. But a broad line can be drawn between things invented and things discovered. The distinction between them is almost always overlooked, and sometimes its existence is denied by the courts; but it is inherent in the nature of things.

Moreover, in ordinary speech, custom has made a valuable discrimination between the two words, according to which an invention is a thing newly created, whereas a discovery is a thing newly found.

This distinction, so far from being inapplicable in the patent law, is particularly valuable there.

Most patents are granted for inventions strictly. The patentee has invented or created a device, contrivance, or mechanism, which operates according to known laws, or depends upon familiar properties of matter. He has found out nothing new in nature; but he has created a new way of using or combining familiar materials, or he has caused a force in common use to operate in a new situation, or for a new purpose. It is not sufficient that the device, contrivance, or mechanism should be new. The law requires, also, that it should be the result of "invention." And what invention is we shall presently consider.

This is one, and by much the larger, class of patentable subjects. The remaining class consists of those that are based upon a newly discovered law of nature or property of matter, called in the patent law a *principle*.[1] These are cases of discovery.

The patentee has discovered a new principle, and if he makes some practical application thereof (a condition presently to be noticed), he may obtain a valid patent.

In the case of discovery, therefore, no inquiry need be made into the mental process by which a knowledge of the principle was attained. It is sufficient that the principle upon which the patent is based should be *new*, *i. e.* that it should not have been known till the patentee revealed it. And whether it is new or not is a question of fact.

Principle.

A leading case in which a new principle was the basis of a patent is the following: —

About the year 1828, James Neilson, in England, discovered that a hot blast of air thrown into a furnace was more effective than the cold blast previously used. It had been supposed that the colder the blast the hotter the fire, because the furnace fires

[1] It is possible that when we come to discuss the cases under this head it will be necessary to extend our definition by adding that a principle may be a scientific fact as to the relations or the capacity of a law of nature or property of matter already known, but not fully understood.

"A law of nature or property of matter" is, however, a definition sufficiently accurate for our present purpose, if, indeed, it be not absolutely so.

"Principle" has also other meanings in the patent law, which we shall presently consider.

were observed to burn better in winter than in summer. This supposition, however, was incorrect. In reality, the fires burned better in winter because the air is drier then, not because it is colder. Neilson, therefore, discovered a physical law or truth,[1] namely, that a hot blast is more effective than a cold blast in a furnace. And he described an apparatus for making use of this discovery by heating the air blast before it is directed into the furnace.[2]

It is this class of cases, then, to which the word "discovered" in the statute applies.[3]

It is true that a naked *principle*, as it is called, a law of nature or property of matter, cannot be patented. So long as it is, or from its nature must remain, a mere item of knowledge, no patent can be had.[4] But if a method or process of applying the discovery to practical use is described, that method or process is patentable.

Nevertheless, the means by which the principle is applied may be devoid of all invention, and such as any workman skilled in the art wherein the application is made might supply, when the discovery is told him.

These last two propositions, namely, that a principle by itself

[1] A truth rather than a law, being a specific instance or illustration of a general law. *Vide post*, page 539, n., chapter on Principle.

[2] Neilson *v.* Harford, Web. Pat. Cas. 273. *Vide post*, page 611.

[3] It is true that in the Constitution "invention" and "discovery" are used as if they were synonymous, for it is there provided that Congress may secure "to authors and inventors the exclusive right to their respective writings and discoveries."

It is, however, absurd to suppose that in this general provision the framers of the Constitution were using language with critical exactness, and that they meant to lay down the impossible proposition that inventions and discoveries are the same.

In the Patent Act of 1793, also, "discovery" and "invention" are used interchangeably.

[4] There is another class of cases similar to that in which a naked discovery is sought to be patented, — we mean cases in which an effect or function or abstract idea is claimed in the patent.

The statute, as we have seen, declares that a patentable subject must be either an art, or a machine, or a manufacture, or a composition of matter, or some improvement thereof. An applied principle is an art (process), but a naked principle cannot be called an art, being the mere announcement of a fact. So, also, an effect or function or abstract idea cannot be called an art, much less a machine, manufacture, or composition of matter. Therefore one may not patent an effect, function, or abstract idea, but only the device by which the effect is produced, or through which the function is discharged, or in which the abstract idea is embodied. The product of a process, however, is patentable. *Vide post*, page 79.

is not patentable, and that its application, though simple and obvious, is patentable, may be illustrated by the hot-blast case.

If Neilson had merely announced the principle that a hot blast is better than a cold blast for a furnace, he could have had no patent. But he described a means of applying the principle, by interposing a chamber or receptacle in which the blast was heated by a separate fire, before it was thrown into the furnace.

Now, it was proved not only that any workman of ordinary skill in the trade, once informed of the principle, would have been able to apply it, but also that Neilson did not describe the best apparatus for the purpose. He used a chamber, whereas the defendant in the suit upon his patent used a series of pipes, and the pipes or tubes were more effective than the chamber. The court, however, sustained Neilson's patent, and held that it was infringed by use of the defendant's improved apparatus.

In another case, the improvement related to the art of making lead pipe. The discovery was that lead, when its particles are heated, will reset at a certain temperature. The apparatus used for making lead pipe in accordance with this discovery was new for that purpose, but old in itself, having been used in the preparation of macaroni. The patent, however, for utilizing this newly discovered property of lead by means of the macaroni apparatus was held valid.[1] Here, then, as in the Neilson case, the real and entire value of the improvement lay in the principle discovered. And illustrations might be multiplied.[2] It is plain, therefore, that the merit of such patents, that on account of which the patent is granted, is the discovery.[3]

In these cases, then, no particular process of mind, no "inven-

[1] 14 How. 156, and 22 How. 132. *Vide post*, page 574.

[2] In the case of Colgate *v.* The W. U. Tel. Co. (*post*, page 359), the patent claimed a telegraph wire cased in gutta-percha, to be used in water as well as in air. Judge Blatchford said: —

"The gist of the invention is the discovery of the fact that gutta-percha is a non-conductor of electricity, and the application of that fact to practical use. . . . *The claim is valid, even though a metallic wire covered with gutta-percha existed before the plaintiff's invention, if it was not known that gutta-percha was a non-conductor of electricity, and could be used to insulate the wire.*"

[3] It might be well to notice that sometimes the discovery is of a hitherto unknown property in a manufactured article, itself, perhaps, the subject of a patent. *Vide post*, pages 379, 381. And sometimes it is the discovery that two or more substances will unite to make a third substance. In this case the discovery is of certain unknown capacities in the two substances, by virtue of which the third substance is formed.

tion," is called for by the statute; all that it requires is the finding out of a new principle, and a practical application of it.

There is another small, but very important, class of cases which are inventions rather than discoveries, though practically they are considered as discoveries. We mean those cases in which the patentee has made a useful application of a previously known, but unapplied principle. Here, the law or truth concerned was known before, but it had never been applied to a practical purpose, or at least to any purpose at all resembling that to which the patentee puts it; and usually it has not been applied to any practical purpose at all. So that here, as in the cases of discovery, the gist of the patent is not an apparatus, contrivance, or mechanism, but the operation of a principle.

The celebrated invention of Morse is an instance. Professor Morse discovered no new force or property in nature, but he invented a method of applying certain known forces to a particular purpose. It was known before his invention that electricity would pass over a wire, and that iron was magnetized by the passage of electricity through a coil of wire surrounding it. He invented a method of applying these forces to the production at a distance of intelligible signs or letters.

In these, as in all cases of patentability, other than those of discovery, it is requisite that "invention" be shown.

Thus, if Morse's application of electro-magnetism had not required invention to make it, he could have had no patent for it.

Neilson's patent furnishes a better illustration, for it was proved that the application of the law discovered by him did *not* require invention, it being such as any one skilled in the art concerned might have made, when informed of the principle.

If, therefore, in some scientific publication the statement had been made that a hot blast is better than a cold blast in an iron furnace, Neilson could have had no patent for the practical application of that principle.

He could, of course, have had a patent for the particular apparatus devised by him, if it showed invention; but such a patent would have been comparatively worthless, because, as we have seen, Neilson's apparatus was not the best for the purpose.

Practically, however, in cases like the Morse case, where the gist of the patent is the application of a known principle to some new purpose, the question of invention very rarely arises.

The existence of invention in such cases is commonly indisputable; and the controversy about the patent is as to its scope.

These cases, therefore, are allied to those in which a new principle has been discovered, and the two classes are always considered together, under the head of "principle."

In both classes the patent granted is usually for a process, and the scope of the patent is the bone of contention; the question being whether the patent shall cover every application of the principle involved, by whatever apparatus or means, to the end proposed by the patentee, or only such application and apparatus as he has described, with, of course, all colorable imitations thereof and substantial equivalents therefor. And in the first class of cases, where the principle itself is discovered, there is, sometimes, as we have seen, a further difficulty, namely, as to whether the patent claims a naked, abstract principle (which is not patentable), or the practical application of a principle. Of course this last difficulty cannot arise in the second case, where the very application itself is invented, the principle being known.

If, however, we left the matter here, the distinction made between cases of principle and all other cases would be open to misconception. In a sense, every invention involves a principle. That is, every patentable improvement is but a new way of applying some law of nature or property of matter, *i. e.* a principle. This is true of inventions as well as of discoveries; of a rat-trap as well as of Neilson's process.

But in the case of inventions strictly, the mechanism or device or apparatus through which the force or forces act is the invention, whereas when a new force or property in nature (a principle) is discovered, and becomes the basis of a patent, the mechanism, device, or apparatus whereby it operates is a mere vehicle, which, commonly, any one skilled in the art concerned could supply, when the discovery was told him.

In the case of inventions, the forces or properties employed are lost sight of. All that the mind of the inventor contemplates is the material wherein and the adjustment whereby they operate. Thus, in a machine, the forces or properties of gravitation, motion, inertia, or whatever they may be which operate in and through the mechanism, are not the objects to which the inventor's mind is directed. On the contrary, he does not think of them apart from their embodiment at all. His

efforts are spent, not to use certain forces or properties (principles), but to make a certain mechanism.

In fact, as we have already suggested, in cases of discovery the courts do not consider whether the mechanism, device, or apparatus through which the principle operates is new or old.

This is true also in those cases of invention which we have likened to cases of discovery. The reason is that in both classes of cases the operation of a principle is the gist of the patent.

It is true, indeed, that sometimes the new use of an old contrivance is patentable because it is a non-analogous use (though great authorities hold otherwise);[1] but it is only in cases of "principle" that the novelty of the contrivance employed is absolutely unimportant.

It should be added, however, that the contrivance may be in itself a subsidiary invention, and as such the subject of another patent.

Sometimes it is said that the difference between discovery and invention is one of degree simply; that a discovery is a great advance in the arts, an invention, a slight advance; and therefore, it is said, the patent for a discovery includes a great deal, but that for an invention very little.

This difference in scope certainly exists, but its existence is an accidental fact, not a fact essential to the nature of invention and of discovery.

The ground upon which it rests, however, comes nearer to furnishing a basis of classification. For the reason why a discoverer takes a great step in the arts, and an inventor a slight step, is that a discovery commonly results in a new process, whereas an invention is commonly but an improvement in some process. Thus Mr. Justice Grier said: "A new process is usually the result of a discovery; a machine, of invention."[2]

Even this distinction, however, does not obtain in all cases. A case in which it does not may be stated as follows: A new material, or a new property in an old material, is discovered, and this material, of which or in which the discovery was made, is substituted for another in some existing machine. This might be a patentable improvement upon a machine, but it would not be a process.

In concluding this subject, we may say that we have taken the

[1] *Vide post*, page 285.

[2] Corning *v.* Burden, 15 How. 252.

classification of cases under the head of "Principle," as we have found it in the courts and in the books. It is a classification which has made itself, as it were, and it is always convenient.

The reasons upon which we conceive it to rest we have stated; but should these, or should the classification itself, appear unsatisfactory to any reader; we must beg him to remember that they are but incidental to our subject and to our argument.

All that we insist upon is the distinction pointed out between a discovery and an invention. The topic "Principle" is discussed in the seventh chapter of this book, and we need not refer to it again in these remarks.

But before leaving the general subject of discoveries as contrasted with inventions, we shall venture to suggest one more consideration. The fact already mentioned, that the courts never speak of "discovery" as an intellectual quality discernible in certain improvements, is significant. There is, of course, an intellectual process of discovery, and principles or truths are discovered; but it is never said, "there is," or "there is not discovery in this improvement;" and the courts never contrast "discovery," as they do "invention," with "the skill of the workman."

This is an implicit, and therefore an important, recognition of the fact that when a new principle is discovered and becomes the gist of a patent, it is enough to show that the principle is new. No mental process corresponding to that of invention need be proved to have been concerned in making the discovery; whereas, in the case of all patentable improvements other than discoveries, not novelty only, but invention also, must be shown. This fact in regard to "discovery" is all the more significant, because, as we shall point out hereafter, the mental process of discovery is commonly similar to that of invention; and therefore it would not be incorrect, although it is always unnecessary, to say, there is, or there is not, as the case might be, discovery in this improvement.

We shall return to this subject toward the end of these remarks, in order to compare the mental process of discovery with that of invention. But before such a comparison can be made with profit, it is necessary that we should discuss the more difficult and more important subject of invention itself. To this we now proceed.

Invention.

All patents, other than those based upon a discovery, must be, in the language of the statute, for some thing invented. "Invention or discovery is required as the proper foundation of a patent, and where both are wanting, the applicant cannot legally secure the privilege."[1]

What process of mind is indicated by the word "invented"?

The phrases descriptive of it used by the courts are very few: "Inventive *genius*," "the *genius* of an inventor," "the inventive faculty," "invention as distinguished from mechanical or technical skill," "invention as distinguished from construction," "ingenuity contrasted with the judgment of a skilled workman."

In repeating these few expressions we have already exhausted very nearly all that have been used to define the term "invention;" and, as the reader will have observed, in each of them, save one, the very word to be defined is employed, so that they are not real definitions, but only phrases thrown out by way of description. Moreover, the word "ingenuity," used in the only one of these expressions wherein the word "invention" does not, in some form, occur, is rather a synonym than a definition.

"Invention" is thus difficult to define, because the idea expressed by it is a simple and elementary one. Invention, as we have already hinted, is that process of mind which *creates*. It is the giving birth to a new idea capable of physical embodiment.

Even to one who has spent no thought upon the subject, the word "invention" conveys a substantial idea, though often an ill-defined one. It means to him something that no other word means; and the idea which underlies that meaning is, the creating of something new.

New in this sense, that it is not a mere modification of an idea already existing, but an addition to the stock of ideas.

The verbal expression of a new idea not susceptible of, or rather not reducible to, physical form may be copyrighted; but a new idea which is so reducible becomes in its embodiment the subject of a patent.

[1] Mr. Justice Clifford, in Bray *v.* Hartshorn, 1 Cliff. 538.

The Mental Process.

Before proceeding to discuss further the meaning of the word "invention," we wish to notice a criticism which certain minds may make upon what we have already said.

It may be objected, then, that no light is thrown upon the matter by declaring that the process of mind involved is what the law looks to. This declaration may be true enough, the objector would continue; but inasmuch as the process of mind is revealed only by the tangible thing which results therefrom, why separate the two and go back to the mental process? Is it not simpler and as accurate to consider the thing itself sought to be patented, without making an investigation into the mental process of which it is the result? We shall answer this objection by following the course which it suggests, and in pursuing that course we shall prove, we trust, that, by a consideration of the tangible thing sought to be patented, we are inevitably referred to the mental process by which the idea of that thing was reached. The starting-point is different, but the goal is the same.

If, then, we regard the material world, wherein and whereby inventions take effect, we find that they depend upon the properties of matter; and by properties we mean not only the qualities belonging to matter, but also the forces, such as gravitation, and perhaps electricity, which reside in matter.

Inventions, in the sense of the things invented, are but combinations of these properties, — or, to speak more exactly, combinations of matter possessing these properties, or some of them, — for a particular purpose.

Man cannot add to or diminish the quantity of matter, or of the forces that reside in matter. All that he can do is to make various arrangements of matter, and consequently of the properties that belong to it. Every invented thing, taken as it appears to the senses, consists not only in the material parts of which it is composed, but also in the property or properties that give life to those parts. In steam, for instance, we distinguish between the tangible vapor and the force which it exerts.

An invention, then, in the objective sense of a thing invented, is an arrangement of matter in such a way that the property or properties residing in it shall do a certain work for the service

of man, the corresponding mental act of invention being the conception of that arrangement. Now, remembering that we have put aside the finding out of new properties, which are called discoveries, and confining ourselves to inventions strictly, we may proceed to state the matter a little differently, thus: inasmuch as the value of an invention[1] depends not on the matter made use of, but on the properties it possesses, we may say that every invention[1] is a new way of making use of properties of matter.

Does it follow that every new way of making use of the properties of matter is an invention?

By no means. What, then, is the distinction? What new way of using the properties of matter amounts to invention, and what does not?

The answer is, that the new way which implies invention must be such that it was not obviously open to any person instructed in the art to which it belongs to adopt it, if he should choose to.

In the contemplation of the patent law, not only any way which has already been employed, but also any way so like to some previous way that it must be presumed to be within the mental reach of any one skilled in the art or trade wherein it belongs, is not the subject of a patent.

So, then, from the very consideration of the thing invented, we are brought back to a consideration of the mental process concerned, that is, to invention in the true sense.

If that process be such that it was to be expected of the ordinary, instructed intellect, — expected in the sense that it might be counted upon, — then it is not invention.[2] Then it is merely "the skill of the workman," whereas the courts require "the genius of the inventor."[3]

[1] In the sense of invented thing.

[2] Slight but very valuable changes in form furnish a good illustration of the truth that the process of mind involved must be looked to in order to determine if a given improvement be patentable. *Vide post*, page 40.

[3] "Mechanical skill is one thing; invention is a different thing. Perfection of workmanship, however much it may increase the convenience, extend the use, or diminish expense, is not patentable. The distinction between mechanical skill with its convenience and advantages and inventive genius, is recognized in all the cases." The Supreme Court, in Reckendorfer *v.* Faber, 92 U. S. 347.

"Mere mechanical skill can never rise to the sphere of invention. The latter involves higher thought, and brings into activity a different faculty. Their domains are distinct. The line which

The whole object in investigating the patentability of the most complicated machine, process, or device is to arrive at the idea which is at the bottom of it, and then to decide if, in view of all prior knowledge upon the subject, that idea has been reached by a process of invention; and by "idea" we mean, of course, to include not only the main thought embodied in the alleged invention,[1] but the whole intellectual image of which the material thing sought to be patented is the copy and the embodiment.

In dealing with Patents we deal with Ideas.

It is to be observed that we have indicated two mental processes or states; and care must be taken not to confound them, for if they are confounded, the argument from this point will be mistaken. There is, first, the idea expressed by the invention, — the mental image which is given a physical form; and, second, the process of mind by which that idea is reached. If the process be an act of creation, then the thing which embodies the thought is patentable.

The first of these, the mental image of which the thing sought to be patented is the counterpart, is called by the courts the "character" or "principle"[2] or "idea" of the invention; and sometimes, more exactly, "embodied conception,"[3] and "material reflex and embodiment."[4]

Thus, where two machines are under consideration, the question being whether or not the second is a patentable improvement upon the first, we find the courts striving to discover what is the principle or the character or the idea of each machine, in order to decide whether the second machine has merely the same principle or character or idea as the first, though in a different form, or a new and substantial idea of its own; *i. e.*, whether the similarity between the machines is an identity in those qualities which constitute the essence, or only in unessential particulars.

denotes them is sometimes difficult to trace; nevertheless, in the eye of the law it always subsists." Mr. Justice Swayne, in Blandy *v.* Griffith, 3 Fish. 609.

[1] In the objective sense.

[2] We come now to another meaning of "principle" in the patent law.

[3] By Mr. Justice Bradley, for instance, in Bischoff *v.* Wethered, 9 Wall. 812.

[4] By Mr. Justice Swayne, in Smith *v.* Nichols, 21 Wall. p. 118.

These three words all refer to the mental image reflected in the machine. They are synonymous with the "embodied conception" of Mr. Justice Bradley. "Idea" can mean nothing else, as is too plain for argument. And we shall show briefly that character and principle also have that meaning, for; —

First. They do not refer to the mechanism, or to any distinct part of it. The mechanism is the machine itself. The character or principle is embodied in the mechanism, but lies back of it, and the very reason of looking for the character or principle of the machine is to explain the mechanism.

Secondly. They cannot refer to the result accomplished by the machine, or its function. That may not be in dispute. It is often agreed that the two machines accomplish the same result, the question being whether they accomplish it by the same means.

Now, there are but three things in a machine, — the idea, the mechanism embodying that idea, and the function or effect. If, then, character and principle cannot mean either the mechanism or the function, they must mean the thought or idea expressed by the machine.

It is not a matter of choice or convenience to make the idea of the invented thing, instead of the thing itself, the object of our thoughts. It is a mental necessity. The mind itself makes the translation of things into thoughts. This is apparent at once to any one who considers his own mental processes. In thinking of an invention,[1] we really think, not of the material thing, but of the thought which the thing embodies. We have seen that this is so in the case of complex contrivances like machines. Therefore it must be true also of simpler contrivances, for the obvious reason that the mental act of comparison must be the same in all cases. The mind cannot operate in different ways according to the nature of the things to be compared.

The truth upon which we are insisting is more apparent, indeed, with regard to machines, for instance, because in their case the mind is conscious of the separation that it makes between the idea and its embodiment. It is easy, in fact, to think of the idea of a machine as apart from its physical embodiment. The reason is, that the material parts which carry out the idea are many and diversified, — some essential, others unimportant. Moreover, the harmonizing and adjustment of the parts

[1] In the objective sense of the word.

are presented to the mind. The idea is carried out piecemeal, as it were. The idea is a unit, but its embodiment is manifold and complex.

Whereas, in the case of a more simple contrivance, as, for instance, a knife of peculiar shape, the mental conception and its embodiment are more closely associated. Given the idea, the physical form is present to the mind at once. Moreover, the unessential details of the physical form are entirely neglected by the mind. One forgets those parts of the material thing which are not essential to the carrying out of the idea, though they may be inseparable from the material thing.

Again, the fact that in comparing invented things we really compare the ideas embodied in them, may be proved in this way: Resemblance is not a thing, but a thought. It is not a quality residing in the things compared, but a mental relation between them, *i. e.* a perception that certain qualities are identical in each. The senses perceive the two things to be compared. The mind develops, as it were, the idea of resemblance. We see the things, we do not see their resemblance.[1]

From this it follows that when two things are compared, it is really the idea embodied in one that is compared with the idea embodied in the other; because a mental relation (resemblance in this case), in other words, an idea, must connect ideas and not things.

This truth, that in thinking of invented things, as in comparing them, we think really of the ideas that they embody, is, as we have said, plain to any one who reflects upon the operation of his own mind. And the same thing appears when we put ourselves in the place of an inventor. A machine, for instance, is not made haphazard, or piece by piece as an idea strikes the inventor; but it is made after an image which exists complete in the mind of the inventor. He therefore thinks of that image when he thinks of the machine, of the real idea, rather than of its tangible copy.

If he be not the maker, but the critic or judge of the machine, the order of his thinking remains the same. He thinks of the machine only by thinking of the image after which it is made; in other words, of the idea which it embodies.

[1] *Vide* Ferrier's Lectures on the Early Greek Philosophers, chapter on Plato. And Herbert Spencer's Principles of Psychology, ch. viii. p. 182.

In dealing with patents, then, we are dealing with ideas, whether we will or not. Whatever our language, though we speak of the thing, we think of the thought. The real question, therefore, is as to the thought, Is it an inventive thought?[1] This, in turn, as we have seen, depends upon the process by which that thought is reached. If the process be a creation, a making, then the condition of patentability is fulfilled, there is invention. Sometimes, indeed, the courts look at the material thing itself of which the patentability is in question, rather than at the process of mind by which it was reached; and they inquire whether a new function or effect or result is produced. These inquiries are, as we shall see throughout this book, of great assistance in detecting the presence of invention. But a new function or effect is not proof of patentable merit: it is only evidence of that inventive process of mind which issues in patentable merit.

Moreover, it is a noteworthy fact that in the most difficult cases these criteria are of the least assistance. In such cases we are referred directly to the fundamental inquiry, — Is the improvement the result of inventive genius or not?

Certain judges do not even ask if a new function or effect has been produced. They assert that the statute requires only that the thing to be patented shall be new and useful. This language would seem to imply that no particular process of mind is requisite to an invention, and that anything, however simple, obvious, or similar to what already exists, is nevertheless patentable if it be new and useful.

Such unguarded statements of the law are, however, few; and by reference to other opinions of the same judges it becomes apparent that they meant by "*new*" *not only* what the word necessarily means, but also that sort of newness or uniqueness

[1] "A patentable invention is a *mental result*. It *must be new*, and shown to be of practical utility. Everything within the domain of the conception belongs to him who conceived it. The machine, process, or product is but its *material reflex and embodiment*." Mr. Justice Swayne, in Smith *v.* Nichols, 21 Wall. p. 118.

"Indeed, the whole subject-matter of a patent is an embodied conception outside of the patent itself, which, to the mind of those expert in the art, stands *out in clear and distinct relief*, whilst it is often unperceived or but dimly perceived by the uninitiated. This outward embodiment of the terms contained in the patent is the thing invented, and is to be properly sought, like the explanation of all latent ambiguities arising from the description of external things by evidence *in pais*." Mr. Justice Bradley, in Bischoff *v.* Wethered, 9 Wall. p. 815.

which we have described as the condition of patentability. If there be any of these judges whose meaning cannot thus be explained, it is sufficient to say that his construction of the statute is overborne by the weight of authority, and is contrary to reason.

We may add, that it is natural for those who look more at the thing produced than at the mental process behind it, to find the requirement of patentability, in the statute, in the word "new," not in the word "invented." The obvious reason is, that the word "invented" necessarily refers to a process of the mind, whereas the word "new" refers to the thing which is the object of that process.

Thus, we find so great a lawyer as Mr. Justice Curtis saying (to a jury), that any "new" combination [in this case of machinery] is patentable; but he goes on to show what he means by "new" as follows: "When I say it must be new, I do not refer to the materials out of which the parts are made, nor merely to the form or workmanship of the parts, or the use of one known equivalent for another. These may all be such as never existed before in such a combination, and yet the combination may not be new in the sense of the patent law. To be new in that sense, some new mode of operation must be introduced," [1] &c.

It is plainly, however, the correct reading of the statute to give to the words "invented or discovered" their ordinary meaning, rather than to import it into the word "new," thereby rendering the words "invented or discovered" superfluous. Whatever is invented or discovered must be new; but a thing may be new, and yet neither invented nor discovered.

Looking at the matter in another way, it may be said that the words "invented or discovered" define the kind of newness called for by the statute.

This, however, is a discussion about words merely. We leave it, in order to gather up the threads of our argument before proceeding to suggest two criteria for determining upon the presence or absence of that *invention* which is the test of patentability.

We have shown, then, that the statute demands a peculiar process of the mind as the characteristic of invention; that the statute is so interpreted by the courts; and, further, that it is impossible to arrive at the patentability of an improvement in any other way. This we proved by considering the physical

[1] Forbush *v.* Cook, 2 Fish. 668.

thing sought to be patented, and attempting to determine its patentability without regard to the process of mind by which it was reached, — a task which we found to be impossible.

We have also shown that in dealing with patented things we must, by the law of our minds, deal primarily with the ideas that they embody; and as an illustration of this truth, we have described the way in which the courts treat of machinery as the subject of a patent.

As to that process of mind itself which amounts to invention, we have repeated the phrases commonly used to describe it; and we have said that it was a creative process, the bringing forth of an addition to the stock of ideas, not the mere development of an old idea.

We shall now go a step further, and we shall propose two tests: one of what is not, and the other of what is, "invention."

A Test of what is not Invention.

An idea is not invention, if it be in the nature of an inference. It is true, of course, that what is a plain inference to one man is often a sealed book to another. But the inference here spoken of is that which is natural to a man of ordinary intellect, possessing the ordinary skill in and knowledge of the art in respect to which the inference may be drawn.

Whatever is a logical deduction from something else is not invention. In other words, whatever is a necessary conclusion from certain premises, supposing the mind to be directed to them,[1] and supposing the mind so directed to be that of the man whom we have described, is not invention. The same thing may be stated more shortly thus:[2] *reasoning is not invention.*

[1] For sometimes invention is shown in *calling together* the premises upon which the reasoning faculty operates. *Vide post*, page 32.

[2] By "reasoning," here and hereafter in these remarks, we mean the ordinary process of inference.

It is not necessary to enter into the controversy about the syllogism, and to consider whether or not the syllogism represents the process of mind which actually takes place in an act of reasoning. Mr. Spencer says: "Reasoning, whether exhibited in a simple inference, or in a long chain of such inferences, is the indirect establishment of a definite relation between two things; and the achievement of this is by one or many steps, each of which consists in the establishment of a definite relation between two definite relations." Principles of

The books are full of cases where the patent in litigation is for a thing or a process *inferred* from some other thing or process. And sometimes it is inferred, not from any one particular thing, but from such knowledge of things, or of the relations of things, as men in general possess. Of this last proposition a leading case in the Supreme Court of the United States furnishes an excellent illustration. It is that of Reckendorfer *v.* Faber.[1] In this case the patentee had combined a lead-pencil with a rubber eraser by sticking the handle-end of the pencil into a small tube of rubber, the diameter of which was a little less than the diameter of the pencil. It was a logical inference of the simplest kind, first, that these articles, being useful separately, would be useful together; and, secondly, that the pencil would stick in the hole prepared for it. The court, therefore, held that there was no invention in so bringing them together, and that the patent was invalid.[2] In this case the inference was drawn, not from any one thing, so much as from the known relations of things.

Perhaps cases of double use, as they are called, furnish the clearest illustration of this principle, that inference is not invention. In these cases, an old thing or process is made use of in some new situation, — the old process is applied to some new thing, or the old thing is made use of for a new purpose. If the new use of the old thing or process is *analogous* to its old use, then it is called a "double use," and it is not patentable. If, however, it is not an analogous use, — in other words, was not fairly to be inferred from the old use, — then it is a new use, strictly speaking, and it is patentable. Thus, if one observing that a certain kind of wheel works well on a wagon, concludes that it will also work well on a railway car, and obtains a patent for the car-wheel, his patent is not valid.[3] The intellectual process at the bottom of it was one of mere inference, of reasoning.

Again, given a device for the preservation of corpses, it is no invention to apply a device substantially the same to the preser-

Psychology, ch. vii. And Cardinal Newman, more shortly: "We reason when we hold this by virtue of that."

[1] 92 U. S. 347.

[2] We are bound to say that this decision is not unassailable; but it must be supported, if at all, on the ground here stated.

[3] Losh *v.* Hague, Web. p. 208.

vation of fish.[1] The mental act here performed is a legitimate inference. The last two illustrations are instances of double use; Reckendorfer *v.* Faber was a case of combination. A case of substitution is that of Hicks *v.* Kelsey,[2] in the Supreme Court.

In Hicks *v.* Kelsey, the patentee, knowing, as all men are supposed to know, the common properties of an iron bar, concluded that such properties would make it more useful in a wagon-reach than the wooden bar previously used for that purpose. He therefore substituted the iron for the wood. The mental act performed was a mere inference. Knowing the office of the wagon-reach, and the properties of an iron bar, the patentee inferred that the wagon-reach would be stronger if made of iron,—as any one might have inferred, at least any one skilled in the art of wagon-building. Therefore, the Supreme Court held that it was no invention thus to substitute iron for wood. In an earlier case in the same court, Hotchkiss *v.* Greenwood,[3] the patent was for a porcelain door-knob, composed of a knob proper and a shank inserted therein whereby the knob was fixed to a door. The knob itself was old and the shank was old. All that the patentee had done was to bring the porcelain knob and this particular shank together. By so doing he made a door-knob better than any in use before it; but the knob having been useful with other shanks, and the shank with other knobs, it was a legitimate inference that they would be useful together, and it was proved that no invention was required to adapt them to each other. It was therefore held that the substitution of the porcelain knob for the knob previously used with that particular shank was not an invention.

We take at random a few more cases to illustrate this principle, that inference is not invention.

Given a sounding-board of small size, it is no invention to make a larger sounding-board in the same combination, which gives forth a louder sound.[4] It was a direct inference that increasing the size of the sounding-board would increase the quantity of sound reverberated.

Given a deflecting plate in a saw-mill machine, it is no invention to make such a machine having two deflecting plates, which simply double the effect of the first one, introducing no new effect.[5]

[1] Brown *v.* Piper, 91 U. S. 37.
[2] 18 Wall. 670.
[3] 11 How. 248.
[4] Day *v.* Bankers', &c. Tel. Co., 9 Blatch. 345.
[5] Dunbar *v.* Myers, 94 U. S. 187.

Another leading case in the Supreme Court is that of the Milligan & Higgins Glue Company *v.* Upton.[1] The patentee made a powder of glue, and put it up for sale in that form, whereas before, it had always been sold in the form of loose pieces. In the new form the glue was more soluble and easier to handle. But these advantages had attended the comminution of similar substances; of sugar, for example. It was, therefore, a mere inference that the same effects would follow in the case of glue.

So, also, an improvement in degree is not invention.

If a certain quality, size, or shape produce a good effect, it is a mere inference that its aggravation, where that is possible, will increase the good effect.

A leading case on this point is that of Smith *v.* Nichols,[2] in the Supreme Court. The patent was for an elastic fabric, used for the gores of gaiter boots. The elasticity was imparted by narrow strips of rubber woven into the cloth. The patentee's fabric differed from one previously used for suspenders, only in that it was more tightly woven, and that the strips or cords of rubber were nearer together. By thus increasing the elasticity of the material, the patentee made it available for a new purpose, namely, the gores of gaiter boots. The improvement was a valuable one, but inasmuch as it was an improvement in degree simply, it was held to be no invention. The way to increase the elasticity of such corded fabrics was well known. It was to increase the proportion of elastic cords to that of the other cords used. It was, therefore, a mere inference that a fabric of great elasticity would be produced by multiplying the rubber cords.

Changing the position of the raker's seat on a reaping-machine, whereby no new function is introduced, but only the raker is enabled to rake more easily, is not invention. If he could rake in the old position, it is a natural inference that he could rake in the new position. The improvement in degree which attends the change is the result, not of a new idea, but of the qualification of an old idea. If the patentee in this case had discovered some new fact as to the physical limitations under which a man can rake, — in what position of the arms and body, — then the change in the situation of the seat, if made in accordance with his discovery, would have been patentable. In the actual

[1] 97 U. S. 3.

[2] 21 Wall. 112.

case there was no discovery, but only the inference that a man could rake more easily in the new position; an inference drawn from the known muscular capabilities of the man and the structure of the machine. Finally, aggregation is not invention. If a man collects devices from various stoves, and puts them into a new stove, where each discharges the office it had discharged before, and nothing else, so that there is a mere assemblage of separate known devices, the stove so produced is not patentable.

If the separate devices had worked well in one stove, it was a natural inference that they would work well in another; there was no invention in putting them together.

It appears, then, that the process of mind called for by the statute is not that of ordinary reasoning, or inference or deduction. Whenever the mind advances from the known to the unknown by a transition natural to the ordinary, instructed intellect, there is no invention. Inference, then, is a criterion of what is not invention.

The Test of what is Invention.

Invention is imagination; it is the very opposite of reasoning or inference; it is a single act of the mind; rather an instantaneous operation than a process. It has no stages; the essence of it is that it dispenses with them.

In the process of reasoning or inference the conclusion is reached both gradually and inevitably. The mind is led on from one point to another, until it reaches a conclusion from which there is no escape. Whereas, when the mind invents, it starts with the conclusion. The conclusion flashes, so to say, upon the mind. The conclusion, therefore, either carries conviction with it, or it has to be verified; for the mind does not perceive how it has been reached.

In every case the truth revealed by invention can be verified by reason; for this is but to say that nothing happens without a cause, and when, by an act of invention, a certain truth has been reached, the mind can work backward, as it were, and analyze the causes (reasons) upon which depends the existence of the material thing invented.

But reason would never lead one to the truths and ideas which are the objects of invention; in fact, most often it leads directly

away from them. And it is for this reason that invention is so difficult and comparatively so rare. It is not a sort of elevated reason; it is a faculty which differs in kind from reason,[1] which often, in truth, is free to act only when reason has been thrust aside, and its conclusions ignored, nay, denied.[2]

Invention, then, is in the nature of a guess. The mind leaps across a logical chasm. Instead of working out a conclusion, it imagines it.

We have suggested this at the outset in saying that inventing is creating. Now, the creative faculty is the imaginative, and invention is nothing more nor less than imagination exercised upon matter. The "genius of the inventor" is imagination. The use of that word "genius," which is so frequent in the mouths of the judges, proves that they hold this very idea of the nature of invention, namely, that it is an exercise of imagination.

Genius as thus used is a somewhat vague term, but if we analyze the meaning which it conveys to us we find that it implies an act of mind having two characteristics: first, the absence of conscious effort; second, instantaneousness of operation. These are the qualities of imagination,[3] and they are the very opposite of the qualities of reasoning, which follows only upon a distinct and often a laborious effort of the will, which also, so far from being instantaneous, is in its essence a gradual passage from one thing to another.

[1] "Mere mechanical skill can never thus be applied, because it was supposed to be applicable to fibrous material only, and xyloidine is not fibrous. "It is my opinion," said an expert, whose testimony is quoted in the opinion of the court, "that a chemist would exhaust all other theories before he would think of ordinary bleaching agents for the purpose." This new use of the bleaching agent was therefore held to be patentable. It was a result the very opposite of that to which reason would have led. Invention was, therefore, required to attain it. Very similar is the English case of Steiner *v.* Heald, 6 Ex. 607. Both of these cases are set out at length in Chapter IV., at pages 202, 203.

[2] An excellent illustration of the difference between reasoning and invention here set forth is furnished by the case of Spill *v.* The Celluloid Manufacturing Company (18 Blatch. 190), where the patent sued on was for applying a well-known bleaching agent to xyloidine, a substance supposed to be unbleachable. It was proved in evidence that the knowledge and judgment of one skilled in the art concerned, in other words, his reason, would lead him to conclude that the bleaching agent could not rise to the sphere of invention. The latter involves higher thought, and brings into activity a different faculty." Mr. Justice Swayne, in Blandy *v.* Griffith, 3 Fish. 609.

[3] Maudsley, Physiology and Pathology of the Mind, ch. ix.

We have seen that reasoning is not invention ; if reasoning be not invention, then imagination[1] must be it, for these two are the

[1] Imagination is a faculty recognized by all psychologists, though they differ somewhat as to its limitations. Instead of "imagination," it is sometimes called "invention," sometimes "conception," and, again, "constructive association." Reid calls it "the invention of proofs."

It would manifestly be improper in a practical work like the present to enter into an analysis of the imaginative faculty. We are here concerned only with its superficial and relative nature; in other words, with imagination as it appears to us in its operation and in its results. We attempt to describe rather than to analyze it. And whether imagination is unconscious reasoning or absolute intuition is of no importance to our argument. It can be, and commonly is, distinguished superficially, relatively, practically, from other acts and processes of mind; and that is sufficient for our purpose.

We may indicate, however, what we believe to be the rationale of the matter as follows: —

Reason (rather than reasoning), according to some philosophers, enters into all mental acts. Reason in this sense means, not that process of inference which we have described, but simply *classification*. Every mental act, whatever else it may be, is a classification. But a classification may be intuitive, and not inferential. According to other writers, *perception* does not imply classification. However this may be, it is undenied that knowledge may and must be either mediate or immediate. In other words, we may know something from itself, or from something else. It may be an intuition or an inference. An intuition is a "single, indecomposable mental act;" an inference is a mental passage from one thing to another.

A perception of external objects is an intuition; and so is a perception of certain elementary truths or laws of the mind. "Relations that are equal to the same relation are equal to each other," is the example given by Mr. Spencer.

Facts which are not thus known by intuitions, which, in other words, do not at once present and recommend themselves to the mind, are *inferred* from that which does thus present and recommend itself.

This drawing of inferences is reasoning; and perfect reasoning is drawing from the facts in hand those inferences, *and those only*, which the facts logically imply.

Now, if invention were reasoning, we should find that the best reasoning would be the best inventing; but the fact is that invention begins only where reasoning leaves off. This is easily seen. The weakest form of reasoning is that by analogy; but an improvement analogous even to what was known before is not invention. Invention does not begin until it appears that there is no analogy between what was known and what is invented, or an analogy too faint to justify a logical inference.

The essence of invention, therefore, is the perception of a likeness, which true reasoning denies, because the premises do not justify it. It is reasoning from insufficient premises, — and something more.

But, it may be said, it is easy enough to reason from insufficient premises, and to draw all sorts of unwarranted conclusions therefrom. Granted; *but to seize upon the true, though extra-logical, conclusion* is not so easy, and that is what imagination does.

It will not do to say that the true conclusion and the false conclusions were already in the mind, and that by

only ways by which the mind develops or creates new ideas.[1] We have said also that invention is characterized by an absence of conscious effort and by instantaneousness of operation. These

processes of inference the mind rejects the false conclusions, and thus comes to the true conclusion.

For, without stopping to ask *how came the true and the false conclusions into the mind* (a pertinent inquiry), we have only to point out the fact that the process described would be like that of hunting for a needle in a hay-mow. The number of possible false conclusions is indefinite; the true conclusion, therefore, cannot depend upon their rejection. The imagination conceives of its existence.

Whether the act of imagination is an intuition or an inference unconsciously performed, it is not necessary here to inquire. It has the character that we have indicated, and it is practically distinguishable and distinguished from inference. It may contain unconscious reasoning.

But if so, it is not that sort of reasoning in which the whole process is unconscious. Thus, we reason in sleep; and habitual inferences are made unconsciously at last.

In such cases the whole process is unconscious. The mind is not conscious of the premises, or of the arrival, so to say, of the conclusion; whereas, in a case of real imagination, the perception of the conclusion is always in the nature of a surprise. The mind is conscious of the premises, and conscious of the conclusion flashing upon it; but it is unconscious of the steps, if any exist, by which it passed from one to the other.

Thus we see that, according to a familiar law, the extremes of thought meet. The simplest cognitions are intuitive, the more difficult ones are inferential, and the most difficult are, again, intuitive, — intuitive practically, — though perhaps unconsciously inferential.

Finally, it may be said that, in the last analysis, reasoning and imagination are both *perceptions of likeness*, and that reasoning shades off into imagination. This is true; and if it were not true, the question of "invention" would give rise to no difficulty. The task of the courts in cases of patentability is to draw the line between reasoning and imagination. The fact that both are perceptions of likeness does not invalidate the superficial and relative, but practical and valuable, distinction between reasoning, a perception of likeness justified by the rules of logic, and imagination, a perception of likeness not so justified. Every mental act is a classification; but we do not therefore refrain from dividing mental acts into different classes. Such a division is valuable, because it is that which naturally suggests itself. It is the apparent division, — the division which makes itself.

The same may be said of the division between imagination and reasoning; and this also may be said, that its reality is proved by the familiar fact that he who reasons well is seldom he who imagines well. Moreover, a man reasoning is conscious of an experience different from that of a man imagining.

From this note many considerations have intentionally been omitted, for the sake of brevity. On some future occasion, however, the author hopes to recur to the subject of imagination as it is exhibited in art and in the arts.

[1] There are three ways in which it may be said that the mind *arrives* at a new idea, — reasoning, imagination, and perception or observation. But the new ideas attained by perception or observation are, as we have explained, the subjects of discovery, not of invention.

qualities necessarily belong to it from the very fact that it is an act of imagination, — of vision. There is no invention until this act is performed; but no effort can insure its performance, and the performance is instantaneous, and unaccompanied by conscious effort, though that may precede it; but the statement, to repeat it, that invention is characterized by absence of conscious effort and by instantaneousness of operation, is open to misconception. The reader must bear in mind that we are describing, not the whole mental process by which a patentable thing is produced, but only the inventive part of that process. We do not mean that every invented thing is produced easily, without care, thought, or experiment; but that the vital idea of the invented thing, that which makes it an invented thing, comes instantaneously and without effort. The inventive thought may have been preceded by months and years of thinking and experiment, and it may require months and years more to embody it in a tangible form; but the patent is not granted for the labor and thought that preceded the invention, nor for the labor and thought that reduced it to practical form. These last are necessary for the granting of a patent; but the patent is not granted for them. The patent is granted on account of the invention,[1] and the invention is the grasping of a truth, not attained by reasoning, and not perceived to be a truth until the mind of the inventor imagined it. However long or extensive the preparatory thought and labor may have been, the inventive idea is not gradually developed thereby, or evolved therefrom. When it comes, it does not come as a necessary consequence of what has gone before. Until the last step was taken, the inventive thought was as much unknown as it was before the first step was taken.

This shows very clearly the difference between reasoning and invention. In a process of reasoning every step is not only valuable, but necessary; each step is an advance; each step brings us nearer to the conclusion, and at last the conclusion follows inevitably. It was latent, so to say, in the premises, and needed but a process of reasoning to evoke it. Hence it was within the reach of all men capable of conducting the ordinary process of reasoning. But the thought or experiments which precede an invention are only gropings in the dark. However accumulated,

[1] But not *for* the invention; the patent is granted for the embodiment of the inventive idea.

they prove nothing, and they do not necessarily lead to anything. The inventive thought does not depend upon them, and cannot be verified by them. In a certain sense they may have been necessary; they may have cleared the ground, prepared the way for the arrival of the inventive thought; in fact, they may have rendered its arrival possible. Nevertheless, they have not caused its arrival. Reasoning is unravelling, and invention weaving, of thought. Reasoning is an analytic, invention a synthetic, process. In one case a truth is drawn out; in the other it is constructed.[1]

We have been speaking of cases where an invention crowns a long course of thought and labor. At other times such a course is required to reduce the invention to a practical form, — to fit material things to the niceties of thought.[2] In such case the invention may be supplemented by a process of reasoning, the inventive idea furnishing the starting-point for such a process. And the value of the improvement finally reached may depend upon this development of the inventive thought, but the original conception, not the working out thereof, is the gist of the improvement and makes it patentable.[3]

There are obviously three kinds of inventions.

1. Those where the inventive conception comes without previous conscious thought or experiment, and also carries with it

[1] Bain calls imagination (invention) "constructive association." — "The Senses and the Intellect."

[2] ". . . The invention itself is an intellectual process or operation, and, like other expressions of thought, can in many cases scarcely be made known except by speech. The invention may be consummated and perfect, and may be susceptible of complete description in words, a month or even a year before it can be embodied in any visible form, machine, or composition of matter." The Philadelphia & Trenton R. R. Co. *v.* Stimpson, 14 Peters, p. 462.

[3] "The law means by invention, not maturity. It must be the idea struck out, the brilliant thought obtained, the great improvement in embryo; he must have that; but if he have that, he may be years improving it, maturing it. It may require half a life. But in that time he must have devoted himself to it as much as circumstances would allow. But the period when he strikes out the plan which he afterwards patents, that is the time of the invention, that is the time when the discovery occurs." Judge Woodbury, in Adams *v.* Edwards, 1 Fish. 1.

So, also, Mr. Justice Swayne, in showing that an invention belongs to the originator of the inventive idea, and not to the mechanic who has given it a body, said: "As long as the root of the original conception remains in its completeness, the outgrowth, whatever shape it may take, belongs to him with whom the conception originated." Blandy *v.* Griffith, 3 Fish. 609.

the necessary physical form. This is the simplest case. An instance is the barbed wire fence. It occurred to the inventor thereof that he might string upon an ordinary wire fence, spurs, prongs, and other disagreeable things, whereby beasts should be repelled. This was an invention, but probably it was not, and certainly it may not have been, preceded by thought or by experiment, and its reduction to tangible form was simply the work of the mechanic.

2. Cases where, again, the inventive thought is easily reduced to practice, but it was not arrived at without previous labor and pains. Many improvements in machinery belong to this class. For instance, an inventor sets out to render automatic a certain operation requiring an attendant. He may expend years of labor and thought before hitting upon the inventive idea which solves the difficulty. His unsuccessful experiments have shown him how the thing could not be done, not how it could be done. They may have amounted to more than this. Through them all there may have run an imperfect anticipation of that inventive thought which was to solve the difficulty, but being incomplete, they were without practical value.

In making an invention, the inventor may strike out a hundred inventive thoughts, but the law gives him a patent only for such as are embodied in some practical form.[1] The unsuccessful inventive ideas, however brilliant or difficult as intellectual achievements, confer no benefit upon the public. The consideration for the granting of a patent is, therefore, wanting. But our inventor having once conceived the idea of his automatic

[1] "If it is an experiment only, and ends in experiment, and is laid aside as unsuccessful, however far it may have been advanced, however many ideas may have been combined in it which subsequently taken up might, when perfected, make a good machine, still, not being perfected, it has not come before the public as a useful thing, and is therefore entirely inoperative as affecting the rights of those coming afterwards. . . . It may often happen that a person in pursuit of an invention goes a certain distance, makes certain parts of an invention, but fails of arriving at any practically useful result, and the whole falls to the ground. Somebody else comes afterward and takes up the invention, and may incorporate into his invention something found by somebody before; but if that somebody has never perfected that part in the eye of the law as I have explained to you, the second is not to be prevented from having the benefit of that which has been left without practical fruit." Sprague, J., in Howe *v.* Underwood, 1 Fish. p. 166.

movement, a few changes in the mechanism may accomplish it. Or, we may suppose that it was difficult to embody the conception. Much thought and experiment were necessary to adapt the physical means which are to carry out the idea. Then we shall have an instance of class number

3. Where the inventive thought is both preceded by labor and experiment, and also requires labor and experiment to embody it properly in physical form. A disregard of this distinction between the original thought which is the kernel of the patentable idea, and the process of reasoning, experiment, and labor which may have preceded its conception or attended its reduction to practice, breeds infinite confusion of language. We are told again and again by the courts that the law does not regard the process of mind involved, and the reason given for the statement is this: the law does not inquire whether the patentable improvement was reached by a flash of thought, or only by years of thought and experiment. We have seen in what sense this is true, and how little it justifies the general statement that the law does not look to the process of mind involved. A certain process (or act) it always requires, — that of invention. Whether the other process, that of reasoning, precedes it or follows it, the law does not inquire. So, also, the law does not regard the *quantity* of thought involved, or the value of the contrivance embodying it. A slight invention [1] is patentable, as well as a great one, provided it be a real invention.[1] The *quality* of the thought, not the quantity, is what the law looks to.

Objections Anticipated.

We have still to deal with certain possible objections to this theory, that the genius, in other words, the imagination, of an inventor, as shown in the result, is the condition of patentability.[2]

We proceed to state them, as follows: —

"True it is that many, perhaps most, inventions are characterized throughout, or at some stage of them, by the exercise of imagination, — at some point the mind of the inventor has, so to say, leaped across a logical chasm.

"But it is true, also, that other patentable improvements are

[1] In the objective sense.

[2] Discoveries, we remind the reader, being set aside.

reached by a process of reasoning, pure and simple, — a difficult process often, requiring an accurate intellect and a store of knowledge for its performance.

"Nevertheless, it is a true process of reasoning, whereby the mind, starting with the defect which the invention is to remedy, in other words, with the problem in hand, proceeds step by step from adequate premises to a necessary conclusion. That this must be so," the argument would continue, "is apparent from the fact that different inventors set about their work and perform it in different ways.

"Many, if not most of them, do indeed invent by a process of unreasoning imagination, and they cannot state how their results are obtained. In fact, as those familiar with the mental habits of inventors well know, they often have a scorn of reason and of knowledge both, and they are disinclined to inform themselves of what others have accomplished, lest they should injure their own originality.

"There are, however, inventors of a different class, whose minds, though commonly no more acute or imaginative, are yet better trained and informed, than those of the former class. These inventors proceed step by step, by a series of inferences rather than by intuitions. They set themselves, not to receive impressions, but to work out results. They reason from known premises to inevitable conclusions. In short," it might be said, "there is between the operations of these two classes of inventors the very difference that you have described as existing between the faculties of invention (imagination) and of reason.

"Thus, supposing that an inventor of this class attempts to remedy the defect in some machine. He first sets before his mind the result to be accomplished. Then he says to himself: this material or device or arrangement, as the case may be, will work in such and such a way; this other element or adjustment will accomplish this or that; and so the desired result will be brought about.

"The reasoning may be more simple or less simple than this. A single inference only may be required, or the process by which the final result is reached may consist of a series of inferences, each step being inferred from the preceding step; but in either case" (the argument would conclude) "the process is essentially a logical one."

No stronger argument than this, we believe, can be directed

against the position that invention is imagination exercised upon matter; and we have tried to state it with all the force of which it is capable. At first sight, it is, perhaps, almost convincing, but, as the reader will perceive upon reflection, it conceals a profound fallacy.

In the class of cases under consideration, reasoning is indeed the faculty most conspicuously used; but imagination must be employed before the reasoning begins, and in order that it may begin. For in these cases invention (imagination) is exercised either (1) in selecting out of a great many possible elements the particular elements to accomplish the result desired, an infrequent case; or (2) in associating, and applying to the subject under investigation, isolated facts or laws which, though separately known, have not so been associated before, and could not so be associated except by the exercise of imagination, as we have defined it. In other words (in the second case), invention consists in supplying or correlating the premises from which reason draws the necessary conclusion. This second case is a common and a deceptive one.

In both cases, the essence of the invention consists in striking out a fruitful line of reasoning, or in getting a new point of view, and not in the reasoning itself which follows. The difficulty is that the reasoning is often such as to obscure the real nature of the process; so easy is it, where we are given only a new point of view from which to regard old facts, to imagine that *nothing* new has been given. Our attention is diverted from the inventive act of the mind to the reasoning which follows it. The invention, however, does not consist in drawing correct inferences, which is comparatively easy, but in finding the right premises to draw inferences from.

We will now consider separately the two classes that we have indicated. Of the first class, an instance is found in the case of Williams *v.* The Rome, &c. R. R. Co. (15 Blatch. 201), where the inventor had made a lamp, described in the opinion of the court as "the first one which successfully burned kerosene oil in a locomotive headlight;" and this he had done by combining several devices, all of which had previously been used in other lamps and in other collocations.

Taking each device by itself, it might be a matter of reasoning that, having performed its function well in the old situation, it

would continue to do so in the new combination; and, good devices having been selected from various lamps, it might be inferred that the resulting lamp would be a good lamp.

But invention lay in selecting these particular devices out of the many that might have been selected; and perhaps, also, in this case, though the fact is not stated, in the manner of adjusting and combining the several devices.

The second class. This class is a numerous one, and the act of imagination in it is often overlooked. For instance: several important but isolated facts are well known to scientific men. It is known that the force or substance A has certain functions, and that the force or substance B has certain other functions. Scientific men have long been in search of a beneficial result, C. It is a matter of reasoning, when A and B are brought together that the result C will follow.

Here, then, apparently, is a case of invention that is only reasoning. The conclusion is not imagined. There is no flashing upon the mind of the conclusion sought. There is a deliberate process of reasoning issuing in an improvement which it would be absurd to call unpatentable.

In this case, we answer, invention *lies in associating* the facts or laws which constitute the premises, or one of them; in bringing A and B together.

Scientific men were familiar with A and B separately, and they were seeking to produce the effect that the union of A and B produced. Moreover, had the union of A and B been suggested to them, they would have been able by a process of pure reasoning to conclude that C must follow from the conjunction of A and B.

In such a case, therefore, the process of mind which combines the elements of the invention [1] into the result desired is indeed a process of reasoning; but the process of mind which associates those elements is an imaginative or inventive process.[2]

Given the materials, reason can arrange, and, so to say, manipulate them. The fallacy which we combat lies in the assumption that the materials, *i. e.* the facts or laws from which the desired result can be inferred, are given. But in every case of this sort it is necessary to ascertain how the facts or laws were associated.

[1] In the objective sense.

[2] "Imagination is the correlative conception of imperfect component parts." Ruskin, Modern Painters.

If this was done for the patentee, that is, if the state of the art supplied him not only with the truth of his premises, but with their association as well, then the improvement is not patentable.

We might now go on to inquire when it is that the state of the art supplies the facts so that nothing but reasoning is needed to produce the result. This inquiry may be answered by saying, that to preclude invention, not only must all the facts involved be known, but they must be so known in relation to the subject in hand that they would presumably be present to the mind of any instructed person, so soon as he directed his attention to the subject. The simplest illustration is furnished by those cases where one material is substituted for another. In the case of any machine, for instance, the properties of matter manifested in it are necessarily present to the mind of every one who contemplates it. The size, weight, strength, rigidity, elasticity, &c., of the several parts (so far as these properties are availed of in the machine), are necessarily present to the mind so soon as one thinks of changing any of them. It is therefore not a new association of ideas to introduce some element which has the same characteristics, though in a different degree, as the element displaced. The idea of the new element is already in the machine. To put iron in the place of wood, for instance, in any part, for the sake of greater strength, is no invention; for the improvement is an inference from facts which are not only known, but known, so to say, in this connection. That is, the elements of the improvement are supplied by a mere contemplation of the machine; or, in the language of the courts, they are furnished by the "state of the art." It is understood, of course, that by "state of the art" is included such knowledge of the properties of matter in ordinary relations as men in general possess, and not those facts only which are peculiar to the particular art in question.

Thus, in the case supposed, the office which the iron is to fulfil one may gather from a contemplation of the machine; but the existence of iron and of its principal properties is a part of that practical knowledge which men in general possess.

If, instead of "state of the art," we were to say "existing knowledge," the limitation intended would, perhaps, be indicated more correctly.

In a case of substitution, such as we are considering, it is said

that no "new function" is fulfilled. If a "new function" were fulfilled the case would be one of invention, because the thing done would not be a simple inference from the facts of the old machine and the properties of matter manifested in it. Other properties of matter not necessarily called up in thought by the mere contemplation of the machine would have been associated with it. Facts from the outside would have been brought into association with those manifested in the old machine.

So in the case of an improvement in any art, if the change made only involves the application of facts or laws known and associated with that particular art in previous practice, the change is not a patentable improvement; for no act of imagination is required. The result in such a case is merely a conclusion the premises of which are present to the mind of an instructed person, whenever he thinks of the subject. On the other hand, if the facts or laws of nature involved in the improvement, though known generally and separately, have not before jointly been availed of in that particular art, or in one strictly analogous thereto, and therefore are not necessarily present to the mind of any one who intelligently considers the subject, then the importation of such facts into the new association requires an act of imagination, and is therefore patentable.

The objection which we have been considering might be put somewhat differently. It might be said that the distinction which we have made between imagination and reasoning, as processes of mind, is arbitrary and unreal. "It is impossible" (the contention would be) "to draw a hard and fast line between the two, and to say that this idea was reached by a reasoning process, and that other by an imaginative. The mind uses both processes in the development of a single idea. The two are inextricably mixed. In fact, the mind never, or very rarely, proceeds by a purely logical process. That exercise of imagination whereby the mind leaps across a logical chasm is found in all of its operations that have for their object the attainment of new ideas."

Much of what has been said in the preceding pages applies to the objection put in this form, but we wish to present a few considerations rather by way of suggestion than of argument bearing upon the point.

In the first place, then, as we have already shown, reason and imagination may operate successively in the construction of a

material thing. The result is a unit, but the mental process by which it was reached may have been manifold and complex. Reasoning may have been at work at one stage, and imagination at another. But if there was no imagination in the process, then invention is excluded. It is absurd to say that the mental acts of reasoning and of imagination mingle in any other sense than this, namely, that they take place successively and in furtherance of a single and a common object. They are distinct processes, and the recognition of them as such is an elementary principle of psychology.

It should be remembered that all intuition is not imagination. Thus, the intuition or perception of external objects, and the intuition of a law of the mind, as that relations which are equal to the same relation are equal to each other, are not acts of imagination. They are mere recognitions of a fact or truth already existent. Whereas imagination is the act of constructing, so to say, a new truth.

Again, inferences which are habitual, or which are nearly identical with habitual inferences, are made almost, sometimes quite, unconsciously.[1] But these, when they relate to material things, can never be mistaken for acts of imagination (invention), because, when reduced to language, they are at once seen to be inferences of the most obvious kind. The only acts of the mind which can ever be mistaken for acts of imagination (invention) are strict inferences consciously drawn.[2]

Furthermore, when the act of imagination is confused with the more common and more simple process of reasoning, it is often because the person who confuses the two assumes that all reasoning is syllogistic; whereas, as the reader hardly needs to be reminded, in an ordinary process of reasoning most of the premises and many of the syllogisms are suppressed. Nevertheless, the process is a series of *stages*, gradually conducting the mind to an inevitable conclusion. What we really mean, therefore, — what reasoning really amounts to, in fact, — is a process of inference whereby the mind, by a transition natural to all intellects, passes from one thing to another. Each step is an in-

[1] Mr. Spencer speaks of "the familiar fact that in reasoning we constantly skip the intermediate steps of an habitual argument, and pass at once from the premises to a remotely involved conclusion." Principles of Psychology, Part II. ch. ix. p. 189.

[2] *Vide* foot-note to page 24.

ference, though it may depend upon a suppressed premise or syllogism.

Every conclusion depends upon previous conclusions, and usually upon a great many. Each premise may be in itself the conclusion of a preceding (implied) argument.[1]

When, therefore, we say that in an invention the mind starts with the conclusion, imagines it, we do not mean that the conclusion so imagined is in all cases the final conclusion. Sometimes, very often, it is so. An instance is the case of the barbed wire fence, an illustration which we have already used. But at other times the conclusion imagined is that on which one of the premises depends, or that by virtue of which the premises are brought together. We will not, however, extend this discussion.

We have already explained that invention comes in sometimes at one, sometimes at another, stage of the intellectual process which results in a patentable improvement.

In that intellectual process there is commonly one difficult point, a stumbling-block which reason cannot surmount; otherwise anybody instructed in the art could make the improvement in question. And when once the stumbling-block has been surmounted, its existence begins to be doubted; for after imagination has shown the way, reason easily explains and verifies the steps.

We may add, though the remark is obvious, that the patentability of a given improvement must be determined by the manner in which it would ordinarily be arrived at, without regard to the manner in which it has actually been arrived at in a particular case. The criterion, in other words, is the action of minds in general, not the idiosyncrasy of a particular mind. Thus, in a given case, the improvement may be such as a person having the ordinary skill in, and knowledge of, the art to which it belongs could reason out; whereas, in fact, imagination may have been exercised by the alleged inventor, — and this because he was ignorant, or because he had not the normal reasoning faculty, or because he had the imaginative faculty in excess, or from all these causes combined. In such a case the improvement would not be patentable.

[1] This subject is elucidated in Cardinal Newman's "Grammar of Assent," ch. viii.

Application of the Rule.

Of course, it is often difficult to apply the principle upon which we insist; otherwise, upon the subject of "invention" there would be no judicial decisions, and no law, save the statute; but the final criterion of patentability is obtained by putting ourselves in the place of the alleged inventor, and then deciding if he arrived at his improvement by a process of pure reasoning, or if an act of imagination constituted the process or a step in the process.

We do not mean, however, that whoever seeks to decide upon the patentability of an improvement follows, and must follow, this method in every case. It is not necessary that he should do so, because many causes have already been decided upon this principle (whether it has been announced in them or not), and any one familiar with them has in his mind one group of cases which illustrates patentability, and another group which illustrates non-patentability. When, therefore, a new case comes up, he may decide it, partly or wholly, by considering to which group, on the whole, it bears the closer resemblance.

With this matter, however, we have no concern. We are discussing patentability itself, not the manner in which individual minds may decide upon its existence in a given case. In fact, however, the two things are often confused; and because it is impossible to lay down a rule which, having regard to the material thing, and not to the mental process by which it was reached, shall separate patentable from non-patentable improvements, and because, in proportion to the difficulty of the case in hand, the various tests of invention (such as the production of a new function, &c.) fail to be of assistance, — for these reasons it is sometimes assumed that there is no ultimate criterion of invention.

The very use of the word admits that there is something to be defined, but the contention is, not only that it has not been, but that it cannot be defined. According to this view, it is a mysterious, occult faculty. Its presence can be perceived, but its nature cannot be analyzed. And yet it scarcely requires argument to prove that some rule of patentability there must be, though not necessarily a rule of which those who apply it are conscious.

We have shown that the rule cannot be drawn from a consideration of the material things concerned; and we might add that

even if a rule could be framed so as to cover all existing cases, it does not follow that it would cover all combinations of matter hereafter to be invented, for we cannot tell in what new forms, or for what new objects, matter may be combined.

Bearing in mind, then, that patentability cannot be determined by considering the material things concerned, let us rehearse the facts in the case.

We find the statute defining patentable matters as the products of invention or of discovery. We find the courts holding that a peculiar process of mind is the essence of invention; and they describe this process as one requiring the genius of the inventor, distinguished from the knowledge and skill of the workman.

Now, it is obvious, as we have reminded the reader already, that (setting aside perception or observation, by which discoveries are made) there are but two ways of arriving at new ideas: by reasoning and by imagination. Of these, reasoning is excluded, for, as we have shown, that is what is meant by "the judgment and skill" of the workman or mechanic. It follows that imagination is what is meant by invention.

It is curious to observe the manner in which the courts have felt about, as it were, for a phrase to describe an improvement not patentably different from that to which it is referred. In the early cases, "principle," a term adopted by Judge Story, was commonly employed; and it was held that a second improvement was not patentable, if it embodied the same "principle" as the first.

About the year 1850, the phrase "mode of operation," a favorite though not original expression of Mr. Justice Curtis, came into judicial use, and it was held that the introduction of a new "mode of operation" distinguished a patentable from a non-patentable improvement. More recently the word "substantially," a term much used by Mr. Justice Clifford, has played an important part. Thus the difficulty has been shifted about from word to word, with no other gain than that of variety in expression.

What lay in the minds of those who used these phrases was this: that the second improvement, to be patentable, must contain a new idea, created or imagined by the inventor, and not merely inferred or deduced from that which was already known.

The "genius of the inventor," then, is a strictly scientific phrase; the genius of the poet works in the world of ideas;

the genius of the inventor works in the world of matter. The quantity of matter, to repeat the truism, can neither be added to nor diminished by man. But he can arrange it in new combinations. When these new combinations are so connected with others previously existing that they are logically to be inferred from their predecessors, then, though they evince judgment, taste, or skill, they are not inventions.

But when there is no such connection, and the new combinations have been imagined by the mind, and thus first introduced into the world, then they are inventions. All men may make logical deductions and inductions, and that which all men might do, if they would, is not invention. The inventor alone perceives or creates an idea which is not thus within the reach of all men. In other words, invention is the action of a single mind, where a class of minds would fail to act; it is the individuality of mental action.

Utility Evidence of Invention.

Here we cannot refrain from noticing the scientific basis thus afforded for the doctrine of utility, as evidence of invention under the patent law.

If by a slight change an improvement is made that amounts to a decided advance in some art or industry, the courts look upon it with favor, and they find invention in it if they can; especially is this so if the improvement effect a result which has long been desired, which many minds have striven for without success. In such a case, the great utility of the improvement, coupled with the difficulty which has attended its production, raises a presumption that invention was required to bring it forth. This is a fair conclusion; for if the improvement required only "mechanical skill," why was it not made before? When once the change is made, it seems indeed a perfectly obvious one, — a natural inference; but the fact that many minds have been directed to the subject and have not drawn the inference is strong evidence, at least, that it was not a natural inference; that invention was required to make it.[1]

[1] "The history of invention presents many instances of very important results produced by changes apparently trifling and insignificant. The steam printing-machine was on the point of being abandoned from a defect which was entirely obviated by setting the inking rollers in a slightly oblique position. The immersing cloth in hot water and the

This argument, however, must not be pushed too far. The mere fact that an improvement has not been hit upon before, although it would have been useful before, is not enough;[1] for this is true of almost all improvements, whether due to the skill of the workman or to the genius of the inventor. In order to raise the presumption of invention, it must be shown, not only that the defect supplied, or the difficulty removed, had an actual existence, but also that those (or some of those) familiar with the art in which it existed were conscious of it; and, again, not only that they were conscious of it, but also that they had striven unsuccessfully to remedy it.

If these three conditions are fulfilled, there is a presumption, if not a conclusive presumption, that the improvement was the work of inventive genius. An instance is furnished by the case of Pearl *v.* The Ocean Mills.[2] Pearl, the patentee, had made slight changes in the form of the bobbins and spindles of cotton machinery, whereby their weight was much reduced, and a corresponding economy of power effected. In upholding the patent, Judge Shepley said: —

"No more difficult task is imposed upon the court in patent cases than that of determining what constitutes invention, and of drawing the line of distinction between the work of the inventor and the constructor.

"The change from the old structure to the new . . . may be one which, viewed in the light of the accomplished result, may seem so simple as to be obvious almost to an unskilled operative, and yet the proof may show that this apparently simple and obvious change has produced a result which has for years baffled the skill of the mechanical expert, eluded the search of the discoverer, and set at defiance the speculations of inventive genius. . . . Without a knowledge of the results accomplished by these changes [those made by Pearl] they might at first glance appear to be merely structural changes. Nothing has a greater tendency to prove that these changes involve some functional difference beyond mere mechanical perfection and adjustment, than the greatly improved result attending the change, — when viewed in connection with the failure of the many experiments previously made to accomplish similar results by mere structural changes, like these, for example, of diminishing the weight of the spindle in all its parts."

shearing it in one direction, as from list to list, instead of from end to end, increased very greatly the value of the cloth so dealt with." Webster, p. 86, note (*b*).

[1] See page 208.

[2] 11 O. G. 2.

Discovery and Invention compared.

We may now return to the subject of discovery, and compare the mental process of discovery with that of invention. We have seen that, in deciding upon the patentability of a discovery,[1] it is not necessary to consider the process of mind by which it is reached, because the question whether or not a discovery has been made is one of fact, not of opinion. But if we examine the process of discovery, we find that in most cases it closely resembles that of invention; indeed, commonly, the difference between invention and discovery lies in the subjects upon which they are exercised, not in the processes themselves, and it is for this reason that discoveries and inventions are so often confounded.

Sometimes, however, there is no relation between them; for sometimes a discovery is the result of mere observation unaccompanied by reasoning, much less by imagination. In fact, discoveries[1] may be divided into three classes, as follows:—

1. Where the discovery is merely a matter of observation. Here, all that the mind has to do is to receive a fact forced upon its attention. Discoveries of this class are often accidental. Chance reveals to the discoverer a principle of which he was not in search. They might perhaps be called passive discoveries, because in making them the mind merely apprehends a fact without reasoning upon it. An instance is the following: A manufacturer of liquid nitroglycerine once, by accident, spilled some of it upon the ground, where it was absorbed by sand; and he was surprised to find that when so absorbed, upon the application of flame it exploded, instead of burning. Upon this discovery he founded a valuable patent.

Many chemical discoveries are of this kind. For instance, some years ago a chemist, knowing that a certain metal had a peculiar action upon aniline dyes, tested the action upon them of every other known metal; and in so doing he discovered that a particular metal had the same action to a highly valuable degree. In this case there may, indeed, have been invention in starting upon the course of experiments (an unimportant consideration in this place), but the discovery made, although not an accident, required merely trained observation, and neither reasoning nor invention.

[1] In the sense of the thing discovered.

2. Where a fact is perceived, but its bearing is not obvious. The mind has to operate upon it either by way of reasoning or of invention, in order that there may be a practical application of it. The following is an instance, taken from Webster on Letters-Patent, p. 54, note: —

"Many years ago, ladies wore flowered tabbies. The method of working the flower was discovered by mere accident; a man having spat upon the floor, placed his hot iron on it, and observed that it spread out into a kind of flower. He afterwards tried the experiment upon linen, and found it produced the same effect. He then obtained a patent, and lived to make a considerable fortune."

Another instance is furnished by the case of McClurg *v.* Kingsland,[1] where the discovery was as follows: —

"A workman in a foundry observed, in pumping water into a bucket, that the water entering at a tangent to the circle of the bucket acquired a circular motion, diminishing when it approached the centre, where bits of straw and other lighter materials would be concentrated. In casting iron rolls, the method required this rotary motion for the same purpose. The thought all at one struck the mind of this observer that the application of this principle or law of nature might be beneficially made to the casting of rolls by merely introducing the metal at the bottom of this mould at a tangent." [2]

The discovery of Sir Isaac Newton (who is commonly said to have conceived of the law of gravitation while watching the fall of an apple) was of this character, though, of course, in Newton's case, the distance from the particular instance perceived to the general law discovered was indefinitely greater than it was in the other cases that we have cited.

3. Where the mind, acting upon some hint, forms a more or less distinct image of that which it expects to discover, and thus arrives at the fact discovered. In these cases, we commonly find that the discovery originates from the perception of some deficiency in the material world of man's creation. The discoverer casts about in his mind, and uses experiments perhaps, in order to invent a mode of supplying that deficiency, and in so doing he makes a discovery that furnishes him with the

[1] 1 How. 202.

[2] Quoted from the opinion of Mr. Justice Grier, in Burr *v.* Duryee, 1 Wall. 531.

means of supplying it; or else it is an intellectual problem, which, in the attempt to solve it, is found to rest upon a principle, guessed at, and so discovered by the inquirer.

In this class of cases, therefore, a discovery is also an invention. Before the discovery is made, and in order to its making, the mind imagines in some degree the thing to be discovered. It runs ahead, so to say, of its actual knowledge, and thus constructs some notion of the fact afterward discovered. Now, this process is of the essence of invention. Most physical discoveries are arrived at in this way; the mind having the knowledge of certain facts jumps at a conclusion, or imagines an hypothesis which being tested is found to be correct.

It is not necessary, however, to dwell upon the distinction between this class and the second class of discoveries; and we need not be curious to distinguish the mental processes which they severally imply.

The vital fact is that in both of them the mind operates upon certain facts presented to it and thus makes the discovery. The idea of the discovery is reached by a process of reasoning or by a process of imagination, and the idea so arrived at is verified by experiment; whereas in cases like those which we have called passive discoveries (Class 1), the mind simply apprehends or perceives, and neither reasons nor imagines.

The imaginative process is, as we have seen, of the essence of invention. Discoveries of the third class, therefore, are inventions as well as discoveries. As to discoveries of the second class, it is difficult to say whether the transition in them from a particular instance to a general law is an act of reasoning merely or of imagination. For the reasons we have stated, it is unnecessary to enter into that question, but in so far as discoveries of the second class require imagination to reach them, they also are inventions as well as discoveries.

We may add that discoveries of the second class sometimes involve both a discovery and an invention,—the invention following upon the discovery, whereas in cases of the third class the discovery is the invention.

Thus, in the case of McClurg *v.* Kingsland, there was first a discovery, concerning the movement of water under the circumstances stated; and, secondly, an invention, namely, directing

liquid metal into its mould in such a manner as to take advantage of the law discovered in the case of water.

The patent, therefore, might have been supported on either ground, — on account of the discovery [1] or on account of the invention.

If the law of nature involved had been known before, and the patentee had merely made use of that law for the object and in the manner stated by his patent, the patent, we apprehend, would still have been valid.

On the other hand,[2] if the practical application of the law discovered had been something different from what it was, something perfectly obvious, still it would have been patentable, just as the practical but obvious application of Neilson's law was patentable. In this case, therefore, in the English case of the flower tabbies, and in other cases like them, the patentee both discovered a principle and invented an application of the principle.

A Seeming Exception.

It remains to notice an apparent exception to the rule that in all cases of alleged invention a certain process of mind is the condition of patentability. For sometimes, in cases of invention as well as in cases of discovery, not mind at all, but chance, has revealed the patentable thing. It is true, of course, that a law of nature or property of matter (which is the subject of a discovery) is much more likely to be disclosed by accident than are the complex arrangements of matter which form the subjects of invention. Nevertheless, a patentable invention might be the result of mere accident. We do not remember any actual case of this sort; but we recollect an illustration furnished by the case of Hartshorn *v.* Tripp (7 Blatch. 120).

The patent sued on was for a carriage curtain-fixture. The merit of it was that the curtain, once started, ran up of itself, without a continuous pull upon the cord. It was proved that, thirty-five years before the date of the patent, a witness had seen upon a carriage sent to his shop for repair, a curtain-fixture which acted in the same way, — not by the intention of its maker, but

[1] We assume that the fact discovered was not known before.

[2] Here, again, we assume that the law discovered was not known before.

because, being constructed with a pawl and ratchet-wheel, the teeth upon the wheel had become so worn by use that the pawl, once started, would slip over them, instead of engaging with them.

The witness thought no more of the old curtain-fixture until it was recalled to his memory by the similar curtain-fixture of the patentee, so that his evidence did not invalidate the patent.

But if, perceiving the utility of the ratchet-wheel with teeth worn down, he had patented one made with teeth of the same size and shape, his patent, doubtless, would have been valid.

In such a case the invention would be the result of accident, but none the less it would have the quality of inventive thought; chance would have thrown together the elements of a patentable thing, which, if not so presented to the mind, would have required inventive thought to combine them.

It is plain that the law cannot undertake to decide whether chance or thought has withdrawn an invention from its hiding-place. But the law does require that the thing to be patented shall be of such a character that, *supposing it to have been thought out*, and not chanced upon, it must be the result of inventive thought. These cases, therefore, confirm the general principle that inventive thought (imagination), as distinguished from the ordinary process of reasoning, is the criterion of patentability.

Conclusion.

These remarks upon the characteristics of invention and of discovery we offer as, we believe, the first attempt to analyze the meaning of those words, and of the terms used by the courts to describe that meaning. We are far from thinking that our suggestions are equal to the difficulty of the subject; neither do we fancy that the most thorough and correct analysis of invention would render it easy thenceforth to decide upon the presence or absence of it in any given case.

The chief difficulty in the administration of the patent law is, not to ascertain the principles which govern it, but to apply them. The principles are few, and comparatively simple; but the infinite and complex forms of matter which the human mind can invent or infer are difficult to classify. Nevertheless, the first step should be to ascertain as exactly as may be the nature and scope

of the principles according to which the classification must be made. This we have attempted, with regard to invention and to discovery.

In conclusion, should it be objected that some of the discriminations here proposed are too fine drawn to be applied safely and successfully in practical matters, the answer is obvious and twofold. In the first place, no metaphysical distinctions that can be conceived by the mind, much less expressed in language, will approach in number or in fineness the actual differences between similar arts, machines, manufactures, and compositions of matter. In order to do justice between rival or successive inventors it is necessary carefully to examine and to discriminate the mental processes which the things produced severally presuppose, as well as to consider the things themselves, in order to determine precisely what has been done, what physical change has been wrought in each case. Secondly, the fact that just decisions in difficult questions of invention really proceed upon fine metaphysical distinctions does not imply that those distinctions are *consciously* present even to the mind of the judge who acts upon them. In such matters, that "broad common-sense view of things," so insisted upon by those who have a dread of subtleties, is nothing more nor less than a view which must be substantiated and supported by those very subtleties; but it is arrived at spontaneously, instinctively, or however otherwise we may describe the action of that faculty of the mind which grasps a subject as a whole, unconsciously estimating the bearing and the weight of each detail. So true is it that the powers of right judgment and of right reasoning are thus separate and distinct, that instances are not uncommon of great judges who decide intricate and difficult cases wisely and justly, and yet are unable satisfactorily to explain the grounds of their decisions. They have the power to construct, but not to analyze.

CHAPTER I.

THE STATUTE.

1. THE object of this book is, first, to show what is in itself patentable in the United States; and, secondly, to set forth the circumstances and conditions which affect the right of an original inventor to a patent *at the time that his invention is completed.*[1]

This object we shall endeavor to accomplish chiefly by abstracts of all the important cases on the subject in the Federal courts, and of the leading cases in the English courts. We shall preface them, however, by an attempt to state and to explain the principles which they illustrate.

2. The common law does not provide a patent system. It is created by statute only, and in the United States by virtue of that clause in the Constitution which confers upon Congress power "to promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

The motive thus indicated for the establishment of a patent system is of practical importance. It shows that by the intendment of the Constitution a patent is not a free grant from the government to an individual, but a contract between them for the protection of the individual's discovery, in consideration of a benefit which he has conferred upon the public through the advancement of science or of the arts.

This view is but a just recognition of the fact that a patentee gives a *quid pro quo* when he receives his patent; and the practical consequence of it is, that the patent is construed liberally, as amounting to a contract, and not grudgingly, as stating the terms of a gratuity.

It is in such a spirit that the courts of this country have

[1] We do not treat of abandonment or of public use or sale.

always dealt with patents,[1] and so have the English courts for many years; but in the last century, and in the first quarter of this century, by a false association of ideas, the judges in England confounded patents for inventions with patents for other monopolies, and they were ingenious to upset them.[2]

3. Moreover, this fact that a benefit to the public is the consideration upon which the granting of a patent depends has a bearing upon the case of rival inventors, of whom one may first have conceived the idea of the invention in question, but afterward have failed to prosecute it with diligence, so that his rival has anticipated him in reducing the invention to practice. In such a case the courts take note of the fact that the second inventor was the first to confer upon the public the benefit in question.

Again, the same fact is of weight when an inventor seeks to patent an improvement which, though once invented before, was not given to the world by the first inventor, and has been abandoned and forgotten by him. In other connections, also, the consideration for which a patent issues becomes important; but it need not be dwelt upon here; the reader will frequently be reminded of it in the course of our investigations.

4. The first act of Congress creating a patent system was passed in 1790.[3] Since then there have been various statutes,

[1] Ames *v.* Howard, 1 Sumner, p. 485.

[2] Neilson *v.* Harford, Webster, p. 310.

[3] We quote here so much of the act of 1790 (repealed by that of 1793) as relates to our subject: —

"SECT. 1. Be it enacted," &c., "that upon the petition of any person or persons, . . . setting forth that he, she, or they hath or have invented or discovered any useful art, manufacture, engine, machine, or device, or any improvement therein, not before known or used, and praying that a patent may be granted therefor, it shall and may be lawful to and for the said Secretary of State, the Secretary for the Department of War, and the Attorney-General, or any two of them, if they shall deem the invention or discovery sufficiently useful and important, to cause letters-patent to be made out, . . . reciting the allegations and suggestions of the said petition, and describing the said invention or discovery clearly, truly, and fully, and thereupon granting to such petitioner or petitioners, . . . for any term not exceeding fourteen years, the sole and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said invention or discovery."

"SECT. 2. . . . The grantee or grantees of each patent shall, at the time of granting the same, deliver to the Secretary of State a specification in writing, containing a description accompanied with drafts or models, and explanations and models (if the nature of the invention or discovery

repealing, establishing, and amending the patent law. But there has been no substantial change in the conditions of patentability, and no change at all since July 8, 1870, when the act now in force was passed.

We proceed to set forth those sections of the Patent Act, taking them in their order, with which this book is concerned.[1]

5. Section 4886 provides that —

"Any person who has invented or discovered[2] any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof, not known or used by others in this country,[3] and not patented or described in any printed publication in this or any foreign country[4] before his invention or discovery thereof, and not in public use or on sale for more than two years prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law, and other due proceedings had, obtain a patent therefor."[5]

will admit of a model), of the thing or things by him or them invented or discovered, and described as aforesaid in the said patents; which specification shall be so particular, and said models so exact, as not only to distinguish the invention or discovery from other things before known and used, but also to enable a workman or other person skilled in the art of manufacture, whereof it is a branch, or wherewith it may be nearest connected, to make, construct, or use the same, to the end that the public may have the full benefit thereof, after the expiration of the patent term."

"SECT. 5. . . . Upon oath or affirmation made before the judge of the District Court where the defendant resides, that any patent which shall be issued in pursuance of this act was obtained surreptitiously by, or upon false suggestion, and motion made to the said court, within one year after issuing the said patent, but not afterwards, it shall and may be lawful to and for the judge of the said District Court, if the matter alleged shall appear to him to be sufficient, to grant a rule that the patentee or patentees, &c., show cause why process should not issue . . . to repeal such patents; and if sufficient cause shall not be shown to the contrary, the rule shall be made absolute. . . . And in case no sufficient cause shall be shown to the contrary, or if it shall appear that the patentee was not the first and true inventor or discoverer, judgment shall be rendered by such court for the repeal of such patent or patents."

[1] Patents for designs are treated of in an Appendix to this book.

There was no act making designs patentable until the year 1842.

[2] The words "or discovered" were not used in the act of 1793. In the act of 1836 the statute ran, "discovered or invented."

[3] In the act of 1793 this was, "not known or used before the *application*." The act of 1836 altered it to, "not known or used BY OTHERS before [the] *invention or discovery* thereof." The present restriction to domestic use was introduced by the act of 1870.

[4] This clause was first adopted by the act of 1870.

[5] In the act of 1793 there was also

The clauses concerning public use, or sale, and abandonment, relate to the conduct of the inventor after his invention is complete. They lie, therefore, outside of our subject, which regards only the invention itself, and the circumstances, past or present, affecting its patentability at the time of its completion.

6. Section 4887 says:—

"No person shall be debarred from receiving a patent for his invention or discovery, nor shall any patent be declared invalid, by reason of its having been first patented, or caused to be patented, in a foreign country,[1] unless the same has been introduced into public use in the United States for more than two years prior to the application. But every patent granted for an invention which has been previously patented in a foreign country shall be so limited as to expire at the same time with the foreign patent," &c.

7. The section which follows is no part of the subject treated by this book; but inasmuch as it might be thought to throw some light upon the nature of a patentable thing, by showing that it must be strictly, as the statute says, an art, machine, manufacture, composition of matter, or some improvement thereof, and not an abstract idea, or result, &c., we quote the section here:—

SECT. 4888. "Before any inventor or discoverer shall receive a patent for his invention or discovery, he shall make application therefor, in

the following provision: "Simply changing the form or the proportions of any machine, or composition of matter, in any degree, shall not be deemed a discovery." The act of 1793 was repealed by that of 1836.

[1] A similar provision was first adopted by the act of 1836, as follows (in sect. 8):—

"But nothing in this act contained shall be construed to deprive an original and true inventor of the right to a patent for his invention, by reason of his having previously taken out letters-patent therefor in a foreign country, and the same having been published, at any time within six months next preceding the filing of his specifications and drawings."

This provision was repealed, and the following enacted in 1839 (sect. 6):—

"*And be it further enacted*, That no person shall be debarred from receiving a patent for any invention or discovery, as provided in the act approved on the 4th day of July, 1836, to which this is additional, by reason of the same having been patented in a foreign country more than six months prior to his application: *Provided*, That the same shall not have been introduced into public and common use in the United States prior to the application for such patent: *And provided, also*, That in all cases every such patent shall be limited to the term of fourteen years from the date or [?] publication of such foreign letters-patent."

The present provision was adopted by the act of 1870.

writing, to the Commissioner of Patents, and shall file in the Patent Office a written description of the same, and of the manner and process of making, constructing, compounding, and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make, construct, compound, and use the same; and in case of a machine, he shall explain the principle thereof, and the best mode in which he has contemplated applying that principle, so as to distinguish it from other inventions; and he shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery," &c.

8. SECT. 4892. "The applicant shall make oath that he does verily believe himself to be the original and first inventor or discoverer of the art, machine, manufacture, composition, or improvement for which he solicits a patent; that he does not know and does not believe that the same was ever before known or used,"[1] &c.

This section is to be considered in connection with section 4923, *infra*.

9. Section 4920 provides that, —

"In any action for infringement the defendant may plead the general issue, and having given notice in writing to the plaintiff or his attorney, thirty days before, may prove on trial any one or more of the following special matters: —

"*First.* That for the purpose of deceiving the public, the description and specification filed by the patentee in the Patent Office was made to contain less than the whole truth relative to his invention or discovery, or more than is necessary to produce the desired effect; or,

"*Second.*[2] That he had surreptitiously or unjustly obtained the patent

[1] This provision has been the law since the act of 1836, when it was enacted in substantially the same terms as those now on the statute-book. In the act of 1793 the corresponding provision ran thus: "Every inventor, before he can receive a patent, shall swear or affirm that he does verily believe that he is the true inventor or discoverer of the art, machine, or improvement for which he solicits a patent."

[2] In the act of 1793, the section, from this point, runs as follows (in sect. 6): —

"That the thing . . . secured by patent was not originally discovered by the patentee, but had been in use, or had been described in some public work, anterior to the supposed discovery of the patentee, or that he had surreptitiously obtained a patent for the discovery of another person."

In the act of 1836, so much of this section as concerns our subject ran as follows (sect. 15): —

"That the patentee was not the original and first inventor or discoverer of the thing patented, or of a substantial and material part thereof

for that which was in fact invented by another, who was using reasonable diligence in adapting and perfecting the same; or,

"*Third.* That it [the invention] had been patented or described in some printed publication prior to his supposed invention or discovery thereof; or,

"*Fourth.* That he was not the original and first inventor or discoverer of any material and substantial part of the thing patented; or,

"*Fifth.* That it had been in public use or on sale in this country for more than two years before his application for a patent, or had been abandoned to the public."

It will be observed that in section 4920 the first clause relates to the sufficiency and correctness of the specification without regard to the nature of the subject-matter, and is, therefore, foreign to our subject. The third clause repeats a provision already made in section 4886; and the fifth clause, again, is but a repetition of the last two provisions in section 4886, with which, as has been said, we have no concern.

The second and fourth clauses, therefore, are the only ones which add anything to section 4886 as a test of patentability.

Numerous cases arise under the second clause, — very few, indeed, under the first branch of it, that which is qualified by the word "surreptitiously," but many under the second branch of it, where the defence is that the patent sued on was "unjustly" obtained. These cases are characterized as occurring in the "race of diligence." Often, by accident or under the pressure of commercial necessity, several persons conceive of or complete an invention; perhaps both conceive of it and complete it at about the same time. In such cases, the rule is that he who conceives first, if he uses due, that is, reasonable, diligence, to reduce his invention to practice, shall obtain the patent, although

claimed as new, or that it had been described in some public work anterior to the supposed discovery thereof by the patentee, . . . or that he had surreptitiously or unjustly obtained the patent for that which was in fact invented or discovered by another, who was using reasonable diligence in adopting and perfecting the same . . . *Provided, however*, That whenever it shall satisfactorily appear that the patentee, at the time of making his application for the patent, believed himself to be the first inventor or discoverer of the thing patented, the same shall not be held to be void on account of the invention or discovery, or any part thereof, having been before known or used in any foreign country, it not appearing that the same, or any substantial part thereof, had before been patented or described in any printed publication."

another person who struck out the idea later has reduced it to practice earlier.

Strictly speaking, therefore, there is no such thing as a race of diligence. At least, the second inventor or conceiver is so handicapped that he wins only by want of due diligence on the part of the first inventor. He cannot win by excess of diligence on his own part.

These cases are discussed in the ninth chapter of this book, under the head of "Prior Invention."

10. The fourth clause of section 4920, if it adds anything to section 4886, as a test of patentability, does so by virtue of the word "first" inventor or discoverer; for the word "original," prefixed to "inventor," is meaningless.

Every inventor is an "original" inventor. That is, a man does not invent unless he creates something himself. An inventor who was not an original inventor would be a mere imitator,— not an inventor at all. The expression "original" inventor is therefore tautological. An inventor may not be the "first" inventor. Some other person may have anticipated him, and produced the same thing which he, without knowledge of his predecessor's invention, afterward struck out by himself. A similar criticism applies to the phrase "original discoverer."

It might be said that even this clause of section 4920 is substantially contained in section 4886, by the words "not known or used by others." This is probably so. At any rate, this provision of section 4920 is always construed as confirming or amplifying the words we have quoted from section 4886.

11. SECT. 4923. "Whenever it appears that a patentee, at the time of making his application for the patent, believed himself to be the original and first inventor or discoverer of the thing patented, the same shall not be held to be void on account of the invention or discovery, or any part thereof, having been known or used in a foreign country, before his invention or discovery thereof, if it had not been patented or described in a printed publication."

12. We find, then, that section 4886 (barring the last two provisions), section 4887, section 4892, section 4920 (barring the first and fifth clauses), and section 4923, contain all that the statute says upon the subject-matter of a patent. In fact, they contain more; for, besides declaring what is in its nature patentable,

they also state certain further conditions, under which only the otherwise patentable matter can be patented. Patentability in this wider sense is included by this book, which is intended to be coumensurate with those portions of the statute that we have designated.

According to these further conditions, (1) the inventor or discoverer must, at the time of making his application for a patent, believe himself to be the original and first inventor or discoverer of that which he seeks to patent; and it must also appear that the patentable thing, before its invention or discovery, was (2) not known or used by others in this country [the inventor being the first and original inventor]; (3) not patented or described in any printed publication in this or any foreign country. Finally, (4) a patent is not valid if it has been surreptitiously or unjustly obtained for that which was in fact invented by another, who was using due diligence in perfecting it.

Each of these conditions, except the first, has given rise to much litigation, and each has been the subject of frequent judicial construction. The second, particularly, has required great ingenuity of explanation in order to prevent its shutting out patents granted for the rediscovery of a lost art. We refer to those cases where an invention was once practised, but has been given up and forgotten, so that the public have lost the benefit of it. Roughly speaking, the rediscovery is patentable.

As to the third and fourth conditions, their meaning is now well settled, and it was at no time difficult to get at. Most of the points which have arisen in regard to their construction were ingenious sophisms, set up for the purpose of bending the language of the act to fit the sinuosities of a particular case. More numerous, of course, are those cases where the contention was, not so much as to the meaning of the statute, but as to whether the facts in question came within that meaning. All of these cases, when they are not too trivial or too complicated for our purpose, we shall set forth, inasmuch as they may throw light upon causes hereafter to occur.

Discovery.

13. Having now finished these indispensable, if uninteresting, remarks upon the statute provisions in regard to patentability, we turn to consider the nature of invention and of discovery.[1]

According to the statute, he may have a patent "who has *invented* or *discovered* any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof," &c.

The reader will have observed that the statute says not simply that the patentee must have made, or caused to be made, a new and useful thing; it requires that he shall have *invented* or *discovered* it.

14. The first and most obvious remark to be made upon these words is that they do not have the same meaning. In common speech, when we say that a man has invented something, we mean that he has made or created something that did not exist before; whereas, when we say that he has discovered something, or has made a discovery, we mean that he has found out something which existed before, but was not known to exist before.

This distinction clearly obtains in regard to patentable subjects.

Most patents are granted for things created or invented,—machines, for instance. Other patents, however, rest upon a discovery of some new law of nature or property of matter, or, perhaps, upon a discovery in regard to the capacity or relations of a law of nature or property of matter. Such patents are said to involve a *principle;* though this is but one of several meanings which that word has in the patent law. A principle, then, in this sense, is a law of nature or property of matter, or (perhaps) a scientific fact in regard to such law of nature or property of matter.

If the discoverer of a principle makes a practical application of it, and describes the application, he may obtain a valid patent. For instance, the discoverer of a new metal or of some new, that is, unknown, property in a known metal, would be entitled to a patent if he made a practical application of his discovery.

[1] In the remarks that follow, much is repeated from the Introduction. This is necessary in order to present to the general reader a more easy view of invention and of discovery than is afforded by the radical treatment of the subject in the Introduction.

15. Some years ago the discovery was made that when lead is melted its particles will, at a certain temperature, reset. This discovery was turned to account in making lead pipe by a new and greatly improved process, and the process was held patentable, although the machinery through which the newly discovered principle operated was old.[1]

[Another instance of discovery is the following:[2] About the year 1828, James Neilson, in England, discovered that a hot blast of air thrown into a furnace for melting iron was more effective than the cold blast previously used. It had been supposed that the colder the blast the hotter the fire, because the furnace fires were observed to burn better in winter than in summer. This supposition, however, was incorrect. In reality, the fires burned better in winter because the air is drier then, not because it is colder. Neilson, therefore, discovered a physical law or truth, namely, that a hot blast is more effective than a cold blast in a furnace. And he described an apparatus for making use of this discovery by heating the air-blast before it is directed into the furnace.]

16. It is true that a mere *principle*, a naked principle, cannot be patented. So long as it is, or from its nature must remain, a mere item of knowledge, no patent can be had. But if a method of applying the discovery to practical use is described, that method is patentable. Nevertheless, the apparatus or other means whereby the principle is applied may be in itself devoid of all invention, and such as any workman skilled in the art concerned might supply, when the discovery was told him.[3]

These last two propositions — namely, that a principle by itself is not patentable, and that its application, though simple and obvious, is patentable — may be illustrated by the hot-blast case. If Neilson had merely announced the principle that a hot blast is better than a cold blast in an iron furnace, he could have had no patent. He described, however, a method of applying that prin-

[1] Le Roy *v.* Tatham, 14 How. 156; 22 How. 132.

[2] Neilson *v.* Harford, Web. 295.

[3] Of course it may, and sometimes does, happen that the apparatus itself is new, and is the result of invention. In such case there are both a discovery and an invention, — a discovery of a principle coupled with an application thereof, in other words, of a process, and an invention of a particular apparatus; and the inventor may have one patent for his process and another for his apparatus. But if a process is simply the operation of a machine, it cannot be patented separately. *Vide post*, page 77.

ciple by interposing a heated receptacle between the air blast and the furnace.

Now, it was proved at the trial that any workman skilled in the art would have been able to apply the principle as soon as he was informed of it; so that there was no invention in the application, — that was perfectly obvious. Moreover, the patentee did not describe the best form of apparatus for the purpose. He used a chamber for heating the air, whereas the defendants in the suit upon his patent used a series of pipes or tubes; and it was proved that their apparatus was much more effective than his. None the less, Neilson's patent was sustained, and it was held to be infringed by use of the defendants' superior apparatus. It is plain, therefore, that the merit of such patents, that on account of which the patent is granted, is the discovery.[1]

17. There is also a small but important class of cases in which the patent is for an invention, though practically it is considered as being for a discovery. We mean those cases in which the patentee has made a useful application of a previously known but unapplied principle, — and a principle, moreover, the application of which was not obvious, as was that of the principle in the Neilson case.

An instance is the celebrated invention of Professor Morse. He discovered no new force or property of matter, but he invented a method of applying certain known forces to a particular purpose. It was known before his invention that electricity would pass over a wire, and that iron was magnetized by the passage of electricity through a coil of wire surrounding it. He invented a method of applying those forces to the production at a distance of intelligible signs or letters.

When a known principle is applied to some useful end, it is

[1] It might be well to notice that sometimes the discovery is of a hitherto unknown property in a manufactured article, itself perhaps the subject of a patent. In such case, the granting of a valid patent depends upon the same conditions as when the discovery is of the kind that we have been discussing. This note, however, should not be offered without an apology to the reader, inasmuch as it is perfectly clear that the discovery of a new property in a manufactured article is, according to the terms of our definition, the discovery of a new principle, as much as when the principle discovered resides in a natural substance, or is a substance or force by itself.

So, also, the discovery might be that the union of two substances produced, by virtue of certain hitherto unknown capacities in them, a third and new substance.

of course essential that the application should require invention; but practically the question of invention does not come up in those cases of invention which, as we have said, are considered as cases of discovery. At least, we recall no instance in which it did. The real controversy that arises is not as to the validity of the patent, but as to its scope.[1]

In each case, *i. e.* when a principle is discovered, and when the application of a known principle is invented, the difficulty is to decide whether the patent shall cover every application (by whatever apparatus or other means) of the principle involved, to the end proposed by the patentee, or only such application and apparatus as he has described, with, of course, all colorable imitations thereof and substantial equivalents therefor. And in the first case, where the principle itself is discovered, there is sometimes, as we have seen, a further difficulty; namely, as to whether the patent claims a naked, abstract principle (which is not patentable), or the practical application of a principle. This difficulty, of course, cannot arise in the second case, where the application is the very thing invented.

18. Strictly speaking, then, principle, in this sense of the word, is to be defined as we have stated. But the term is commonly used to indicate processes founded upon a principle, or consisting in the application of a principle, to the exclusion of those principles the discovery of which does not lead to a process; and, in fact, cases where a new principle is made use of otherwise than in a process give rise to little difficulty. The subject of "principle" in this restricted sense of the word is discussed in Chapter VII. of this book.

Whether the classification it denotes is a scientific one or not, it has become established in the law, and, to say the least in its favor, it affords a convenient method of treating the more important of the patents for a process.

19. The only point upon which we insist is that of the distinction between invention and discovery, or rather between things invented and things discovered. Sometimes there is an invention founded upon a discovery, so that the patentee has both discovered and invented.[2] It is true also that the mental process of discovery is often very similar to, if not identical with,

[1] *Vide* Introduction, pages 7, 8, 9.

[2] *Vide* Introduction, page 43.

that of invention, at least when the discovery is not the result of pure accident.[1] This is clearly seen when the discovery and the invention compared are both of a high order. But a broad line can be drawn between things invented and things discovered. We have seen what is the actual difference between them. The practical consequence of it is that in cases of discovery (except when it is contended that a naked principle is patented) the only question of patentability is that of novelty; whereas, in the case of all patentable improvements other than discoveries, there is a further and far more difficult question, namely, that of invention.

Invention.

20. What is "invention"? The courts say that a thing is invented when it is produced by a faculty of the mind, which they call "the inventive faculty," "the genius of the inventor," "inventive genius." Improvements which fall short of being inventions they describe as effected by the judgment or skill of one instructed in the art wherein the improvement is made. Thus, improvements in degree simply, as in the fineness of texture of a cloth, are not patentable.[2]

And so of improvements which consist in a mere change of form. In a leading case, the patentee, starting with a wagon which had a curved reach (or pole connecting the axles), increased the curve thereof sufficiently to allow the fore-wheels to turn under the reach. It was held that this improvement was not patentable; that, given a curved reach, any wagon-builder might naturally think of a greater curve under which the fore-wheels could pass, and that the improvement was therefore not invention.[3]

So, also, a mere change of situation involving no new function is not patentable. Thus, a patent for shifting the raker's seat from one side of a reaping-machine to the other, though the change enabled the raker to work more easily, was held to be invalid.[4]

Again, it is not invention to apply an old process or device to a new but analogous purpose. In an early case, it was held that the application of a process to palm-leaf, in order to curl it for

[1] *Vide* Introduction, pages 41, 43, 44.

[2] Smith *v.* Nichols, 21 Wall. 112.

[3] Flood *v.* Hicks, 2 Biss. 169.

[4] Marsh *v.* Dodge, &c. Co., 6 Fish. 562.

mattresses, the same process having been used to prepare hair for mattresses, was not patentable.[1]

In an English case, it was held to be no invention to use for spinning flax, which had been macerated so that its fibres were shortened, an arrangement of rollers borrowed from cotton-spinning machinery.[2]

Neither is it invention to substitute one well-known material or device for another, when no new function is introduced thereby. The substitution of a known porcelain door-knob for a clay knob, in combination with a particular shank, was held by the Supreme Court to be no invention.[3]

Finally, it is not invention to group together two or more things or devices, which, when united, act just as they did separately, — one not affecting the other; so that there is a mere juxtaposition of separate elements, and not such a union as forms a homogeneous whole, — a new entity. In a leading case in the Supreme Court, the patentee had taken a fire-pot from one stove, a flue from another, and a coal-reservoir from a third, and had put them into a new stove, where each fulfilled the office it had fulfilled in its old situation, and nothing more. The aggregation was held not patentable.[4] In another case, the patentee had tied a lighter to a bundle of kindling-wood. Both lighter and kindling-wood were old, and it was no invention, though a convenience to make one bundle of them.[5]

In all these instances, and they might be multiplied at great length, the improvement was the result simply of the skill and judgment of one versed in the art wherein the improvement was made.

21. On the other hand, the following are examples of improvements which required the genius of the inventor to produce them: —

In the case of Smith *v.* The Goodyear Dental Vulcanite Co.,[6] a leading case in the Supreme Court of the United States, the patentee was the first to use hard rubber as a plate for false teeth. Cement and other substances had been used before, but they had all been defective, inasmuch as they allowed crevices

[1] Howe *v.* Abbott, 2 Story, 190.
[2] Kay *v.* Marshall, 8 Cl. & Fin. 245.
[3] Hotchkiss *v.* Greenwood, 11 How. 248.
[4] Hailes *v.* Van Wormer, 20 Wall. 353.
[5] Alcott *v.* Young, 16 Blatch. 134.
[6] 93 U. S. 486.

between the teeth and the plate. But in the hard-rubber plate the teeth could be inserted without leaving crevices. It was, moreover, light, flexible, and not susceptible to decay from the secretions in the mouth. Here, then, was something more than substitution of one known material for another: there was the introduction of a new effect.

Again, a new and greatly improved roller for a wringing-machine was constructed by surrounding the shaft with a fabric made of fibrous cloth and rubber. This material had been sold before, in the form of a tube, to customers, who cut it into sections or rings for stuffing-boxes. But it required inventive genius to discover its usefulness for the very different purpose of the wringing-machine.[1]

So, also, it was held that the use, for collars, of linen faced with paper was a patentable invention, although substantially the same material had been used previously for maps.[2]

In another case, the patent was for engraving glass by means of sand, thrown by a jet of steam or water against the glass while it revolved. This was held to be an invention, the former way of engraving glass being by the use of a brush, with which sand and water were applied.[3]

In these cases, the reader will have observed, there was an exercise of that inventive genius which the courts require as the condition of patentability. In other words, the improvement in each case was not such as the skill or judgment of an intelligent artisan or mechanic could be relied upon to effect. It was something more than that.

22. Sometimes, indeed, the courts appear to consider merely whether an alleged invention is "new" and "useful." But when such language is used, they mean by "new" that sort of newness or uniqueness which inventive genius produces. It is plainly, however, the correct reading of the statute to give to the words "invented or discovered" their ordinary meaning, rather than to import it into the word "new."

Any improvement, indeed, is, or may be, new, in the sense that the identical thing in which the improvement results was never made before. But if it be so like to some former thing,

[1] Forsyth *v.* Clapp, 6 Fish. 528.
[2] Union Paper Collar Co. *v.* White, 421. 7 O. G. 698.
[3] Tilghman *v.* Morse, 9 Blatch.

that any one who was familiar with its predecessor might have made it, then it is substantially an old thing. There is no new idea in it. And invention, as a learned judge very happily said, consists, not in making a modification of an old idea, but in making an addition to the stock of ideas.

It is in the power of a skilled artisan to modify an old idea which has taken shape in his art, but for the production of a new idea we must look to the genius of the inventor.

Utility, Evidence of Invention.

23. It is for this reason that utility is often high evidence of invention. Thus, if a man makes some change, though apparently a very slight one, in well known and much used machinery, and this change constitutes a valuable improvement, there is a presumption that inventive genius was required to make it.

This argument, however, must not be pushed too far. The mere fact that an improvement has not been hit upon before, although it would have been useful before, is not enough; for this is true of almost all improvements, whether due to the skill of the workman or to the genius of the inventor. In order to raise the presumption of invention, it must be shown, not only that the defect supplied or the difficulty removed had an actual existence, but also that those, or some of those, familiar with the art in which it existed were conscious of it; and, again, not only that they were conscious of it, but also that they had striven unsuccessfully to remedy it.

If these three conditions are fulfilled, there is a presumption, if not a conclusive presumption, that the improvement was the work of inventive genius. Just such a case is that of Pearl *v.* The Ocean Mills,[1] where a slight change in the form of the bobbins and spindles of cotton machinery effected a long-sought saving of power. It was, therefore, held patentable, although the actual, material change was very slight, and *after it had been made* it seemed obvious.[2]

24. An improvement, however, may be of great utility, and

[1] 11 O. G. 2.

[2] See also Smith *v.* The Goodyear Dent. Vul. Co., 93 U. S. 486; Hoe *v.* Cottrell, 17 Blatch. 546; Penn *v.* Bibby, 2 Ch. App. Cas. p. 136; Washburn, &c. Co. *v.* Haish, 4 Fed. Rep. 900; U. S. Stamping Co. *v.* King, 17 Blatch. 55.

yet not be an invention. This fact is illustrated by cases of mere substitution, such as the case of Hotchkiss *v.* Greenwood, already stated. In another case decided by the Supreme Court (Hicks *v.* Kelsey[1]), the substitution in a wagon-reach of an iron bar for a bar made of wood and iron bolted together, though the wagon-reach was strengthened and greatly improved thereby, was held to be not patentable.[2]

On the other hand, every useful exercise of inventive genius is patentable. However slight the change and its consequent improvement, if it has any value at all, though the least in the world, it is patentable.

State of the Art.

25. Here it might be well to notice, what is implied in the foregoing remarks, that when the patentability of an improvement is asserted, the state of the art to which the improvement relates must be taken into consideration. The inventor is presumed to know the state of the art, and any improvement which is not such an advance upon that state as to be an invention is not patentable. In reality the inventor may not have been familiar with the state of the art, so that his improvement, considered merely as the achievement of his own mind, is an invention; but if it be of such a character that one who was familiar with the state of the art might have produced it without the exercise of inventive genius, it is not patentable.

Equivalents.

26. The doctrine of equivalents falls under this head. That doctrine is, that the substitution, in an existing contrivance or process, of an element commonly known as an equivalent for the element displaced, is not invention. In the arts, and in mechanics especially, many contrivances have their equivalents. Thus, a cam is often an equivalent for a simple lever, and a toggle-joint or wedge for a cam.

[1] 18 Wall. 670. See also page 208.

[2] In a recent case, the Supreme Court said: "It may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result never attained before, it is evidence of invention." Loom Co. *v.* Higgins, 105 U. S. p. 591.

If we were to state the matter more exactly, we might say, perhaps, that *by equivalent in the patent law is meant something commonly known by those skilled in the art to which it belongs as capable of being used interchangeably with that of which it is said to be the equivalent.*

In this definition the only word, we conceive, at all ambiguous is the word "skilled," and by that term we mean to designate those possessing the ordinary ability in and knowledge of the art which they follow, and which is in question. It is hardly necessary to add, that we here intend not the subordinate workmen, but those upon whom the direction of the work devolves. Thus, if the asserted equivalent relates to a locomotive, the fact of its equivalency depends upon its being commonly known as an equivalent by those who direct the building of locomotives, not upon the knowledge possessed by an ordinary workman in the machine-shop. Or, if it be contended that, for a certain purpose in machinery generally, without regard to any particular machine, a wedge is an equivalent for a cam, then the fact of equivalency must be determined by the knowledge of wedges and cams commonly possessed by those who design machinery, or construct it, wherein wedges and cams are employed.

27. Thus it appears, also, that equivalents are decided to be such, according to the practical knowledge of those who are conversant with the art or trade to which they belong.

They are not restricted to such as are laid down in treatises, as, for instance, in books upon mechanics or chemistry. In Foster *v.* Moore,[1] Mr. Justice Curtis said: —

"I do not think the doctrine respecting the use of mechanical equivalents is confined by the patent law to those elements which are strictly known as such in the science of mechanics. In the present advanced state of that science there are different well-known devices, any one of which may be adopted to effect a given result, according to the judgment of the constructor. And the mere substitution of one of these for another cannot be treated as an invention. It does not belong to the subject of invention, but of construction. One constructor may adopt a spring-catch, another a catch and spring; but whether he takes one or the other is matter of judgment in construction, as long as both are designed to accomplish the same end, and both are in common use to accomplish it."

[1] 1 Curtis C. C. R. p. 291.

28. On the other hand, they do not include such as would be equivalents to men of science only, and not to practical men. Thus, in the case of Carr *v.* Rice,[1] where the patent sued on was for a machine which rebolted and dusted bran, Betts, J., in speaking of the machine of one Ashby, alleged to anticipate the patentee's, said: —

"The question of fact for the jury to decide . . . is whether the plaintiff's machine contained substantially the principle, and the like means for carrying it out, with what is embodied in Ashby's contrivance. . . . The difference to the eye is palpable and great, and a similarity in substance is only made out on theoretical notions, or the idea of mathematical equivalents, as, for instance, that the ends of arms projecting at equal distances from a central shaft in Ashby's plan may, in a mathematical sense, be taken for the periphery of a wheel or the circumference of a cylinder; but if a description of that arrangement, laid before a mechanic skilled in building machines, would not enable him, without invention, to build a cylinder nearly filling a sifting case, it would not amount to that kind of public notice and knowledge which could interfere with this after patent."

29. Chemical equivalents are to be recognized with caution. In fact, there are certain *dicta* by the courts presently to be quoted, according to which the ordinary doctrine of equivalents does not apply to chemical compositions.

It is plain, however, that in chemistry, as well as in mechanics, certain things are commonly known as equivalents for certain other things; and the substitution of known equivalents in chemical compositions is not patentable any more than such substitution in machines, or in other contrivances.

The difference is, that mechanical equivalents[2] are commonly contrivances made by men, and therefore are commonly known as equivalents; whereas chemical equivalents[2] are commonly such as exist in nature, and therefore they are not known to be equivalents until experiments are made with them.

Thus, in the case of Tyler *v.* Boston,[3] Mr. Justice Grier said: —

"This term '*equivalent*' [meaning apparently 'equivalent in fact'], when speaking of machines, has a certain definite meaning; but when

[1] 1 Fish. 198.
[2] Here we mean equivalents *in fact*, whether known to be such or not.
[3] 7 Wall. p. 880.

used with regard to the chemical action of such fluids as can be discovered only by experiment, it only means *equally good*."

30. It is true, also, that when one element is substituted for another in a chemical composition, it is likely to change the identity of the composition, and therefore to prove itself something more than a mere equivalent for the element displaced; whereas the substitution of one element for another in a machine is not so apt to produce a change of corresponding importance. And this, we conceive, is all that is meant by the following *dicta* of the Supreme Court in the case of Hicks *v.* Kelsey:[1] —

"In Crane *v.* Price, it is true, the use of anthracite instead of bituminous coal with the hot blast in smelting iron-ore was held to be a good invention, inasmuch as it produced a better article of iron at a less expense. But that was a process of manufacture, and in such processes a *different article replacing another article in the combination often produces different results*. The latter case is more analogous to the cases of composition of matter than it is to those of machinery; and in compositions of matter a different ingredient changes the identity of the compound, whereas an iron bar in place of a wooden one, and subserving the same purpose, does not change the identity of a machine."

Judge Nixon, however, in the case of Rumford Chemical Works *v.* Hecker,[2] said: —

"Since the leading case of Crane *v.* Price (Web. Pat. Cas. 409), it has not been considered safe to invoke the ordinary doctrine of equivalents in construing patents for new manufactures or compositions of matter."

And he refers to the *dicta* already quoted from the case of Hicks *v.* Kelsey, as supporting the decision in Crane *v.* Price.

We may add, that the case of Crane *v.* Price is much discredited in England (*vide* page 378), and that in the case of Rumford Chemical Works *v.* Lauer,[3] Judge Blatchford applied the ordinary doctrine of equivalents to a chemical composition. In the subsequent suit of the same plaintiff against Hecker, Judge Nixon, following the rule of comity, adopted Judge Blatchford's decision, but with the protest which we have quoted.

[1] 18 Wall. 670. [2] 10 O. G. p. 291. [3] 10 Blatch. 122.

31. Judge Sawyer thus described a mechanical equivalent:—

"When in mechanics one device does a particular thing, or accomplishes a particular result, every other device *known* and *used* in mechanics which skilful and experienced workmen know will produce the same result, or do the same particular thing, is a known mechanical substitute for the first device mentioned, for doing the same thing or accomplishing the same result, although the first device may never have been detached from its work, and the second one put in its place.

"It is sufficient to constitute a known mechanical substitute, that when a skilful mechanic sees one device doing a particular thing, that (*sic*) he knows the other devices, whose uses he is acquainted with, will do the same thiug." [1]

32. It is plain, of course, that two equivalents not being identical must differ in some way, either in themselves or in their effects, or in both, and therefore one would be more useful in some situations than the other.

The substitution of the more useful for the less useful in such a case, though a new effect was produced thereby, could not, we should say, be invention; because, according to the very meaning of "equivalent," when one device is suggested to the mind of a person skilled in the art where it belongs, he naturally thinks of its equivalent device.

If, then, the substitution of an "equivalent," instead of producing the same effect, produces a different effect, it is not therefore patentable. The substitution was no more difficult than it would have been had it produced no new effect.

In the case of Cross *v.* MacKinnon,[2] however, Wheeler, D. J., appears to have thought otherwise, for he sustained the patent, which was for a pen, on the ground that the substitution of a spring for a weight in the pen (the spring acting more quickly) was, in connection with another change, a patentable improvement.

33. Equivalents in a process follow the same rule, and, as the reader will have observed, they are included by the terms of our definition. A step in a process stands upon the same footing in this respect with the devices of a machine.

34. The question of equivalency arises more often in cases

[1] Carter *v.* Baker, 1 Sawyer, p. 516.

[2] 11 Fed. Rep. 601.

of infringement than in any other. But it arises also in cases of patentability, when the contention is that the improvement alleged to be patentable is in reality the mere substitution of an equivalent, and therefore no invention. These last cases, but not those of infringement, are set forth in this book.

In concluding this subject of equivalency, we cannot do better than to repeat the admirable language of Judge Sprague, in a charge to the jury.[1] It runs as follows: —

"The term 'equivalent,' gentlemen, has two meanings as used in this class of cases. The one relates to the results that are produced, and the other to the mechanism by which those results are produced. Two things may be equivalent, that is, the one equivalent to the other, as producing the same result, when they are not the same mechanical means. Mechanical equivalents are spoken of as different from equivalents that merely produce the same result.

"A mechanical equivalent, I suppose, as generally understood, is where the one may be adopted instead of the other, by a person skilled in the art, from his knowledge of the art. Thus, an instrumentality is used in a mechanism; you wish to produce a pressure downward; it can be done by a spring, or it can be done by a weight. A machine is presented to a person conversant with machines. He sees that the force applied downward in the one before him is by a weight; from the knowledge of his art, he can pass at once to another force, the spring, to press it downward; and those are mechanical equivalents.

"But, gentlemen, there may be equivalents in producing the same results, each of which is an independent matter of invention, and in that sense they are not mechanical equivalents. To illustrate my meaning: Suppose, in early days, the problem was to get water from a well to the surface of the earth. One man takes a rope made of grass, and draws up a pail of water; another would see that, as a mechanical equivalent, a rope of hemp would accomplish the same result. But suppose another person comes, and for the first time invents a pump. That is equivalent in the result of bringing the water to the surface of the ground; in that respect it is equivalent, in producing that result, to hauling it up by a rope; but is not mechanically equivalent; it brings into operation, as you know, very different powers and forces, and would require invention to introduce it."

[1] Johnson *v.* Root, 1 Fish. p. 363.

Patentable and Non-Patentable Improvements.

35. The "state of the art" [1] has also a wider application.

Every existing machine or contrivance of any sort has what may be called its horizon; and this horizon embraces many improvements which are not patentable, because they are but modifications of the old contrivance, or of the use of the old contrivance. Such improvements, therefore, are referable to mechanical skill. We do not get within the range of invention, as we have seen, until a new idea is struck out. If we go a step further, and inquire what is a "new idea," the only answer is that it must be such as does not naturally follow from what is already known.

A patentable improvement is one which would not naturally be inferred from the state of the art by one who was familiar with it. The state of the art [2] may be regarded as the premises, and the improvement as the conclusion. If the conclusion follows naturally, that is, if the improvement is such as any one instructed in the art might be expected to make, then it is not invention. But if there is a logical gap between the premises and the conclusion, then the improvement is patentable; for invention was required to bridge the gap, — to perceive a conclusion not warranted by the premises, — although *after the conclusion has been reached* the connection between it and the premises becomes apparent, and, indeed, often seems obvious.

It is for this reason that invention is always in the nature of a surprise (as is frequently said) both to the inventor and to the spectator. Inventive genius, which partly guesses, so to say, at a conclusion, is the unusual, the unexpected, exercise of the mind. Whereas mechanical skill, which merely draws natural inferences, is the ordinary, the expected, exercise of the mind. It can be counted upon. Mechanical skill, or technical skill of any sort, is the possession of minds as a class. Inventive genius is the action of a single mind, where the class of minds fails to act. It is the individuality of mental action.

Every mind can reason, and every instructed mind can be re-

[1] By this phrase we mean to include not only the knowledge peculiar to the art in question, but also such knowledge of things and of the relations of things as men in general possess.

[2] The art in question, or one strictly analogous thereto.

lied upon to put two and two together in its own trade or art. This is precisely what is meant by mechanical skill or judgment. Thus, a man says, this wheel works well here, therefore it will work well in this other different but analogous situation. The act of inference here performed results in an improvement, but not in a patentable improvement.[1]

Or he says, sugar is more soluble and easier to handle if powdered or granulated than it is when in lumps; *therefore* these advantages will attend the comminution of glue also; and he puts up glue in a powdered form. Here, again, the mental act was merely to draw a natural inference.[2]

36. But he who first used a stream of sand to engrave glass was guided to the idea of his invention by no such process of inference. He knew, of course, that gritty substances, when rubbed against glass, polish it; and it *occurred* to him to bring sand and glass into contact by means of a stream of sand thrown against the revolving glass. The conviction that glass might be engraved in this manner flashed upon him.

It was in the nature of a guess. He imagined the process. In a suit upon his patent, the defendants alleged that his process was not patentable, because prior to it a stream of sand, with a jet of steam, had been thrown from locomotives upon cows, to drive them off the track. This somewhat humorous defence is an illustration of the difference between a process of ordinary inference and an act of invention. The use of the sand-stream for engraving glass did not follow, as a natural inference, from its use to scare the cow. One who beheld its use from the locomotive hardly would have said: "The sand-stream drives away the cow, therefore it will engrave glass." And yet, as an expert witness for the defendants gravely remarked, the only difference between the two uses was that in one case the sand came in contact with cows, and in the other case it came in contact with glass.[3]

37. Another simple example of invention is as follows: —

In an old corn-shelling machine, beaters or wings were employed to force into the throat of the machine all misplaced or hesitating ears, in order to prevent the passage from clogging. These beaters were fixed to a shaft, and they revolved in a direction opposite to that taken by the ears. They did not

[1] Web. p. 207.
[2] Glue Co. *v.* Upton, 97 U. S. 3.
[3] Tilghman *v.* Morse, 9 Blatch. 421.

operate successfully, however, until an inventor reversed their motion, and made them follow the direction of the ears of corn; and he obtained a valid patent for the improvement.[1] This was a simple change; but no one could say hat it was obvious, or that any one familiar with the old machine might have *inferred* that reversing the motion of the beaters would accomplish the desired result. The inventor imagined that such would be the effect, and he found by experiment that it was so.

38. In making an invention, therefore, the mind leaps to a conclusion instead of working it out. This is not to say that all patentable things are produced without effort, or care, or experiment. The inventive thought, which is the kernel of the patentable thing, is indeed, as we have said, in the nature of a guess, a flash of thought;[2] but it may be preceded by a long course of thought and of experiments. The inventor may have groped about for a long time before hitting upon the inventive thought.

Or, again, it may be difficult to reduce the invention to practice. Care and experiment may be required to work out the inventive idea. This is often the case with machinery, — one thing has to be adapted to another, this and that have to be changed and modified, before the inventor's idea is successfully embodied in a physical form.[3]

The Mental Process.

39. The fact, that certain inventions require a process of reasoning, also, at some stage of them, whereas others do not, gives rise to the frequent saying, that the law does not consider the process of mind involved in an invention.

It is true that the law does not inquire whether the inventive idea was reached at once, without labor, or only after a course of thought and experiment; neither does the law inquire whether the original conception was easily reduced to practice, as in the case of the corn-sheller, or required labor and experiment to embody it.

[1] Adams *v.* Joliet Mfg. Co., 12 O. G. 93.

[2] *Vide* Introduction, page 24, note.

[3] The relation which the inventive thought bears, or may bear, to the whole mental process by which a patentable thing is produced, is explained in the Introduction. *Vide* pp. 20–29.

But the law does demand that the idea which is the kernel of the improvement shall be an inventive idea, — something struck out by the genius of the inventor, not arrived at by a process of inference.[1]

40. We do not mean, of course, that the courts inquire how the particular patentee has reached his alleged invention, but they inquire how it would naturally and ordinarily be reached.

The criterion, in other words, is the action of minds in general, not the idiosyncrasy of a particular mind. Thus, in a given case, the improvement may be such as a person having the ordinary skill in, and knowledge of, the art to which it belongs could reason out; whereas, in fact, invention may have been exercised by the patentee, — and this because he was ignorant, or because he had not the normal reasoning faculty, or because he had the inventive faculty in excess, or from all these causes combined. In such a case the patent would, of course, be held invalid.

Invention always the Criterion.

41. It remains to notice an apparent exception to the rule that patentable improvements are the result of inventive genius only. A case might occur in which accident had thrown together the elements of an invention, so that the patentee found it made ready to his hand. In such a case the law cannot undertake to inquire whether chance or thought has withdrawn an invention from its hiding-place; but it does demand that the improvement shall be of such a character that, supposing it to have been thought out, and not chanced upon, it must be the result of *inventive* thought.[2] Even in such cases, therefore, inventive genius is the criterion of patentability.

Function, Effect, &c.

42. Before passing from the general subject of invention, it is necessary to consider a class of cases analogous to one already mentioned.

[1] Cases which, at first sight, might seem to involve nothing more than inference or reasoning, are examined in the Introduction, pp. 20–34.

[2] *Vide* Introduction, page 44, for an illustration. Discoveries, of course, are often made by accident. *Vide* page 41.

A naked principle, as we have seen, is not patentable. So, also, an effect, or result, or function, or abstract idea, is not patentable. But the product of a described process, if the product be a new one, is, of course, patentable. The matter of process and product will be considered shortly.

The statute, as we have seen, declares that a patentable subject must be either an art, or a machine, or a manufacture, or a composition of matter, or some improvement thereof. An applied principle is an art (process), but a naked principle cannot be called an art, being the mere announcement of a fact. So, also, an effect, or function, or abstract idea, cannot be called an art, much less a machine, manufacture, or composition of matter. Therefore, one may not patent an effect, a function, or an abstract idea; but only the device by which the effect is produced, or through which the function is discharged, or in which the abstract idea is carried out.

In a very early case,[1] Judge Story said:—

"A patent can in no case be for an effect only, but for an effect produced in a given manner, or by a peculiar operation. For instance, no patent can be obtained for the admeasurement of time, or the expansive operations of steam; but only for a new mode, or new application of machinery, to produce these effects."

In another case,[2] before the same judge, the patent claimed an improvement in looms, consisting in the communication of motion from the reed to the yard-beam, "*which may be done as above specified.*" If the patent had been held to claim every mode of communicating this motion, it would, of course, have been invalid, as claiming a function; but the court laid hold of the words italicized, and construed the patent to intend only the particular mode of communicating motion from the reed to the yard-beam devised and described by the patentee.

43. In a Supreme Court case,[3] the patent was for an improvement in seed-planters. It consisted in a combination of devices by which the seed was dropped simultaneously from the hopper into a tube, and from the tube to the ground.

At the trial below, before a jury, the patentee asked the court for an instruction to the effect that he might claim *any* mode of

[1] Whittemore *v.* Cutter, 1 Gall. 429 (1813).

[2] Stone *v.* Sprague, 1 Story, 270.

[3] Case *v.* Brown, 2 Wall. 320.

combining the same devices which would produce the same effect, namely, simultaneous or double dropping. This instruction, the Supreme Court held, was rightly refused, inasmuch as the claim sought to be established by means of it was for a result or an effect.

In another case,[1] where a stove was the subject of the patent, one claim was for a combination of a hopper with a circulating current of air. The court said: —

"The circulating current of air, being a result, cannot be patented; but as it is said to be produced substantially *in the manner described* in the specifications, the chamber *g*, with the inlet *i*, set forth in the specifications, by which this result was produced, must be regarded as the thing patented."

Another instructive case is that of McComb *v.* Brodie.[2] The patent was for an "improvement in metallic ties for cotton-bales."

The third claim was for—

"The slot cut through one bar of the clasp or buckle, as shown in the diagram, which enables the end of the tie or hoop to be slipped sidewise underneath the bar in the clasp or buckle, so as to effect the fastening with greater rapidity than by passing the end of the tie through endwise."

The court, Woods, J., said: —

"A patent cannot be granted for a principle or an idea, or for any abstraction whatever; for instance, for the naked idea of a slit, slot, or aperture, disconnected from any application. But when the idea is applied to a material thing, so as to produce a new and useful effect or result, it ceases to be abstract, and becomes a proper subject to be covered by a patent. For instance, the idea of bending the end of a cotton-tie in a particular manner would not be the subject of a patent; but when the idea is applied to the fastening of the tie to a clasp or buckle, so as to produce a new and useful result, then it becomes patentable. So, the abstract idea of a slot in a buckle is not of itself patentable; but when the idea is applied to a buckle, so that the result is new and useful, or so that an end is accomplished in a novel and useful manner, then the idea ceases to be abstract, and becomes the proper subject of a patent."

44. We may dismiss this important but not difficult subject with the following remark: When an effect or function is claimed

[1] Henderson *v.* The Cleveland Co-operative Stove Co., 12 O. G. 4.
[2] 1 Woods, 153.

in a patent, the courts commonly construe the claim as being for the means, when any are described, by which such result is reached, or by which such function is discharged; and thus limited the patent is sustained.

This, as we have seen, was the course pursued by the court in Stone *v.* Sprague, *supra*, and in Henderson *v.* The Cleveland Co-operative Stove Co., *supra*, and other instances will be found amongst the cases on this subject. They are collected in the seventh chapter of this book, page 616.

New and Useful.

45. It remains to consider the concluding words in the chief clause of the statute upon the subject-matter of a patent. We repeat it: Any person may have a patent "who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof." We have seen what invention and discovery are; and that "new" means simply *new*, or else expresses that sort of newness or uniqueness which results from inventions or from discoveries. The other words, excepting the term "art," will give us very little trouble, for there is no controversy about them, and no doubt as to their meaning.

As to the term "useful," the courts have construed the condition expressed by it so liberally that it almost never serves to defeat a patent.[1] The following rules are clearly established: 1. Anything is useful which is not entirely frivolous or worthless, and not detrimental to the well-being, or injurious to the morality of the public, or of a character to mislead the public to its disadvantage.[2] 2. The subject of a patent need not be the best or the most useful of its kind. It is necessary only that it should be use-

[1] But *vide* Deusmore *v.* Scofield, 102 U. S. 375; *post*, page 258.

[2] Lowell *v.* Lewis, 1 Mas. p. 186; Hoffheims *v.* Brandt, 3 Fish. 218; Cox *v.* Griggs, 1 Biss. 362; Tilghman *v.* Werk, 1 Bond, 511; Westlake *v.* Cartter, 6 Fish. 519. In a case where the patent was for a process of making cast-iron car-wheels, Sprague, J., said to the jury: "I have been requested to instruct you that an article cannot be considered useful if it endangers human life, or is so expensive that manufacturers would not be induced to make it. These may be very important considerations for you to take into view, but they are not necessarily conclusive; and you will determine, from a consideration of all the evidence, whether the invention is, upon the whole, a useful one." Many *v.* Sizer, 1 Fish. 17.

ful in some degree.[1] 3. It need not possess all the usefulness, or the degree of usefulness, claimed for it in the patent.[3] 4. In a suit for infringement, if the defendants are proved to use the invention described in the patent sued on, they are estopped to deny its utility.[3]

Concerning utility as evidence of invention we have already treated.

An Art or Process.

46. I. *An art* is a process, a method of doing something, distinct from the mechanical, chemical, or other tangible means whereby it is done.[4]

"A machine," said Mr. Justice Bradley, "is a thing. A process is an act, or a mode of acting. The one is visible to the eye, — an object of perpetual observation. The other is a conception of the mind, seen only by its effects when being executed or performed." [5]

In another case [6] the same judge said : —

"That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed. If one of the steps of a process be that a certain substance is to be reduced to a powder, it may not be at all material what instrument or machinery is used to effect that object, whether a hammer, a pestle and mortar, or a mill. Either may be pointed out; but if the patent is not confined to that particular tool or machine, the use of the others would be an infringement, the general process being the same.

"A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new

[1] Many *v.* Jagger, 1 Blatch. 372; Wilbur *v.* Beecher, 2 Blatch. p. 137; Shaw *v.* Colwell Lead Co., 11 Fed. Rep. 711.

[3] Robertson *v.* Hill, 6 Fish. 465; Haworth *v.* Hardcastle, Web. p. 484; Lewis *v.* Marling, Web. 490; Morgan *v.* Seaward, Web. 187.

[3] Simpson *v.* Mad River R. R. Co., 6 McLean, 603; Vance *v.* Campbell, 1 Fish. 483; McComb *v.* Ernest, 1 Woods, 195.

[4] Processes involving a "principle" are discussed in the chapter upon that subject. *Vide post*, page 527; and they embrace almost all of those which present any difficulty.

[5] Tilghman *v.* Proctor, 102 U. S. p. 728.

[6] Cochrane *v.* Deener, 94 U. S. p. 787.

or patentable; whilst the process itself may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence."[1]

47. It should be remarked, however, that when the invention is not of "certain things to be done with certain substances, and in a certain order," but of a machine operating in a certain way for a certain purpose (and not suggested by any discovery, or involving the application of a previously unapplied principle), then the mere operation of the machine cannot separately be patented as a process. But it might be very difficult to draw the line between a real process and the mere operation of a machine. An inventor might invent a process, and also a machine for carrying out that process. Thus, supposing a man to invent a process of sewing together the "uppers" and the soles of shoes by means of a new stitch, capable of being made by hand; and assuming also that at the same time he invents a machine which will make the stitch. Clearly, he would be entitled to one patent for his process, and to another for his machine. But let us suppose that the process invented (as alleged) by him was that of applying a stitch, which had previously been used in sewing plain surfaces, to the new purpose of sewing together the soles and uppers; and let us assume that he invents a machine whereby the stitch can thus be applied, — such use of the stitch not being possible by hand, because the sewing must be done from the inside of the shoe, where, of course, the hand of the operator could not work. It is true that the process becomes possible only by the invention of the machine; and a description of the machine would be a description of the process, although a description of the process would not necessarily be a description of the machine. On the other hand, it might be said, the inventor must first have conceived the idea of applying the stitch in the new situation, and then have invented a machine by which such application may be made. In other words, he invented a process, capable of various applications *in posse*, and also a machine.

48. The case just stated is an actual one.[2] It was decided by Wheeler, J., against the patentee. He said: —

[1] See also Wood Paper Patent, 23 Wall. 566.

[2] McKay *v.* Jackman, 12 Fed. Rep. 615.

"A boot or shoe might be the subject of a patent as an article of manufacture, but there would have to be something new about it as such, in the sense of the patent laws. Blake [the patentee] did not invent a boot or shoe, nor a sewed boot or shoe, nor a boot or shoe sewed with this kind of stitches. All these were known and in use before. He invented a machine by which boots and shoes could be sewed with this kind of stitches, in parts where they could not be so sewed before. The new effect was due to the operation of the machine. The patentability belonged to the machine, and not to the boot or shoe, as appeared before. . . . Further, this machine, the process it went through with, and the work it wrought, were so intimately connected that the machine could not be conceived of as an operative thing without involving the rest. The specification of the machine, and its use in the machine patent, included also a description of the process and product."

The point is a nice one, and it has not, so far as we know, arisen before.[1]

49. In the case of Corning *v.* Burden (15 How. p. 267), Mr. Justice Grier said:—

"A process, *eo nomine*, is not made the subject of a patent in our act of Congress. It is included under the general term 'useful art.' An art may require one or more processes or machines in order to produce a certain result or manufacture. The term 'machine' includes every mechanical device, or combination of mechanical powers and devices, to perform some function and produce a certain effect or result. But where the result or effect is produced by chemical action, by the operation or application of some element or power of nature, or of one substance to another, such modes, methods, or operations are called processes. A new process is usually the result of discovery; a machine, of invention.

"The arts of tanning, dyeing, making water-proof cloth, vulcanizing india-rubber, smelting ores, and numerous others, are usually carried on by processes, as distinguished from machines. . . . It is for the discovery or invention of some practicable method or means of producing a beneficial result or effect, that a patent is granted, and not for the result or effect itself. It is when the term 'process' is used to represent the means or method of producing a result that it is patentable, and it will include all methods or means which are not effected by mechanism or mechanical combinations. But the term 'process' is often used in a

[1] It will be decided, we understand, having been taken from the decision by the Supreme Court, an appeal of Judge Wheeler.

more vague sense, in which it cannot be the subject of a patent. Thus, we say that a board is undergoing the process of being planed, grain of being ground, iron of being hammered or rolled. Here the term is used subjectively or passively as applied to the material operated on, and not to the method or mode of producing that operation, which is by mechanical means, or the use of a machine, as distinguished from a process. In this use of the term it represents the function of a machine, or the effect produced by it on the material subjected to the action of the machine. But it is well settled that a man cannot have a patent for the function or abstract effect of a machine, but only for the machine which produces it."

50. The law concerning *process* and *product* as, respectively, the subject of a patent, was stated by Mr. Justice Swayne, in the case of Rubber Co. *v.* Goodyear (9 Wall. p. 796), as follows: —

"A machine may be new, and the product or manufacture produced from it may be old. In that case the former would be patentable and the latter not. The machine may be substantially old and the product new. In that event, the latter, and not the former, would be patentable. Both may be new or both may be old. In the former case, both would be patentable; in the latter, neither. The same remarks apply to processes and their result. Patentability may exist as to either, neither, or both, according to the fact of novelty or the opposite. The patentability, or the issuing of a patent as to one, in no wise affects the rights of the inventor or discoverer in respect to the other. They are totally disconnected and independent facts. Such is the sound and necessary construction of the statute."

51. It should be added, however, that a *product* sometimes carries with it proof that it is the result of a particular process.

Shepley, J., in the case of Merrill *v.* Yeomans,[1] after saying that in many cases the product might be produced by various methods, remarked: —

"In other instances, however, not only does a new process produce a new product, but the process is inseparable from the product, and inheres in it after it is made, so that, upon inspection of the product, it is manifest that the process must have been employed."

And he gives as an instance vulcanized rubber.

The remaining terms — machine, manufacture, composition of matter — give rise to no difficulty, or if to any, it is in determin-

[1] 1 Holmes, 331.

ing under which head a particular invention or discovery should be classed. This, being a matter of the specification, does not belong to our subject. It may be convenient, however, to define the words.

52. II. *A machine.* Says Mr. Curtis: —

"When the supposed invention is not a mere function, or abstract mode of operation, separate from any particular mechanism, but a function or mode of operation is embodied in mechanism designed to accomplish a particular effect, it will be a machine in the sense of the patent law." Curtis on Patents, § 20.

He also quotes from Mr. Justice Heath: [1] —

"When a mode of doing a thing is referred to something permanent, it is properly termed an engine; when to something fugitive, a method."

"Machine" includes combinations of machines, as well as single organizations, or organizations for a single purpose.[2]

53. An improvement of a machine is, perhaps, the most frequent subject of a patent. It is a patentable improvement, if it contain a new idea; and is neither a copy of the idea embodied in the original machine or in any other prior machine, nor a mere logical carrying forward of that idea. There is no difference between an improved machine and an improvement upon a machine.

54. III. *A manufacture.* This means any thing made as a finality, or as a thing to be used by itself, and not as a part of any mechanism.

Mr. Curtis says: "Fabrics or substances made by the art or industry of man, not being machinery." And he continues: —

"It may sometimes require a nice discrimination to determine whether one of these classes does not run into the other, in a given case; as, for instance, when a tool or instrument of a novel or improved

[1] Boulton *v.* Bull, 2 H. Blackstone, 463, 468.

[2] "Patentable inventions pertaining to machines may be divided into four classes: first, entire machines, as a car for a railway, or a sewing-machine; second, separate devices of a machine, as the colter of a plow, or the divider of a reaping-machine; third, new devices of a machine in combination with old elements, all embraced in one claim, or with separate claims for what is new, together with a claim for the new combination of all the elements; fourth, devices or elements of a machine in combination where all the devices or elements are old." Mr. Justice Clifford, in Sanford *v.* Merrimac Hat Co., 4 Cliff. 404, and *passim*.

construction is produced, to be used in connection with other machinery or to be used separately. As an article of merchandise, found and sold separately in the market, such a production would be a manufacture; but regarded with reference to its use and intended adaptation, it might be considered as a machine, or part of a machine.

"In determining, in such cases, how the patent for the article should be claimed, it would probably be correct to range it under the one or the other of these classes, according to the following test: If the article is produced and intended to be sold and used separately as a merchantable commodity, and the merit of it, as an invention, consists in its being a better article than had been before known, or in its being produced by a cheaper process, then it may properly be considered simply as a manufacture. But if its merit appear only after its incorporation with some mechanism with which it is to be used, and consists in producing, when combined with such mechanism, a new effect, then it should be regarded as a machine, or an improvement of an existing machine." Curtis on Patents, § 25.

55. IV. *A composition of matter* might be defined as an artificial substance made up of two or more elements so united as to form a homogeneous whole. Medicines and paints are examples.

When a solid substance and a liquid are united by absorption of the liquid, as, for instance, if a a block of wood should be soaked with oil or liquid tar, the article so produced might properly be called either a manufacture or a composition of matter.

The patent may be for the method of compounding, or for the result, the composition. "Generally speaking," says Mr. Curtis, "the patent covers both, because if the composition is itself new, the process by which it is made must also be new, and the law will protect both as the subjects of invention. But if the article itself be not new, but the patentee has discovered merely a new mode or process of producing it, then his patent will not be for a new 'composition of matter,' but for a new 'art' of making that particular thing." Curtis on Patents, § 28.

We may add, that in a composition the elements are united by reason of the qualities which they possess, and not by reason of their form.

CHAPTER II.

ANTICIPATION OR IDENTITY.

56. By the terms placed at the head of this chapter we mean to indicate the objection to a patent, that its subject-matter is identical with some prior thing, whether patented or not.[1]

Cases of anticipation are distinguished, on the one hand, from cases of patentability strictly or ingenuity; and, on the other hand, from cases of new use, of substitution, or of combination. In cases of ingenuity, the question is whether the alleged invention is patentable generally, — patentable, that is, when considered, not with reference to any one thing in particular, but to everything in general. Again, in cases of new use, of substitution, or of combination, invention is shown, if shown at all, either in making a new use of some old thing, or in making one new thing out of two or more old ones. Whereas, in cases of anticipation, as we have said, the question is whether the patentee has really produced a new contrivance, or has merely changed, developed, or transformed an old one, without exercise of invention. This question is raised more frequently than any other in suits upon patents, and especially when a machine is the subject of the patent.

57. The point to be decided is this: Does the new contrivance embody a new idea, or is it but a carrying forward or transformation of the idea embodied in the contrivance to which it is referred? Is the identity of the first lost or preserved in the second contrivance? In answering these questions, two things are to be considered; namely, the change made in the second contrivance, and the result of that change as shown in the altered or increased utility of the contrivance. If both the

[1] The subject of anticipation is not to be confounded with that of prior knowledge or use. *Vide post*, page 621.

change and the result of that change are great, there is a presumption of invention.

In the case of Hall *v.* Wiles,[1] Nelson, J., charged the jury as follows: —

"A formal change, such as a change in proportions, a mere change of form, or a different shape, is not a change within the meaning of the law. An improvement upon an old contrivance, in order to be of sufficient importance to be the subject of a patent, must embody some originality, and something substantial in the change, producing a more useful effect and operation. And in determining this question the jury have a right to take into consideration, in connection with the change, the result which has been produced. Because the result, if greatly more beneficial than it was with the old contrivance, reflects back, and tends to characterize, in some degree, the importance of the change."[2]

58. The doctrine of equivalents is especially applicable in cases of anticipation. Of that doctrine we have already treated in the first chapter of this book, to which the reader is referred. By the substitution of equivalents, it often happens that the appearance of a machine is altered entirely, and yet its principle, its mode of operation, remains substantially the same.[3] On the other hand, two machines may look alike, — may be alike, in fact, in respect to details, — and yet they may act upon very different principles. Betts, J., said: —

[1] 2 Blatch. p. 200.

[2] McCormick *v.* Seymour, 3 Blatch. 209; Eames *v.* Cook, 2 Fish. 146; Waterbury Brass Co. *v.* Miller, 9 Blatch. 77; King *v.* Hammond, 4 Fish. 488; U. S. Stamping Co. *v.* King, 17 Blatch. 55.

[3] In Jupe *v.* Pratt, Web. 146, Alderson, B., spoke as follows of a gas-meter, and of an infringing machine: "It was for measuring the quantity of gas that was supplied to every individual, in order that they might not take it without its being known. There never was a more instructive case than that. . . . There never were two things, to the eye, more different than the plaintiff's invention and what the defendant had done in contravention of his patent-right. The plaintiff's invention was different in form — different in construction; it agreed with it only in one thing, and that was, by moving in the water, a certain point was made to open, either before or after, so as to shut up another, and the gas was made to pass through this opening; passing through it, it was made to revolve it. The scientific men, all of them, said, the moment a practical scientific man has got that principle in his head, he can multiply without end the forms in which that principle can be made to operate."

"The slightest change of a machine, which effects a real improvement in it, may be patentable, while great apparent variations may be only disguises under which an older discovery is attempted to be employed and appropriated."[1]

59. If there is nothing in an original patent to affect the validity of a later patent, then no reissue of such original patent, made subsequent to the date of the second patent, can affect its validity.[2]

60. Mr. Justice Clifford instructed the jury in a case of anticipation[3] as follows: —

"In determining that question [of identity] you are not to determine about similarities or differences merely by the names of things, but are to look to the machines, or their several devices or elements, in the light of what they do, or what office or function they perform, and how they perform it, and to find that a thing is substantially the same as another if it performs substantially the same function or office in substantially the same way to obtain the same result, and that things are substantially different when they perform different duties, or in substantially a different way, or produce a different result.

"For the same reason you are not to judge about similarities or differences merely because things are *apparently* the same, or *apparently* different in shape or form; but the true test of similarity or difference in making the comparison is the same in regard to shape or form as in regard to name, and in both cases you must look at the mode of operation, or the way the parts work, and at the result as well as at the means by which the result is attained.

"In all your inquiries about the mode of operation of either of the machines, you are to inquire about, and consider more particularly, those portions of a given part or element which really do the work, so as not to attach too much importance to the other portions of the same part, which are only used as a convenient method of constructing the entire part or device.

"You will regard the well-known substantial equivalent of a thing as being the same as the thing itself, so that if two machines having the same mode of operation, do the same work in substantially the same way, and accomplish substantially the same results, they are the same; and so also if the parts of two machines, having the same mode of operation, do the same work in substantially the same way, and accom-

[1] Carr *v.* Rice, 1 Fish. p. 208.

[2] Hitchcock *v.* Tremaine, 9 Blatch. 550.

[3] Union Sugar Refinery *v.* Mathiesson, 2 Fish. p. 626; 3 Cliff. 639.

plish substantially the same result, those parts are the same, although they may differ in name, form, or shape; but in both cases, if the two things perform different work, or in a way substantially different, or do not accomplish substantially the same result, then they are substantially different."

NOTE. — The cases of strict anticipation follow, — cases, that is, where the patented contrivance and that alleged to anticipate it are compared as wholes. After them are put those cases in which the patentability of the second contrivance rests upon a change of form, or of situation, or of size; upon a change in degree, or upon the multiplication or omission of parts. After these abstracts of cases there are references to cases elsewhere set forth in this book, in which the question of anticipation arose, but in which it was not the principal question. Finally, there will be found the titles of certain less important cases, omitted for want of room.

WYETH *v.* STONE, 1 STORY, 273.

D. OF MASS., 1840. STORY, J.

Wyeth's patent, dated March 18, 1829, describing machinery for cutting out ice. It consisted of two spur-wheels, 3 feet 6 inches in diameter, connected by an axle-tree (immovable at the wheels, but turning in composition boxes), furnished with handles, and with fills for the attachment of a horse, and (quoting now from the specification) "a cog-wheel about 3 feet 2 inches in diameter, more or less, fixed in the centre of the axle-tree, so as to be incapable of turning except with the axle-tree; two cog-wheels, about 4 inches diameter, more or less, one of which to work on the large cog-wheel, and the other to work on the one so working, and both to be secured by pintles passing through the handles; the small cog-wheel, not working on the large cog-wheel, to have secured beside it a circular saw about 2½ feet diameter, more or less. The proportion between the large and small cog-wheels is varied to obtain greater or less velocity for the same, as may be wanted. This part of the apparatus for cutting ice is called the saw, and is used as follows: Put the saw into one of the outside grooves made by the cutter; drive the

horse forward, following the groove made by the cutter; at the same time, a man who manages the handles presses them down as much as the strength of the horse will admit of. This operation is followed back and forth until the ice is cut through."

The ice was cut through on three sides of a square in this manner, and then pried up and broken off by an iron bar and chisel.

Story, J.:—

". . . I am of opinion that the invention is substantially new. No such machinery is, in my judgment, established by the evidence to have been known or used before.

"The argument is, that the principal machine described as the cutter is well known, and has been often used before for other purposes, and that this is but an application of an old invention to a new purpose; and it is not therefore patentable. It is said that it is in substance identical with the common carpenter's plough. I do not think so. In the common carpenter's plough there is no series of chisels fixed in one plane, and the guide is below the level, and the plough is a movable chisel. In the present machine there are [*sic*] a series of chisels, and they are all fixed. The successive chisels are each below the other, and this is essential to their operation.

"Such a combination is not shown ever to have been known or used before. It is not therefore a new use or application of an old machine."

Judge Story construed the specification to intend only the particular apparatus and machinery described for cutting ice, and not (we quote from the opinion) —

"For any mode whatsoever of cutting ice by means of an apparatus worked by power, not human, in the abstract, whatever it may be. If it be the latter" (Judge Story continued), "it is plain that the patent is void, as it is for an abstract principle, and broader than the invention, which is only cutting ice by one particular mode, or by a particular apparatus or machinery."

STAINTHORP *v.* ELKINTON, 1 FISH. 349 (E. D. OF PA., 1858. GRIER AND CADWALADER, JJ.); THAYER *v.* WALES, 9 BLATCH. 171 (E. D. OF N. Y., 1871. BENEDICT, J.); STAINTHORP *v.* HUMISTON, 1 FISH. 475 (S. D. OF N. Y., 1859. HALL, J.).

Stainthorp's patent of March 6, 1855, for improvement in machines for making candles.

In all these cases the defence was the same. In the first two, the question of anticipation and the fact of infringement only were considered. In the third case, Hall, J., raised the question of invention, but decided it in favor of the patentee. The first claim of the patent (the only one infringed in any of these cases) was "the employment of pistons formed at their upper end into moulds for the tips of candles, in combination with *stationary* candle moulds, *to throw out the candles in a vertical direction*, substantially as set forth in the specification."

The prior devices upon which the patentee's device was an improvement are not fully described in the report of any one of these cases, but they appear to have been: —.

First, a device which started or *popped* the candles from beneath, after which they were drawn out by hand.

Secondly, one in which there was a piston, but not in combination with tips and stationary moulds; and this device threw the candles out horizontally and not vertically.

Of the plaintiff's invention, Grier, J., said: "The patentee does not claim to be the first who conceived the idea of pushing a candle out of the mould by a piston; but he has succeeded in inventing a labor-saving machine of great practical value, by a combination of devices, using a hollow piston with a mould for the tip, in combination with stationary moulds." And of the prior devices, already described, so far as they can be from the reports, he said: —

"None of these abandoned experiments or machines would infringe the combination of devices claimed in this patent, if used, nor can they be invoked to destroy it."

Hall, J., observed as follows upon the question of ingenuity: —

"It must be conceded that, with all these prior machines before him, an intelligent, thoughtful person, practically acquainted with the whole art and process of candle-making, and constantly superintending and aiding in the operation of several of the prior machines, might, without the exercise of any extraordinary power of invention, devise and perfect the organization covered by the first claim of the Stainthorp patent; and that, looking now at the several prior machines in connection with that of Stainthorp, it appears somewhat strange that the invention perfected by him was not sooner produced.

"But this is true in respect to many important inventions, and, upon the whole case, I am of the opinion that invention was required to

produce the organization and device covered by the first claim of Stainthorp."

In this opinion, Judge Hall referred to the decision made by Grier and Cadwallader, JJ., in the trial mentioned above, with which, of course, he would be loath to disagree. Had the defence of want of invention been urged at that trial, the fate of the patent might have been different.

There was still another suit on this patent, Stainthorp *v.* Humiston, 4 Fish. 107 (N. D. of N. Y., 1864, Hall, J.), where the court considered, without particularly describing, several prior patents, and held that they did not anticipate Stainthorp's patent.

CAHOON *v.* RING, 1 CLIFF. 592; 1 FISH. 397.

D. OF MAINE, 1859. CLIFFORD, J., AND A JURY.

The patent was for an improvement in broadcast seed-sowers. The first claim, which only we need consider, was for—

"The employment of a tubular chamber or discharger, rotating rapidly in a horizontal position, so that its outer edge or periphery will be on a plane vertical or nearly vertical to the horizon, and thereby communicating a centrifugal motion to the grain, seed, &c., away from the centre of a circle whose plane is thus vertical or nearly vertical to the horizon."

The report contains no description of the prior machines relied upon to defeat the patent; but the following statement of law in regard to them was made by Clifford, J.:—

"It is insisted on the part of the defendant to the effect that an apparatus for discharging seed in sowing broadcast, though invented, constructed, and designed to throw out the seed in horizontal planes, and adapted to produce and accomplish that mode of operation, yet, if such apparatus, by having certain changes and modifications made in its construction and arrangement, could be adapted to the discharge of seed in vertical planes, that then such apparatus, while in its original form, . . . embodies the principles and mode of operation of Cahoon's machine. . . . On the contrary, I instruct you that if you shall find that discharging seed in vertical planes, in the manner and by the means described in the Cahoon specification, is a new and useful, or different and better, mode of sowing seed broadcast, and that Cahoon,

as claimed in his patent, was the first person to invent and adapt an apparatus so as to accomplish that method of sowing, such prior horizontal machines cannot invalidate his patent."

HUSSEY *v.* BRADLEY, 5 BLATCH. 134; 2 FISH. 362.

N. D. OF N. Y., 1863. NELSON AND HALL, JJ.

Infringement of various patents for improvements in reaping-machines. The novelty of all the patents was contested, prior inventions being adduced as anticipating them. In the case of every claim but one, however, it was perfectly obvious that there was a patentable difference between the earlier invention and that of the plaintiff. The claim in regard to which the question of patentability really arose was that of reissue No. 742, viz.: —

"I claim as my invention the combination of side and cross-bearings of the guards, with flush edges at and near the forks of the blades, substantially," &c.

The object of this device was thus described in the original patent: "My improvement extends also to the prevention of the accumulation of *grass*, &c., under the blades, which I will describe as follows: In my original invention, the blades are ground with a bevel on both sides of the edge. The purpose of this is, that by means of the shoulder of the bevel the sharp edge is prevented from coming into immediate contact with the iron in passing the guard. This bevel is not so necessary near the fork of the blades as near their points; hence, in this improvement, about one inch of the edge at the fork is flush on the under side, leaving the bevel all on the upper side. The design of this is that the *grass*, &c., which is forced in between the blades and the lower part of the guard, shall be cut up and worked out by the flush edge, acting close to the iron at the fork. This latter improvement is also claimed as new in its application to the particular purpose for which it is designed."

Upon this invention, and upon that by one White, alleged to anticipate it, the court, Hall, J., remarked as follows: —

"The cutting apparatus of White, in which this invention is alleged to be embodied, was made an exhibit, and has been examined in reference to this question of novelty.

"It has substantially the same side and cross bearings of the guards as the Hussey machine, and it has a scalloped cutter with flush edges; but it is insisted by the complainant that it does not present the same combination, because the separate plates which together constitute the scalloped cutter — each plate forming a single projection of the tooth-formed cutter — were, as a general rule, placed on the cutter-bar with their flushed edges so arranged that only every other flushed edge was uppermost, the alternate plates being placed on the bar with their flushed edges on their lower side. It is conceded that there were exceptions to this rule, there being, if we recollect rightly, in one case two, and in another three, of the adjoining plates having their flush edges on the same upper or lower side as they were fastened to such cutter-bar.

"The evidence in the case shows that a cutter-bar constructed in this manner is much inferior to one constructed according to the specification of Hussey; that it chokes more rapidly and requires more frequent cleaning, and that the cutters and other parts of the machine are more likely to be broken or injured. It is quite certain that Hussey's mode of arranging the cutter-blades with the flushed edges of each on the lower side is so far preferable to the alternate arrangement as to constitute a substantial difference in the practical operation of the machine. The White machines were substantially abandoned and given up. . . . If the maker of the White machine had appreciated the advantage of this arrangement, he would certainly have adopted it; as it was as easy to manufacture the machine with the uniform arrangement of the cutter-plates as it was to manufacture it with the alternate or promiscuous arrangement presented in the cutting apparatus of that machine. As these differences are matter of substance, and as we think the patent of Hussey may properly be so construed as to give such effect to the words '*substantially as described*,' as to require this uniformity of arrangement, we have concluded, after some hesitation, that the proof of the prior existence of the White machine does not avoid the patent No. 742."

In a subsequent case, Hussey *v.* Whitely, 1 Bond, 407 (Leavitt, J., 1860), two of the reissued patents not directly mentioned above, viz. No. 449 and No. 912, were sustained on a motion to dissolve the injunction granted in the previous July by Hall, J.

Hussey *v.* McCormick, 1 Biss. 300 (N. D. of Ill., 1859, McLean, J.). Reissue 449 was sustained.

MAGIC RUFFLE CO. *v.* DOUGLASS, 2 Fish. 330.

S. D. of N. Y., 1863. Shipman, J., and a Jury.

G. B. Arnold's patent of May 8, 1860, for an improvement in ruffles, thus described by the court (quoting first from the claim): —

"'The ruffle therein described, as a new article of manufacture, the gathered cloth A (the ruffled strip) being secured to the binding B (the band), by the single series of stitches C, which perform the double duty of securing the gathered cloth to the binding, substantially as therein set forth.' The distinguishing features of this article, by which it is materially different from all other ruffles known before, are the single series of stitches and the unvarying regularity of the plaits or gathers, thus dispensing with the gathering thread, avoiding the injurious process of whipping or scratching the fabric with a sharp needle, and the perforations in the ruffled piece which the needle and thread make in gathering, before sewing on the band, and by pulling out the thread after it was sewed on, or in case the thread was left in, by dispensing with its presence. I repeat, the ruffle patented differs from those that existed before, by the uniformity of the plaits, and by the absence of all whipping or scratching with the needle, with all perforations except those made by the permanent stitches, and by the absence of an appendage in the shape of a useless thread in the ruffle after it was finished." He also said: "Of the utility, in the legal sense, you can have no doubt. The superior beauty and rapid sale of the article is shown on all sides. The beauty of an *ornament* is one great test of its utility."

The judge told the jury that this invention was patentable, leaving it to them to determine whether it was patentable to the plaintiff or to certain other persons. The evidence on this last point is not reported.

AYLING *v.* HALL, 2 Cliff. 494.

D. of Mass., 1865. Clifford, J.

Ayling's two patents, one for the process, one for the product, dated May 10, 1864.

The invention consisted in a method of treating caoutchouc, in order to make it independent of temperature, of exposure to the

atmosphere, &c., as well as to increase its strength and elasticity. The means used was a bath of carbon spirits and chloride of sulphur (in the proportion of 50 to 1), at a natural or cold temperature.

It was held that this was not anticipated by an English patent granted to one Alexander Parker for treating caoutchouc, for the same purpose, with a bath of coal-tar naphtha and chloride of sulphur, in the proportion of 40 to 1.

Carbon spirits, or petroleum naphtha, is the product of the distillation of natural petroleum. Coal-tar naphtha (called also light-spirits naphtha, crude benzole, and rectified naphtha) is obtained by treating coal with heat, and it was proved that it differs both physically and chemically from carbon spirits. "The evidence also shows," said the court, "that the product obtained by the complainant is new."

SANGSTER *v.* MILLER, 5 BLATCH. 243.

S. D. OF N. Y., 1865. NELSON, J.

H. & J. Sangster's patent for an "improvement in lanterns," reissued Aug. 21, 1855.

"The patent," says the report, "was originally issued June 30, 1851, and claimed the mode of attaching the lamp to the lantern by means of the springs and flanges, as therein substantially described. A suit was tried upon this patent in the District of Massachusetts, at the May Term, 1855, . . . in which the novelty of the improvement was attacked, and a decree was rendered for the defendants. The patent was afterwards surrendered, and a reissue granted on the 21st of August, 1855, in which reissue the patentees disclaimed the fastening of the lamps to lanterns by springs, and also the fastening of the springs to the upper part of the lamp and extending down so as to spring outward over a flange in the lantern; but claimed the constructing and arranging the springs to cause the attachment of the lamp to the lantern, by the operation of pressing the lantern down upon the springs, and also arranging thumb-pieces at the base of the lamp, by extending the springs toward each other horizontally, and thus forming an elbow-catch to rest against the shoulder of the flange of the lantern."

Nelson, J.: —

"The amendment of the claim will hardly help out the novelty of the improvement against the proof of lamps previously in use, embracing substantially a similar arrangement of the parts connecting the lamp with the lantern, causing 'the attachment of the lamp to the lantern by the operation of pressing the lantern down upon the spring-catches,' is not well distinguishable from the process of causing the attachment by pressing the lamp upwards through the aperture into the lantern, — the mode of fastening being the same, — which seems to have been in general use at the date of this discovery. The construction of the parts is the same, in substance, in the reissue, as described in the original patent; but the patentees suppose that they have avoided the objection by changing the form of the claim. I think . . . that the claim itself, as set forth in the reissue, is not the subject of a patent, but is a mere result from the arrangement and combination of the parts. Then, as to the second claim, the arrangement of the thumb-pieces attached to the springs. This is but a change of form. The springs may, perhaps, be worked with greater facility than when the thumb-piece is straight, instead of being bent; but the change is only in degree. It involves no invention. It is simply the device of the mechanic," &c.

MORRIS *v.* RYER, 3 FISH. 176 (1867); BLANCHARD *v.* PUTNAM, 3 FISH. 186 (1867).

S. D. OF OHIO. The first case before LEAVITT, J., and the second before LEAVITT, J., and a Jury.

In the first case, it was contended that the plaintiff's — Morris's — invention (for which a patent was granted in March, 1856, reissued in May, 1862) was anticipated by the prior invention of Thomas Blanchard, patented in December, 1849. The second suit was for infringement of *Blanchard's* invention by the defendants, who used *Morris's* invention. In this suit, besides the defence of non-infringement, the defendants set up prior inventions alleged to anticipate Blanchard's invention.

In the first suit, the judge held Morris's patent to be valid. In the second suit, Morris's patent was again upheld by a verdict for the defendants.

"The invention of Morris," says the report, "consisted of a stationary form or mould, around which wood could be bent into any required shape. The bending was effected by placing the

centre of a piece of wood, previously steamed, against the centre of the mould, and clamping them together. Levers then pressed against the ends of the wood, and gradually forced them around the form; the levers being drawn together by cords wound upon a drum. In bending the wood, the inner fibres were condensed and the outer ones stretched. But while wood may be greatly compressed without injury, a slight stretching tears the fibres. To obviate this difficulty, the wood, before being bent, was laid upon a strap of flexible iron, and the ends were confined between two blocks of solid iron, called clamps or abutments, which were attached to the flexible strap. By this means the stretching of the outer fibre was prevented, and the entire change in the length of the fibre, caused by the bending, took place, by compression, in the inside of the curve."

The claims were as follows:—

"Having thus fully described my improvements, I do not wish to be understood as claiming them in connection with machines for bending wood, where the bending is effected by the rotation of the form; but what I claim therein as new . . . is:—

"1. A wood-bending form, to which timbers are made to conform by bending them from the centre or inner end of the desired curve outward, when used in combination with abutments or clamps, to prevent or regulate end expansion, and lever or handles, or their equivalents, to guide the bending, substantially as described.

"2. A stationary or poised wood-bending form in combination with the cords, levers, and drum, or their equivalents, and the eccentric clamp, or its equivalent, in the manner and for the purpose set forth.

"3. In combination with the stationary form, levers, and abutments, I claim the employment of hooks, or hooks and pins, or their equivalents, that shall embrace the ends of the wood, to restrain the wood in shape, and permit the removal of the abutments after the completion of the operation."

In Blanchard's invention, "the wood was bent by attaching one end of the stick to a form which was rolled over the wood toward the other end." He claimed "my improved method of bending wood, substantially as hereinbefore described."

In neither case, as reported, is there any description of the inventions set up by the defence, excepting the invention of Blanchard. We quote the following remarks of Leavitt, J., made to the jury in the second case, to show that the inventions were dis-

tinguished on the broad ground that one, as we have seen, operated from the centre of the stick outward, and the other from one end inward: —

"I will state very rapidly some of the points in which it is claimed by the counsel for the defendants that there is a substantial difference between the two structures.

"In the first place, it is claimed that the Morris machine bends from the centre to the outer end, whereas the Blanchard machine bends from the end inward. The jury have seen the operation of these machines, and are doubtless prepared to say whether, in that respect, the two machines are alike.

"It is also claimed that the application of the power, in the operation of bending, is different in the two machines, and that the effect upon the timber bent by these two methods is different; that in timber bent under the Morris patent there is less disturbance of the fibres of the wood; that bending from the centre outward to the end leaves the fibres more firmly set than they are by the operation under the Blanchard invention. If the jury should be satisfied of this difference in the operation of the two, it will be for them to say whether it does or does not constitute a substantial difference in the principle of the machines. It is also contended that there is a substantial difference in this, that it is one of the main elements of the invention patented to Blanchard that there is provision made for end relaxation,[1] when the end pressure is too great, and that, upon the principle and theory of the Morris machine, there is no necessity for this relaxation, and therefore no provision is made for it."

The judge construed the patent of Blanchard as not including a stationary form or mould.

AIKEN *v.* DOLAN, 3 FISH. 197.

E. D. OF PA., 1867. CADWALADER, J.

Hibbert's patent of Jan. 9, 1849, extended for seven years, from Jan. 9, 1863, to P. Hall, administrator. It was for an improvement in knitting-needles, namely, the invention of "the latch-needle," as an optional substitute for the spring-hook needle formerly used in knitting-machines.

[1] By means of an upsetting screw.

The court thus remarked upon the question of priority, as to which the report contains nothing further: —

". . . Latch-needles . . . certainly were made and experimentally used in the United States a great many years before 1846 [date of Hibbert's invention]. In one prior instance, at least, they were openly used in making an experimental fabric. The work and its product were imperfect; but both work and product were seen by persons who have not lost the recollection of them; and more than one of the needles, and a machine by which some of them were made, have been preserved to the present day. This was a sufficient prior knowledge by others to prevent the subsequent invention of Hibbert from being new."

The court held, however, that Hibbert had made a patentable improvement upon this old latch-needle, inasmuch as he had given to it a certain curved swell, which produced a new effect. The old needle and the improvement are thus described by the court: —

"Now, in the primitive needle, the yarn, when passing backward from the hook, was held down to the surface, first of the needle, and afterward of the latch, and was thus, on reaching the projecting end of the latch at the further extremity of the groove, jerked over the projection with more or less of shock immediately following tension. The strain with shock must thus have occurred after every stitch. . . . Hibbert . . . made or caused to be made latch-needles with a curved elevation, since called a swell, which was highest at the middle of the groove, and with such a corresponding elevation of the pivot that the end of the latch was depressed when it fell back at that extremity of the groove where the latch of the primitive needle had projected upward. The curvature of the swell was determined so as to effect this depression of the latch with a sufficient *longitudinal* extension of the latch beyond the furthest extremity of the groove, to receive the returning thread underneath. The remedy of the former defect was thus, in theory, complete. The improvement, though depending upon a change in *form*, was, in purpose and effect, a change in a material part of the *process* of manufacture. Tension of the yarn occurred at the swell, but was graduated so as to avoid shock."

BLANDY *v.* GRIFFITH, 3 Fish. 609.

S. D. of Ohio, 1869. Swayne, J.

Patent granted, Aug. 3, 1858, to H. F. & F. J. L. Blandy for a bed-plate for steam-engines. The report says:—

"The invention consisted of a hollow bed-plate, substantially in the form of an eight-inch pipe, about eight feet in length, which was attached by feet or saddles to the side of the boiler of a portable engine. To the outside of this pipe the working parts of the engine were attached; being thus removed from contact with the boiler, and from the injurious effects of the unequal contraction and expansion of the boiler-plates. The cylindrical form of the bed-plate imparted great strength, while, as it was hollow, it was exceedingly light." The claim of the patent was as follows:—

"The application to portable steam-engines of a hollow continuous bed-plate, in the manner substantially as described, for the support and attachment of the operative parts of the engine, whereby the latter, in working, is rendered independent of the contraction and expansion of the former, and the boiler relieved from the direct strain of the engine, as set forth."

Upon the specification and claim the court thus remarked:—

"Fairly construed, we think the context claims for the patentees, as their invention: 1. A hollow continuous bed-plate placed between the boiler and the engine. 2. The bed-plate to have flanges in its upper and outer side cast with it. 3. The attachment and securing of the operative parts of the engine upon its upper and outer side, by means of the flanges. According to these views, the essence of the invention lies in two things: The construction of the bed-plate and its lateral attachment to the engine, as set forth in the specifications."

The defence set up as anticipating this invention prior bed-plates thus described by the court:—

"At first they were solid. After the year 1845 or 1846 they were altered and cast hollow. The plate consisted of a frame cast in one or four pieces. The sides were hollow boxes from four to eight inches square. They extended the whole length of the boiler. The frame was placed upon it. The parts were secured to the boiler by feet or flanges cast with them, and secured by bolts. Upon the bed-plate so attached the engine was placed, and firmly fixed there by bolts or

rivets. Both the bed-plate and engines were directly over the boiler. About the year 1853, feed-pipes for the supply of water were introduced into the bed-plate. The exhaust steam from the cylinder was passed along its entire length, and by that means heated the water before its entrance into the boiler. The object of the feet or flanges on the plate was to render the engine, as far as practicable, independent of the contraction and expansion of the boiler, and to relieve the boiler from the direct strain of the engine. In other words, the purpose was to effect, as far as was possible by the means employed, the insulation of the engine.

"Here are certainly some striking points of analogy to the engine of the complainants. But able scientific experts have testified that the dominant conceptions in the two cases are totally distinct from each other, and that the differences are not merely mechanical or equivalent, but that they strike deeper, and are radical in their character. Whether they are so is the test to be applied to the solution of the question before us. We have already held that the use of the plate as a heater is not a part of the invention patented. This subject may therefore be laid out of view. The essential diversities are to be found, it is said, in two particulars: The bed-plate covered by the patent is *a single, continuous shell or tube.* It is proved that this gives a combination of lightness and strength beyond any other configuration or structure which has yet been devised. The engine is attached to the outer side of the bed-plate, and is not placed upon it, or over the boiler. The attachment is lateral.

"In both these points the proof is that it is essentially different from the Talbott engine, and from any other which preceded it. In these views, after much reflection, we have found ourselves able to concur. It is not our business to form any opinion of the *comparative* value of the complainants' engine. The question is, not whether the invention is better or worse than its predecessors, but whether it is new, useful, and different from anything before used or known. Those who hold the negative are at liberty to use anything older to which the proofs in this case relate. All required of them is that they shall not use, either in form or substance, what is patented to the complainants."

AMERICAN HIDE & LEATHER SPLITTING & DRESSING MACHINE CO. *v.* AMERICAN TOOL & MACHINE CO., 1 Holmes, p. 520.

D. of Mass., 1870. Shepley, J., and a Jury.

On the question of anticipation by a prior English machine, Judge Shepley said:—

" . . . If the English machine is shown to have required further invention to make it a practical and operative machine, and to embody the same invention which is described in the American patent, it would not work a forfeiture of the American patent. I do not say that if the English machine would require change or adjustment of its parts, it would not work such forfeiture, because a change or adjustment of its parts might have nothing to do with the question of invention. But if you find that in the English machine there was the same device, the same combination of elements to produce the same results in the same mode, so that there was an identity of invention, then it is immaterial whether it did or did not require more adjustment of parts or mechanical perfection to make it work as well or better than the American machine."

SEYMOUR *v.* OSBORNE, 11 Wall. 516 (1870).

Infringement of reaping-machine patents. (Appeal from the N. D. of N. Y., where a judgment had been given for the defendants by Nelson and Hall, JJ. See 3 Fish. 555.)

The chief parts of a reaping-machine are the following: 1. The reel which presses the standing grain against the cutting apparatus. This is a revolving frame, having a top, middle, and bottom bar, but otherwise open. 2. The cutting apparatus, which usually consists in "a vibrating, scalloped sickle, sliding through a series of fingers or guards." 3. A platform on which the grain falls after it is severed.

It is to this third part that the patents in the present case relate. In the first reaping-machines, the platform was directly in the rear of the cutting-bar, and square in shape, so that the grain either fell off from it and lay in the path of the machine, or else it was taken up in a hand-rake by a man who sat at the end of the platform and threw it to one side. In the first case, the severed grain lay in the path of the horses when the next swath

was cut; and, in the second, the office of the raker was laborious, and it was impossible for him to lay the grain neatly and in piles. Some device was necessary to throw the cut grain aside, so that it should fall in the track just passed over by the horses, and be out of their way on the next round.

"The invention of Seymour consisted in constructing the platform . . . in the shape of a quadrant or sector of a circle, and placing it just behind the cutting apparatus, and in such relation to the main frame that the cut grain could be swept around on the arc of a circle, and dropped on to the ground behind the horses, so as to be so far removed from the standing grain as to leave room for the horses and frame to pass between the standing grain and the gavels, thereby obviating the necessity of taking up the cut grain as fast as cut, and at the same time doing the work more perfectly." This invention did not dispense with the hand-rake and its user, but it enabled him easily to lay the grain in piles on one side.

The original patent was divided, and two reissues were granted, of which the claims were as follows: —

Reissue No. 72. "A quadrant-shaped platform, arranged relatively to the cutting apparatus substantially as herein described for the purpose set forth."

Reissue No. 1683. "The combination in a harvesting machine of the cutting apparatus (to sever the stalks) with a reel, and with a quadrant-shaped platform located in the rear of the cutting apparatus, these three members being and operating as set forth."

The defendant set up several prior machines, as follows: 1. Obed Hussey made a machine without a reel, and with a square platform, from which the grain was discharged (by a hand-rake operated by a man who sat in the body of the machine) directly into the path to be travelled by the horses on their next round. Hussey also made a machine with a straight adjustable guide-board on the platform, which would press the grain aside far enough to leave room for a single horse or for a tandem team to pass by on the next round; also machines with two platforms, one attached to the rear of the other, whereby two men were employed, — one to rake the grain back, and the other to sweep it to one side; also a machine "with a square platform, to the rear of which was bolted an angular addition, giving to the whole, where the

addition was made, an angular form."[1] 2. Nelson Platt's reaper, which was propelled from the rear, and which had two platforms. The first was rectangular, and the grain fell on it from the cutters; whence it was raked to the second, a quadrant-shaped platform, from which it was discharged by a vibrating rake sweeping across the platform in the arc of a circle. [This rake was automatic. It will be noticed in a subsequent part of the case.] The Supreme Court held that the invention of Nelson Platt and the inventions of Hussey did not anticipate

[1] Of this the court said: "Examined where the addition is bolted to the main platform, irrespective of the other ingredients of the combination, it approaches much nearer to the invention of the complainants than any of the other exhibits introduced in evidence by the respondents. Conceding all that, still it would not be difficult to show that the two are substantially different in several respects; but it is unnecessary to enter that field of inquiry, as the proofs are entirely satisfactory to the court that the machine as constructed was merely an experiment, and that it was never reduced to practice as an operative machine.

"Undoubtedly it was built in the autumn of 1848, subsequent to the close of the harvest season; but the respondents' testimony shows that it was not used for cutting grain during that harvesting season.

"Some obscurity surrounds its early history, nor is it of much importance that it should be better known. It appears that it was sent to the railroad depot to be transported to some other place for trial; but there is no positive evidence that it was ever forwarded or used, or that it was capable of any beneficial use. Where it was transported, if at all, from the depot, does not appear; but it does appear that it was returned the next year to the shop of the maker, and that it was set against the wall by the side of the street, in front of the shop, where it remained for some time; that it was then removed to the new shop of the maker, where it remained until it was taken to pieces and broken up by his order, and never restored till long subsequent to the complainant's patent. [No other facts in regard to this machine are stated in the report].

"Original and first inventors are entitled to the benefit of their inventions if they reduce the same to practice, and seasonably comply with the requirements of the patent law in procuring letters-patent for the protection of their exclusive rights. Crude and imperfect experiments are not sufficient to confer a right to a patent; but in order to constitute an invention, the party must have proceeded so far as to have reduced his idea to practice, and embodied it in some distinct form.

"Desertion of an invention, consisting of a machine, never patented, may be proved by showing that the inventor, after he had constructed it, and before he had reduced it to practice, broke it up as something requiring more thought and experiment, and laid the parts aside as incomplete, provided it appears that these acts were done without any definite intention of resuming his experiments, and of restoring the machine with a view to apply for letters-patent. Johnson *v.* Root, 2 Cliff. 123; Gayler *v.* Wilder, 10 How. 498; Parkhurst *v.* Kinsman, 1 Blatch. 494; White *v.* Allen, 2 Cliff. 230."

the plaintiff's improvement, and that the combination invented by him was patentable.

The plaintiff also alleged infringement of two patents held by him as assignee of the inventors, Palmer and Williams, which were as follows: —

Reissue No. 4. "Discharging the cut grain from a quadrant-shaped platform, on which it falls as it is cut, by means of an automatic sweep-rake sweeping over the same, substantially as described."

No. 1682. "The combination of the cutting apparatus of a harvesting machine with a quadrant-shaped platform arranged in the rear thereof, and a sweep-rake operated by mechanism in such manner that its teeth are caused to sweep over the platform in curves when acting on the grain, these parts being and operating substantially as hereinbefore set forth." [1]

The defendants contended that this improvement of Palmer and Williams was merely the work of a mechanic, not invention; that all they had done was to take Platt's automatic sweep-rake and put it upon Seymour's quadrant-shaped platform. On the other hand, the plaintiff maintained that the patents of Palmer and Williams were for the *means* of discharging the grain, that "this means" was a combination, and that the elements of such combination must bear the following relation to each other: —

"*First.* The quadrant-shaped platform must be directly behind the cutting apparatus.

[1] The defendants contended that lar curves, and delivering it upon the these two patents were for one and the same invention; and the plaintiff, that they were not, on the ground that the first included, and the second did not include, the return movement of the sweep-rake.

Judge Clifford thus construed these patents: ". . . Number 4 is the combination of a quadrant-shaped platform located behind the cutting apparatus of the harvester, so as to receive the grain as it falls after it has been cut, with an automatic sweep-rake so constructed as to sweep over the platform in circular curves, and to move forward and backward, or towards and from the cutting apparatus, so as to seize upon the grain as it falls after being cut, sweeping it over the platform in circu- ground behind the machine with its stalks at right angles, or nearly so, with the line of progression of the machine, and to return by a forward movement towards the cutting apparatus to the original position, when the first operation commenced."

"Number 1682 . . . consists of a combination of the cutting apparatus of a harvester with a quadrant-shaped platform arranged in the rear thereof, and with a sweep-rake operated by mechanism in such a manner that its teeth are caused to sweep over the platform in curves when acting on the grain and to discharge the stalks crosswise to the direction of the swath, and out of the way of the team on the return of the machine."

"*Second.* The automatic sweep-rake must traverse the platform so as to sweep the grain from where it falls as, cut round to the place of its destiny upon the ground.

"*Third.* To accomplish this, the rake must have a certain relation to the cutting apparatus, to the platform, and to the material which has been laid upon the platform."

The Supreme Court upheld the combination, its novelty as regarded the prior inventions set up, and its patentable ingenuity, Clifford, J., delivering the opinion, but not entering into any analysis of the inventions.

Also, it was contended that the several patents sued on were for an *effect*, and not for any particular machinery, and were therefore void. The court said: "Founded as the defence is upon an obvious misconstruction of the claims of the several patents, it does not seem to require much explanation. Omit the words 'substantially as described,' or 'substantially as set forth,' and the question presented would be a very different one; but inasmuch as those words, or words of equivalent import, are employed in each of the claims, the defence is without merit. Where the claim immediately follows the description of the invention, it may be construed in connection with the explanations contained in the specifications, and where it contains words referring back to the specifications, it cannot properly be construed in any other way. Curt. on Pat. (3d ed.) §§ 225–227."

Patents No. 72, No. 1682, and No. 1683 were again before the court in the case of Marsh *v.* Seymour (97 U. S. 348, 1877), when they were sustained against the same objections. One new point was taken, namely, that the invention described in No. 1682 was "neither useful nor practical." On this head Mr. Justice Clifford (for the court) said:—

" . . . The second assignment of error is, that the patent does not in terms describe any device to prevent the rake from rising when operating upon the grain, and enough appears to show that the rake in the first machine made by the complainants was not of sufficient weight to prevent it from rising when the teeth came in contact with heavy grain. Brief experiment, however, was sufficient to disclose the defect, which was immediately remedied by adding a spring of proper stiffness to hold the rake down without impairing the other operating devices, to enable the rake to perform the function of removing the cut grain from the platform and causing it to drop in gavels in the proper place. None

of these facts are [*sic*] controverted; but the respondents contend that the spring was a new invention, and that any one may make and use the patented machine, or vend the same to others to be used, without the spring, and not be liable as infringers; but the court is entirely of a different opinion, as the addition of the spring for the purpose suggested is nothing more than any practical mechanic or operator would supply as soon as the difficulty was discovered. Viewed in the light of these suggestions, it is clear that the defence to the second patent [No. 1682] must be overruled."

KNOX *v.* MURTHA, 9 BLATCH. 205.

E. D. OF N. Y., 1871. BENEDICT, J.

Infringement of a patent for an improved smut-mill and separator, reissued to Daniel Shaw, Jan. 11, 1870. The third and fifth claims only were in suit.

The court decided first that there was no infringement, and secondly that the third claim was void for want of novelty and of invention, and the fifth for want of invention. The third claim was as follows: —

"In combination with a smutter or scourer, and a suction-fan, both arranged on and driven by the same shaft, and an air-trunk for directing the force of the blast, a regulator for changing the force or volume of the current of air, without changing the speed or motion of the smutting or scouring cylinder, substantially as described."

A prior invention, called the Sanders machine, was set up as anticipating that described in this claim. The only difference between the two was in the shape of the air-trunk. The Sanders machine, according to the court,

"consists of an air-trunk, through which an air-current is created by a suction-fan, and the same regulated by a regulator. In this trunk the current first ascends through an ascending leg. At the top of the ascending leg the air-trunk turns at right angles, and gives to the air-current a horizontal direction. This horizontal portion of the air-trunk is enlarged, and its lower surface given the form of a capacious hopper, with a slide-valve at the bottom. After passing the hopper, the air-trunk turns down again, and into the eye of the fan. In this machine, material coming from a scourer is spouted into the ascending leg, where the heavy grain is separated from the rest of the mass by

gravity, precisely as in the Shaw machine. This separation effected, the remainder of the mass passes into the horizontal part of the air-trunk, where the current is weakened by the enlargement of the trunk, and, by means of the depression of the bottom of the air-trunk to form the deep hopper, the force of gravity is again rendered effective. Here, therefore, while the dirt, dust, and chaff are carried on by the air-current to the eye of the fan, the screenings are carried by their gravity out of the air-current to the bottom of the hopper, and thence removed by the slide-valve. The dust and dirt thus separated from the screenings pass out of the machine through the fan."

In the Shaw machine the enlargement of the air-trunk was in the descending leg thereof, and the court said: —

"It is manifestly no substantial change in the air-trunk to place the enlargement on the descending leg, instead of on the horizontal portion as in Sanders's separator. In both cases the air-current is weakened by an enlargement of the trunk, and in both cases the separation is effected by the air-current being forced to take a lateral direction away from the force of gravity."[1]

"The fifth claim," said the court, "is as follows: 'The arranging of the smutter or scourer, and the suction separating-fan, within or between the legs of the blast or air-trunk, in which the entire separation is made, and which passes over or around them for the purpose of economizing space and cheapening the construction of the machine, substantially as described.' The idea here expressed . . . is that in a machine having a scourer and fan connected by an air-trunk, as described, economy of space and cheapness of construction would be gained by placing the smutter or scourer between the legs of the air-trunk, instead of elsewhere. Certainly no invention was required to reach such a result. It would rather require invention to find any reasonably convenient place to locate a fan and scourer so connected, other than the one chosen by the patentee. . . . A similar arrangement of materials for the same reason is to be seen everywhere. I am, therefore, of opinion that the fifth claim of the Shaw reissue is invalid because of insufficiency of invention."

[1] Compare this case with that of Roberts *v.* Ryer, *post*, page 151.

THE WATERBURY BRASS CO. *v.* MILLER, 9 BLATCH. 77.

D. OF CONN., 1871. WOODRUFF, J.

Patent originally granted to one Hayden, and reissued to the complainant May 24, 1870, for an "improvement in brass kettles," embracing both the new kettle and the machine that produced it.[1] The machine may be described very briefly. It consists of an engine-lathe, with a revolving mandrel, the foot of which is pointed in order to hold the object to be operated upon. Attached to the mandrel and revolving with it is a form or pattern in the shape of the interior of the article to be produced. Against the form is fastened, by its centre, a disk of the metal to be fashioned, and, in a carriage secured to the frame of the lathe, a burnishing or spinning tool, which revolves close to the form, and is "so adjustable, and so guided when adjusted, that the tool is sustained and guided in a precise path prescribed for it before motion is given to the machine, the path being such that the tool will, when moved, travel along and in near proximity to the form set upon the mandrel." This tool spins or shapes the metal into the desired form. Its motion is "taken by gear wheels and pinions, from the wheels or pulleys of the revolving lathe. These wheels and pinions act upon a screw connected with the tool carriage, which will move it forward or backward, but with such arrangement of devices that, as already stated, the tool must move in its described path."

Several processes were set up by the defence as anticipating this invention of Hayden. It was proved that small articles of brass fastened to a lathe had been spun by a tool in the hand of a workman. Such tools were neither driven nor guided by machinery, and whatever efficacy they possessed was due to the strength and skill with which the workman applied them. Judge Woodruff held that such devices were very plainly no anticipation of Hayden's machine. The strength of the defendant's case rested on a prior patent granted in France, Dec. 4, 1835, and Jan. 26, 1838, to the Messieurs Japy. Their device was substantially like Hayden's, with one very important exception, — the tool in this case was merely a burnishing, and not a spinning tool. The

[1] There was an earlier and less important suit on this patent, before Ingersoll, J., and a jury, in the Southern District of New York, in 1858, viz. Waterbury Brass Co. *v.* New York & Brooklyn Brass Co., 3 Fish. 42

metallic article, under this patent, was first fashioned by dies, and then smoothed and polished by the tool, which was not adapted, and was never used, to shape the article. "It cannot be denied," said Judge Woodruff, "that this device for smoothing the kettle already complete in form would be very suggestive to an ingenious mind already conversant with the art of hand-spinning on a lathe. It was a near approach to a device for spinning by a machine; but I think it clear that it stopped short of it."

In the argument for the defence, the position was taken, that if the Japy machine were capable of the use for which Hayden made his machine, though such capability was unknown to Japy, the inventor; then Hayden's invention, being in effect the discovery of a new function in the Japy machine, was not patentable.[1] The judge, however, held that the Japy machine "had, in truth, no such capacity, or certainly not in any such degree as made it useful, as Hayden's machine is useful, for spinning metals." And he went on to say: —

"It was a pertinent and quite plausible suggestion of the counsel for the complainant that the inventor of a machine should be presumed to know not merely its purpose, but its capacity; that, when the product sought was in great demand, the art of spinning upon a lathe, well known, the best mode of producing kettles and like articles, the subject of attention and study, the objections to the process of stamping known and appreciated, the fact that an inventor of a machine, contrived expressly for the making of such articles, should have made a machine, and had no suspicion that it could raise the disk which he used to the required form by spinning, is no slight evidence that it had no such capacity; that the wisdom which comes to an alleged infringer after another inventor has perfected a similar machine by which the operation can be usefully performed, is not to destroy the claim to an original invention, and that an alleged example of a machine claimed to produce an effect which the original never did produce, and which its inventor never claimed for it, is to be looked upon with some distrust of its actual likeness to such original."

In a subsequent case, reported in the 10th of Blatchford, p. 319, Judge Blatchford, using this case as an illustration, said: —

"Japy Brothers, as early as 1835, invented a machine for smoothing brass pans, kettles, &c. It served only to make the surface smooth,

[1] *Vide post*, page 303.

after the pan or kettle, &c., had been reduced by other slow, and what would now be deemed tedious, means to the desired form. Subsequent ingenuity has shown that a very slight change either in the form of the edge of the smoothing or burnishing tool, or even of the direction of its contact with the pan, &c. (the parts being appropriately strengthened for the purpose), produced the machine for spinning metals to form, which has revolutionized the manufacture." [1]

BAILEY WASHING & WRINGING MACHINE CO. *v.* LINCOLN, 4 Fish. 379.

D. of Mass., 1871. Lowell, J.

Suit on claims Nos. 1, 5, and 6 of the last reissue of J. Allender's patent, dated April 18, 1865, originally granted in 1859, for a wringing-machine. Allender's roller was a wooden cylinder surrounded by a flat metal spring, which in turn was covered by a cylindrical strip of india-rubber. The rollers were "fitted with a frame and boxes, and with spiral springs and set-screws, to give and adjust the requisite pressure to the rollers, and a guide

[1] This case is similar to that of Stimpson *v.* Woodman (*post*, page 429), where it was held that, given an engraved roller operated by hand to stamp leather, and also an unengraved roller operated by machinery to press leather, it is no invention to make an engraved roller operated by machinery to stamp leather. In that case the patentee had simply brought together two devices; but in the present case he did something more, for the hand-tool in use before his invention did not produce the same effect (by reason of want of strength and precision in the workman's hand) that it did when the patentee had communicated to it the mechanical force and direction the idea of which, it must be assumed, he derived from the Japy machine-driven tool; whereas, in the case of Stimpson's invention, the engraved roller, for aught that appears, was as effectual when operated by hand as it afterward was when the patentee had communicated to it the machine-motion, which he transferred, so to say, from the smooth roller in use for compressing leather. The gain was not in the effect (as was the case with Hayden's invention), but in the speed and ease with which the effect was obtained. Nevertheless, the greater utility of the substitution or combination made in this case does not change the character of the mental process by which the patentee attained to his improvement. This case must be distinguished from that of Stimpson *v.* Woodman, if at all, on the ground that the Japy burnishing tool and the hand-spinning tool were not so associated in the minds of those skilled in the art concerned as were the pressing roller and the stamping roller in the leather case.

to conduct the clothes properly between the rollers" (quoted from the opinion).

Claim No. 1 was for the roller; No. 5, for

"rollers for washing or wringing machines made of or covered with vulcanized rubber or *any other elastic substance or compound*[1] impervious to water, when used in combination with adjusting spring or springs."

No. 6, for the same combination, with the addition of set-screws to regulate the pressure of the adjusting springs.

It was proved that in 1848 J. Young made an india-rubber covering for rollers of wringing-machines, and obtained a patent therefor. It was also in evidence that soon after the invention of Allender it was discovered that the spiral spring might be omitted with advantage, and thereafter rollers were made without it.

Some English patents were adduced, but the court held that the chief of them was not prior to Allender's invention. There was, however, in New Jersey, a prior invention made and used by one Day, namely (quoting from the opinion): —

"A washing and wringing machine, with which he squeezed starch out of flat webs of cloth; and this machine had one, and afterward two, rollers covered with india-rubber, which again was covered with folds of printer's blanket or felt, and over this with folds of muslin. The rollers were combined with blocks of india-rubber to give the pressure, and with wedges to adjust the pressure, and these are undoubtedly the equivalent of the springs and set-screws of the reissued patent. . . . For a wringing-machine it is of importance to dispense with the cloth; but the question is, whether there could be invention in dispensing with it. I have had much doubt on this point; but upon the whole am of opinion that the rollers of the Day machine are different

[1] The point being taken that this was not a claim for the india-rubber, and that the patentee had not discovered the peculiar value of its use in a roller, the court remarked: "It does appear to be true that he either did not understand the full value and scope of his machine, or was induced or obliged not to claim it. Taking the strongest view against him, namely, that he was not informed of the peculiar value of india-rubber as a covering for the rollers, but thought any flexible material would do as well, or nearly as well, still he points out india-rubber as the covering which he considers the best; *and no one who should afterwards discover its peculiar value could patent its use in the same combination;* and if so, Allender may by reissue claim its use in that combination if he invented it; otherwise it must be held that by describing and not fully claiming it he has abandoned it, which is precisely what he may avoid by a reissue."

from those of the complainants. They are not covered with india-rubber, and I think there might be invention in combining a rubber-covered roller, as Allender did, with the other elements of the Day machine. The india-rubber of Day performs the office of the spiral spring of Allender, and if the latter had not covered his roller with india-rubber, but with cloth, and had claimed, and continued to claim only any flexible covering, he could have held perhaps only his peculiar spring; because Day had already covered rollers with cloth, and had a spring of india-rubber beneath it; but to substitute an india-rubber covering for one of cloth appears to be important and valuable, and I do not know that it is any less an invention than to substitute a spiral spring for india-rubber underneath. I was much pressed with the argument that a person who should merely wind a piece of cloth over the plaintiff's rollers would infringe the patent by using the machine in that way; and if so, one who had done the same thing beforehand had anticipated the invention. Here, I think, the true test is whether the machine is substantially the same. If a piece of cloth or muslin were so tightly stretched over the roller that it remained for practical purposes covered with india-rubber, no doubt there would be infringement; but a roller covered with cloth, as distinguished from one covered with india-rubber, would not infringe. In this connection, the reissued patent clearly claims only coverings impervious to water; and though there is no such claim or intimation in the original patent, yet the model shows such a roller, and its value being discovered, as we have already seen, it may be claimed by a reissue."

KING *v.* HAMMOND, 4 Fish. 488.

N. D. of Ohio, 1871. Sherman, J.

Z. King's reissued patent of July 30, 1867, for an improvement in iron bridges, thus described by the court: —

"The invention in its main and principal features relates to the channel iron or stay plates, so constructed and arranged in relation to an arch that the said plates form a vertical and lateral support to the bridge, and said plates being constructed with a flange or rim on one or both sides, so as to have two or more, and conforming to the spring or sweep of the arch; and in addition, the said plates, by means of the flanges, admit of the side or top plates being so secured to them that a continuity in the structure of the bridge is attained. The said plates may be so formed or bent as to be either placed on the side, top,

or bottom, or other parts of the arch, of any form, without regard to the outer or inner lines of the arch being parallel. The said plate or plates are arched, with a flange on one or both sides."

The novelty of the patent was attacked, and the prior inventions adduced were thus described and disposed of by the court:—

" . . . French patent, dated Sept. 15, 1851, granted to Cadiat & Ougey . . . published in the Records of Invention in 1857, I do not find that the channel irons, as described in the King patent, are contained. The specification and drawings represent what are more familiarly known as angle irons, being a separate iron, and the office of which is to unite two or more plates, either at the top, bottom, or side, and secured in positions in relation to the said plates by means of bolts, rivets, or other equivalents. In all forms of this construction there is an increased weight of material, and requiring additional labor and cost, instead of a diminution of all these, which is accomplished by the King invention." And so of other similar inventions. " . . . To sum up, . . . the channel iron of the King bridge presents in a single piece of metal what had been before accomplished, if at all, only by the union of several distinct pieces or parts, which was attended with great additional expenditure of material and labor, and consequent cost. It dispenses with angle irons and numerous rivets, and in one solid, firm construction, complete in itself, furnishes this essential feature of an iron arch bridge. It certainly cannot be the doctrine of the patent law that an invention apparently so valuable for its simplicity and increased economy should be antedated by more complex and expensive combinations, which do not contain the essential feature of the King invention."

CAREW *v.* BOSTON ELASTIC FABRIC CO., 5 FISH. 90.

D. OF MASS., 1871. CLIFFORD, J.

Suit on Hayward's patent of Aug. 29, 1854, afterward extended and reissued to Carew, July 6, 1869, for improvements in the manufacture of india-rubber.

The invention consisted in a means of remaking rubber that has once been vulcanized, either alone, or with cheaper stuff embodied in it, by subjecting it, while in moulds or dies, to the action of steam heat. The moulds were heated before the com-

pound was introduced; and after its introduction heat was applied by means of steam, in chambers or jackets, the heat of the steam being conducted by the walls of the jackets or chambers to the moulds. Moreover, *the heat was applied while the compound was under pressure.*

The court held that this invention was not included in that of the celebrated Goodyear patent,[1] and that it was not anticipated by any of several prior processes set up by the defence, and alluded to in the opinion, but not of importance in this regard.

CAHILL *v.* BECKFORD, 1 HOLMES, 48.

D. OF MASS., 1871. SHEPLEY, J.

Patent of Miles S. Cahill, granted Nov. 10, 1868, No. 83,925. It was for a bronze leather-dressing or varnish composed of spirit-varnish and aniline fuchsine, the proportions being determined by the point of saturation; that is, by the amount of fuchsine which the varnish will dissolve. Fuchsine is a golden green crystal of aniline red; aniline crystals being sulphates or chlorides of aniline, which is a colorless substance produced by the distillation of coal-tar.

Before the plaintiff's invention, bronze varnishes had been made by dissolving bronze aniline crystals in shellac which contains alcohol; but all of these had failed of their object, for the reason (we quote from the opinion),

"that when shellac was present in quantity sufficient to make a reasonably durable dressing, the action of the shellac in the varnish destroyed or changed the color of the bronze crystal. . . . The complainant seized upon this very property which the shellac possesses of modifying the color of the aniline crystal, and by experiment discovered that the shellac varnish, which destroyed the bronze color in the bronze crystal of aniline violet, developed a bronze color from the green crystal of fuchsine, or aniline red. In this preparation, not only was the desired color obtained, but a resinous coating was formed on the surface of the leather, sufficiently compact to be reasonably durable."

The patent was therefore sustained.

[1] Which was for mixing caoutchouc with sulphur, and subjecting the compound to a high degree of heat. *Vide* page 655.

Cahill *v.* Brown, 15 O. G. 697 (D. of Mass., 1878). Clifford, J., sustained the Cahill patent. Prior inventions are discussed at great length; but none of them really resembled the plaintiff's invention, and their consideration is not profitable.

BRIDGE *v.* BROWN, 1 HOLMES, 53.

D. OF MASS., 1871. SHEPLEY, J.

S. W. Pingree's reissued patent of March 28, 1865, held invalid for want of novelty. It claimed an improved process for extracting tan-bark.

Dictum, that there is no invention in directing a steam jet into a mass of bark in a vat by means of pipes thrust downward from the top through the bark at different points, instead of introducing the steam "through tubes, holes, or other apertures from the bottom," as was formerly done.

Said the court: —

"When the steam was [thus] introduced through holes in the false bottom, it first came in contact with the bark *top of the false bottom*, in substantially the same way and substantially the same places that it does from the aperture of the pipe extending from the top of the mass of bark down to the top of the false bottom."

MASURY *v.* TIEMANN, 8 BLATCH. 426.

S. D. OF N. Y., 1871. BLATCHFORD, J.

Masury's patent, granted July 12, 1859, for improvement in paint-cans. Paint-cans are made of thick tin or of galvanized iron. Before the plaintiff's invention it was difficult to open them at all, and especially difficult to open them without injury to the contents. The specification said: —

"For the top of the can, in the place of using material of the same weight and thickness as for the other parts, I take thin brass or other soft metal, and attach a rim or ring thereof to the top of the can, and secure the same by soldering, as in the ordinary mode. For sealing the can after it shall have received its contents, I take a disk of tin and

solder it to the rim or ring, leaving between the said disk and the edge of the can sufficient space to admit the passage of a penknife blade. The can is then in all respects like the ordinary tin can hermetically sealed, except that the cover of my . . . can may be removed by severing the thin brass rim or ring with a penknife or other sharp instrument."

"The defendants," said the court, "claim to have shown by testimony that in 1852 they substituted in use for a can with a loose or slip cover a can having a hole in the middle of its top, covered by a thin brass cap, on which were shown in relief, by being struck through from the other side by a die, the name of the defendants' firm and other words; and that this brass cap could be easily removed by inserting a knife under its edge and prying it up, or by severing it. But this can was not the equivalent of the plaintiff's, and did not embody the invention. The rim or ring between the brass cap and the edge of the can was not of thin metal capable of being severed, but was of the same thick metal as the body and bottom of the can; and when the cap was removed the difficulty existed of getting at so much of the contents of the can as lay in the recess formed inside between the thick ring and the body of the can, — a difficulty which the plaintiff's invention obviates."

In a subsequent suit on this patent, before the same judge,

MASURY *v.* ANDERSON, 11 BLATCH. 162,

S. D. OF N. Y., 1873,

another prior patent was set up in defence, namely, that of Lignac, granted in England, Oct. 7, 1847, numbered 11,892. The invention thus patented was described by the court as follows:—

"A cylindrical can made of ordinary sheet tin, some five inches in depth and four inches in diameter, one end of which is composed of a circular-shaped piece of tin, formed with a flange something less than a quarter of an inch deep, turned down at the outer circumference of such end. The lower end of such flange is connected with the outer wall or side of the can by a band of sheet-lead, a little over one-half of an inch wide, encircling the circumference of the can, the lower part of the band being soldered to the top of the wall or side of the can, and the upper part of the band being soldered to the lower edge of such flange so as to leave a width of lead of about one-quarter of an inch between the upper edge of the wall or side of the can and the lower

edge of the flange, and to allow the lead to be penetrated and cut in such width around the circumference of the can, and thus the top or end of the can to be separated from the body of the can."

This, at first sight, seems to embody the essential feature of the plaintiff's patent, but it was proved that the Lignac can failed to accomplish the end in view of both devices. In the first place, lead is much more difficult to solder than thin metal, so that the Lignac can was more costly than the Masury can. Moreover, the band of thin brass was capable of a much better and more complete "finish" than the other. Beside these, the Masury can possessed the three following advantages over the Lignac can: 1. It was almost as easy to make as the simplest form of can; whereas, in the Lignac can the band required additional labor for its preparation and insertion, and the seams could not be soldered by machinery as the seams of the Masury can could be. 2. The brass in the end of the Masury can could be cut in an oblique or vertical direction; whereas, the knife must be applied to the Lignac can in a lateral direction, — a much more difficult process. 3. The Masury can could be opened without waste; whereas, again, from the Lignac can, if full, the contents above the centre of the lead band would escape when the band was cut.

It was in evidence that the Masury can, even when brass was substituted for lead in the band, was opened more easily by cutting out the hard top with hammer and knife than by cutting through the band.

"Although," said the court, "the inventor of the Lignac can had the general idea of enabling a can to be opened by cutting more easily through a softer or a thinner metal, he did not embody his idea in a form which was practically of any substantial utility, and the means he adopted were substantially different from those adopted by the plaintiff."

Another prior invention also was set up, but it was too unlike the plaintiff's to merit description here.

THE STANLEY WORKS *v.* SARGENT & CO., 8 BLATCH. 344.

D. OF CONN., 1871. SHIPMAN, J.

Infringement of a patent for improvement in door or shutter bolts, granted to one William H. Hart, July 4, 1865.

Shipman, J.:—

" . . . The invention . . . consists, as I understand it, in making the barrel in which the bolt slides of one piece of sheet-metal, with prongs passing through holes in the plate, by which it is riveted to the plate itself. The defendants claim that there is no novelty in this device, or at least none worthy of being dignified with the name of invention. They produce two wrought-iron bolts, which, they insist, antedate the invention of Hart. The barrel proper on these bolts produced in evidence by the defendants is short, and to secure firmness and accurate movement of the bolt into the catch-piece or staple, a guide, or short additional barrel, is placed at the end of the plate nearest the catch-piece or staple. But the main barrel and the guide, or short barrel, are both secured to the main plate by flanges riveted to the latter. On the other hand, the barrel on the plaintiff's bolt consists of one long piece of sheet-metal, extending nearly the entire length of the plate, with prongs passing through the latter, by which both are firmly riveted together. No additional short barrel or guide is necessary. To this extent the invention of Hart is clearly new. It is true that the wrought-iron bolts of English manufacture which were in use before Hart's invention had barrels riveted by prongs to the main plate; but in every instance the main barrel was short, or rather it consisted of three short guides or staples, within which the bolt moved, one of them being cut open at the top for the knob of the bolt to pass through as the bolt was advanced or retracted. In these English bolts, therefore, the barrel proper, if it can be so called, consisted of four pieces of metal; and, in addition to these, a fifth piece constituted the guide or short barrel near the forward end of the main plate. They are, therefore, widely different in construction from Hart's invention. . . .

"Utility is not an infallible test of originality. The patent law requires a thing to be new as well as useful, in order to entitle it to the protection of the statute. To be new, in the sense of the act, it must be the product of original thought or inventive skill, and not a mere formal or mechanical change of what was old and well known.

"But the effect produced by a change is often an appropriate, though not a controlling, consideration in determining the character of the

change itself. In this case, the result of what may not improperly be called the new organization of the common door-bolt by Hart, was both considerable and useful. The evidence abundantly shows that the new article to a great extent superseded the old ones in the market. It can be manufactured with less expense. It is certainly a much more neat and compact article than any in prior use.

"An inspection of his new bolt, in contrast with the old ones produced at the hearing, clearly shows, in my judgment, that these advantages resulted from the changes made by Hart and claimed in his specification; and, though this reconstruction of a well-known article shows no very brilliant inventive skill, yet I think it is sufficiently new and original to support the patent."

REEVES *v.* KEYSTONE BRIDGE CO., 5 Fish. 456.

E. D. of Penn., 1872. McKennan, J.

Patent granted to S. J. Reeves, June 17, 1862, for an "improvement in the construction of columns, shafts, braces," &c., of iron bridges. The patentee claimed

"The uniting together three or more pieces of wrought-iron, made with flanges in the direction of their length, so that they shall form a column or shaft, to be used as posts, and also as braces or compressive chords, in the construction of buildings, bridges, piers, or other structures."

The court thus described the invention: —

"The peculiar features of this column are, that it is composed of not less than three longitudinal segments or bars of wrought-iron; that the edges are flanged throughout their whole length; that when they are brought together, the flanges are brought face to face; and the unity of the column is secured by bolts or rivets passing through these flanges at short intervals. . . . A hollow wrought-iron column does not constitute the patentee's invention; but it consists in a hollow shaft, so made as the result of a concentration in its periphery of the metal used in its construction, composed of at least three longitudinal segments of rolled iron, with flanges throughout their whole length, which are to be brought face to face, and through which they are to be fastened by bolts or rivets."

Its advantages were ease and cheapness of manufacture, and strength of resistance.

Prior inventions were set up as follows (quoting again from the opinion): —

1. "The invention is claimed by Linville and Piper, two of the respondents. On Jan. 14, 1862, a patent was granted to J. H. Linville, for an improvement in iron truss-bridges, which is described as partly consisting in a novel construction of the posts of wrought and cast iron. This post is composed of two rolled plates of wrought-iron, semi-octagonal in form, secured by rivets passing through the length of its diameter, or by bands shrunk around it, binding the plates firmly to distance pieces interposed between them at suitable distances to spring them apart at the middle, and terminating in cast-iron bases and capitals.

"In the second claim of his specification, the patentee, therefore, very properly described his post as 'composed of two wrought-iron plates or bars *a a*, distance pieces *b b*, and rivets J J, or their equivalents, and cast-iron bases L L, and capitals O O, the whole combined as herein specified.'

"It must be observed that the specification does not indicate the form of the post as an appropriated or distinctive feature of the invention. The shaft is composed of two rolled-iron bars, but that it must be hollow is an inference merely, from the description. In comparing the invention with others, it must be considered as the product only of the elements, which the patentee has indicated as necessary to give it its distinctive character. While, therefore, it may be constructed upon the principle of expanding the metal from the centre toward the periphery, yet the special mode in which this principle is embodied in it, and is made practically available, constitutes its patentable peculiarity.

"Treating it, then, as the patentee himself does, not as a technical combination, but an organized unit, composed of the enumerated constituents, I think it is essentially distinguishable from the complainant's post. They are alike only in this, that neither is solid, and both are made of rolled-iron plates. In every other material point they are unlike. This dissimilarity consists, first, in the number of pieces of which the column is composed; second, in the use or absence of flanges to these pieces; third, in the mode of uniting or fastening the several pieces of the columns together; and, fourth, in keeping the pieces in a straight line, and therefore parallel to each other, or forming them into curves by swelling the post in the middle. That these differences are essential is apparent from Mr. Linville's specification, in which he describes plates without flanges, their number, the mode of fastening them together, and their being sprung apart at the middle, as com-

ponent, and therefore material, constituents of his organized post. But it is unnecessary to enlarge upon this. Any other hypothesis is inconsistent with the patentee's acts. His patent imports that he was the sole inventor of the post therein described. But in 1865, in conjunction with Mr. Piper, he applied for and obtained a patent nominally for improvements in his post of 1862, but really changing its fundamental organization, and seeking to fix its invention in 1860, and in fact describing and appropriating the distinctive features of Reeves's post, which had been patented three years before," [1] &c.

[1] Here follows, in the opinion, some discussion of the doctrine of abandoned experiment, or invention not prosecuted with diligence, as thus: "It is vigorously urged that although the patent of 1865 to Linville and Piper is subsequent in date to Reeves, the post described in it was invented in 1860, and that they therefore anticipated him. It is in evidence by several witnesses that in 1860 Linville and Piper were engaged together in getting up plans for a proposed railroad bridge over the Schuylkill, near the arsenal at Philadelphia; that sketches of various forms of posts were made, among them those described in the patents of 1862 and 1865; that all the forms thus delineated were rejected, except the one described in the patent of 1862, which was adopted for the construction of the posts in that bridge; that the sketches of the posts described in the patent of 1865 were preserved for a time, but were lost; that no post of that description was made by the patentees until after the date of that patent; and, in fact, that nothing beyond the making of the sketches was done to embody or carry out the alleged invention until the patent was applied for.

"Will these sketches carry back the date of the invention to the time when they were made? . . . A patentee whose patent is assailed upon the ground of want of novelty may show, by sketches and drawings, the date of his inceptive invention; and if he has exercised reasonable diligence in 'perfecting and adapting' it, and applying for his patent, its protection will be carried back to such date; and in a race of diligence between rival inventors, the one who first perfects an invention and embodies it in a distinct form is entitled to priority. But can this be accorded to one who has conceived the idea of an invention, and has sketched it on paper, but has done nothing more in reference to it for a period of five years, as against the patent of an independent though subsequent inventor? Reasonable diligence in 'perfecting and adapting' the invention is essential to the efficacy of such a claim."

The judge then examined and approved the cases of Reed *v.* Cutter, 1 Story, 500; White *v.* Allen, 2 Fish. 440; Gayler *v.* Wilder, 10 How. 477; Parkhurst *v.* Kinsman, 1 Blatch. 494; Sickels *v.* Borden, 3 Blatch. 535; Ellithorpe *v.* Robertson, 2 Fish. 83; Winans *v.* Harlem R. R. Co., 4 Fish. 1; also he referred to Curtis on Patents, § 43, and continued: —

"Numerous other cases affirm the same doctrine, and it must therefore be considered as an established rule that illustrative drawings of conceived ideas do not constitute an invention, and that unless they are followed up by a seasonable observance of the requirements of the patent laws, they can have no effect upon a subsequently granted patent to another. Applying this rule to the present case, the conclusion is unavoidable that Linville and Piper had not 'perfected and adapted' an

2. "The publication of the description and plates in the *Allgemeine Bauzeitung* preceded Reeves's invention. It is a public work, and describes the post illustrated by the accompanying drawing. . . . The post described in this work is *cruciform*. It consists of a flat iron bar, which forms the main part of the column, with two other flat bars at right angles to it, connected by means of peculiarly shaped angle-irons, so that in the centre of the connection a hollow space is formed, which produces an increase of the rigidity of the column, while the section remains which is necessary for carrying the load. Now, it is apparent that the single flat bar is prescribed as the main part of the column relied upon to bear up the weight imposed upon it; that the two other bars are designed to furnish it lateral support; and that the angle-irons, while they serve the purpose of connection, are further auxiliary to it by giving it additional stiffness. . . . Following the description, then, all these bars, or at leas the single one, must necessarily be incorporated in the structure. To omit them would be to discard the part prescribed as necessary to resist the compressive strain upon the column, and therefore to abandon the vital principle of its construction. Indeed, all these constituents must be embodied in it to fulfil the fundamental requirements of the text.

"Now, a column thus constituted is not the column of Reeves. It differs from it in the necessary elements which compose it, and in the

invention in 1860, and that by reason of their subsequent and long-continued remissness they lost any inchoate right they might have had to priority over Reeves."

Next, to show that the experiment of Linville was abandoned as well as incomplete. the court quoted from the evidence of one of the witnesses — *Linville's draughtsman at the time the* drawings were made — as follows: "'Mr. Linville showed and sketched for me different forms of wrought-iron bars in pieces for posts; any number of them, and all shapes. . . . He had two pieces in some posts, and four in others. Finally, he [Linville] rejected all the other pieces except those pieces which we employed at the Schuylkill bridge.'" "And the testimony," continued the judge, "of Linville and Piper is in substantial accord with this. . . . The proofs show, further, that the sketch of the post then rejected, but now in controversy, was lost with other sketches in 1863, and that it was not reproduced until 1865, when steps were taken to obtain a patent. In the mean time, Reeves had invented, 'perfected and adapted,' and obtained a patent for his post, and was engaged in its manufacture and introduction into public use. In *point of fact, then, all that Linville* and Piper did before the date of Reeves's patent, can only be regarded in the light of experiment, which they abandoned, and did not take up again until the lapse of more than two years after his patent was issued.

"Whether the sketches made are to be considered as an incomplete invention, not prosecuted with the required diligence or as an experiment actually abandoned, they cannot impair the right of Reeves to be treated as the first inventor."

principle of its construction and operation. Four angle-bars and at least one flat cross-bar must be incorporated in its structure; while in the Reeves column three flanged bars, without any cross-bar, are required, and as many more as are desired may be employed. The latter is entirely hollow, and must be made so as to conform to the fundamental conditions of its construction. It corporealizes the principle that increase of diameter secures additional power of compressive resistance, and therefore that the metal used in its construction must be thrown out as much as possible from its centre, and concentrated in its periphery. Its resisting power is located exclusively in its circumference. Such a condition is clearly not indicated in the German description of that post. As before stated, the bar which traverses its diameter is an indispensable part, and as it is described as subject to the greatest compressive strain, corresponding strength for resistance must be provided in the diameter of the post. This is a vital diversity, so that the two posts can only be identified by confounding the distinct principles embodied in each of them," &c.

SMITH *v.* FRAZER, 5 FISH. 543.

W. D. OF PENN., 1872. MCKENNAN, J.

Smith & Denniston's patent of Aug. 27, 1867. The claims were: —

"1. The introduction of a stream or flow of water into the crushing-pan of a revolving sand, sand-rock, or sand-stone crusher, to aid the crusher or crushers in disintegrating the rock, and to cleanse and discharge the pulverized sand, substantially," &c.

"2. The rotating and revolving crushing-wheels *b*, in a sand-rock crusher, in combination with a crushing-pan A, provided with a discharge-gate s, and a water supply-pipe *h*, or its equivalent, all constructed and operated substantially," &c.

The court said: —

"By the words of the specification the patentee purposes to employ only the co-operative agency of water, and the patent must, therefore, be construed to claim, not its abstract functions, but the special mode in which, in connection with the mechanical devices described, its power is made available. In this view of the patent, the objection that the claim is for a subject not patentable is clearly unfounded."

The court, however, held that this invention was anticipated by the "Chilian mills," which were for crushing and cleansing gold ores: —

"These mills were constructed with two rotating crushing-wheels, which revolved in a pan provided with a hole in its side to wash the sand and *débris* away, and with a constant stream of water flowing into the pan. There can be no doubt, from the explanation given of their construction and mode of operation, that they are substantially identical with machines embodying the invention claimed by the patentee. It is true that their discharge-gate does not extend to the bottom of the pan, so that the gate was adapted to carry off the water with only the lighter impurities suspended in it. And such was its intended function where the machine was used for crushing and cleansing gold ores, and it was desired to retain the particles of gold in the pan; but where it is desired to discharge the whole contents of the pan, it could be so obviously effected by extending the aperture to the bottom that the change would fall far below the rank of an invention. To conceive and make it would require but a moderate degree of mechanical knowledge. Certainly it would evince no patentable merit, and cannot, therefore, in any of its relations, be treated as within the protection of a patent."

TILGHMAN *v.* MORSE, 9 BLATCH. 421.

S. D. OF N. Y., 1872. BLATCHFORD, J.

Patent granted to Tilghman, Oct. 18, 1870, for an "improvement in cutting and engraving stone, metal, glass," &c. The first claim only was in suit. It ran thus: —

"The cutting, boring, grinding, dressing, engraving, and pulverizing of stone, metal, glass, pottery, wood, and other hard or solid substances, by sand used as a projectile, when the requisite velocity has been artificially given to it by any suitable means."

By "sand" the patentee meant, as he explained in the specification, small particles of any hard substance. In his specification he also described many methods of imparting velocity to the column of sand, among others, the following: —

"The means of propelling the sand which I prefer is by a rapid jet or current of steam, air, water, or other suitable gaseous or liquid medium. . . .

"I have produced some cutting and grinding effects by sand impelled by the force of gravity. . A stream of sand fed into the top of a high, vertical tube at first falls slowly, but after the air in the tube is set in motion the sand gradually falls more rapidly, and can finally acquire velocity sufficient to grind or depolish glass."

The court said: —

" . . . It is set up in defence that it has for many years been customary to deaden or roughen parts of the surface of articles of smooth glass by covering over certain portions with thin sheets of metal, . . . and then subjecting the exposed surface of the glass to the frictional action of some suitable material, produced by such material striking against the exposed portion of the glass. It is not alleged that prior to the invention of the plaintiff a simple stream of falling sand . . . was used to wear away or roughen the exposed portions of glass, but it is alleged that it was always known that any solid or liquid material falling continually on any surface would wear away the latter. . . . There is nothing in all this that touches the plaintiff's invention. His invention consists in the discovery that a stream of sand, driven with sufficient velocity to cause the grains of sand, through their own velocity and momentum, to act as projectiles against the article to be cut or dressed, will do the work effectually, without any vehicle to carry the sand into contact with the article, and without any contact between anything and the article except the sand.

"This view disposes of the apparatus or process described in the provisional specification of John Robinson in England of Dec. 13, 1866, for 'improvements in ornamenting glass.'"

This, in a word, was the application to the glass of a rotating wire brush, fed with emery or with sand and water.

"It is urged," said the court, "that this process of Robinson produces an action and effect very similar to that produced by the defendant in the use of a concentrated stream of granulated material falling or poured on the article to be operated upon, at about right angles to its surface, where there is a greater or less accumulation of the material all the time, and where, during the displacement of the particles, a continuous friction and rubbing on the surface being operated upon is kept up; that the action and effect so produced by the defendant are not similar to what occurs in projecting at a high velocity a very small stream of sand against a surface obliquely; and that the process of Robinson is not a grinding process, but is one in which, by the action of the wires of the brush, the exposed surfaces are deadened or roughened, just as they are deadened or roughened, and not ground away, in

the defendant's process. Whether the process of Robinson was practically of any use is not shown, and is left to conjecture. But even if useful, in its employment the surface of the glass was subjected 'to the action' of the wire brush, and the parts roughened or deadened were put in that condition by being operated upon by the wire brush, as Robinson expressly states. It is true that the brush was 'fed with emery or sand and water.' What part the emery or sand fulfilled is not stated. . . . Robinson states that the emery or sand is capable of roughening or deadening the surface of the glass. But his process, so far as it can be understood, is to rub the emery or sand against the surface of the glass by means of the rotating wire brush. . . . If the rotation of the wire brush would make projectiles of the grains of emery or sand, by a velocity of rotation sufficient to overcome their adhesion, through the water, to the wires of the brush, it would be a pure matter of accident whether those projectiles would strike the glass. It seems probable that the sand and water were fed to the surface of the glass, and that the wire brush was used to scratch the grains of sand against the glass. The description is very vague. Whatever the process was, it would suggest to no one the plaintiff's invention, or the process used by the defendant." [1]

JENKINS *v.* WALKER, 1 HOLMES, 120.

D. OF MASS., 1872. SHEPLEY, J.

The patent was for an elastic packing for joints and valves that are exposed to steam or to hot and corrosive liquids. It was a composition (we quote from the opinion of the court) "containing forty per cent or more of refractory mineral matter, cemented together by vulcanized rubber. The term 'refractory,' as used in the arts, indicates the quality of resisting the action of heat and solvents. In this sense, Paris white, French chalk, and plumbago are refractory."

The defence brought forward a patent to one Newton "for mingling plumbago with hard-rubber compound, to be used in the manufacture of bearings for machinery, in order to prevent attrition or friction. It appears from the evidence in this case that the composition of matter described in the Newton specification, if made in the mode there described, would not have the physical properties of the compound described in the complain-

[1] For another, but absurd, defence set up in this case, *vide post*, p. 298, n.

ant's specification, because the presence of so large a proportion of sulphur, as indicated in the formula of the Newton patent, would render the valves susceptible to the action of the heat and solvents.

"The patenting a material for one purpose does not necessarily invalidate patenting it for another different and not analogous purpose. Newton *v.* Vaucher, 6 Exch. 859." [1]

STUART *v.* SHANTZ, 6 FISH. 35.

E. D. OF PENN., 1872. MCKENNAN, J.

Infringement of a patent granted to Stuart & Wemys, for an "improved guard-plate for stoves," dated May 18, 1868. The chief defence was that this invention had been anticipated by the patent granted to W. L. McDowell, April 28, 1863.

The objects of the Stuart & Wemys guard-plate were, first, to conceal the fire-pot; and, second, to direct downward the heat that radiated from the fire-pot, so that none of the rays of heat should pass upward or horizontally into the room, but all of them should be deflected so as to impinge upon the floor, or upon objects near it. This was accomplished by surrounding the fire-pot with a perforated shield, having above each perforation a projecting roof. These projections concealed the fire-pot from the eye, when they were looked at from any point more than a few feet above the floor, and they deflected the rays of heat.

The McDowell device, on the other hand, was intended to send all the rays of heat *upward*, in order to avoid burning or charring objects which might be near the red-hot cylinder; and it was particularly designed for stoves in railway cars. The result desired was brought about, according to the specification,

"by making the fender of a series of deflectors consisting of short, hollow frustums of cones or other suitable forms of sheet-metal, and arranging them around the outer side of the fire cylinder or box, so as to be supported together upon the said perforated supplementary top plate of the base, leaving sufficient spaces between the said deflectors, and between the latter and the stove, for the hot air to pass obliquely outward and upward from the cylinder or fire-box into the surrounding external air."

[1] *Vide post*, page 381.

It will thus be seen that in both devices the object was to give a new direction to the rays of heat proceeding from the fire-box, and in both devices the method was to place metallic surfaces near the cylinder in such position as to turn the currents of heat in the desired direction. But in one device the direction given was an upward one, with the object of sending the heat away from the vicinity of the cylinder, where it might burn the clothes of persons standing by; and in the other device the direction given was a downward one, with the different object of heating the lower strata of air before heating the other strata. The objects of the two devices were, therefore, essentially different; and it could not be maintained that the method used was the same in each, and that its employment in the later invention was merely the new use of an old device, because the metallic surfaces opposed to the rays of heat in the second device were, both in shape and in arrangement, different from those of the first device. The court so held, remarking: —

"Constructed, therefore, upon different theories, and intended for the production of different primary results, and with peculiar mechanical adaptations, the inventions in question fall into distinct categories, and so are distinguishable in form, design, and mode of operation from each other."

WOODWARD *v.* MORRISON, 1 HOLMES, 124.

D. OF MASS., 1872. SHEPLEY, J.

Woodward's patent of Feb. 20, 1866, for an improved bookbinder's paste.

Ordinary bookbinder's paste is made of wheat-flour and water. The albuminous or nitrogenous constituents of the flour have a tendency to putrefy, and their putrefaction causes fermentation of the non-nitrogenous constituents. The paste, therefore, will not keep. The plaintiff's invention was designed to overcome this tendency, and to render flour-paste a standard article of commerce. This was accomplished by making the paste of the following ingredients: Flour, two pounds; chloride of sodium, one ounce; alum, one-quarter ounce; bichloride of mercury, six grains. This small quantity of bichloride of mercury (corrosive sublimate) preserved the paste from decomposition, and its ex-

tremely poisonous character was neutralized by the gluten of the flour, so that the patentee's paste was not liable to putrefy or to ferment, and yet it was not poisonous. The chloride of sodium assisted the composition, though the evidence as to the manner and the extent of its assistance was conflicting.

The defence was want of novelty. It was proved that every ingredient of the patented composition had been used in paste, separately, and all the ingredients, except salt, in combination, but not in the same proportions or for the same object. In 1847 one Turner had employed corrosive sublimate mixed with alum and water in a paste used to affix paper labels to wooden boxes containing pills manufactured to be sold in the South; but this paste Turner purposely made poisonous by using a comparatively large quantity of corrosive sublimate, in order to prevent insects from destroying the boxes and their contents. So, also, one of the respondents had used corrosive sublimate, with a similar intention, in paste put between layers of leather pasted together for heels and stiffenings. And in "Cooley's Cyclopedia of Practical Receipts," London, 1856, p. 938, it is stated that the addition of a few drops of corrosive sublimate to paste will prevent insects from attacking it, and will preserve it in covered vessels for years; and again, at page 216: "the addition of a few grains of corrosive sublimate or a few drops of creosote will prevent it turning mouldy, and is said to preserve it for years."

The court remarked as follows: —

"... What, then, remained to be discovered in the art of making a prepared paste as a standard article of commerce? It was known that corrosive sublimate and other poisonous substances might be used for the purpose of arresting or preventing spontaneous decomposition of the paste, and also for preventing the attacks of vermin or insects on the paste. It does not appear to have been known that paste could be preserved by means of these substances without making a corrosive and poisonous composition, unsafe to handle and, to a certain extent, unfit to use. The desired result which remained to be attained was to arrest the fermentation and prevent the spontaneous decomposition, and consequent great waste of the paste, without making a composition corrosive or poisonous. The complainant ... did not discover that the poisonous qualities of corrosive sublimate were neutralized by albumen, but he does appear first to have discovered that, by the use of a quantity of corrosive sublimate so small that its poisonous qualities were neutralized by the albuminous bodies in the flour, a comparatively

large quantity of paste could be preserved from putrefactive decomposition. . . ."

The court go on to notice the discovery of the complainant, stated above, that the addition of chloride of sodium (or of some other salt soluble in the aqueous solution of corrosive sublimate, or in the same solution in which that is soluble) improved the composition. Patent sustained.

RENWICK *v.* POND, 10 BLATCH. 39.

S. D. OF N. Y., 1872. BLATCHFORD, J.

Patent reissued to W. C. Hicks, March 1, 1870, for improvement in breech-loading fire-arms.

Blatchford, J.: —

". . . There can be no doubt on the evidence that Hicks was the first person who devised a practical mechanism for certainly withdrawing a loaded cartridge from its chamber, in a breech-loading fire-arm, under all conditions, as well when its rim or flange has not been expanded by the blow of a striking instrument as when it has been so expanded, by effecting such withdrawal through the engagement, within the periphery of such chamber, of a hook, actuated automatically, with a metallic flange forming part of the cartridge. In devising such mechanism he made an important invention. Sometimes it is desired to withdraw the loaded cartridge without attempting to fire it. Before the invention of Hicks, the only certain means of doing so was to insert a rammer in the muzzle of the barrel of the fire-arm, and push the cartridge out through the breech end. This was dangerous, because liable to cause the cartridge to explode by striking its fulminate end against the breech-closing piece. The mechanism described in the patent issued to Horace Smith and Daniel B. Wesson, Feb. 14, 1854, and reissued to them Oct. 10, 1854, would withdraw the cartridge only after its rim had been forced by expansion, caused through the blow of the striking instrument, to engage with recesses provided to receive it, and would not withdraw a loaded cartridge before any attempt had been made to fire it."

Later on the court say: —

"Claiming the arrangement of a combination, when the arrangement is such as to produce a given mechanical result of the combination, is

not a claim to a function. The result is not claimed irrespective of the means producing it. The means alone are claimed, and claimed only when specially arranged to produce a given result. This is very far from claiming a function."

CLARK *v.* SCOTT, 9 BLATCH. 301.

S. D. OF N. Y., 1872. BLATCHFORD, J.

Infringement of a patent granted to Dudley and Clark, July 27, 1869, for an "improved hand-mirror."

Before this invention, the glass of a hand-mirror was imbedded in a wooden frame, the end or extension of which was fashioned into a handle. Such mirrors were defective in two ways: there was "a want of strength, especially at the neck, or junction of the handle with the body," and worse, the glass was liable to be fractured by the twisting or warping of the wooden holder. The patentees remedied these defects by first placing the glass in a cheap, thin frame of wood, and then imbedding it in a cement, which formed the back, edge, and outside handle of the mirror. The patentees claimed the use of any cement for the purpose, and they described and recommended a particular cement.

When the plaintiffs applied for this patent they also applied for a patent claiming a brush-handle made in the same way as the mirror. But this application was rejected, on the ground of an existing patent for the same thing, namely, that of Parsons & Scott, assignees of Estabrook, granted June 19, 1866. The defendants contended that the invention of Parsons & Scott anticipated the plaintiffs' mirror as well as their brush. But the court remarked upon it as follows: —

"It [the Parsons & Scott patent] describes a brush in which the bristles, inserted through a perforated plate, are imbedded and held firmly in a suitable cement, which cement, at the same time, in combination with the plate and an extension of the plate into the handle, forms the back and handle of the brush. As a structure, such brush was not substantially the same thing as the hand-mirror of Dudley. The Patent Office so decided, necessarily, in granting the patent for Dudley's mirror, and the decision was proper. The removal from Estabrook's brush of the plate and bristles removes also the extension of the plate, which forms the strengthening piece in the handle, and if

a mirror were inserted in lieu of the plate and bristles, the article would be without a strengthening piece. The cutting off of the bristles would leave no cavity for the glass.

"The specifications of the Parsons & Scott patent gives [*sic*] no suggestion as to how to construct a mirror like Dudley's. . . . Where the glass in a hand-mirror is mounted in a wooden frame, it is liable to be broken by the warping of the wood; and in the mirror of Dudley there is no liability to warp in the frame, and no danger of the fracture of the glass from such cause. . . . This point of advantage in the mirror does not exist in the brush. Consequently there is a special function exerted by the mirror-back in protecting the glass from fracture through the warping of the frame which is not exerted by the brush-back." And he concluded by saying that this result or function "constituted sufficient invention to support a patent for the mirror, even though a brush with a like back and handle had existed before. Whether, if the mirror had existed before, a patent for a brush with a like back and handle could be sustained, and whether, the Dudley mirror being patented, a patent for the Dudley brush could be sustained, are questions which do not here arise. The Dudley mirror has been patented. The Dudley brush has not been patented."

MURPHY *v.* EASTMAN, 1 HOLMES, 113.

D. OF MASS., 1872, SHEPLEY, J.

McLaughlin's patent of Jan. 11, 1870, for an improved brush. The invention was an *improvement* in brush-heads, designed to prevent the breaking of glass, or the scratching of wood surfaces by the brush-head. It consisted in making a groove around the brush-head near the bristles, and putting in the groove a rubber ring in the form of a parallelogram, "so that the ring fitting into the groove, or furrow, which had a sharp angle in it, presented a sharp angle outward." Devices alleged to anticipate this invention were thus disposed of by the court:—

"Monzani's patent was merely for covering with vulcanized rubber those parts of brushes or brooms which in their use are liable to be struck against places or things which are to be dusted or cleaned thereby. . . . Crittenden's specification described the same thing substantially as Monzani's. . . . There is nothing in these patents or rejected applications to invalidate the McLaughlin patent. . . . Re-

spondents also offer evidence tending to show that, prior to the date of the McLaughlin invention they made, in the fall of 1867, *first*, a brush with a block or head, with a projecting shoulder, by which a square vulcanized rubber band was attached upon the block for the purpose of keeping the head of the brush from injuring the wood-work; *second*, a similar brush, with a circular groove and a round band; and, *third*, a brush with a cork block or head inserted in a tin cover. Around the edges of this cover was a projecting shoulder, and round the edge of this cover, and held in place by this shoulder, a square vulcanized india-rubber band. Brushes made in the similitude of these three forms of brushes are put into the case. No brush made in either of these forms, before the date of McLaughlin's invention, is produced in evidence, and there is no reason, from the testimony, to believe that any one is in existence. The testimony is conflicting as to their form and structure; but it leaves no doubt in the mind of the court, that, whatever they were, and whenever and howsoever constructed, they were mere experiments. They were never put upon the market, they never came into practical use, they were never sold, they were not even thought worthy of preservation, and cannot now be found. Such brushes, if previously constructed in the form contended for by respondents, as experiments, and never made public or brought to the knowledge of McLaughlin, and ultimately abandoned and lost, could be no obstacle to his right to take out a patent."

There was another suit upon this patent, namely, Murphy *v.* Kissling, 1 Holmes, 432, also decided by Judge Shepley, who said: —

"The defendants also set up, as anticipating the invention of McLaughlin, a door-step," . . . having "an angular groove in it, with a rubber ring fitting therein in the same manner as in the brush-head in the McLaughlin invention. It was not new at the date of the McLaughlin invention to put a rubber ring into an angular groove. What was new was his combination of a brush-head with an angular groove and a rubber ring fitting therein, whereby the elements of the combination operated together and jointly in the function of the brush."

PLATT *v.* UNITED STATES PATENT BUTTON, RIVET, NEEDLE, AND MACHINE MANUFACTURING CO., 9 BLATCH. 342.

S. D. OF N. Y., 1872. BLATCHFORD, J.

Infringement of a patent granted to Platt, July 10, 1866, for improvement in buttons. The claim was: —

"The button, formed of a single piece of metal, with the edge turned over, and with one central hole, as a new article of manufacture, as specified."

The specification stated that the button was fastened by a rivet or eyelet passing through the button and the garment.

Before this invention, buttons fastened in the same way were made "by uniting two thicknesses of metal at the edges, with a piece of paper between them." This article was too costly. They were also made of one piece of sheet-metal; but such buttons were objectionable on account of the sharpness of their edges. The edge of the plaintiff's button was thickened by being turned over on itself. It therefore avoided the defect in each of the old kinds of button, and it was a valuable improvement.

The defence set up prior inventions, which are described only in the following remarks of the court: —

"Some of the prior buttons contain one or two of the three features of the plaintiff's button, but all of such features are not found combined in any one of the prior buttons. Those features are, the single thickness of metal, — its edge folded over on its body, — the central hole, capable of being used for a single rivet or eyelet to fasten the button to the garment. Thus, the Rose button has the single piece of metal and the folded edge, but no central hole. In the Jamison button, the edge is not folded over upon the body of the single piece of metal. . . . The Fay button is not made of metal. The Smith button is not made of a single piece of metal. . . . Nor is the plaintiff's button anticipated by a button made of a single piece of metal with its edge folded over on the body of the metal, and with two, or three, or four holes, so as to be attached to a garment by sewing, or by a button made of more than one piece of metal, in which the edge of one of the pieces of metal is folded over upon the other parts, which make up the thickness of the button, and not upon itself."

Patent sustained.

RUMFORD CHEMICAL WORKS *v.* LAUER, 10 BLATCH. 122.

S. D. OF N. Y., 1872. BLATCHFORD, J.

Patent originally granted to E. N. Horsford, reissued to the plaintiffs, June 9, 1868. The third claim: "I claim the mixing in the preparation of farinaceous food, with flour, of a powder or powders, such as described, consisting of ingredients of which phosphoric acid, or acid phosphates and alkaline carbonates, are the active agents, for the purpose of liberating carbonic acid, as described, when subjected to moisture."

This claim, the court held, was anticipated by the patent of John Fowler, dated May 1, 1849, for an invention which consisted

[1] "in the adding to a certain weight of flour such quantities of alkaline and acids, sugar and salt, as shall, by the addition of water only, enable such prepared flour to be manufactured into bread, &c., without the use of fermenting matter.

"The specification then describes a mode of making the prepared flour, by first mixing with one hundred weight of dry flour ten and a half ounces of fine, dry, tartaric acid, and then, after two or three days, mixing with the flour and acid twelve ounces of bicarbonate of soda, or fourteen ounces of bicarbonate of potassa, in fine powder, twenty ounces of muriate of soda (common salt), and eight ounces of loaf sugar, in fine powder. The specification adds: 'The quantities of acids and alkalies may have to be slightly varied, according to their quality; but the point to be attained is the neutralization of both. My prepared flour, when used to make bread, biscuits, or other like food, only requires to be made into dough with cold water, in the proportion of ten ounces of water to one pound of flour for bread, and about six ounces to one pound of flour for biscuits, and baked at once in a well-heated oven. I do not claim mixing acid and alkali with flour as a substitute for yeast, nor do I claim mixing one of these ingredients with flour in the dry state, when the other is dissolved for making bread.' The claim is this: 'Mixing both the acid and alkali with the flour in the dry state, sugar and salt being added or not, at will, substantially in the manner and for the purpose herein set forth, as a new article of manufacture.'

"In view of the Fowler patent, it is impossible to see any patentable novelty in the third claim of the plaintiffs' patent. The prepared flour

[1] By the court.

made with the ingredients named in said claim contains the phosphoric acid, or the acid phosphate, as a mere equivalent for the tartaric acid of Fowler's prepared flour; as much so as a screw or a lever is a mechanical equivalent for a pulley. Any pulverulent acid, capable, on the application of heat or moisture, of liberating carbonic acid to make the dough porous, is, in the prepared flour, the equivalent of any other pulverulent acid having the like capacity, so far as regards such prepared flour, before heat or moisture is applied. Everything of substantive, patentable invention, in regard to prepared flour as composed of an acid in dry powder, and an alkaline carbonate in dry powder, mixed with dry flour, is found in the patent of Fowler. Especially is this so in regard to the plaintiffs' patent, in view of the fact that the specification of that patent discloses no mode of practically mixing the ingredients composing the self-raising flour, but merely states that the acid 'may be mixed with flour and bicarbonate of soda,' as a substitute for cream tartar and tartaric acid 'in the practical preparation of self-raising flour.'"

The rest of the case is not sufficiently important to require our attention. For the different opinion in regard to chemical equivalents, expressed by Judge Nixon in the later case of the same plaintiff *v.* Hecker (10 O. G. p. 291), see *ante*, page 66.

DECKER *v.* GROTE, 10 BLATCH. 331.

S. D. OF N. Y., 1872. BLATCHFORD, J.

Infringement of a patent for "improvement in cushions for billiard tables," granted to Levi Decker, Dec. 18, 1866, and reissued March 19, 1869.

The cushion sloped inward, that is, its upper edge was nearer than its lower edge to the centre of the table, and the ball therefore struck against the upper edge, where only it came in contact with the cushion. At this point of contact the patentee fastened upon and partly in the cushion a narrow cord of catgut, or like material, which ran longitudinally around the cushion. The ball, therefore, struck against the cord, and not against the cushion. This device had several advantages. It made the cushion stiff, so that it would not give way, and thus let the ball ride over it; it obviated much friction, the contact-surface of ball and cushion being restricted; it made the course of the ball,

after striking, more true; it concentrated, so to say, the elasticity of the cushion (made of rubber), and also saved it from wear. The invention, therefore, was of great utility, and it went into general use.

Several prior inventions were set up in defence. First, the invention of Carpenter. Carpenter's application for a patent was rejected, April 10, 1858, on the ground that his invention was anticipated by a patent granted to the plaintiff, December, 1857. Carpenter's device was a wire of "whalebone, steel, brass, or other elastic material suitable for the purpose," placed in a groove running along the upper edge of the cushion, *above* the point of contact of ball and cushion. The object was thus stated: —

"When the ball advances with considerable force, and is imbedded into rubber, the whalebone or wire is lifted, the ball acting as a wedge, and from the natural tendency of the wire to resume its former position, it hugs the ball firmly upon the table, which allows the rubber to repel the ball without hopping or jumping."

This device differed essentially from the plaintiff's, inasmuch as it did not present any surface, other than that of the cushion, for the ball to strike against; and, therefore, unlike the plaintiff's invention, it did not possess the advantages of elasticity imparted to the cushion, saving of wear and tear, and directness of rebound given to the ball. Its only merit in common with the plaintiff's invention was that it kept the ball on the table, and this it accomplished in a different way, namely, by pressing it down after it had hopped, instead of presenting a surface which obviated the hop. The court, therefore, held that Carpenter's device did not anticipate the plaintiff's; and they held the same in regard to the patent of John Lyncher, granted Nov. 10, 1863, which Judge Blatchford thus described: —

"Lyncher uses thin strips of horn, cut spirally, in connection with hard or soft rubber, to form a cushion. The strip of horn is used as a facing to the rubber pad, or is inserted into a long slit cut into the pad, and made fast therein by rubber cement. The grain of the horn, in the spiral strip, runs crosswise of the strip, so that when the ball strikes the cushion the spring action of the horn, although crosswise of the strip, is with the grain, and not crosswise of the grain. When the strip is inserted in the pad, it is shown as extending downward from the upper exterior corner of the pad, in a slanting direction away from the face of the

pad. A facing to the pad presents nothing in common with the plaintiff's invention. In the case of the inserted strip of Lyncher, the action of the cushion, under the impact of the ball, is different from what it is in the plaintiff's arrangement. The cushion does not yield in substantially a horizontal direction, because of the interposition of the strip of horn. For the same reason the resilience of the rubber is not returned to the ball in substantially a horizontal direction.

"By inserting the strip, Lyncher destroys the homogeneous character of the cushion. The plaintiff preserves the homogeneous character of the cushion. From this difference results the different action of the two cushions under the impact of the ball and in response thereto. It follows that nothing in Lyncher's arrangement anticipated the plaintiff's invention."

In a subsequent case,

DECKER *v.* GRIFFITH, 13 BLATCH. 187,

E. D. OF N. Y., 1875. BLATCHFORD, J.,

additional devices alleged to anticipate the plaintiff's device were set up as follows: First, a patent granted to William K. Winant, Aug. 10, 1858.

"The specification of that patent sets forth," said the court, "that the invention of Winant 'consists in the introduction of a strip of spring-steel (or equivalent material) into a crease or groove cut in the upper face of the rubber, near the angle thereof, in such a manner that said steel is protected from injury by the rubber which thus intervenes between the steel and the ball, and the cushion is rendered sufficiently firm to prevent the ball imbedding and injuring the correctness of the angle of deflection; and beside this, the strip is so narrow as not to be injured by the concussion, and is retained in place without requiring any attachment by screws, cement, or otherwise.' . . . There is one feature in this patent of Winant's which is unlike the arrangement of Decker. Winant describes his strip of steel as merely lying in the crease or groove cut in the rubber, and as being kept in place without being attached by screws, cement, or otherwise; whereas Decker describes his cord as being moulded or imbedded entirely within the rubber. The patent of Winant was considered, and very properly, by the Patent Office, when Decker's patent was reissued, as not having anticipated Decker's claim in his reissue. It is shown by the evidence of Daniel D. Winant, the brother of William K. Winant, that, prior to 1864, he made many billiard tables constructed in accordance with the

Winant patent, but with the added feature of an arrangement for tying down the steel strip to the cushion by means of holes in the lower edge of the strip, and wires put through them and fastened to the under side of the rail, to keep the strip in place in the rubber. In that arrangement, the steel strip was incorporated in the structure, so as to be incapable of dislodgment, quite as effectually as if moulded or imbedded entirely within the rubber, as suggested in Decker's specification. It stiffened the angle or corner of the cushion, and prevented its yielding under the impact of the ball, and allowing the ball to pass over it. . . .

"It is also shown that one Stevens, in Boston, prior to 1864, made india-rubber cushions for billiard tables, which had a French clock-spring placed in a slit cut in the upper face of the rubber, parallel to and near the inner face of the rubber, bringing the upper edge of the spring near the upper corner of the rubber. The spring was cemented into the slit, and cloth was glued or cemented over the slit. The spring was thus imbedded entirely within the rubber. . . . As to the defendants' arrangement with the round wire imbedded in the rubber, it required no invention to substitute in the Stevens arrangement a round wire for the steel strip. If the plaintiff's reissued patent can, in view of the Winant and Stevens arrangements, above described, be upheld at all, because it is made to cover a cord imbedded entirely within the rubber, and is not limited, as his original patent was, to a cord applied outside of the upper corner of the cushion, it certainly cannot be extended to cover arrangements which are substantially the same as the Winant and Stevens arrangements.

"The bill must be dismissed with costs."

ROBERTSON *v.* SECOMBE MANUFACTURING CO., 10 BLATCH. 481.

S. D. OF N. Y., 1873. BLATCHFORD, J.

Robertson's reissued patent, dated Dec. 12, 1871, for an "improvement in hand-stamps."

Head-note: "Robertson's invention, by which a permanent type-form is combined with a handle, and with type-wheels, so arranged as to be capable of making as many impressions as may be desired, is not anticipated by a combination of type-wheels for numbering with a fixed type-form for dating and printing, but which, having no handle, is incapable of use as a hand-stamp, and which requires the materials to be pressed down upon it from above.

"Nor by a combination of type-wheels for numbering (requiring the change of one or more type-wheels at every stroke), combined with type-forms for dating and printing."

This patent was again sustained in Robertson *v.* Garrett, 10 Blatch. 490.

TILLOTSON *v.* MUNSON, 5 Biss. 426.

N. D. of Ill., 1873. Blodgett, J.

Infringement of a patent for an improved filter-well, reissued to Tillotson & Tillotson, Oct. 25, 1870. The claim ran as follows:—

"In its application as a buried water reservoir, in the bottom of a well, the filter consisting of a perforated cylinder or cylinders, the central space forming a chamber into which the water is filtered, and from which the water supply is drawn by an ordinary elevating device, as described."

The filter consisted of two cylinders, one enclosing the other, and both closed at top and bottom. The water from the well or earth passed through the perforations of the outer cylinder into the space between it and the inner cylinder, this space being filled with charcoal or other filtering substance, and thence the water passed through similar perforations into the inner cylinder, whence it was drawn up by a pipe and pump. In addition, another cylinder might be used, enclosing the outer of the two cylinders already described, having similar perforations, and filled with coarse sand, to act as a preliminary filter. In the original patent, more than one filtering space was required; in the reissued patent, but one. When the filter was placed in the bottom of the well, it might be buried and the well filled up, "if desired," so that the pipe would form its only communication with the surface.

The novelty of the patent was attacked. It was shown that one Bartlett, to whom a patent was granted Feb. 19, 1856, invented a reservoir which was buried, so to say, at the bottom of a well, so that the only means of drawing up the water was the pump-pipe, and an additional air-pipe, which, the inventor supposed, was necessary to make the pump work. And some

provision was made for surrounding this reservoir with filtering material. Further, in a patent of March 28, 1865, to one Andries, is described a filter having "concentric casings of perforated metal around a water chamber, and the spaces between those casings filled with gravel, charcoal, and other filtering material." This patent is essentially like the complainants', except that it calls for more than one filtering space, which, as we have seen, was also a requirement of the complainants' original patent. The court, therefore, held, in effect, that all the complainants had done was to bury Andries's filter according to Bartlett's method, and that such substitution of the Andries filter for the less efficient filter used by Bartlett was not patentable.

The counsel for the complainants contended that there was a new feature in their filter, inasmuch as, the filter being buried, the atmospheric pressure upon the water in the earth was utilized to drive the water through the filter whenever a vacuum was created in the water-chamber, by pumping the water therefrom. But, said the court, all drive-wells operate upon this principle; and, moreover,

"the aid of atmospheric pressure is invoked by the Andries filter, when used in an open well surrounded by water. The moment the action of the pump exhausts the water from the water-chamber, the pressure of the atmosphere helps to drive the surrounding water through the filter into the chamber to fill the vacuum."

THE LYMAN VENTILATING & REFRIGERATOR CO. *v.* LALOR, 12 Blatch. 303.

S. D. of N. Y., 1874. Blatchford, J.

Patent reissued to Stephen Cutter, March 10, 1874, for an "improvement in methods of cooling and ventilating rooms," the original patent having issued March 26, 1856. The first claim was:—

"The combination of a descending conduit, or cold-air flue, or either, with a reservoir for containing cooling materials, substantially in the manner and for the purposes described."

The method was as follows: An upright box, having openings at the top and at the bottom (or near it), is divided by a hori-

zontal grate into two compartments. Upon the grate rests the ice or other cooling material. The drippings from the melting ice fall into a trough or lip at the bottom of the lower compartment, whence they are carried away. The air of the room coming in contact with the ice in the upper compartment is condensed. It loses its moisture, and (cold air being heavier than warm air) it falls through the grating into the lower compartment, whence, through the opening or openings near the bottom, it passes out into the room again, and, spreading over the floor, it displaces the warmer, moist air, which is forced to the top of the room, and itself enters the ice-box, to be condensed and cooled. Thus, a constant circulation of air over the ice is kept up.

"On the question of novelty," said the court, "the defence sets up a refrigerator built by Mace & Healy, in February, 1851, for one Van Arsdale, in the house No. 31 East Twenty-first Street, in the city of New York, as a part of the house, where it still is. The ice is placed in an ice-chamber in the upper part of the refrigerator. The bottom of the ice-chamber is slatted, so that the cooled air and the drip of water can pass down between the slats. Underneath these slats is a solid drip-roof of zinc, sloping each way from the centre, and terminating on each side a very short distance from the side of the refrigerating chamber, the edges of the roof being turned down. The water runs down the roof and over these edges, and then falls down to the bottom through narrow, vertical spaces, formed on each side by sheets of metal running down parallel to the sides of the chamber, just within the overhang of the turned-down edges of the drip-roof, and running down nearly to the bottom of the chamber. It is claimed that these narrow, vertical spaces act as conduits, not merely for the water, but for the cooled air, and that the latter can pass under the lower edges of the sheet of metal into the chamber. It is also claimed that there are openings between the upper edges of these sheets of metal and the overhangs of the drip-roof, though this is disputed. Now, it is very plain that this structure does not embody what is covered by the first claim of the plaintiff's patent, as above defined. There is a reservoir for containing ice, combined with a descending conduit, and it may be that a small proportion of cooled air will, at some time in the operation of the apparatus, find its way down the narrow, vertical spaces and out into the chamber. But none of it, or of any other part of the air in the chamber, will find its way again into the ice-reservoir, whether there be or be not openings over the tops of the vertical partition sheets of metal. There is no such circulation of air as there is in the plain-

tiff's structure. The Van Arsdale refrigerator does its work by conduction, by the contact of the air in the chamber with the cooled metallic drip-roof, and the cooled metallic vertical partitions, and not upon the principle of the plaintiff's structure."

The next invention alleged to anticipate the plaintiff's was a movable refrigerator, called the Harpel refrigerator. The court held that the prior existence of this was not proved. Several other inventions were set up, but either their priority or their success was in doubt. All of them cooled the air, or the substance to be preserved, by conduction, instead of circulation, as was the case in the plaintiff's invention. The evidence in regard to them is reported at length, but none of them came so near the plaintiff's invention as the Van Arsdale refrigerator, described above.

The first claim of a reissue of 1871 was also sustained in two other suits, — one before Judge Hall, in the Northern District of New York, in March, 1872 (Lyman *v.* Myers); and the other before Judge Benedict, in the Eastern District of New York, in January, 1874 (The Lyman Patent Refrigerator Co. *v.* Oswald). In both of these suits, as in the present suit, the patent was sustained against the alleged prior invention of Thaddeus Fairbanks, a patent for which was applied for Sept. 5, 1846. The application was rejected Feb. 6, 1847, and withdrawn July 27, 1847. A patent was granted Aug. 12, 1856, the invention having been assigned by Fairbanks to one Schooley for five dollars. Nothing was done by Fairbanks with invention or patent between 1847 and 1856. Judge Blatchford held that the application was not a "prior publication." His remarks upon this point are quoted at page 719, *post*.

Judge Blatchford's construction of the patent was adopted by Shepley, J., in

THE LYMAN VENTILATING & REFRIGERATOR CO. *v.* CHAMBERLAIN, 10 O. G. 588,

D. OF MASS., 1876,

where also was reiterated the doctrine that a withdrawn and abandoned application does not afford sufficient evidence of an invention to defeat a subsequent patent.[1]

[1] *Vide post*, page 627.

FRINK *v.* PETRY, 5 O. G. 201.[1]

S. D. OF N. Y., 1874. BLATCHFORD, J.

Frink's patent for reflectors, reissued in two divisions, Feb. 8, 1870, numbered respectively 3826 and 3827. The report is very long and full of detail. We quote from the head-notes, slightly transposing them. Like most of those in the Patent Office Gazette; they are clear and accurate.

"The plaintiff's patent was for a reflector, of which the principal features were a metallic surface, above the source of light, reflecting the light downward below its source; and a glass surface in sections under the other, serving as a lining to it, and aiding in reflecting the light, with a space between the two surfaces for the circulation of air and ventilation.

"Prior to the plaintiff's invention, one Boyle had obtained an English patent for a reflector, in which the reflecting surface consisted of silvered glass in sections, arranged in several series around the light, one series above another, and diminishing in circumference upward, and all contained in a wire or metal frame.

"As it had no upper reflecting surface, it was held to be no anticipation of the plaintiff's first claim, which was, in substance, for a reflector having a reflecting surface of glass, in combination with another reflecting surface placed above the first, with a space between the two for air, &c.

"The employment of a glass lining over the reflecting surface of a known reflector is patentable, since it protects the surface, and increases the reflected light."

DALTON *v.* JENNINGS, 12 BLATCH. 96.

S. D. OF N. Y., 1874. BLATCHFORD, J.

Infringement of a patent for "improvement in ladies' hair-nets."

The improvement, viewed in relation to a net formerly in use, was simply the substitution of a coarse thread for every alternate fine thread, in both directions.

Blatchford, J., held that this might be patentable as a design, but not as a manufacture, its only possible superiority to the old net consisting in its appearance.

[1] Also 11 Blatch. 422.

On appeal to the Supreme Court (93 U. S. 271) this decision was affirmed, the court saying, *obiter*, that, if new, the improvement was not patentable, and holding that it had been anticipated by various prior inventions; namely, a piece of lace, a tidy, a mosquito bar, a hair-net, — in all of which the interstices of the threads or cords were traversed, diagonally or otherwise, by finer threads or cords; "in each case," said the court, "the precise arrangement described in the plaintiff's patent."

THE WOOD-PAPER PATENT, 23 WALL. 566 (1874).

Improvements in the manufacture of paper. Of the several patents sued on in this case, we have to consider only reissue No. 1448, granted to Watt & Burgess, April 7, 1863, for a paper-pulp made from wood. It was held invalid, on the ground that it described an article improved indeed, as compared with its predecessors, but not patentably different from them.

In making paper-pulp, the object is to extract cellulose from the vegetable substances that contain it. It exists in straw and in wood, but in them it is mixed with what is called "intercellular matter." Before the invention of Watt & Burgess, cellulose was extracted from wood and straw only by the use of both mechanical and chemical processes; whereas Watt & Burgess, or the other inventor whose patent (assigned to them) we are presently to notice, extracted pure cellulose by chemical means alone. This cellulose, however, was not substantially different from that produced in the old way.

The court, through Mr. Justice Strong, remarked as follows:[1] —

"Though the two reissued patents (Nos. 1448 and 1449) were granted on the same day and to the same patentees, and though they are both substitutes for the one original patent granted July 18, 1854, antedated Aug. 19, 1853, they are to be carefully distinguished one from the other. The first (No. 1448) is a patent for a product or a manufacture, and not for any process by which the product may be obtained. The second (No. 1449) is for a process, and not for its

[1] No facts bearing upon the point stated other than those contained in the quotation here made are given in the report.

product. It is quite obvious that a manufacture, or a product of a process, may be no novelty, while, at the same time, the process or agency by which it is produced may be both new and useful, — a great improvement on any previously known process, and, therefore, patentable as such. And it is equally clear, in cases of chemical inventions, that when, as in the present case, the manufacture claimed as novel is not a new composition of matter, but an extract obtained by the decomposition or disintegration of material substances, it cannot be of importance from what it has been extracted.

"There are many things well known and valuable in medicine or in the arts which may be extracted from divers substances. But the extract is the same, no matter from what it has been taken. A process to obtain it from a subject from which it has never been taken may be the creature of invention, but the thing itself, when obtained, cannot be called a new manufacture. It may have been in existence and in common use before the new means of obtaining it was invented, and possibly before it was known that it could be extracted from the subject to which the new process is applied. Thus, if one should discover a mode or contrive a process by which prussic acid could be obtained from a subject in which it is not now known to exist, he might have a patent for his process, but not for prussic acid. If, then, the Watt & Burgess patent for a product is sustainable, it must be because the product claimed, namely, 'a pulp suitable for the manufacture of paper, made from wood or other vegetable substances,' was unknown prior to their alleged invention. But we think it is shown satisfactorily that it had been produced and used in the manufacture of paper long before 1853, the year in which the original patent of Watt & Burgess was dated.

"It is insisted, however, that the paper-pulp which had been produced before the invention of Watt & Burgess was not pure cellulose, that it was only approximately pure; and from this it is argued that the pure article obtained from wood by their process is a different and new product or manufacture. Whether a slight difference in the degree of purity of an article produced by several processes justifies denominating the products different manufactures, so that different patents may be obtained for each, may well be doubted, and it is not necessary to decide. The product of the complainant's patent is a pulp suitable for the manufacture of paper, and, confessedly, to make white paper it requires bleaching. The pulp which had been obtained by others from rags in large quantities, and from straw, wood, and other vegetable substances to a lesser extent, was undeniably also cellulose, suitable for manufacturing paper, and, so far as appears, equally suitable. The substance of the products, therefore, was the same, and so were their

uses. The design and the end of their production was the same, no matter how or from what they were produced.[1]

"It is freely admitted that the patent of an originator of a complete and successful invention cannot be avoided by proof of any number of incomplete and imperfect experiments made by others at an earlier date. This is true, though the experimenters may have had the idea of the invention, and may have made partially successful efforts to embody it in a practical form. And though this doctrine has been more frequently asserted when patents for machines have been under consideration, we see no reason why it should not be applied in cases arising upon patents for chemical products. But the doctrine has no applicability to the present case. What had been done before the Watt & Burgess invention was more than partially successful experimenting. A product or a manufacture had been obtained and had been used in the arts, — a manufacture which was the same in kind and in substance, and fitted for the same uses, as the article of which the complainants now claim a monopoly. That this manufacture may have been the product of one or more different processes is, as we have said, quite immaterial in considering the question whether it is the same as that produced by the complainants.

"It has been, however, argued that the product of the complainant's process and the product claimed as a new manufacture is cellulose, of the proper consistency and dimensions, and with a fibre of proper length for immediate felting into paper, while the cellulose obtained from rags or wood, or other vegetable substances, by other processes than that of the Watt & Burgess patent, had a longer fibre, and required, in addition to chemical agency, mechanical treatment to prepare it for use in paper-making. Hence it is inferred the product is a different one; that it is properly denominated a new manufacture, and that it was patentable as such.

"This argument rests upon a comparison of the finished product of the complainants with an article in an intermediate stage, and while undergoing treatment preparatory to its completion. It may be quite true that at some stage of its preparation the paper-pulp made and used before 1853 was not of the proper consistency for paper-making, or that its fibre was too long, and that it required additional manipulation to fit it for use. But when it had received that treatment, its fibres were reduced to the proper length, and it became capable of all the uses to which it is claimed the product of the complainants is adapted. It is with the finished article that the comparison must be made, and,

[1] Compare this case with that of the Badische, &c. Co. *v.* Hamilton,&c. Co., *post*, page 170.

being thus made, we are of opinion that no substantial difference is discoverable.

"It may be that if the cellulose which had been produced prior to 1853, of such form and with such properties that it could be at once felted into paper, had been only a chemical preparation in the laboratory or museum of scientific men, and had not been introduced to the public, the Watt & Burgess product might have been patented as a new manufacture. Such appears to be the doctrine asserted in some English cases, and particularly in Young *v.* Fernie.[1] In that case, Vice-Chancellor Stuart remarked upon a distinction between the discoveries of a merely scientific chemist, and of a practical manufacturer who invents the means of producing in abundance, suitable for economical and commercial purposes, that which previously existed as a beautiful item in the cabinets of men of science. 'What the law looks to,' said he, 'is the inventor and discoverer who finds out and introduces a manufacture which supplies the market for useful and economical purposes with an article which was previously little more than the ornament of a museum.' But this is no such case. Paper-pulp obtained from various vegetable substances was in common use before the original patent was granted to Watt & Burgess, and whatever may be said of their process for obtaining it, the product was in no sense new. The reissued patent, No. 1448, is, therefore, void for want of novelty in the manufacture patented. . . ."

THE CORN-PLANTER PATENT, 23 Wall. 181 (1874).

This case is so long and intricate, that we can take up only certain comparatively brief portions of it. There were in suit several patents for improvements on a corn-planting machine. Most of the difficulties that arose were on the subject of this chapter, and some were on the subject of *Prior Knowledge or Use.* We begin, however, with a question of "ingenuity." The claim of reissue 1092 ran as follows: —

"In combination with a seed-planting machine, operating by hand, and having its seeding devices forward of the wheels, and forward of the driver's seat, and a hinged connection, the locating of the seat in such relation to a line drawn through the centres of the wheels or ground-supports, as that the occupant of said seat may, by moving himself or throwing his weight forward or backward on his seat, with-

[1] 10 Law Times Reports, 851.

out the necessity of rising, walking, or standing over or near the seeding devices, force the seeding apparatus into, or raise it from, the ground, substantially as described."

Upon this the court said: —

"After a careful consideration of this claim, we are brought to the conclusion that the subject of it is not patentable, prior inventions having placed the driver on the machine, and having constructed the platform in such manner that his movement backward or forward would raise or lower the seeding apparatus, and the seat itself not being claimed as new, it can hardly be contended that the proper location of the seat for effecting the same object required the exercise of inventive power."

"The next patent," said the court, "reissue 1093, after describing the machine as before, with its runners and front frame, its seat for the driver over the wheels, and contrivance for raising and lowering the front frame, its seat for the dropper over the runners, its hinged joint, &c., concludes as follows: —

"'There are two points in this machine that have unvarying positions or heights with regard to the ground; namely, the point of the tongue, as its height is defined by the horses' necks, to which it is attached, and they standing, of course, upon the ground, and the journals or axle of the covering or supporting wheels F F, as they roll on the ground, and between these fixed points the hinged connection between the front and rear part of the machine is made, so as to admit of raising or lowering the seeding devices.

"'Having thus fully described the nature and object of this part of my invention, what I claim under this patent is, in combination with a seed-planting machine that has a hinged or yielding joint between its fixed points of support and with its seeding devices between said points, the so connecting of the parts between said fixed points of support as that that portion of the machine carrying the seeding devices may be raised up out of the ground by the attendant riding on the machine, and be carried by the tongue or horses' necks, and the supporting wheels, substantially as and for the purpose described.'"

The court held that if this were a claim for "any and every connection of the parts which will produce the result 'substantially as described,'" it was anticipated by Kirkman's and also by Remy & Kelly's device.

"But if the claim is to be construed as limited to the mode of connecting the parts in the appellant's machine (being a hinged connection between the two frames, and therefore different from Kirkman's ma-

chine), and to the means by which the final result was accomplished, namely, by the shifting of the driver's weight on the machine (and therefore different from Remy & Kelly's), then this objection would be obviated. But, thus modified, it would substantially correspond with reissue 1038, being simply for a mode of doing that with the driver on the machine which was done before under reissue 1038 with the driver on the ground, employing only in addition the mode of operation used by Kirkman. In other respects the two combinations would be precisely the same. We are of opinion, therefore, that this patent cannot be sustained."

They continued as follows: —

"The next patent, reissue 1094, is for a matter too frivolous to form the subject of invention. It is simply for a peg or stop to prevent the rear part of the machine from tipping so much as to dump the driver on to the ground. No mechanic of any skill would construct a machine of the character prescribed, without providing some such arrangement. . . .

"The latest patent of the series, reissue 1095, is for a peculiar valve in the tube, through which the seed is dropped to the ground, called the flipper-valve. When the machine is in motion, the time taken for the seed to drop from the hopper to the ground, supposing it to drop from a height of only 18 or 20 inches, would carry it forward more than a foot after its discharge, and thus carry it beyond the cross-row. It became important, therefore, to drop the seed from a point near the ground, or from the bottom of the tube instead of the hopper, at each movement of the lever by the operator. To do this required two movements: one for dropping the seed from the hopper into the tube; the other for dropping it from thence to the ground."

This invention enabled both objects to be accomplished by a single movement of the hand. The seed for one hill was dropped into the ground at the same time that the seed for the next hill was dropped into the tube from the hopper. This was effected (we quote again from the opinion)

"by placing in the seed-tube a long, slender valve, composed of a slip of metal, suspended on a pivot in the middle, so that when one end was pushed forward the other end would be pushed backward. In this way each movement of the upper extremity would let a charge of seed into the tube on one side, and keep it there, whilst the simultaneous movement of the lower extremity would discharge the previous charge on the other side."

The claim was as follows: —

"So combining with a lever, by which both may be operated, a valve or slide in the seed-hopper and a valve in the seed-tube, as that a half motion of the lever by the operator riding on the machine, by which they are operated, shall both open and close the seed-passages at regular periods, and pass measured quantities only, substantially," &c.

Two devices, Finn's and Case's, alleged to anticipate this improvement were thus disposed of by the court: —

"Finn says that he invented his machine in the summer or fall of 1851. The seed-dropping apparatus consisted of a vibrating side or back to the seed-tube, which required two movements, one backward and the other forward, for dropping each hill of corn, alternately opening and closing the tube. It was operated by levers, in connection with the valves in the hoppers. But each hill or check-row required one movement of the lever to let the seed into the tube, and a reverse movement to let it out, and this double movement was repeated at every check-row. Whereas by Brown's apparatus both results were accomplished by a single movement, — a forward movement effecting a dropping for one check-row, and a backward movement effecting it for the next. It is evident that although there was a similarity between the two processes, they were essentially different. It may be that Brown's is only an improvement on the process used by Finn. If this be so, still it is only the improvement (that is, the machine as he uses it) that he claims by his patent. The machine of Case, which he swears he constructed in March, 1853, is still more unlike Brown's in form, though less unlike in operation. It has two independent valves, — one in the hopper to let the seed into the tube, and one at the bottom of the tube to let it out. These two valves are so connected by a chain or spring that both are opened at once. A spring is arranged to shut them as soon as possible, so as to prevent the seed admitted above from escaping below until the next movement of the lever. This apparatus, it is true, requires but one movement of the hand for each dropping, the spring performing the other. But the spring has to be drawn by the force of the hand so as to have the necessary recoil. The same strength has to be exerted by the operator as if he made both movements with his hand. It is evident that this device is also different from the appellant's. The two have similarities, but they are essentially distinct machines."

The Chief Justice had not been appointed when this case was argued. Mr. Justice Clifford, with whom concurred Miller and

Davis, JJ., delivered a dissenting opinion. He held that the real invention of the patentee was a combination of old elements, whereas the reissue of his patent was for the separate elements of the combination claimed in the original patents.

HILL *v.* HOUGHTON, 6 O. G. 3.

D. OF MASS., 1874. CLIFFORD AND LOWELL, JJ.

Lowell, J.: "The reissued patent of the complainant is for a new and useful spelling-block, and the . . . invention is declared in the specification to consist, first, in placing different letters of the alphabet upon two or more sides of cubical or six-sided blocks, so that, by combining the blocks, words in which the same letters occur more than once may be readily spelled; and, second, in placing upon one side of each block a numeral, by the aid of which, in connection with a printed key, the blocks needed for spelling any word may be readily found. The two claims follow this description. . . .

"It is proved that six-sided cubical blocks of wood were in common use as toys before the plaintiff made his invention, and two sets are given in evidence which were actually made, and have been for twenty years in the possession of the witness, who identifies them. This evidence is not impeached or disputed; the blocks in both samples are made of wood, and have letters and pictures and other devices upon them. One set is numbered consecutively with conspicuous numbers from 1 to 24, and this set has several pictures illustrating each letter. The second set consists of twenty-four blocks, and has pictures, some of which illustrate the letters and some do not. The first set has two letters on two of the blocks, combining I and J, and W and V, thus enabling the twenty-six letters to be placed on twenty-four blocks. The second set has five blocks, on each of which two letters are placed, though evidently not intended to enlarge the spelling capacity of the blocks, since the repeated letters are not those which would be much in demand.

"In this state of the art, we are of opinion that it was not a patentable improvement in spelling-blocks to place two or more letters on each block, even though the plaintiff may have been the first person to place them systematically, with a view to enlarge the usefulness of the blocks. In a machine, it may sometimes be invention to adapt the

machine to greater usefulness by a plan which has been very nearly approached, but never actually reached before. The point is often a somewhat nice one.

"In this case, we think the invention was fairly complete when the blocks had been arranged for spelling a great variety of words, and especially when, for economy of space or other reasons, several of the blocks were impressed with more than one letter; otherwise the novelty and the infringement must depend upon the particular letters which are repeated."

ROBERTS *v.* RYER, 91 U. S. 150 (1875).

Appeal on a bill for infringing a patent to one Sanford for a refrigerator. Defence, a prior invention of one Lyman. The gist of both patents was constant circulation of the air in the refrigerator, Sanford making use chiefly of the descending current for refrigerating articles in the ice-box, and Lyman using chiefly the ascending current for that purpose. (The quoted parts are from the opinion of the court, delivered by Waite, C. J.)

Sanford's patent was for the combination of

"(1) an open-bottomed ice-box or its equivalent, so constructed that the air may pass freely down through it, while at the same time the drip of the water from the melting ice is prevented by collecting the water and taking it in an escape-pipe outside of the refrigerator; (2) a dividing partition open above and below, separating the refrigerator into two apartments; and (3) a chamber directly under the open-bottom ice-box, in which articles to be refrigerated may be placed in such manner as to receive the descending current of air from the ice-box directly upon them."

No particular shape of opening in the bottom of the ice-box was made essential by the patent, nor any special manner of collecting and carrying off the melted ice, nor any precise form of the partition. It was not even required that the partition should be vertical, but only that it should

"be open at the top and bottom and divide the refrigerator into two apartments. There are no specifications as to the size of the openings or their form, or as to the comparative size or form of the two apartments. It is said that the apartment for the ascending current may be so narrow that it will serve only as a passage for the air; but there is nothing to prevent that for the descending current being narrow also,

if the purposes of the refrigerator are such as to make that desirable. . . . If in any place the air descending from the ice-box can strike directly upon the articles to be refrigerated, the structure will be within the limits of the patent. . . . "

Lyman's "device consisted of a receptacle for ice, with a grate for its bottom, on which the ice rested. This receptacle was placed in the upper part of the refrigerator and on one side. Below it was a cold-air chamber, into which the air flowed from the ice through the grate. The water from the melting ice was collected in this chamber and conducted by a pipe to the outside of the refrigerator. From the cold-air chamber was a conduit leading downwards, but which did not extend to the bottom of the refrigerator."

There was a side opening in the upper part of the ice-box into the apartment for the ascending current. This apartment was the larger of the two, and was intended to hold most of the articles to be refrigerated. The conduit, however, which conveyed the air as it came from the cold-air chamber toward the bottom of the refrigerator, and so under the partition, was large enough to hold some articles for refrigeration, and it had so been used by the inventor in the course of his experiments.

"True, the partition was not vertical, and the apartments need not be of equal or of any particular proportionate size. Neither was this necessary, as has been seen, in the Sanford patent. Each, however, called for the circulation of air, and each obtained it substantially by the same device. They each passed the air cooled in the ice-box through convenient openings downwards in one apartment, and upwards through the other. In each device the cooled air passed through the opening in the bottom of the partition, and the warmed air through that in the top," and for the common object of "cooling, desiccating, and purifying the confined air. . . . Undoubtedly Lyman expected to use the ascending air principally for the purposes of refrigeration, and he. therefore, supposed the greatest benefit would be derived from that current; but there was nothing in his specifications to prevent the use of the descending air, or from so constructing his refrigerator as to make that available. If it should be thought advisable to extend the size of the chamber for the descending air, there was nothing to prevent it. It would still operate as a conduit in which the cold air would fall down and be kept separate by the sides from the other air until it mingled with the lower strata. It being, then, certain that Lyman contrived a machine which would produce the desired circulation, and could be used for refrigeration in the ascending current, it remains only

to consider whether, if one desired to make use of the descending current for the same purpose, he could claim such use as a new invention. It is no new invention to use an old machine for a new purpose. The inventor of a machine is entitled to the benefit of all the uses to which it can be put, no matter whether he had conceived the idea of the use or not. Lyman had the descending current. True, he concentrated the air as it fell, and sent it downwards through a space smaller than that which would be contained in a chamber extending the full size of the bottom of the ice-box to the bottom of the refrigerator. But he did have a space large enough to expose in it some articles to the effect of that current. If it should be found desirable to utilize that current to a greater extent than was at first contemplated, all that need be done is to enlarge the conduit. If the circulation is kept up, the device will be within the specifications.

"In fact, the proof is abundant, that in his experiments, while perfecting his invention, Lyman did, in more cases than one, utilize the descending current.

"With both the inventors, the circulation by means of an ascending and descending current was the principal object to be obtained. One considered the greatest benefit for the purposes of refrigeration was to be derived from the use of the descending current, while the other had his attention directed more particularly to the advantages of the ascending. They each had both, and could utilize both.

"It is no invention, therefore, to make use of one rather than the other," &c.

This was clearly a case of anticipation, though the court considered it as one of new use.[1]

JONES *v.* SEWALL, 6 Fish. 343.

D. of Maine, 1873. Clifford, J.

Infringement of two patents granted to Isaac Winslow, one for the product (No. 34,928) and one for the process (No. 35,274) of preservation of green corn.

The process was to strip the kernels from the cob with a curved and gauged knife, in such a manner as to leave a considerable portion of the hulls upon the cob and to set free the juice of the kernels. The kernels were then placed in stout tin cans, sealed up, and thoroughly boiled, whereby they were cooked

[1] *Vide post*, page 281.

in their own juices, and thus preserved in a sweet and tender condition. The cans were next punctured to allow the air to escape, and then immediately resealed to prevent evaporation of the juices of the corn. It was proved that by this method, and by it only, green Indian corn could be preserved in a fresh and juicy condition; and the two patents were held valid.[1] The chief defence was that the invention was anticipated by the English patent of Peter Durand, sealed in 1810, being a communication from one Appert,[2] a Frenchman. The court held

[1] The two patents are substantially the same; but the description of the process is a little more full in the *product* patent, No. 34,028. We subjoin so much of it as is necessary to explain the invention.

"Select a superior quality of sweet corn in the green state, and remove the kernels from the cob by means of a curved and gauged knife, or other suitable means. Then pack these kernels in ['strong '] cans, and hermetically seal the latter so as to prevent evaporation under heat, or the escape of the aroma of the corn. Now expose these cans of corn to steam or boiling heat for about one hour and a half; then puncture the cans, and immediately seal the same while hot, and continue the heat for about two hours and a half longer. Afterwards the cans may be slowly cooled in a room at the temperature of seventy to one hundred degrees Fahrenheit. Indian corn thus packed and treated may be warranted to keep in any climate. Being preserved in its natural state as near as possible, it retains the peculiar sweetness and flavor of fresh corn right from the growing field.

"It is only necessary to heat this preserved corn, and season the same, in order to prepare it for the table, as it is fully cooked in process of preserving. Other methods of treatment may be adopted without departing from my invention, so long as the hermetical sealing and use of the heat are so managed as to secure the aroma and fresh flavor and prevent putrefaction, thus producing the new article of manufacture substantially as described."

Claim: "The above-described new article of manufacture, namely, Indian corn when preserved in the green state, without drying the same, the kernels being removed from the cob, hermetically sealed and heated, substantially in the manner and for the purpose set forth."

[2] Appert's invention was for "preserving animal food, vegetable food, and other perishable articles a long time from perishing or becoming useless. . . . Vegetable substances are to be put into the vessel in a raw or crude state."

He put the substance to be preserved in an air-tight bottle or other vessel, and placed the vessel in cold water, which was gradually heated till it boiled, the "ebullition being continued according to the nature of the article and the size of the vessel," &c.

He also claimed the application of heat by placing the vessel in an oven, or stove, or steam-bath, instead of using the method already indicated, and he concluded as follows: "I do, as the choice of the consumer or the nature of the said food or other articles may render preferable, leave the aperture of the vessel, or a small portion thereof, open until the effect of the heat shall have taken place, at which period I close the same."

that this was no anticipation of the plaintiff's process, remarking (page 361): —

"Other vegetables, such as beets and carrots, or peas and beans, may be packed in cans in a crude state, as they retain their juices, and may be well preserved if entirely secluded from the atmosphere, as by packing them in vessels hermetically sealed; but their chemical composition is very different from green corn, which is much more difficult to preserve in its natural freshness, without loss of its peculiar flavor and aroma, as accomplished by the complainant's process."

Green corn was not known in England when Durand's patent was granted.

This case came before the Supreme Court,

SEWALL *v.* JONES, 91 U. S. 171 (1875).

The decision of the Circuit Court was reversed, Judge Clifford dissenting. The ground was that the invention already described, that of Appert, anticipated Winslow's process; but the point of difference between Judge Clifford and the rest of the bench was in regard to the construction of Winslow's patents rather than in regard to the substance of his invention. Mr. Justice Clifford's construction was the more liberal one. He held that the process covered by Winslow's patents included removing the kernels from the cob in such a manner that the juices were set free, and formed a liquid in which the kernels were cooked, so that they became soft and juicy; whereas the majority of the court held that this part of the process was only recommended and not required by Winslow's patents, and that his patents covered merely removal of the kernels from the cob, however accomplished, placing them in a can, boiling, puncturing, and resealing; and that Appert's process was for preserving vegetables in any form, intact, or separated from their husks: that Winslow's process, therefore, was anticipated by Appert's, although the method of separating the corn recommended by Winslow might be an improvement upon what was before known.

The dissenting opinion of Mr. Justice Clifford is long and exhaustive. We quote one paragraph: —

"Corn at that period was unknown in England, and it is not probable that the patentee had ever heard of such an article, and it does not

appear that a can of green corn has ever been preserved in that mode of operation to the present time. Patented inventions must be described so that those skilled in the art or science may be able to make, construct, and practise the same; and yet it is plain that no amount of study or examination of the foreign specification would ever enable any person to preserve green corn in the mode of operation employed by the assignor of the complainants."

Naturally, this decision was followed by a reissue of both patents, No. 7061, April 18, 1876, and No. 7067, of the same date.

The claim of No. 7061 (the process patent) was as follows:—

"The process described of separating and obtaining the nutritious and edible parts of the corn, and boiling them in a liquid composed wholly or mainly of their own juices."

There was a suit on this reissue, namely,

JONES *v.* McMURRY, 13 O. G. 6.

D. of Md., 1877. Bond, J.

Of reissue No. 7061 (the claim in which we have just quoted), Judge Bond (after expressing the opinion that the decision of the Supreme Court was broader than the complainant admitted, and that it determined the whole process described by Winslow to be anticipated by Appert's invention) said:—

"In his reissued patent the complainant states that he takes tender green corn, and scrapes it from the cob so as not to detach the inner ends of the kernel, which, with the pieces and softer parts of the corn, he cooks together, and then proceeds with the old process of Appert for cooking and sealing."

He then quotes the claim, and continues:—

"No one ever cut green corn from a cob who did not accomplish exactly what this claim describes, and no one under the process described in patent 35,274, which required the corn to be removed from the cob, could so remove it without breaking the kernels; and when he proceeded to cook in a can, as the patent required, he would find necessarily more or less of the juices with it. The reissue does not claim that the juices only should be used in the cooking.

"The process described in the reissue is substantially that of the original patent; but if we admit there is something new and patentable in the reissued patent which was not in the original, the patent is void

because it is not for the same invention as the original. It may be the subject of a new patent, but cannot be a reissue of an old one; and that, too, of an old one which has been adjudged invalid by the Supreme Court for the want of novelty."

COHN *v.* UNITED STATES CORSET CO., 93 U. S. 366 (1870).

M. Cohn's patent, granted April 15, 1873 (No. 137,893), for an improvement in corsets.

In making corsets, the fabric is woven with pocket-like openings, or slots, for insertion of the whalebones which stay it. In order to make a corset that will adapt itself to the form of the wearer, the whalebones, and consequently the pockets, must be of varying length,—shorter under the arms, for instance, than at the back. The patentee stated that before his invention it had been customary to weave these slots from top to bottom (from edge to edge) of the corset, and, after insertion of the whalebones, to stitch the slots by hand. There were two objections, he said, to this method: first, the hand-labor involved was expensive; and, secondly, the length of each pocket, or, in other words, the distance from the top edge (for all the pockets started from the bottom), having to be determined by the workman in each case, the pockets were formed without precision, and were not all of the same length. Further, the patentee recited that another method in common use was to weave the fabric with the slots all stopped and finished *at uniform distances from the top edge.*

His invention consisted in so weaving the fabric that the slots should all be stopped and finished, not at a uniform distance, but at the desired, *irregular* distances from the top edge.

"I am aware of, and do not claim," he said, "a woven corset with the pockets stopped and finished off at a uniform distance from the edge; I am also aware of, and do not claim, a hand-made corset with pockets of varying length stitched on; but what I do claim . . . is a corset having the pockets for the reception of the bones formed in the weaving, and varying in length relatively to each other as desired, substantially," &c.

To anticipate his patent, the defendants relied upon the specification of a patent left at the office of the Commissioner of Pat-

ents for England, in 1854, by John Henry Johnson. It was as follows: —

"This invention . . . consists in the employment of the jacquards[1] in the loom, one of which effects the shape or contour of the corsets, and the other the formation of the double portions of slots for the introduction of the whalebones.

"These slots or double portions are made simultaneously with the single parts of the corset; and in place of being terminated in a point, they are finished square off, *and at any required* length in the corset, instead of always running the entire length, as is usually the case in woven corsets. When the corset is taken from the loom, the whalebones are inserted into these cases, and the borders are formed, thus completing the article, which contains all the elegance and graceful contour of sewn corsets made by manual labor."

Mr. Justice Strong, delivering the opinion of the court, held that this specification described the same article that the plaintiff claimed in his patent, of which he said: —

" . . . No process is described; none is patented. The claim is for a manufacture, not for a mode of producing it. Its peculiarities, as described, are that the pockets for the reception of the bones are formed in the weaving rather than by hand, and that they are of varying lengths relatively to each other; that is, that the pockets differ in length from other pockets in the same corset, as desired. There are no other particulars mentioned descriptive of the patented improvement, unless they are that the weaving or variations in the length of the pockets are to be in the manner and for the purpose set forth in the specification. Referring to that, the purpose avowed is the production of a better-shaped corset at less expense; and the manner of effecting this is by substituting weaving for stitching, in closing the pockets at desired or predetermined distances from the edge. Now, in view of the patentee's disclaimers, stopping off the passages or pockets in the weaving is not covered by the patent. It is admitted that had been done before, and no claim is made for it. All that is left, then, is that the woven and closed pockets in the corset vary in length. No rule is stated for the variation." The court next showed that, by the state of the art, the patent must further be limited, namely, "to the pockets under the arms of the wearer, or on the back, or in front of the body, because pockets like, or substantially like, those described by the plaintiff had previously been used in the parts of the corset that cover the breasts and hips of the wearer."

[1] The plaintiff's patent also contemplated the use of a jacquard.

The court then quoted Johnson's specification, and said: —

"Undeniably, this is a description of woven corsets, woven by the use of the jacquards in the loom, woven with slots or passages for the bones, made simultaneously with the other parts of the corsets, and requiring nothing to be done to them after their removal from the loom, except the insertion of the bones and the formation of the borders. It is also plainly a description of corsets in which the passages for the bones, called the double portions or slots, are finished; that is, stopped off in the weaving."

The court gave several reasons to support this obvious conclusion, which we need not detail, and proceeded: —

"It is manifest, then, that there is nothing in the plaintiff's patent which was not described in the Johnson specification, unless it be that the closed slots or cases mentioned in the former are required to be woven of varying length. A variation in the length of the pockets relatively to each other, as desired, is, as we have seen, the sole distinctive feature of the plaintiff's invention. But it was well known before Johnson filed his specification that the bone-pockets of a corset must vary in length. They were made to vary in hand-made corsets and in woven ones by sewing. In all corsets, whether hand-made or woven, the pockets under the arms were made shorter, and those at the back and in front were made longer, in order to fit the wearer and preserve a graceful shape at the top. . . . Johnson knew — having before him the state of the art at the time — that pockets of uniform length would not adapt the corset to fit the wearer, and would not be consistent with elegance of shape, and there is not a word in his description that intimates the pockets are to be stopped off or closed at uniform distances from the edge or without variation in length. The contrary idea is manifest. It is said, they are to be finished (closed) *at any required length*. Required length? Required by whom, and for what? Plainly by the manufacturer, and that they may have all the elegance and graceful contour of sewn corsets made by manual labor, and also that they may fit the wearer. Such a requirement could be met only by pockets of different lengths in the same corset," &c.

"It is quite immaterial, even if it be a fact, that the Johnson specification is insufficient to teach a manufacturer how to make the patented corset.

"It is enough if it sufficiently describes the corset itself. Neither it nor the plaintiff's specification exhibits the process of making. Neither of them set up a claim for a process. The plaintiff claims a manufacture, not a mode of making it; and the important inquiry, therefore, is,

whether the prior publication describes the article. To defeat a party suing, it is sufficient to plead and prove that the thing patented to him had been patented or described in some printed publication prior to his supposed invention or discovery thereof. Rev. Stat. § 4920. What is required is a description of the thing patented, not of the step necessarily antecedent to its production. But the evidence shows that the Johnson specification, in connection with the known state of the art at the time when it was filed and published, was sufficient to enable one skilled in the art of corset-making and in the use of the jacquard to make the patented corset," &c.

FULLER *v.* YENTZER, 94 U. S. 288 AND 209 (1876).

The first of these suits was for infringement (and no question other than that of infringement was raised) of a patent granted to Fuller for a combination of devices by which a crease, or a mark if desired, is made in the cloth fed to the needle of a sewing-machine. The devices are, first, a vibrating point acting upon the upper surface of the cloth, and moving in unison with the needle, so that the point rests upon the cloth only when the needle is in it (this to avoid wrinkling the cloth); and, secondly, a notch or an elastic surface or pad under the cloth where it is pressed by the point. In this way, "the crease or creases are formed in the cloth itself, parallel to the line of sewing, in such a manner that the cloth is ready for doubling over at the creases for the next line of sewing." Instead of one point, several points may be used; or, when the object is to mark and not to crease the cloth, in place of the point a pencil or a similar article is attached to the vibrating arm, which, it should be mentioned, extends from the needle bar or arm, and thus, as has been said, vibrates with it. This combination was especially useful in tucking, plaiting, &c.

In the second suit, on a patent owned by Fuller as assignee, one defence was that the patent sued on was anticipated by this prior patent of Fuller;[1] but the court (Mr. Justice Clifford delivering the opinion) held otherwise.

This second patent, originally granted to one Rose, of which

[1] The first patent, No. 28,633, was granted to Fuller & Goodall, June 5, 1860. The second (reissue No. 3218) was granted, Dec. 1, 1868, to Fuller, assignee.

Fuller was assignee, may be described very briefly. The purpose of the device covered by it was the same as that of Fuller's prior invention, namely, creasing or making folds in the cloth. The Fuller invention, it was said, was open to this objection: the point sometimes pierced and cut very fine cloth, and very heavy cloth it did not impress sufficiently to make a crease in it. The Rose invention formed the creases or ridges by a succession of nips.

"Devices called jaws are provided for the purpose, which are caused to descend while open, with more or less force or pressure, on the fabric, and then in being closed are capable of seizing a portion of the fabric and compressing the same tightly, the fabric at the same time being properly supported against the descending force of the jaws, and which operation, being repeated while the fabric is moved along, produces the required ridge or crease in the line of which the fabric will naturally fold, to facilitate the forming of the tuck for future operations. . . . Effectual means are provided to cause the marking device to react after each creasing action, and follow the upward motion of the needle-arm, in order to give room for the free insertion and removal of the work; and this spring-branch shown in the drawings is made to hold the outer jaw away from the inner one when in the normal position there exhibited. . . . Motion is usually given to the fabric by the feed-mechanism of a sewing-machine, in which it is intended it shall be used as an attachment; but the motion may be imparted to the fabric in any other manner,"[1] &c.

THE CAWOOD PATENT, 94 U. S. 695 (1876).

The patent was for "an improvement in the common anvil or swedge-block, for the purpose of welding up and re-forming the ends of railroad rails when they have exfoliated or become shattered from unequal wear."

The case is so long and difficult that we are forced to omit the abstract which we had made of it. The only defence was that of anticipation. In regard to a prior English patent, alleged to anticipate the plaintiff's invention, the court (by the mouth of Mr. Justice Strong) said that the only question was

[1] We quote from the opinion of the court.

"whether the specification was sufficient to enable a mechanic skilled in mechanical arts to construct and carry into practical use the Cawood machine; or, in other words, whether whatever is essential to the Cawood machine could be read out of the prior specification."

The patent was sustained.

ELIZABETH *v.* PAVEMENT CO., 97 U. S. 126 (1877).

(City of Elizabeth *v.* American Nicholson Pavement Co.)

Infringement of an extended patent originally granted in August, 1854, and reissued for the second time Aug. 20, 1867.

Mr. Justice Bradley delivered the opinion of the court as follows: —

". . . The nature and object of the invention consists [*sic*] in providing a process or mode of constructing wooden block pavements upon a foundation along a street or roadway, with facility, cheapness, and accuracy; and also in the creation and construction of such a wooden pavement as shall be comparatively permanent and durable, by so uniting and combining all its parts, both superstructure and foundation, as to provide against the slipping of the horses' feet, against noise, against unequal wear, and against rot and consequent sinking away from below. Two plans of making this pavement are specified. Both require a proper foundation on which to lay the blocks, consisting of tarred paper or hydraulic cement covering the surface of the road-bed to the depth of about two inches, or of a flooring of boards or planks, also covered with tar or other preventive of moisture.

"On this foundation, one plan is to set square blocks on end, arranged like a checker-board, the alternate rows being shorter than the others, so as to leave narrow grooves or channel-ways to be filled with small broken stone or gravel, and then pouring over the whole melted tar or pitch, whereby the cavities are all filled and cemented together. The other plan is to arrange the blocks in rows transversely across the street, separated by a small space (of about an inch) by strips of board at the bottom, which serve to keep the blocks at a uniform distance apart, and then filling these spaces with the same material as before. The blocks forming the pavement are about eight inches high. The alternate rows of short blocks in the first plan and the strips of board in the second plan should not be higher than four inches.

"The patent has four claims, the first two of which, which are the only ones in question, are as follows: —

"'1. Placing a continuous foundation or support, as above described, directly upon the roadway; then arranging thereon a series of blocks having parallel sides, endwise in rows, so as to leave a continuous narrow groove or channel-way between each row, and then filling said grooves or channel-ways with broken stone, gravel and tar, or other like materials.

"'2. I claim the formation of a pavement by laying a foundation directly upon the roadway, substantially as described, and then employing two sets of blocks, — one a principal set of blocks that shall form the wooden surface of the pavement when completed, and an auxiliary set of blocks or strips of board, which shall form no part of the surface of the pavement, but determine the width of the groove between the principal blocks, and also the filling of said groove, when so formed between the principal blocks, with broken stone, gravel and tar, or other like material.'"

One defence was that the invention had been anticipated by previous patents. On this head the court said: —

"As claimed by him [the patentee], it is a combination of different parts or elements, consisting, as the appellant's counsel, with sufficient accuracy for the purposes of this case, enumerates them, first, of the foundation prepared to exclude moisture from beneath; second, the parallel-sided blocks; third, the strips between these blocks, to keep them at a uniform distance and to create a space to be filled with gravel and tar; and, fourth, the filling.

"Though it may be true that every one of these elements had been employed before, in one kind of pavement or another, yet they had never been used in the same combination, and put together in the same manner, as Nicholson combined and arranged them, so as to make a pavement like his. The one which makes the nearest approach to it, and might, perhaps, be deemed sufficiently like to deprive Nicholson of the merit of invention, is that of John Hosking, which, in one form, consisted of alternate rows of short and long blocks, the latter partially resting on the former by their being mutually rabbeted so as to fit together. The spaces thus formed between the longer blocks and on the top of the shorter ones were filled with loose stone and cement, or asphalt, substantially the same as in Nicholson's pavement. It would be very difficult to sustain Nicholson's patent if Hosking's stood in his way." . . . [But it did not so stand, Hosking's invention being first described in the English patent therefor, the specification of which was

not enrolled till after Nicholson had completed his invention and laid down a pavement for trial.]

"Stead's patent, enrolled in November, 1838, shows a plan of pavement consisting of a series of hexagonal, triangular, or square-sided blocks, standing close together on the surface of the roadway in a layer of sand, and being a little smaller at the bottom than at the top, so as to admit a packing of sand, or pitch and sand, in the interstices between them, below the surface. Small recesses at the top around the edges of the blocks are suggested, apparently for giving a better hold to the horses' feet. It had no prepared foundation like Nicholson's, and no spaces filled with gravel, &c.

"Parkins's patent, enrolled October, 1839, proposes a pavement to consist of blocks leaning upon each other, and connected together with a mixture of sand and bitumen, and connected by keys laid in grooves, and having grooves cut in the surface, either across the blocks or along their edges, to give the horses a better foothold. This plan exhibits no spaces to be filled with gravel or other filling.

"Wood's patent, enrolled in April, 1841, shows a pavement made of adjoining blocks fitted together, but alternately larger and smaller at the top, like the frustum of a pyramid, and not parallel-sided; those larger at the top standing slightly higher than the others, so that when pounded down, or pressed by rollers or loaded vehicles, they would act as wedges, binding the whole pavement more tightly together. No filling is used on the surface, and no prepared foundation is suggested. In one form of his pavement he describes continuous grooves, the grooves being formed of blocks which are shorter than the others, and states that the groove is to be filled with concrete, coal-tar, &c., mixed with gravel or sand; but there is no foundation described for the pavement; and the description given for laying down the pavement, namely, by ramming down the taller blocks after considerable surface has been covered by the pavement, shows that the road-bed on which the blocks are to be laid is to be a yielding one, capable of conforming itself to the under surface of the blocks in the same way as sand does to the ordinary stone pavement when the stones are rammed.

"Perring's patent, enrolled January, 1843, shows a pavement consisting, in one form, of blocks leaning one upon another in rows, with strips of board between the rows, coming to within an inch or so of the top of the pavement, and the same distance from the bottom, leaving gutters for the water underneath, and the adjoining rows being connected with pins passing through the strips of board. The rows are thus separated to enable the horses' feet to get a better hold. No filling is suggested, and, indeed, would not be admissible, as the boards have no support but the pins; and no prepared foundation is required.

"Crannis & Kemp's patent, enrolled Aug. 21, 1843, presents, amongst other things, first, a pavement consisting of rows of blocks adjoining each other, but each block having a small recess on one side, on the surface, to enable the horses to get a better foothold; secondly, a pavement of alternate blocks adjoining each other, but differing in width, and slightly differing in height, the top of one block being rounded off so as to make a groove next to the adjoining blocks, and the rounded blocks in one row alternating with the rectangular-topped blocks in the next row, the object of rounding off the alternate blocks being to give a foothold to the horses. This pavement is to be built on a flooring of plank, either of one or two thicknesses, but without any preparation to exclude moisture, and it has no filling in the depressions or grooves formed by rounding the alternate blocks.

"A French patent, granted to Hediard in 1842, shows a pavement constructed of rows of blocks laid on a board foundation, cemented together by a thin filling (four-tenths of an inch thick) of cement or mastic, from top to bottom; no provision being made to prevent the accession of moisture from the ground below, and no strips between the rows to keep them separate from each other.

"None of these pavements combine all the elements of Nicholson's, much less a combination of those elements arranged and disposed according to his plan. We think they present no ground for invalidating his patent, and no defence to this suit."

SCHILLINGER *v.* GUNTHER, 14 BLATCH. 152.

S. D. OF N. Y., 1877. SHIPMAN, J.

Plaintiff's reissued patent of May 2, 1871, for an improved

"concrete pavement . . . laid in sections, so that each section can be taken up and relaid without disturbing the adjoining section. With the joints of this sectional concrete pavement are combined strips of tar-paper or equivalent material, arranged between the several blocks or sections in such manner as to produce a suitable tight joint, and yet allow the blocks to be raised separately without affecting the blocks adjacent thereto."

The pavement was to be laid in a plastic state,

"either in moulds or between movable joints of the proper thickness, so as to form the edges of the concrete blocks *a a*, one block being formed after the other."

Full directions follow.

Alleged anticipating inventions were thus disposed of by the court: —

"Mr. Russ's invention consisted of a foundation pavement of concrete, which was afterwards to be covered with ordinary stone flagging. This sub-pavement of concrete was divided, in places where it covered a sewer or a drain, into panels, by bars of iron forming crosses, united by an eye-bolt, with a ring in the head of each bolt. When repairs were to be made upon the sewer, the panel could be lifted, without injury to the rest of the concrete, by suitable appliances attached to the ring.

"The Little patent was for a metallic framework, filled in with concrete blocks. Neither device had substantial similarity to the pavement of the plaintiff."

This patent was again sustained in the case of

SCHILLINGER *v.* GUNTHER, 17 BLATCH. 66,

S. D. OF N. Y., 1877. BLATCHFORD, J.,

where it was held, in addition, that a concrete pavement made "of cement, sand, and gravel, made plastic by water, and then laid in blocks, in a plastic state, at the place where it is to be used, and suffered to set or harden there," is not anticipated by a pavement made of "blocks of cement made elsewhere, and then laid, like bricks or flags, at the place of use."

BATES *v.* COE, 98 U. S. 31 (1878).

Patent for a screw-cutting and drilling machine. Anticipation. An extremely long case.

GOULD *v.* BALLARD, 13 O. G. 1081.

D. OF N. J., 1878. NIXON, J.

Reissued patent No. 7149, dated May 30, 1876, for "improvement in corner-clamps or protectors for trunks." Held, to be anticipated by Roulstone's patent, No. 27,476, dated March 13, 1860.

The complainant's invention, the court said,

"is a corner-clamp, made with an outwardly projecting bead at the corner, the bead being convex at the outer, and concave at the inner, side. . . . In the patent issued to Roulstone . . . the whole trunk, embracing sides, ends, top, and bottom, as well as corners, is made of corrugated metal plates or outwardly projecting beads, with an exterior convexity and an interior concavity. The object of the invention is the protection of the corners of a trunk, and it is done by the use of corrugated metal. When it is once demonstrated that the entire trunk may be improved and strengthened by covering it with corrugations, is there anything patentable or novel, or does it require invention, to apply to the covers of a wooden trunk substantially the same protection?"

GOTTFRIED *v.* BARTHOLOMAE, 13 O. G. 1128.

SAME *v.* FORTUNE BROS.

SAME *v.* SCHŒNHOFEN.

N. D. OF ILL., 1878. BLODGETT, J.

Holbeck & Gottfried's patent of May 3, 1864, for an improved mode of pitching the inside of barrels.

Blodgett, J.: —

"The complainants' invention consists of a device by which air is driven through fire by a fan or blower, where it becomes heated to a high temperature, whence it is forced by the blast into the barrels, so as to heat the inside of the barrels sufficiently to melt the pitch or resin which is used for the purpose of pitching the insides, so that it will readily flow into the cracks or pores of the wood. The cask is then closed, and rolled until the melted resin has covered the entire inner surface."

The air was conveyed from a chamber directly above the fire, through a pipe into the barrel. One advantage of this process was that the intensity of the fire was increased by blowing through it the air which was to be heated by it; another advantage was that the air to be heated, coming into direct contact with the hot fire, became decomposed, and its oxygen was in great part consumed, whereby, in spite of the high temperature of the gaseous products that passed into the barrel, all danger of their burning the barrel was removed.

The chief prior contrivance set up by the defence was that of Davison & Symington. The object of this was to cleanse the interior of barrels, particularly beer barrels, by heat. The hot air was driven into the cask in the same manner as in the complainants' process, but it was[1]

"heated by being driven through heated tubes; that is, a nest or group of iron pipes was arranged in a furnace, and, the pipes becoming hot, the air was driven through them into the cask, whereby the inner side of the cask became heated. By that, it was claimed, the must and various impurities were expelled."

The court next remarked, that barrels might be heated for pitching as readily by this process as by the complainants', but that the two processes were different. In the Davison & Symington contrivance the air to be heated did not fan the fire, as it did in the complainants' contrivance, and, moreover, it was discharged into the barrel in a pure state, with all its oxygen; whereas, as we have seen, the oxygen was removed from the air used in the complainants' process, by direct contact with the fire.

The court noted this other important difference between the two contrivances: —

"The Davison & Symington process may produce the same results, yet they produce them by a different mechanism, and a mechanism much more costly; it costs much more to make a machine, and fully as *much, if not more, to operate* it. You would have to produce heat enough in your furnace around your pipes to make the air sufficiently hot, and then keep up that heat by an additional blast of air into your furnace in addition to the blast which drives the air into your cask; so that the two mechanisms, while they produce the same result and reach the same end, do it by two different processes."

There was another suit upon this patent in the Eastern District of Wisconsin, before Dyer, J. (17 O. G. 675), when, by agreement, the Illinois cases were decided by Judge Dyer (a rehearing having been allowed by Judge Blodgett), and suits against four other respondents in the Eastern District of Wisconsin were decided at the same time. In this new trial the Davison & Symington contrivance was again set up. Judge Dyer agreed with Judge Blodgett in holding that it did not anticipate the complainants' contrivance. Both contrivances are

[1] Quoting from the opinion.

more fully described in the report of this case than in that of the former case. Other prior patents are also set forth at length in this second case, among them the Neilson patent,[1] which, being similar to that of Davison & Symington, was disposed of on the same grounds, and the De Vaux patent, issued in England in 1835. This was next in importance to the Davison & Symington patent in this case.

It was for "certain improvements in smelting iron stone or iron ore." It was like the complainants' patent in that it provided for a hot-air blast produced by the passage of atmospheric air through fire, but in all other respects it was very unlike it. Briefly, it provided for two chambers in which the air was condensed, and through which it passed into a third chamber, — the furnace where it was heated; and thence it passed into the furnace where the ore was. These condensing chambers were an essential feature of the invention.

Said the court: —

"The evident purpose of the accumulation of compressed air in the chambers is to constantly force through the fire a great quantity of air, and in its rapid passage through the fire it seems reasonable that a considerable quantity of oxygen would be unconsumed and be present in the hot blast; and, as one of the witnesses stated, 'since the intensity of combustion depends largely on the amount of oxygen supplied, the compressed air will produce more burning, and therefore a higher temperature, than air which is not compressed.'

"Furthermore, I am convinced that the accumulation of compressed air in the chambers A and B of the De Vaux apparatus must have been regarded by the inventor, and is an essential part of the device for the purpose of securing uniformity in the blast, which scientific authorities appear to regard as essential to the best results in the production of a good quality of iron," &c.

BARKER *v.* STOWE, 15 BLATCH. 49.

N. D. OF N. Y., 1878. BLATCHFORD, J.

W. C. Barker's reissued patent of July 6, 1875.

A rubber bucket for a chain-pump, fitting tightly to the tube, and having an orifice in its side for the escape of water remaining

[1] *Vide post*, p. 611.

above it when pumping ceases, is anticipated by a bucket consisting of a rubber disk resting on a metal disk, the rubber disk having a hole in its centre for the chain to pass through; the hole serving, like the slit in the plaintiff's bucket, for the escape of water to the well; the back motion of the chain, when pumping ceased, causing the rubber disk to adhere to the sides of the tube, leaving a space between it and the metal disk, by which the water, after passing through the hole in the rubber disk, escaped to the well.

IN RE APPLICATION OF JAMES ARKELL, 15 BLATCH. 437.

D. OF CONN., 1879. SHIPMAN, J.

Given a notch in one thickness of a paper bag, having an evenly cut mouth, the notch being for the purpose of facilitating the opening of the mouth, it is not invention to make such a notch, for the same purpose, in one thickness of a paper bag, which has a mouth not smooth, but jagged or serrated as to its edges.

BADISCHE ANILIN & SODA FABRIK *v.* HAMILTON MANUFACTURING CO., 13 O. G. 273.

D. OF MASS., 1878. SHEPLEY, J.

Reissued patent No. 4321 (Div. B), dated April 4, 1871, for a new product called artificial alizarine, the invention of Græbe & Liebermann.

A dyestuff called alizarine is produced from the vegetable madder formerly cultivated in immense quantities for that purpose. This alizarine is not pure, but contains other ingredients, which are dyeing agents. The term "alizarine" was also applied by chemists to a theoretically pure crystallized extract from madder, the formula of which is $C^{14} H^{8} O^{4}$.

Græbe & Liebermann, through a process of chemical synthesis invented by them, produced alizarine from coal-tar, which, being cheaper than madder alizarine, superseded the latter. Their alizarine also contained other substances (different from

those found with the alizarine produced from madder), which were valuable as dyeing agents, and not before known.

This artificial alizarine, as it is called,

"was new," said the court, "not only in some of its new chemical properties, but in its capacity to produce, in dyeing and calico-printing, tints which cannot be obtained with the preparation of madder or any other dyestuffs previously known. . . . But defendants further contend, that alizarine was a well-known substance long before the patent, and it could not be made the subject of any letters-patent. . . . Whatever Græbe & Liebermann called their product in the original or the reissue, it was a new product; and they showed what it was, and how it could be produced. Pure alizarine, if it ever existed except in chemical rotation or laboratory experiment, could not have been made the subject of a patent. Nor have Græbe & Liebermann undertaken to patent alizarine, if by alizarine is meant what was known before their inventions to chemists as the body existing in dyestuffs prepared from the madder. What they have patented is the new composition of matter and the new manufacture, having the described properties, produced from anthracine by any process which will produce their new product."

The real value of Græbe & Liebermann's dyestuff, as of the madder dyestuff, lay in the alizarine. There is therefore some reason in the defendant's contention that Græbe & Liebermann's *product* was anticipated by the madder product, although their process was, of course, patentable. Is a compound a unit, in a sense in which a machine is not, so that new elements, even when they are comparatively unimportant, change the identity of a compound, although new elements of corresponding unimportance do not change the identity of a machine? Or could it be maintained that in the case of this compound the *combination* of the old elements with the new elements is what makes it patentable?

But however we look at the matter, the fact remains, that the chief value of "artificial alizarine" arose from the presence in it of the same thing which made the value of madder alizarine. Supposing that both alizarines had been produced from madder, would Græbe & Liebermann's alizarine have been held patentable? If not, then it was held patentable in the actual case, because the process was taken into account in deciding whether the product was new. Such a consideration, however, is not

admitted, under the patent law, in deciding upon the novelty of a product. In this very opinion Judge Shepley said: —

" . . . When the product is new, *independent of the process*, the patent is infringed by the unlicensed manufacture of the new product by any mode of manufacture, the process of manufacture being wholly unimportant."

This patent was also sustained by Wheeler, J., in the Southern District of New York, 1877, Badische Anilin & Soda Fabrik *v.* Higgin, 15 Blatch. 290.

In both cases the decision rested, very properly, upon the presence in the artificial alizarine of new and valuable ingredients.

So also in

BADISCHE ANILIN & SODA FABRIK *v.* COCHRANE,
16 BLATCH. 155,
S. D. OF N. Y., 1879. WHEELER, J.,

where additional evidence, not however fully rehearsed in the report, was produced.

Judge Wheeler also said: —

"If this substance should be found to be so like natural alizarine that no one could tell the difference between them, or know them apart except by their source, the question would be presented whether, even then, it would not of itself be subject under the law to a patent granting to its inventors an exclusive right to it.[1] . . .

"In Steiner *v.* Heald[2] (6 Eng. L. & Eq. 536) the patent was for the invention of a new manufacture of garancine. Garancine was an extract from madder, having its pure red coloring matter, and was well known. The plaintiff produced it from spent madder by the same process by which it had before been produced from fresh madder. It was ruled at the trial that because it was the same substance it was not a new manufacture. This ruling was reversed in the Exchequer Chamber, on the ground that spent madder 'might be a very different thing from fresh madder, in its properties, chemical and otherwise;' and that whether it was or not would be material to the validity of the patent. If it was [not?], the novelty of the manufacture would consist wholly in the material from which it was produced. There would be a combination of

[1] This was merely an *obiter dictum*. It is, we think, unsound. *Vide ante*, page 79.

[2] *Vide post*, page 292.

new materials, which would be a new combination; and so there would be here.

"In the case of The Wood-Paper Patent (23 Wall. 566), the paper-pulp sought to be covered by the patent was not made at all by the new process, but was merely extracted by it. It was cellulose before the treatment, and after; and its patentability appears to have been denied on that ground. There was no new combination about it."

THE ATLANTIC GIANT POWDER CO. *v.* RAND, 16 BLATCH. 250.

S. D. OF N. Y., 1879. BLATCHFORD, J.

Infringement of a patent reissued to the Giant Powder Co., March 17, 1874, No. 5799. The claim was: —

"The combination of nitro-glycerine with infusorial earth, or other equivalent absorbent substance, as a new explosive compound."

The specifications gave the proper proportions, stating that they should vary

"according to the absorbent capacity of the substance mixed with the nitro-glycerine, it being preferable in all cases — and this is the only limit — to use so much only of the liquid nitro-glycerine as the absorbent substance will retain without liability to subsequent separation by compression or leakage."

For ordinary purposes, a mixture of seventy-five parts, by weight, of nitro-glycerine and twenty-five parts of infusorial earth was recommended.

The merit of the invention was that it put nitro-glycerine into the form of a powder instead of a liquid; and by this change two advantages were gained: First, the powder could be transported and handled with comparative safety, whereas the liquid was dangerously explosive; and, secondly, the powder could be put directly into the bore-hole of the rock to be blasted, entirely filling it, however irregular its shape; whereas again the liquid nitro-glycerine, in order that it should not permeate the rock, and thus become a source of danger in subsequent drillings, had to be enclosed in a cartridge somewhat smaller, of course, than the diameter of the bore-hole, and incapable of adjusting itself to the crannies thereof. A percussion-cap and an ordinary fuse

were the means of exploding the powder. Its safety lay in the fact that it could not be exploded by concussion.

Among other defences, two previous patents were set up; namely, a French patent for "improvements in the manufacture of mining and shooting powders," taken out by one Nobel, dated Sept. 18, 1863 (and a certificate of addition thereto, dated Jan. 19, 1864); and an English patent, dated Sept. 24, 1863, granted to A. F. Newton, for "improvements in the manufacture of gunpowder and powder for blasting purposes," being "a communication from abroad by Alfred Nobel." Both patents described the same invention, which was for a mixture of nitro-glycerine with gunpowder, the explosion being brought about, not primarily by ignition of the nitro-glycerine through percussion, but by ignition of the gunpowder. The claim was for

"producing explosive mixtures by treating gunpowder or analogous substances, in the manner and for the purposes above set forth."

Judge Blatchford thus stated the difference between this invention and that of the complainant: —

"It is quite clear that these French and English patents set forth that nitro-glycerine is to be mixed with gunpowder, and that the resulting compound is to be used, in the shape of a dry powder, for shooting and blasting purposes.

"The nitro-glycerine is stated to be absorbed by the gunpowder. But throughout these patents there is no allusion to the explosion of the compounded powder by the detonation or percussion of the nitro-glycerine in it, or to the explosion of the gunpowder in it by the prior explosion of the nitro-glycerine in it. On the contrary, the suggested method of exploding the compounded powder is by the ignition, first, of the gunpowder in it, and the communication to the nitro-glycerine in it of the heat generated by the burning or exploding gunpowder, so as to cause the explosion of such nitro-glycerine. There is no allusion to the fact that nitro-glycerine can be exploded by percussion or detonation, or that it ought to be so exploded, or that it is liable to be exploded by accidental concussion, or that it is therefore unsafe in being handled or transported, or that it is, when mixed with a suitable absolvent, less sensitive to shocks than when in a liquid condition, or that the proportions of nitro-glycerine and absorbent should be such that the absorbent will retain what it absorbs and not let it leak out, and that there should be sufficient nitro-glycerine to form an efficient explosive when designedly exploded by concussion. These are all dis-

tinctively described features, in No. 5799, of the powder there described, and they are none of them described in the French and English patents as features of the compound of nitro-glycerine and gunpowder there referred to," &c.

In a subsequent case,

THE ATLANTIC GIANT POWDER CO. *v.* PARKER, 16 BLATCH. 281,

Judge Blatchford once more sustained the patent against the same prior invention and against another,—a similar compound invented by one Turly, being a mixture of nitro-glycerine and gunpowder. He concluded thus: —

"The article [describing the compound referred to] . . . does not suggest that the blasting compound was a dry powder, or a safety powder, or such a compound as the patent sued on describes. The prior description to invalidate the patent must be such as to show that the article described in the patent can be certainly arrived at by following the prior description; and it is not enough to show that, by the lucky accident of taking gunpowder of the proper quality, a compound may be obtained which is unlike that indicated by such description. By the light of what Nobel has taught in the patent sued on, much can now be asserted to be seen in what was published before, which no one ever, in fact, saw in it before the original of the patent sued on was taken out. There is no evidence that any one from the Turly article, or by any method supposed to be described in it, made, before the invention in question, as patented by Nobel . . . was made by him, the safety powder which constitutes that invention. So far from this, the Turly article starts out with the assertion, that a mass of liquid nitro-glycerine is quite harmless in and of itself, and that its employment has no greater danger than that of common powder."

STROBRIDGE *v.* LINDSAY, 18 O. G. 62.

W. D. OF PENN., 1879. ACHESON, J.

T. Strobridge's reissued patent, No. 7583, dated March 27, 1877, for an improvement in coffee-mills. The claim was for

"A coffee or similar mill having a detachable hopper and grinding-shell formed in a single piece, and suspended within the box by the upper part of the hopper or a flange thereon, substantially as and for the purpose specified."

Acheson, J.: —

" . . . I do not think the word 'detachable,' as used in this claim, necessarily implies that the hopper must possess the capacity of being detached from the top of the box. The object contemplated seems rather to be to have a hopper easily detachable from the box. . . . It is not denied that prior to the date of the Strobridge invention there existed, and were well known in the art, coffee-mills in which the hopper and grinding-shell were formed in one and the same piece. This, however, is not claimed as new or patentable, but the claim is limited to a hopper and grinding-shell so constructed. If the Strobridge invention was anticipated at all, it was by . . . the 'French mill,' . . . thus described by the defendant's expert witness: 'I find in the "Exhibit French mill" an article known as a box-mill, and consisting of a box with a top made of wood, upon the under side of which a block is glued so as to extend down into the box when the top is placed on the box. Through the centre of the top and block a funnel-shaped opening is made, so that this opening through the top and block forms a hopper, being flush with the upper surface of the top of the box. The top and block being glued together makes them practically one piece. To the bottom of the hopper, and concentric with it, the grinding-shell is attached.'

" After a careful inspection of the 'Exhibit French mill' and 'Exhibit Strobridge,' I have reached the conclusion that they differ in important particulars, and that the 'French mill' does not embody the invention covered by the first claim of the complainant's patent. The 'French mill,' indeed, has a sunken or suspended hopper; but here, it seems to me, its likeness to the complainant's invention ceases. The hopper and grinding shell of the 'French mill' are not in one piece. The steel grinding-shell is attached to the bottom of the wooden hopper by means of screws. The sunken part of the wooden hopper is glued to the underside of the cover or top of the mill, and the top is nailed and glued to the sides of the box.

" Neither in the 'French mill,' nor in any other mill shown to have been in existence prior to the Strobridge invention, is there to be found the combination described in the . . . complainant's reissued patent; namely, a coffee-mill having a detachable hopper and grinding-shell formed in a single piece, and suspended within the box by the upper part of the hopper or a flange thereon. . . .

" The defendants, however, strenuously insist that in view of the state of the art, especially as shown by 'Exhibit elevated hopper mill' [not described in the report] and 'Exhibit French mill,' the former having the hopper and grinding-shell in one piece, and the latter

showing a sunken hopper, it did not require invention to make the structural changes recited in the . . . Strobridge reissued patent; but to this I cannot give my assent. To me it seems that the complainant has produced a new and useful mill differing substantially from any which preceded it, and evincing the exercise of the inventive faculty.

"A change in the form of a machine or instrument, though slight, if it works a successful result not before accomplished in a similar way in the art to which it is applied, or in any other, is patentable (Isaacs *v.* Abrams, 14 O. G. 861); and the validity of a patent is not determinable by the degree of novelty or invention displayed (The Miller & Peters Mfg. Co. *v.* Du Brul, 12 O. G. 531). Utility, within the meaning of the patent law, is authoritatively declared to exist 'if the combination is new and the machine is capable of being beneficially used for the purpose for which it was designed' (Seymour *v.* Osborne, 11 Wall. 549).

"Applying these principles to the complainant's reissued patent, why should it not be sustained?

"His combination is new, and, as a result, we have a superior mill characterized by simplicity of construction and the facility with which its several parts may be set up, and, when finished, compact, convenient, and durable. The merits of the invention were quickly perceived by the public. The box-mills in the general market prior to the introduction of the Strobridge mill had the hopper above the top of the box. Immediately upon the appearance of the complainant's mill it met with great popular favor and obtained a ready sale," &c.

In a subsequent case, The Same *v.* The Same, 19 O. G. 1285, Acheson, J., again described the French mill.

THE UNITED STATES STAMPING CO. *v.* KING, 17 BLATCH. 55.

S. D. OF N. Y., 1879. BLATCHFORD, J.

Infringement of a patent granted to E. A. Heath, Oct. 10, 1871, for an "improvement in cuspadores." The defence set up the patent of W. H. Topham, granted Aug. 2, 1870, for an "improved spittoon."

The Heath invention was thus clearly described by Judge Blatchford:—

"It is plain that the invention claimed is a metallic cuspadore, formed of three metallic parts, the lower part being heavier than in

ordinary then existing cuspadores, and extending up to the largest diameter of the spheroid, the middle part and the upper part being lighter than in ordinary then existing cuspadores, the middle part being of a dome shape, and being joined below to the lower part, and above to the upper part, and the upper part being an inverted cone in shape, flaring outwards, and forming a mouth, the whole structure not being liable to fracture, and having the capacity of returning to an upright position, of itself, from a position not upright, when left free, and being essentially of the form shown in the drawings of the patent. That form is a spheroidal body with a conical mouth, flaring outwards."

The Topham specification said: —

"My invention is designed to be applied to spittoons, pails, and other vessels made of paper, . . . and the invention consists in incorporating with the bottom or lower part of the vessel a weight so arranged that, in case of force being applied, no matter from what side, to tilt or upset the vessel, said weight will have the effect of retaining it in its proper position, or of returning it thereto, and so that, when the vessel is thrown down to its place, the weight will cause it to readily adjust itself to a proper bearing on the surface on which it is intended to rest." The claims were: "1. A spittoon made of paper, weighted at its bottom or lower part by a heavier material. . . . 2. The arrangement of a weight, B, between two thicknesses or layers of which the bottom, *a*, or lower part of the paper vessel is composed, essentially as for the purpose herein set forth."

Judge Blatchford remarked: —

". . . The Topham loaded-bottom papier-maché spittoon is not shown to have suggested to any one the making of a metallic loaded-bottom cuspadore like that of Heath's. The metallic cuspadores of Musgrove were not loaded at the bottom, and were merely experimental. . . . But the history of Musgrove's experiment, as given by himself, goes far to show that the making of Heath's cuspadore was not the obvious thing that it is now, after the event, claimed to have been. . . . Many articles had, prior to Heath's invention, been made of three or more pieces of sheet-metal joined together by horizontal seams; but the question as to whether it would be useful or practical to make a metallic cuspadore of three pieces of metal in the way suggested by Heath, and with a loaded bottom, still remained for the exercise of invention. . . . The Topham structure is lacking in the essential features of the Heath structure. Topham's spittoon is not a cuspadore, and is not metallic, and is not made of three parts joined together. In Heath's cuspadore the rounded form and the load in the base co-operate to make

the structure self-righting. In Topham's spittoon there is no such co-operation between the form and the weighted base, as the sides are nearly straight, and the bottom is not rounded. . . . The Heath cuspadore . . . was immediately appreciated by the public. In the first season 20,000 were made; in the second, 40,000; in the third, over 80,000. . . . This result, in connection with all the differences before adverted to between the Heath cuspadore and prior structures, leads to the conclusion that the invention claimed in the Heath patent is a patentable invention, and that the patent is valid. The case falls within the principles laid down in Smith *v.* Goodyear Dental Vulcanite Co. (3 Otto, 496) and in Hicks *v.* Kelsey (18 Wall. 670)." [1]

Judge Blatchford made a similar decision in the case of the same plaintiff *v.* Jewett, 13 Blatch. 469.

GARDNER *v.* HERZ, 16 BLATCH. 303.

S. D. OF N. Y., 1879. BLATCHFORD, J.

Gardner's reissued patent of July 4, 1876, No. 7203; originally granted May 21, 1872.

The patent was for a chair-seat made of two or more veneers of wood, with the grains thereof crossing each other, the veneers being glued together. The seat might be perforated, for ventilation and for ornament, in any desired form. This arrangement of the veneers made a strong and solid seat.

A patent, however, had been granted to Mayo, one of the defendants, Dec. 25, 1865, reissued Aug. 18, 1868, for "improved material for roofing, tubing, tanks," &c., "and other

[1] A decision the other way was made by Nixon, J., in the case of Ingersoll *v.* Turner, 12 O. G. 189, where, however, the evidence as to priority was somewhat different. Speaking of Heath's cuspadore in relation to Topham's spittoon, Judge Nixon said: "*What, then, has Heath done? He has improved a cuspadore by increasing the weight of the bottom, whereby it is rendered less liable to upset, using the same means that Topham applied to spittoons, and producing the same results. He has substituted sheet-metal for other, and, it may be, less appropriate, materials for the manufacture; but there was no invention in the mere change of material. And this method of construction, to wit, the putting together the cuspadore in three pieces, is so obvious that nothing was claimed for it in the patent, and nothing ought to have been.*"

structures." This patent described exactly such a substance as the plaintiff's; and the claim of the reissue was as follows: —

"The employment or use of the compound scale-board, hereinbefore described, in the formation of the specified or analogous structures or articles of house decoration, fitting, and furnishing."

As to the perforations, a patent had been reissued to one Tice, June 27, 1835, for a chair-bottom of perforated sheet-metal; and another to J. A. Cochran, May 22, 1866, for a perforated chair-bottom of india-rubber.

On these facts, the court held that there was no invention in the plaintiff's chair-bottom.

SHARP *v.* STAMPING CO., 103 U. S. 250 (1880).

Lazear's patent of July 14, 1868 (No. 79,989), for an improved apparatus for broiling steak by gas, thus described by the court (Woods, J.): —

"The invention was represented and described as an upright cylinder or closed casing of sheet-metal, with a lid for closing the top, and with an open bottom. The diameter of the open bottom was traversed by a V-shaped horizontal trough, dividing it into two equal openings, through which the flame of a gas-stove, over which the apparatus was placed, might enter in two equal sheets. The trough was filled with plaster of Paris or other good non-conductor of heat, and upon this non-conductor the dripping-pan was placed for receiving the juices of the meat. The steak was clasped in a wire broiler, which was placed in the cylinder or closed casing in a vertical position, with its lower end resting in the dripping-pan, the two flat sides of the meat being equally exposed to the two sheets of flame which entered the lower end of the cylinder in the manner stated. The object was to produce an apparatus in which both sides of the meat might be cooked equally and at the same time, and in which the drippings from the meat might be caught in a pan, where it [*sic*] would be protected from the injurious effects of the heat.

"The latter object was obtained by the non-conductor filling upon which the drip-pan rested, and which filled the V-shaped trough.

"The trough served to contain the filling and support the pan, and to divide the flame into two equal sheets, which ascended along the sides of the steak."

The first and third claims of the patent were: —

"'1. The V-shaped trough E and the filling E', by which the flame is divided, and the grease protected from burning, and smoke thereby prevented, substantially as described, in combination with a gas steak-broiler.'

"'3. An apparatus for broiling steak by gas, whereby the steak is broiled or cooked simultaneously on both sides, or where the sides are equally exposed to the flame and heat, substantially as shown and described.'"

Devices alleged to anticipate this device were set up as follows: 1. Teller's patent (No. 66,911), dated July 16, 1867. The court remarked upon it: —

"The apparatus described in the Teller patent was a cylindrical vessel, having a central opening in the bottom, and an annular opening around the central opening, and a series of vertical wires or rods inserted in the annular bottom that intervened between the two openings. An inverted conical deflector was suspended in the central space from above. The claim of Teller's patent was thus stated: 'The vertical position in which the steaks are placed over the fire, and the arrangement of the vertical rods E E, all substantially enclosed with the cap C, as specified for the purposes in the specifications.'

"It is clear that this contrivance did not anticipate the invention of Lazear. It had no V-shaped trough, filled with a non-conducting substance, nor the dripping-pan referred to and claimed in his letters-patent, nor anything resembling it. It was not adapted to be used with a removable wire broiler, and did not evenly distribute the flame along two sides of the steak."

2. The Shaw patent, No. 28,781, dated June 19, 1860. This patent described a broiling-chamber within which, and supported by a steak-holder in a vertical position, was the steak, not in the centre of the chamber, but close to one side of it. This side was removable, and had attached to its lower end a pan to catch the gravy. Gas jets were placed below the centre of the chamber, and there were two deflectors extending across the chamber, — one at the top and one at the bottom. The object of the deflectors was to turn the heat, first, upward, and then downward from the top of the chamber, so that it should be distributed evenly on all sides of the steak. This, however, was not the result, for, to quote from the opinion, —

"The evidence makes it clear that this contrivance is not capable of broiling a steak equally and simultaneously on both sides, the lower

deflector causing the lower part of the steak to remain raw while the upper part is burned, and the side next the removable vertical cover is left raw." "We can find nothing," said the court, "in this invention which anticipates the claims of the Lazear patent."

A third contrivance set up in defence is not important for our purpose.

HOBBS *v.* KING, 8 FED. REP. 91.

W. D. OF PENN., 1881. ACHESON, J.

J. H. Hobbs's patent of Oct. 15, 1872, No. 132,208, for glass-ware graduated on its inner face, by means of a graduated plunger, is not anticipated by Timmon's patent (dated Sept. 18, 1866), which described graduations blown or cut on the out-side of the glass; nor by Hodgson's patent (dated Feb. 18, 1862), according to which "the glass measures have exterior graduations communicated from graduating marks on the interior walls of the mould."

Said the court:—

"From the uncontradicted evidence it appears that Hobbs's invention is a decided improvement. . . . It is shown that where the graduations are on the cavity of the glass mould, the correctness of the work produced is affected by unavoidable variations in the quantity of molten glass put in the mould, for these variations affect the thickness of the articles of glass-ware through the bottom. But with Hobbs's apparatus and method the thickness of the article through the bottom makes no difference; for if the plunger goes down deeper into the mould, the graduations made in the article will be correspondingly low down, and *vice versa*."

The learned judge also discussed, perhaps unnecessarily, a metallic cup, included in the Hodgson patent, graduated on the inside, but not by the plaintiff's method; and he remarked upon the fact that you cannot see through a metallic cup, but you must observe the graduations of it, by peering into it over the top.

GRIFFITHS *v.* HOLMES, 8 Fed. Rep. 154.

D. of Conn., 1881. Shipman, J.

Cary & Griffiths's reissued patent, No. 5067 (dated Sept. 24, 1872), for an improved suspension ring for business cards.

Shipman, J.:—

"The device consists of a ring of thin sheet-metal, having a shank or bottom piece, provided with sharp spurs, which are pushed through the card and turned down on the opposite side. These spurs are made like those of the little article in common use as a paper-fastener.

"The novelty of the patented device was anticipated by an umbrella-fastener, called upon the trial 'Twitchell's umbrella-fastener,' which was made by the American Ring Company of Waterbury, Conn., for some years, beginning in the summer or fall of 1865, and which is still in common use. This fastener is a ring of sheet-metal, with spurs, which are pushed through the india-rubber band which serves to keep a folded umbrella in place.

"The ring attaches the end of the band to a button or hook. The suspension ring is like the umbrella-fastener, except that the former has a longer shank than the latter, because it is a matter of convenience that after the spurs have been fastened to the card the whole circumference of the ring should be unoccupied, so as to permit it to be easily slipped upon a nail.

"This is an obvious matter of construction, and the necessary change requires only mechanical taste and skill. Substantially the same article is used for two objects, and the new use is quite analogous to the purpose for which the article was previously used. The bill is dismissed."

PENNINGTON *v.* KING, 7 Fed. Rep. 462.

D. of Mass., 1881. Lowell, J.

Automatic lawn-sprinklers.

Head-note: "Sprinklers with radial arms revolved automatically by the force of water passing out through one and the same side of each arm, and sprinklers having a semi-globular vessel with radial ridges and perforations on one side thereof, causing the vessel to revolve by the water passing through them, *held*, not to anticipate a sprinkler having a

rose or globe, with holes bored at an angle of inclination, so as to produce a revolving motion by the forcible discharge of water through them."

SMITH *v.* MERRIAM, 6 FED. REP. 903.

D. OF MASS., 1881. LOWELL, J.

Sutherland's reissued patent, No. 7510,

[1] "for a stay-strip as a new article of manufacture. The stay-strip, as described, is a narrow piece of leather folded or doubled so as to fit over the projecting seam, and with a channel or groove to hug or fit that seam, and other grooves at the sides of the seam calculated to receive the stitches by which the stay is fastened to the boot or shoe. The projection of the seam raises a fillet as it is called, or swell, which serves to protect the stitches, and this is done still further by the beads or swells or fillets which bound the grooves on the edges of the stay-strip. The specification explains one great advantage of a strip thus prepared to be that it can be sewed automatically to the boot or shoe without troubling the operator to guide it by hand so much as he must a strip of a different shape. He claims this stay-strip in its several forms. . . . The admitted or uncontradicted state of the art I understand to be this: Strips had been sewed over the seams of boots and shoes by hand and by sewing-machines. In one class of work soft strips had been applied to outward-turned seams with a rolling presser-foot, and the effect of the operation was to leave slight grooves or depressions near the edges of the finished and applied strip, which had the useful property of protecting the stitches, and a central swell over the seam. Grooved or beaded edges of leather strips, where stitches were laid, had been used in harnesses, and in ladies' belts, and straps for pocket-books, and other articles. One of the pieces of harness produced in evidence looks very much like the plaintiffs' stay-strip. In this state of the art, and of the plaintiffs' patents, I am of opinion that a stay-strip with beaded edges, to protect the stitches, could not be patented as a new article of manufacture, and that a stay-strip with a central recession formed beforehand, to fit or hug the seam, could not be patented by the reissue."

[1] Quoting from the opinion of Lowell, J.

JOHNSON *v.* RAILROAD CO., 105 U. S. 539 (1881).

It was alleged by the plaintiff that his patent (reissued April 16, 1872) covered what is commonly known as "the fish-plate joint" for uniting the ends of railroad rails. The report thus describes this joint: —

"It consists of two iron plates of proper shape and size to fit the 'web,' which is the upright portion of the rail between its head and base. The plates are fastened one on each side of and near the ends of two abutting rails by means of bolts and nuts, the bolts passing through corresponding holes formed in both the plates and rails. In order to permit the rails to expand and contract with the changes in temperature, their ends are not allowed to form a close joint, and the holes, either in the fish-plates or in the rails, are made larger than the bolts, and are elongated in the direction of the length of the rails. By these means the expansion and contraction of the rails is 'compensated' without injury to the joint."

The patentee alleged that in the year 1843 he made a model which contained this device; and thus he attempted to carry back his original patent, dated 1857, to the year 1843.

Upon this point the court remarked as follows: —

"We have examined the model referred to, and cannot see that it contains any suggestion of the fish-plate joint. It is simply an oblong strip of sheet-iron, having its sides bent over so as to form flanges, and with four oblong holes in each flange corresponding with similar holes in the other, and a bolt to pass through the corresponding holes in the flanges. The model is a single piece of sheet-iron, supposed to represent an iron rail. There is no suggestion that it is to be connected with any other rail, and there are no plates or bars with which to make the connection. If the model suggests anything, it is simply the use of a bolt in slotted holes, which, as the testimony in this case shows, was a device in common use in many ways long before the year 1843.

"It is alleged that the model spoken of was made by Johnson when he was about twenty years of age. It does not appear that at this time he had ever seen an iron rail such as those to which a fish-plate joint can be applied, or that he had ever seen a railroad. According to his testimony, the model when finished was placed by him upon the plate under the eaves of a wood-house, where it remained unseen by any one for thirty-three years, until the spring of 1876, when he returned to the place where he had lived in 1843, and got the model for the purposes of this suit.

"It is sufficient to say that the proof fails to show that he in 1843, or at any time before the fish-plate joint for uniting iron rails came into use, was the inventor of that device, or that he ever invented it at all. It was not described in his original patent, and he never set up any claim to it until the year 1872, when its use had become universal wherever railroads were constructed."

PACKING COMPANY CASES, 105 U. S. 566 (1881).

W. J. Wilson's reissued patent No. 6370, dated April 6, 1875. J. A. Wilson's reissued patent No. 7923, dated Oct. 23, 1877. The first for a process of preserving and packing cooked meats for transportation. The second for an improvement in metallic cans intended to hold cooked meats.

The first patent was the more important in this case. The court below thus described it:[1]—

"The meat is to be first thoroughly cooked by boiling it in water, so that all the bone and gristle can be removed and the meat yet retain its natural grain and integrity. While yet warm with cooking it must, by some suitable apparatus, be pressed into a box or case, previously prepared, with sufficient force to remove the air and all superfluous moisture, and make the meat form a solid cake. The box or case is then to be closed air-tight upon the meat. So that the invention contains these elements: 1. Thoroughly cooking the meat by *boiling it in water*, removing the bone and gristle. 2. Placing it, while yet warm with cooking, into a box or case, and pressing it by some suitable apparatus with sufficient force to remove the air and all superfluous moisture, and make the meat form a solid cake. 3. Closing the box or case air-tight upon the meat."

The patent originally included meat *however* cooked, if otherwise treated as described in the patent. But while the trial below was in progress, the patentee disclaimed any process in which the meat was not boiled.

After this disclaimer, the claims of the patent, for the process and its product, ran as follows:—

"*First.* The within-described process of packing, for transportation, meats cooked by boiling, by compressing the same while heated with

[1] 9 Fed. Rep. 547.

cooking into an air-tight package, so as to preserve the meat in its integrity, and retain the natural juices and nutritious qualities of the same.

"*Second.* As a new article of manufacture, meat cooked by boiling, put up while heated with cooking, so as to form a solid cake in the package in its natural state, without disintegration or desiccation, in hermetically sealed packages, as set forth."

Mr. Justice Woods delivered the opinion of the court. Speaking of the disclaimer which we have mentioned, he said: —

"... The patentee and the complainants, it appears, were induced to make this disclaimer by the evidence introduced by the defendants in this case, especially the patent of A. S. Lyman, dated June 22, 1869, 'for an improved mode of preparing and pressing roast meat in a condensed and concentrated form,' and it amounts to an admission that they could not sustain the process covered by their patent, except as applied to boiled meats.

"We are clearly of opinion that a change in the mode of cooking the meat from broiling, roasting, or steaming to boiling, all the other parts of the process remaining unchanged, cannot be called invention, and does not entitle the party who suggests the change to a patent for the process. 'All improvement is not invention, and entitled to protection as such. Thus to entitle it, it ought to be the product of some exercise of the inventive faculties, and it must involve something more than what is obvious to persons skilled in the art.' Pearce *v.* Mulford, 102 U. S. 112. See also Rubber-Tip Pencil Company *v.* Howard, 20 Wall. 498; Hotchkiss *v.* Greenwood, 11 How. 248; Stimpson *v.* Woodman, 10 Wall. 117.

"If meat cooked by roasting or steaming, and put up in a given mode, formed a valuable article of commerce, the cooking of the meat in other ways, as, for instance, by boiling, would naturally occur to any one engaged in the business of packing such food for the market.

"But we think there is nothing new in the process covered by the patent under consideration. Clearly, all its separate elements are old and well known, and have been long used. This is not controverted. The evidence shows that the process of boiling meat, packing it while warm in cans, and sealing it air-tight, had long been used before the original application of Wilson. There is, it is true, much conflict in the evidence, but, taken all together, it leaves no doubt in our minds that the process of cooking meat, lobsters, and other articles of food by boiling, and, while warm from the cooking, compacting them in cans, which are then sealed up air-tight, was practised in many places and for many years before his application.

"Complainants, however, insist that there are two elements in their process which, taken in connection with the others above mentioned, form a combination never used before the date of his patent.

"The first of these is the subjecting of the cases, after they are packed and sealed air-tight, to what is known as the Appert process. This consists of placing in hot water the cans, after they have been filled and sealed up, and thereby heating them. They are then removed and punctured, and the heated air and gases in the cans are allowed to escape. The puncture is immediately closed by a drop of solder.

"The contention is that all this is made a part of the process covered by the Wilson patent, by the description of the new article of merchandise covered by the second claim as "cooked meat" "in hermetically sealed packages." It is insisted that the term 'hermetically sealed packages' implies, among those dealing in canned goods, that the packages have been subjected to the Appert process.

"We think that this is an unwarrantable stretch of the meaning of that claim. The article of merchandise which it covers is produced by the process disclosed by the specification and first claim. "The second claim expressly states that it covers cooked meat put up in solid form, &c., 'in hermetically sealed packages, as set forth.'

"Recurring to the specification and first claim, we are not left in doubt about what, as there set forth, is the process of sealing the cases or cans hermetically. The invention is declared to consist in a process for packing cooked meats into an air-tight package. The method of doing this is thus described: 'A measured quantity of this cooked meat is, while yet warm with cooking, pressed by any suitable apparatus into a previously prepared box or case with sufficient force to remove the air and all superfluous moisture and make the meat form a solid cake. The box or case is then closed air-tight upon the meat.' The process is simply to exclude the air from the case by filling it compactly with cooked meat still warm, so that the cover, when applied, will rest on the meat, and then closing the case by fitting on the cover air-tight.

"There is no suggestion here of anything further to be done to make the package a hermetically sealed one. The process described leaves it hermetically sealed. There is no hint that the Appert process is to be subsequently applied as a part of the process covered by the patent. On the contrary, that idea is excluded by the terms of the second claim, 'hermetically sealed, as set forth.'

"It is further contended by the appellants that the process disclosed by the patent includes the cooking of the meat to be canned by plunging it into water already heated to the boiling-point. That is, the process of cooking is commenced by placing the meat in water already heated up to 212° Fahrenheit. By this method of cooking, it is said that the

meat is preserved in its integrity, and all its natural juices and nutritious qualities are retained.

"We think that the plan of beginning this process of cooking, by putting the meat in water already heated to the boiling-point, is not set forth in the specification or claims. The conditions that they prescribe would just as well be filled by placing the meat in cold water which is then heated to the boiling-point, and allowing the meat to remain in it until cooked thoroughly. No person, on reading them, could extract the idea that there was any advantage to be gained by heating the water to the boiling-point before placing the meat in it to be cooked, or that any such method was in the mind of the inventor. This part of the process is clearly an afterthought, and not intended by him to be covered by his patent when he applied for it. It is evident that the part now under consideration is nowhere described in the specification in full, clear, and exact terms, as required by law. On the contrary, it is not described at all.

"The Appert process, and the cooking of meats by plunging them into water already heated to the boiling-point, may be of great advantage to the canned meats put up by the complainants, and their alleged superiority to the products of other parties may be attributed to these practices. But the trouble with complainants' case is that these elements are not included in the process disclosed by the patent which they allege is infringed by the defendants. Our conclusion is, therefore, that there is nothing new in the process described in the patent. All the elements of the process are old. They are merely aggregated, and the aggregation brings out no new product, nor does it bring out any old product in a cheaper or otherwise more advantageous way. This disposes of the first claim of the patent under consideration. If that claim cannot stand, it follows that the second claim, which is for the product made by the employment of the process described in the first claim, is also invalid. We are of opinion, therefore, that the patent is void for want of invention and for want of novelty in the process described therein. . . .

"All, therefore, that is left to consider is whether the shape of the can described in the [J. A. Wilson] patent[1] is new, and whether the

[1] The first and third claims only were in suit. They ran thus:—

1. "A can for packing food, hermetically sealed and constructed of pyramidal form, with rounded corners, and offset ends to support the heads, said heads being secured as shown and described."

3. "An improved article of manufacture, solid meat compressed and secured within a pyramidal case or can, so that said can forms a solid mould for the meat, and permits its discharge as a solid cake, substantially as described."

defendants use it. The shape of the can described in the patent is pyramidal, with round corners, and with four or more sides. It is admitted on the record by counsel for the complainants that, prior to the date of the Wilson patents, conical tin cans were made and used for canning alimentary substances, and sealed air-tight. If it be conceded that the change of a conical can to a pyramidal can, with rounded corners, involves invention, the complainants are met with distinct and unequivocal evidence that cans used for containing preserved food, and closed air-tight, having four or more sides and pyramidal in form, with rounded corners, were mentioned in the fifth addition to the patent of Emile Peltier, before referred to, and that the machinery for making them was therein described.

"What has been said leaves nothing for the third claim of the patent to rest on. There is nothing new either in the shape, construction, or material of his cans. There is in the record abundant evidence that, long before the date of his patent, cooked meat was packed in cans, so that they served as a mould for the meat, and the meat formed a solid cake. The use of a pyramidal can, which was old, for the purpose of receiving the meat cake, which was also old, involved no invention. The use of vessels with flaring sides, as receptacles and moulds for edible substances, is as old as the art of cookery. Our conclusion is that both the first and third claims of the patent are void for want of novelty."

MATTHEWS *v.* MACHINE CO., 105 U. S. 54 (1881).

Hydrants. Unimportant case.

The court: —

"As to the valve apparatus, the object of which is to let the water in the body of the hydrant escape when the main valve is closed, and to prevent any escape of water when the main valve is open. Since Race and Matthews [the plaintiffs] were not the original inventors of this process, but only of a particular arrangement of valves to effect it, they can only properly claim the specific arrangement which they invented."

McCLOSKEY *v.* DU BOIS, 19 BLATCH. 205.

S. D. OF N. Y., 1881. WHEELER, J.

McCloskey's patent, No. 220,767, for an improvement in plumbers' soft-metal traps, the claim being for

"a die-drawn seamless trap of soft metal, as a new article of manufacture, substantially as herein described."

"These traps," said the court, "are simply bends of water-pipes downward and then upward far enough to hold sufficient water in the bends to fill the bore of the pipes at the lowest point, and prevent the passage of air or gas."

The patentee's traps differed from those commonly used only in that they were drawn through a die instead of being cast or moulded; and it did not appear that lead or other soft metal, when drawn or wrought, was at all different from lead cast or moulded. (The patentee described a process, but claimed only the product.) The court, therefore, held that the plaintiff's traps were not patentable.

". . . The new [traps] are said to be marked with 'longitudinal striations;' but these have nothing whatever to do with the quality or operation of the trap. They are merely the inevitable marks of the die. They are said to distinguish in appearance the new from the old; but that would only be the subject of a design patent, if of any. . . . The patent covers no invention. Wood-Paper Patent, 23 Wall. 562.

"However meritorious an invention of the means for making a drawn trap might be, this patent, which, while it describes means, is for the product only, has nothing to rest upon."

CROSS *v.* MACKINNON, 11 FED. REP. 601.

S. D. OF N. Y., 1882. WHEELER, D. J.

The court:—

"The orator has a patent, numbered 199,621, for an improvement in fountain pens, the principal distinctive feature of which is a spring working between the vibrating writing-pin and the air-tube, to project the pin and restrain the flow of ink when the pen is not in use, and yield to the pressure on the point of the pin and make room for the

flow of ink when the pen is in use. The first claim, which is the one in controversy, is of the vibrating pin and spring combined with the air-tube case of the pen and ink-tube. The defences to this suit upon the patent are want of novelty in the invention patented, and non-infringement. Fountain pens with air-tubes, vibrating points, and other necessary points were well known at the time of the plaintiff's invention; but none of them had his precise arrangement of a vibrating point worked by a spring connected with an air-tube, as he arranged them. The defendant, Mackinnon, had a patent for one substantially like the plaintiff's, except that the vibrating point was actuated by a weight instead of by a spring; in others there were springs, but which were not connected, and did not operate like the plaintiff's.

"One ground of want of novelty presented and urged is the equivalency of the weight in Mackinnon's patent to the spring in the plaintiff's. That they are equivalent in some operations is well established and known; but the question on this part of the case is whether they are equivalent in producing the desired result here. The efficiency of the weight is affected by its necessary confinement in a small working place, and by the necessary inclination of the pen from a perpendicular, both when in and out of use. Something to act more quickly in the direction of the point of the pen, without regard to its perpendicularity, was necessary, and this was found in the spring, which in this operation was more than the equivalent of the weight.[1] Another ground of lack of patentable novelty is an alleged want of working together of the parts mentioned as combined in this claim. This position rests chiefly upon the fact that the air-tube, as such, has nothing to do with the spring; that it is a mere support to the spring, and for that purpose might as well be a solid rod.

"It is a fact that the air in the tube, and the tubular form of that part, have nothing whatever to do with the operation of the springs; but the patent does not rest upon the idea that they do. The pressure of the air-tube was necessary in the pen, and the merit of the invention consists in making the further use of this necessary part to sustain the spring where it is wanted. It does combine with the spring for this purpose, and by this invention is made to do two things instead of one. The spring could be attached to something else, but that would make a different pen, and probably not so good a one."

[1] *Vide ante*, page 67.

ADVANCE IN DEGREE.

FLOOD *v.* HICKS, 2 Biss. 169.

N. D. of Illinois, 1869. Drummond, J.

E. F. Flood's patent of Oct. 15, 1867.

A wagon had been constructed with a reach curved, but not curved sufficiently to allow the fore-wheels to pass under it. The patentee made the reach much more curved, so that the wheels could pass under it, and the wagon could make a sharp turn.

Drummond, J., *held* that when the idea of a curve in the reach had once been attained, any mechanic might naturally think of a greater curve under which the fore-wheels could pass, and, therefore, that the improvement was not patentable.

SMITH *v.* ELLIOTT, 9 Blatch. 400.

S. D. of N. Y., 1872. Woodruff, J.

Perhaps the patent which best illustrates the distinction taken by the courts between mechanical skill and invertive genius is that of William Smith for a corded fabric, reissued in 1868. This patent was thrice in suit, the last time in the Supreme Court. In each case the decision was against the patent.

The fabric as improved by the patentee was used for the gores of gaiter boots, superseding all other materials for that purpose, so that it was of great value. It was thus described by Lowell, J.:[1] —

"A corded fabric in which the central cords or cord warps are griped firmly between two weft threads, each passing half-way round the cord, one above and the other below, and the cords are separated from each other by the interweaving of warp threads and weft threads in strips of cloth between the cords only, and not over and under the cords, so that the cords are covered by weft threads only. The claim is for the corded fabric, substantially as described, in which the cords are elastic and are held between the upper and under weft-threads, and are sepa-

[1] Smith *v.* Nichols, 1 Holmes, 172.

rated from each other by the interweaving of the upper and under weft-threads with the warp threads in the space between the cords, and only there."

Before the first trial,[1] in January, 1870, the patentee filed a disclaimer of any fabric "in which the warp and weft threads are so interwoven between the elastic cords as to form strips of shirred cloth between, and by the contraction of the elastic cords; declaring that in his fabric the warp threads are interwoven with the weft threads only for the purpose of bending the latter tightly about the elastic cords."[2]

The fabric relied upon by the defendants in each case to defeat the patent was a webbing which had been used for suspenders, &c., but not for gores of boots. This was like the patentee's fabric, except that it was less tightly woven, and that its cords were less near together. It was thus described by Woodruff, J.:[3] —

"True, these fabrics do not appear to have been woven of a width sufficient for gores of boots. The material does not appear to have been of suitable fineness to render the fabric attractive for that purpose, although there is some evidence which may qualify this observation. Such a use does not distinctly appear to have been made of those fabrics, until the complainant commenced the manufacture. It is at least doubtful whether those fabrics had the elasticity which is required for shoe gores; and in other particulars there were differences, not in construction or kind, but only in degrees and qualities, not of the substance of the invention claimed.

"If the complainant's patent had been prior in date to the manufacture of these fabrics, and was otherwise valid, there is not a doubt — there can be none — that these fabrics are directly within the claim of the complainant, and would have been plain infringements of his patent. This is a rational, and in general, when they include the whole of an alleged invention, a conclusive, test of the originality of the latter."

Before the second suit,[4] the patentee had disclaimed "any fabric in which the weft threads are so interwoven with the warp threads which lie between the elastic cords that the former are not brought half-way around each of said cords, so as to gripe

[1] Smith *v.* Elliott, *supra*.
[2] Quoted from the opinion of Lowell, J.
[3] Smith *v.* Elliott, *supra*.
[4] Smith *v.* Nichols, *supra*.

them in such a way as not to permit said elastic cords to slip between said weft threads, in case said cords are cut crosswise or bias." In this second case[1] (before Clifford and Lowell, JJ.), Judge Lowell delivered the opinion as follows: —

" . . . This evidence establishes that cloth for suspenders was made with cords of india-rubber covered with weft threads only, the cords being of variable sizes and placed at variable distances apart, according to the degree of elasticity and other properties that were desired. Taking this evidence and the plaintiff's disclaimers into consideration, he appears now to claim that his fabric differs from others known before by being more tightly woven, so that it can be cut crosswise without danger of the cords slipping back or withdrawing, and by having the cords so near together that they form a great part of the bulk of the cloth. Now, it does not appear to us that these differences make up a patentable improvement.

"The fact that an article is better and more useful in the trade is evidence of novelty; but if the superiority is attained by the application of known means in a known way to produce a known result, though a better one, the novelty required by the patent law is wanting. . . . We find that the real objection [to the old webbing used for suspenders] . . . is the want of sufficient elasticity. Many of the dealers give this as the only defect, and most of the others say that the old article is wrong in color, width, and elasticity.

"It is plain that color and width are merely questions of construction, and we think it not less so that the greater elasticity of the complainant's fabric will not support his claim. The old fabrics were of various degrees of elasticity, and the way to increase or diminish the elasticity was perfectly well known; namely, by increasing or diminishing the relative proportion of the elastic cords to the other threads. Any manufacturer could have produced an article with greater or less elasticity, as the needs of the trade might require, up to the maximum which was possible to be attained by native india-rubber, the article then in use for the elastic strand. . . .

"The other ground on which the second disclaimer distinguishes the old from the new article is that in the latter the cords are so firmly grasped by the weft threads, each of which passes half-way round them, that the cords can be cut crosswise, without injury to the fabric by the withdrawing of the cords." He examines the evidence on this point, and says: "The fair result of the whole evidence is very strongly to prove that the old webbing was wanting only in elasticity, and that

[1] Smith *v.* Nichols, *supra*.

the amount of that quality was variable, and could be increased or diminished by the manufacturer.

"But granting that the old cloth was not so tightly woven that it could be cut crosswise without injury (which we do not think the evidence warrants us in granting), that change, too, would seem to be within the knowledge of the manufacturer. Corded elastic fabrics were made in which the same mode of weaving was employed as in the plaintiff's, and making a closer texture by the old means — that is, by drawing the weft threads tighter round the cords — must surely be a matter of construction only. Especially is this seen to be true when we remember that the cords were of various sizes, since the firmness with which they would be griped by the weft threads would depend much on the relative size of the cords and weft threads."

On appeal to the Supreme Court,

SMITH *v.* NICHOLS, 21 WALL. 112,

the decision of the circuit judges was affirmed. Mr. Justice Swayne, delivering the opinion of the court, said: —

"A patentable invention is a mental result. It must be new and shown to be of practical utility; everything within the domain of the conception belongs to him who conceived it. The machine, process, or product is but its material reflex and embodiment. A new idea may be engrafted upon an old invention, be distinct from the conception which preceded it, and be an improvement. In such case it is patentable. . . . But a mere carrying forward, or new or more extended application of the original thought, — a change only in form, proportions, or degree, the substitution of equivalents, doing substantially the same thing in the same way, by substantially the same means, with better results, — is not such invention as will sustain a patent. These rules apply alike, whether what preceded was covered by a patent, or rested only in public knowledge and use. In neither case can there be an invasion of such domain, and an appropriation of anything found there. In one case everything belongs to the prior patentee; in the other, to the public at large.

"The question before us must be considered in the light of these rules. All the particulars claimed by the complainant, if conceded to be his, are within the category of *degree*.

"Many textile fabrics, especially those of cotton and wool, are constantly improved. Sometimes the improvement is due to the skill of the workmen, and sometimes to the perfection of the machinery employed. The results are higher finish, greater beauty of surface, and

increased commercial value. A patent for the better fabric in such cases would, we apprehend, be unprecedented. The patent in the present case rests upon no other or better foundation."

WOOSTER *v.* CALHOUN, 11 BLATCH. 215.

S. D. OF N. Y., 1873. WOODRUFF, J.

Patent of T. Robjohn, dated April 19, 1864, claiming "a banded ruffle, whether crimped, fluted, ruffled, or shirred, when said ruffle is made of two thicknesses of goods, substantially as herein described."

Of this article the court said:—

"It embodied no new idea whatever in mechanical construction; it was identical with what had been made by hand long before. If it possessed greater beauty, greater evenness and regularity of its plaits, than the ruffling made by hand, that was due to the machinery by which it was made, and not to the invention of the maker in suggesting any novelty but such as pertains to quality or degree of perfection in what was old. If it be conceded that such evenness, regularity of plaits, beauty, and finish, exceeding anything which it is possible to produce by hand, made it a patentable article of manufacture, notwithstanding it is in other respects like ruffling before made, still it was not new in such sense as to be patentable. Just such even, regular, beautiful, finished plaits were made and on sale before. . . . The point of difference most insisted upon is that none had at that time the edge of the band hemmed or turned up. I cannot agree, that if there be ruffling known and in the market, which requires to be hemmed before being used, or when put to use, one who hems it before offering it for sale has made a patentable invention, and can monopolize the business of hemming ruffles. The mistake of the complainant is in confounding a process, or a machine for performing, at one operation, what before required more than one, with the product of the operation. The former may be patentable; the latter is not. . . .

"Nor am I prepared to assent to the proposition that the product of a machine is patentable on the mere ground that it makes an already known article more perfectly than it has been or can be made without a machine. The idea being old, men strive to embody it perfectly. Human skill is exhausted in the effort. Human hands, less exact and unvarying in their movements, only approximate perfection. A machine is devised which makes it better than it has ever before been

made. Another machine is invented which approaches more nearly. Still another machine is invented, which performs, it may be, better, — it may be not so well. Is the product of the best human skill, in such case, patentable? Is the product of each successive machine patentable? If all the makers are not entitled to a patent for the article as a product, which of them is entitled? Surely improvements in degree or quality are not the subject of a patent."

CROUCH *v.* ROEMER, 103 U. S. 797 (1880).

Crouch's reissued patent of March 7, 1871, No. 4289, for an improvement in shawl-straps.

Waite, C. J.: —

"The appellant in this case, complainant below, in describing his invention, when he applied for his patent, said that before his invention 'straps had been used to confine a shawl, or similar article, in a bundle, and a leather cross-piece, with loops at the ends, had extended from one strap to the other; and above, and attached to this leather cross-piece, was a handle.' He then said: 'My invention consists of a rigid cross-bar beneath the handle, combined with straps that are passed around the shawl or bundle, such straps passing through loops at the ends of the handle.' This was because the 'leather cross-piece or connecting strap' was 'liable to bend and allow the straps to be drawn toward each other by the handle in sustaining the weight; . . . hence the handle is inconvenient to grasp.' From this, as it seems to us, the *rigid* cross-bar was from the beginning the controlling idea of the inventor. His object clearly was not to bind and hold the bundle, but to keep the handle which the holder was to grasp from pressing the sides of the hand. Hence he says: 'I claim as my invention — 1. The rigid cross-bar connecting the ends of the handle, and provided with loops for the straps, substantially as and for the purposes set forth;' that is to say, to bind and hold a bundle to be carried.

" . . . It is conceded in the patent itself that shawl-straps with handles attached to a leather cross-piece having loops at the ends were old. Eustace, one of the witnesses for the complainant, says he made his goods with a cross-piece of the firmest leather he could get, doubled and stitched so as to render it firmer still. His object clearly was to keep the weight of the bundle from drawing the ends of the handle together so as to press against the sides of the hand. The testimony leaves no doubt on our minds that handles fastened on rigid cross-bars

and used to carry bundles were known long before the complainant's invention. Possibly in adjusting them to use, though this is by no means certain, the straps to bind the bundle were not passed through loops across the bar, yet it is clear, beyond all question, that the handle, rigid cross-bar, loops, or their equivalent, and straps, or equivalents, were used in combination to keep together and carry one or more articles in a package made by piling or rolling the articles together.

"Under these circumstances, it was no invention to stiffen by artificial means the leather cross-piece which had before been made as rigid as it could be by thickness, doubling and stitching. All that was done by this inventor was to add to the degree of rigidity which had been used before. The addition of metal or other substance as a stiffener of the known cross-piece, which had already been made rigid in a degree, was not invention. The substantial elements of a well-known structure were thus in no patentable way changed."

BUCKAN *v.* McKESSON, 18 Blatch. 485.

S. D. of N. Y., 1880. Blatchford, J.

Eames & Seely's patent, reissued July 30, 1872, No. 5007, for a "new soap-compound, produced by incorporating carbolic and cresylic acids, either one or both, with ordinary soap."

An earlier soap was substantially the same as this, except that the carbolic or cresylic acid there employed, though the best obtainable at that time, was not so pure and concentrated as the acid used by the plaintiffs. The plaintiffs' compound was applicable to new purposes; but it was held to be not a patentable improvement.

Blatchford, J. (p. 490):—

". . . There was no invention in using the purer article, provided the prior compound was a true soap, developing the properties of the acids referred to. The advance was only one of degree, so far as the use of the acids was concerned."

BELT *v.* CRITTENDEN, 2 FED. REP. 82.

D. OF MINN., 1880. NELSON, J.

Letters-patent No. 177,986, dated May 30, 1876, for an improvement in metallic coverings for buildings.

All that the patentee did was to increase the size of the corrugations in the metallic sheathing previously used for the same purpose, so that the spaces between the wood-work and the iron were larger. Said the court:—

"If the ordinary form of corrugated iron, when applied to the roof or sides of a building, does not give sufficient air-spaces, there is nothing new in the idea of making them larger and diminishing the surface of the iron at the point where it is nailed to the wood-work, although it might remedy the objection. Neither discovery nor invention was necessary to do this. . . . The fact that the iron at the point of contact with the wood is double in thickness; or that the nail-holes at the joints may be made elongated in order not to interfere with the nails in case of expansion or contraction lengthwise of the corrugations, will not sustain the patent; nor will his manner of forming the joints connecting the several sections of sheathing[1] aid him."

See also —

DALTON *v.* JENNINGS, *ante*, page 142.
THE WOOD-PAPER PATENT, *ante*, page 143.
GUIDET *v.* BROOKLYN, *post*, page 245.

ENLARGEMENT.

DAY *v.* THE BANKERS' & BROKERS' TELEGRAPH COMPANY, 9 BLATCH. 345.

S. D. OF N. Y., 1872. BLATCHFORD, J.

In this case the thing enlarged was a hollow box placed under the sounding-post (upon which the stylus strikes) in the Morse telegraphic machine, the object being to increase the sound.

[1] "The upper end is slit at the centre of the corrugations, and the two parts drawn in and lapped one over the other, thus forming a bevelled surface and a good joint." (The specification.)

It was a natural inference that increasing the size of the box would have this effect; and the improvement was held to be not patentable.

THE THATCHER HEATING CO. *v.* THE CARBON STOVE CO., 15 O. G. 1051.

D. OF N. J., 1878. NIXON, J.

Letters-patent No. 71,244, dated Nov. 19, 1867, for improvements in a stove.

The chief feature of the patentee's stove was a passage-way from the fire-pot to the furnace front, large enough to let "clinkers" pass through it.

The defence produced an old heater which had a passage-way like the plaintiff's, except that it was too small for the passage of "clinkers;" and they asserted that the plaintiff's passage-way, being merely an enlargement of the old one, did not constitute a patentable invention.

"That would be true," said the court, "if no new and useful result was accomplished by the enlargement; but when a change of form produces a new and beneficial result, such change may be patentable. Curtis on Patents, § 44."

This patent was again sustained by Blatchford, J., in Thatcher Heating Co. *v.* Spear, 1 Fed. Rep. 411. S. D. of N. Y., 1880.

PLANING-MACHINE CO. *v.* KEITH, 101 U. S. 479 (1879).

Woodbury's planing-machine, patented April 29, 1873.

The court held that it was anticipated by the machine of one Anson, from which it differed by being larger and stronger, and consequently adapted to planing heavy planks, — a use of which the Anson machine was incapable.[1]

This case also raised the question of anticipation strictly; but on that score it is too long and elaborate for our purpose.

[1] See also a very similar case, Phillips *v.* Page, *post*, page 318.

BRUCE *v.* MARDER, 10 Fed. Rep. 750.

S. D. of N. Y., 1882. Wheeler, J.

Bruce's patent of May 27, 1873, No. 139,365, for an improvement in printing-types.

Wheeler, J.:—

" . . . The improvement consists in having types for figures cast two-thirds the width of the body, which is the height of the type, and with correspondingly larger faces, whereby the type can be more readily set, because they can be justified, as printers say, by two of the ordinary three-in-em spaces, and because the print is much more legible.

" The defences are want of patentability, of invention, and want of novelty.

" The claim in controversy of the patent is for ' figures and fractions in printing-type cast upon a block equal to two-thirds the width of the body of the " em " or standard type.'

" . . . The claim of lack of patentability rests upon the argument that there can be no invention in merely increasing the size of the types for figures, or the width of the body of the type, and none in doing both. At first it would seem that this argument was well founded as to scope of the patent, and sound. But a closer examination of the subject shows that the patent involves more than either of these things, or the combination of both. The invention is not merely of an increase of the size of type for figures. Figures in printing are to be used in the same body of type with letters, and the whole are to be justified, in the language of printers; in other words, spaced so as to fill out the lines. By the old method, figures were cast on types one-half the width of the body of the line, whatever the size of the type might be; and an increase of the size of the figures made necessary an increase of the size of the whole. The orator invented a method of increasing the size of the figures without increasing the size of the type of the letters and the body of the line, and a method of conveniently justifying the types for figures by making the width of the body of the type exactly two-thirds of the width of the body of the line, so that they could be justified by two of the ordinary three-in-em spaces, whatever the size of the type of the body of the line might be.

" This involved finding a new rule of proportion between the sizes of letters and the sizes of figures, and one that not only would give more legible figures, but such as would be more legible without increasing the size of the letters with which they should be printed, and such size of body of type, on which to cast the figures, that the types could be

used conveniently, and economically of space. This required more than mere mechanical skill: it made necessary the creative genius of the inventor. The testimony of practical and largely experienced printers taken in the case shows that his method was not known before his invention; that it has been of great utility and gone largely into use since. This shows that he discovered and put to use what others skilled in the art had overlooked; that it was very desirable when known, and would very probably have been found out before, if ordinary skill in that art could have discovered it. On the whole, the presumption of patentability arising from the grant of the patent is not only not overthrown, but is well sustained.

"The evidence as to prior knowledge and use establishes fairly enough that types for figures were cast with the body of the type two-thirds the width of the body of the line before this invention; and if that was all of the invention, or if the claim was to be construed according to its own terms, without resort to the specification, so that no more would be patented, the want of novelty might be made out. But, as before attempted to be shown, the invention involves the increase of the size of figures in proportion to the size of letters in connection with this size of the body of the type; and the whole of that does not appear with the requisite clearness to have been known or used before."

DUPLICATION.

WILBUR *v.* BEECHER, 2 BLATCH. 132.

N. D. OF N. Y., 1850. NELSON, J., AND A JURY.

Montgomery & Harris's patent of Aug. 12, 1840, for an "improvement in the mill for breaking and grinding bark."

Judge Nelson instructed the jury that the improvement was patentable. Its object was the duplication or multiplication of grinding-chambers; but the invention lay in the manner in which this was brought about. The case, therefore, does not decide, either that mere duplication is patentable, or that it is not patentable except when a new result is developed; but it decides that duplication may be patentable when invention is shown in bringing it about.

The description of the machinery is not sufficiently full and clear to make a detailed report of the case valuable.

BARNES *v.* STRAUS, 9 BLATCH. 553.

S. D. OF N. Y., 1872. BLATCHFORD, J.

Patent for improvement in corset-springs, reissued to the plaintiff Aug. 31, 1869.

The corset-springs in use before the plaintiff's invention consisted in a single metallic plate. There were two such springs, one on each side of the vertical opening in the corset, and they were connected by clasps. For this single plate the plaintiff substituted two plates, one on top of the other, the lower plate being a little longer than the upper. The court thus described them: —

"By having two plates he secured greater strength. But in order to maintain the flexibility of the spring, and prevent danger of fracture to the metal, in the bending of it, in use in the corset, he fastened the two plates together at their centres, and made lengthwise slots in the upper plate, near its end, through which headed pins, fastened to the lower plates, projected, which allowed the two plates to slide along each other lengthwise, when bent, while the headed pins prevented the plates from slipping by each other sidewise, or springing apart from each other facewise.

"This provision was necessary in order to develop the advantage of a spring made of two plates; and, in order not to prevent such sliding action of the plates, it was further necessary that the clasping devices, other than those at the centre of the length of the spring, should not be fastened through both plates. All this Barnes did; and this, in fact, was his real invention. He did not merely substitute two plates for one plate."

So much on the question of patentability. On that of anticipation the court observed as follows: —

"A spring existed before, used in a carriage, which consisted of several metallic plates, placed one upon another and fastened together at their centres, the shorter ones above the longer ones, but so connected at or near each end by headed pins, playing in and through slots, that they could move upon each other in the direction of their length, and be prevented from sliding off each other laterally. I think the evidence shows [it is not otherwise reported] that there was something more than the mere new use of an old article, and more than the mere use of an old article for a new purpose, and more than the mere use of two springs, one of which had been used before, in making the com-

bination which Barnes made. The carriage-spring differed from the corset-spring in not having that flexibility at the centre of its length which the corset-spring has and must have, and in not curving in one direction at one end and in the other direction at the other end, as the corset-spring is shown in the drawings of the patent to do. In other words, the carriage-spring was not a corset-spring, and could not be used as such, without such a change as involved invention.

"The French corset-spring put in evidence was a single spring, not a combined pair of springs; and although it was composed of several metallic plates, placed one above another and fastened together at their centres, and free to move or play upon each other in the direction of their lengths, yet it had no such provision as the slots and fixed pins with heads which Barnes introduced, nor any other provision for preventing the plates from becoming disengaged facewise or laterally. The French spring had no means of combining it with a second spring, when the two should be used, one on each side of the vertical opening in a corset."

DUNBAR *v.* MYERS, 94 U. S. 187 (1876).

This case decides that a single circular deflecting plate, attached to one side of a circular saw in order to spread the wood after it is sawn, thus preventing it from bearing against the side of the saw, and impeding its motion, — this being known, it was not a patentable improvement (though an improvement) to add a second and similar plate to the other side of the saw for the same purpose, and attached in the same manner, — the evidence being that no invention was required to make this addition.

Mr. Justice Clifford delivered the opinion of the court, and reviewed the cases which show that ingenuity or invention is the test of patentability: —

"Invention or *discovery* is the requirement which constitutes the foundation of the right to obtain a patent; and it was decided by this court, more than a quarter of a century ago, that unless more ingenuity and skill were required in making or applying the said improvement than are possessed by an ordinary mechanic acquainted with the business, there is an absence of that degree of skill and ingenuity which constitute the essential element of every invention. Hotchkiss *v.* Greenwood, 11 How. 267," &c.

See also pages 471 and 561, *ad fin.*

OMISSION.

PHILLIPS *v.* CITY OF DETROIT, 17 O. G. 191.

E. D. OF MICH., 1879. BROWN, J.

Robert C. Phillips's patent, No. 121,544, for improvements in wooden pavements.

Said the court:—

"The patent under consideration is of the simplest description. It consists of blocks of wood cut from the trunks or branches of trees in their natural form, the bark only being removed, laid vertically upon a bed of gravel or sand, which is also used as a filling-in to keep the blocks in position. The result is a smooth pavement of greater durability than any other wooden pavement known."

The main question was, whether, considering the state of the art, Phillips's invention was patentable. It was proved, first, that gravel or sand was the common filling for stone pavements; and, secondly, that blocks of wood, such as Phillips described, had been used in pavements before, in the same way that he described, except that in all these prior forms of pavement cement or asphalt, or something of like nature, was used in part, or entirely, for the filling (with one exception, noticed below).

"It remains to consider," said the court, "whether the mere omission of these bituminous substances in the filling is patentable. In the Parkins patent, pitch is mentioned as the other element of the compound; in the Reynolds patent, concrete or asphalt; in the Stead patent, asphalt; in the Fontaine-Moreau patent, asphalt, cement, glue, or bitumen; but in none of them is the proportion in which these substances shall be used in any manner stated or indicated. This is left entirely to the judgment of the paver, who may use it in such quantity as to render the filling absolutely impervious to water, or may diminish it so much (as he would be likely to do, if he were an economical or dishonest contractor) as to make it of no perceptible effect. If, in his judgment, he may use a very small quantity, it seems to be equally a matter of judgment to omit it altogether.[1]

[1] This is very curious reasoning. It is construing a patent for the use (in combination) of cement, or of sand and cement, as a patent for such use of sand alone.

"It is conceded that the round block may be used in any other combination without infringing complainant's patent. The street may be graded, the blocks laid upon the solid earth, and the interstices left open to be filled by the gradual accumulation of the streets, as suggested in the Stead patent of 1839,[1] or they may be filled with the earth scraped from the surface to make the solid road-bed,[2] and still there is no infringement. But suppose the street itself is pure sand, as in Grand Haven, or gravel, as in Ann Arbor, would it be an infringement to do precisely the same thing? If complainant's theory be sound, then the use of round blocks which would infringe his patent in one place would not infringe it in another; and in towns where the natural substratum was sand or gravel, earth of some description would have to be imported from abroad for the filling and foundation, to avoid an infringement. The question of infringement ought not to depend upon the accidents of the soil upon which the round blocks are laid. . . . The variations made from previous patents do not involve the exercise of the inventive faculty."

The learned judge's process of reasoning, as we have partly suggested, in a foot-note, seems to be something as follows:—

1. In the prior patents, the proportion of bituminous substance in the filling is not stated; therefore, those patents may be construed to include fillings which contain no bituminous matter at all.

2. The combination of small blocks (which presented an even surface without filling) and a filling supplied by gradual accu-

[1] In regard to this, the opinion says: "It does not appear that this would be a practicable mode of filling the interstices in the plaintiff's pavement, inasmuch as his patent contemplates the use of segments of whole trunks and branches of trees, which, though placed as close together as possible, would yet leave large spaces between them; whereas the Stead patent obviously contemplates small blocks the spaces between which would be small."

Earlier in the opinion the court thus describes his invention: "The patent to Stead of 1839 includes wooden blocks *so shaped and placed as to support each other in a close and compact manner*, always having the fibres in a vertical position. 'The blocks which I use for the improved paving are cut transversely, out of fir or other suitable timber, or they may be composed of deal-plank ends or small portions of timber firmly cemented together to any of the required figures hereinafter described. . . . The spaces between the blocks may be filled with wooden pieces suited to their shape, or with cement or asphalt, or they may be left open, if not too large.'"

[2] This may be implied from the preceding proposition relating to the Stead patent; but it does not appear from the report that any other patent produced in the case provided for such a filling.

mulation, being old, a combination of large blocks and a filling so obtained would not be patentable, — which, if true, is entirely beside the point (for such a method of filling, under the plaintiff's patent, is neither contemplated nor practicable).

3. If one element of a new combination has not to be procured from a distance, but is at hand, its use with the remaining element is not an infringement of the combination.

The following remarks as to utility, which occur elsewhere in the opinion, seem to us more valuable: —

"Great stress is laid in this case upon the superiority of this pavement over any other heretofore used, and it is claimed as almost, if not quite, decisive of the right of complainants to their patent. While the value and utility of a device and the fact that it has superseded others previously employed for analogous uses is undoubtedly entitled to weight in considering the question of patentability[1] (Smith *v.* Goodyear Dent. Vul. Co., 93 U. S. 486), it is, after all, a somewhat uncertain criterion. If the device be in fact novel, it furnishes an additional reason why the inventor should receive the reward of his ingenuity; but if it involved no exercise of the inventive faculty, its very utility is an aggravation of the wrong done by the patentees in seizing and appropriating that which properly belongs to the public. If, for example, a person should succeed in obtaining a patent for painting the names of streets upon the gas-lamps, it would be a very insufficient answer to the defence of non-patentability to say that it was a very useful device, and one which had superseded the ancient method of painting the names upon the walls of the corner houses." [1]

See also —

RUSSELL *v.* COWLEY, *post*, page 275.
TARR *v.* WEBB, *post*, page 437.
BOOTH *v.* KENNARD, *post*, page 619.
WHEELER *v.* CLIPPER, &c. Co., *post*, page 242.
STOW *v.* CHICAGO, 3 Bann. & Ard. page 91.

[1] *Vide ante*, page 62.

"It may be admitted that, in all doubtful cases involving the validity of a patent, the fact that a mode described in the patent has gone into extensive use has [*sic*] and often will induce courts to decide in favor of the patent.

"But while this is so, courts ought not, merely because of such use, to sustain a patent. The rights of the public are to be protected as well as those of individuals, and a monopoly should not be allowed unless the right to it is clearly shown." Wilson Packing Co. *v.* Chicago Packing, &c. Co., 9 Fed. Rep. p. 552.

DIVISION.

BLACKMAN *v.* HIBLER, 17 BLATCH. 333.

E. D. OF N. Y., 1879. BENEDICT, J.

Ebenezer Blackman's reissued patent of Dec. 5, 1876, No. 7417.

The invention was of a glass chimney in two parts, a base or tubular body and a top-piece, the base being fitted with a flange and a surrounding rim to hold the top-piece in place. Prior inventions were set up, and the court remarked: —

"The only distinction between the prior inventions referred to and the plaintiff's invention is that in these prior inventions the chimney-base and chimney-top were formed in one piece, while in the plaintiff's invention the chimney-base is by itself. But no invention was required to conceive the idea that a lamp chimney could be cut in two, nor was the idea of constructing a lamp chimney in two parts new. In Millar's patent of July 21, 1863, the lamp chimney was constructed in two parts. . . . No change in the mode of operation or the result was effected by cutting off the top-piece. . . . Neither does the plaintiff gain anything from the surrounding rim, which has formed the sole ground for claiming a difference between the invention in the patent sued on and the invention of Arnold and Blackman.

"No true combination [1] results from the addition of the surrounding rim, for there is no co-action between the rim and the tubular body. The only function of the rim is to prevent the top-piece from slipping. The application of the surrounding rim for the purpose of preventing the top-piece from slipping required no invention, and makes a case of juxtaposition, not a new combination."

BUZZELL *v.* O'CONNELL, 4 FED. REP. 325.

D. OF MASS., 1880. LOWELL, J.

Willis's patent, No. 100,229, for an improved sand-paper holder for finishing or "buffing" the soles of boots and shoes.

The court: —

"He described a cylinder formed of two halves hinged together; round each half the sand-paper was wrapped, and its edges were

[1] One claim was for a combination of the base, surrounding rim, and top-piece.

brought together on the inside of the cylinder and kept tight by pins and dowels; journals were shown, to which each end of the cylinder was attached by screws. The old form of holder was described as solid, with the sand-paper wrapped around it, and secured by tacks."

But this was a defective instrument. The lapping of the paper made a surface irregular and not durable; the tacks, which had to be renewed frequently, tore the surface of the roller; and time was lost in reversing the paper.

The defence set up prior devices, which were thus disposed of by the court: —

"Solid cylinders with sand-paper tacked to them had been used before; and one Copeland had, as early as 1855, made and patented a hand-tool in which the sand-paper was wrapped around two halves of an ellipse, which were hinged by a piece of cloth glued to each, and was [*sic*] held firmly together by the hand of the operator, who rubbed the soles with this tool, much as he would have done with a large file or rasp having a handle at each end. The defendant contends that the only change which Willis introduced was to cut the old solid cylinder into two parts and hinge these parts together, just as Copeland had hinged his hand-tool; and that this did not require invention. How generally the old solid cylinder was used, and whether it was of much or little value, we are not informed. I infer from the remarks of one witness that the patentee's cylinder, or those [*sic*] like it in principle, first brought bulling by machinery into common use. Supposing the old solid cylinder used in a machine driven by power to have been of some use, and to have been generally known, still, I think there was a patentable improvement in cutting it in two, bringing the parts together and fastening them to the shaft, so that they should operate like a solid cylinder, though the hinged tool to be operated by hand had already been introduced by Copeland. The advantages of the knife and this mode of adjustment and of operation are so different in the two cases that one could hardly be an anticipation of the other."

CHANGE OF SITUATION.

WHIPPLE *v.* BALDWIN MANUFACTURING CO., 4 FISH. 29 (D. OF MASS., 1858. SPRAGUE, J., AND A JURY); WHIPPLE *v.* BALDWIN MANUFACTURING CO., 4 FISH. 41 (SPRAGUE, REFEREE, 1859).

The Whipple patent for "improvements in machine for cleaning wool from burrs and other foreign substances, and also for ginning cotton," reissued July 31, 1849.

The patent included a change of situation, whereby a continuous instead of a broken surface was obtained. Sprague, J., thus described the prior contrivance, that of Whitney, and the plaintiff's chief improvement: —

"Now, the *Whitney* teeth, instead of being so arranged as to prevent seeds of cotton from falling between them, that is, presenting a surface which will support or float foreign matter, are designedly so arranged as to create no such surface, but to permit the seeds and foreign matter to fall between the rows of the teeth; and it is in this respect the plaintiff's patent says that its teeth are distinguishable from those of the saw-gin, in the language already quoted. The plaintiff's teeth differ from Whitney's in their arrangement.

"But is this a material difference? Does it involve such invention or discovery as to be patentable? There is a mechanical or physical change by bringing the metallic rings, from which the teeth are cut, so near together that burrs or cotton-seeds will not fall into channels between them. This change of arrangement creates a surface which supports or floats the burrs, so that the guard may remove them, which could not be done if they fell into channels between the rings. This result is important. Indeed, it is the attainment of the whole object of the machine; namely, the removing the burrs, by bearing them on this surface to meet this guard. This mechanical change and its effects are, I think, so considerable as to be patentable."

KIRBY *v.* BEARDSLEY, 5 BLATCH. 438.

N. D. OF N. Y., 1867. SHIPMAN, J.

Patent reissued to Kirby & Osborne (dated July 9, 1861), for an improvement in harvesters, consisting in a new arrangement of the bearing or seat on which the raker sits. The improvement

was useful, enabling the raker to do his work both more efficiently and more easily.

The court first examined the original patent,[1] as it threw some light on the construction of the reissue. The reissue introduced a new qualification which, apparently, served to distinguish the patentee's combination and apparatus from something that was old, and that was covered by the original patent. The court laid out of the case the effect on the raker as being no invention, but merely the result of the invention, which was the position of the seat. And, finally, the court *held* that the change in the position of the seat did not involve invention.

"The change of the raker's seat, so that it may face any particular angle, is an act of purely manual adjustment, which any one and every one is free to make. . . . I am well aware that it is often no easy task to draw the true line of distinction between invention, the product of original thought, and mere obvious manual changes, following the beaten track of mechanical experience. This difficulty, in connection with the general merit of inventors, as contributors to the material interests of society, has inclined courts to give a liberal construction to the law, so as to protect every contrivance that can be called new, which proves at all useful. Care has been taken to give the benefit of doubt, as to originality or creative thought, to the inventor. . . . But it is obvious that there is a limit beyond which mere changes cannot and ought not to receive this protection. I think the law never intended that it should cover a change like this, of merely turning a seat at a different angle, regardless of the means by which the change is to be accomplished," [2] &c.

See also The Corn-Planter Patent, *ante*, page 147.

DANE *v.* ILLINOIS MANUFACTURING CO., 3 Biss. 374.

N. D. of Illinois, 1872. Blodgett, J.

Infringement of a patent (granted to William Westlake, April 26, 1864, reissued to James F. Dane and others, Dec. 23, 1869) for an improvement in lanterns. The chief defence was that Westlake's patent was anticipated by that granted to Charles Waters, July 17, 1855.

[1] Granted to W. A. Kirby, March 15, 1859.

[2] McCormick *v.* Seymour, 2 Blatch. 240.

Waters's invention was a means of withdrawing from its frame the glass globe of a lantern, by attaching the rods that protect it, at their lower ends, to a ring, which in turn, by spring catches and by lips, was fastened to a disk that projected outwardly from the top of the base of the lantern. Westlake simply inverted this device, and transferred it to the top of the lantern, where the disk filled the space between the dome of the lantern and the ring, to which the rods were attached. He drew out the globe at the top of the lantern, instead of at the bottom, as Waters had done.

This, being a mere change of situation, was held not to be a patentable invention; and it was also held that it was not made such by the fact that the disk, in its new position above the light, performed the additional function of a reflector, inasmuch as a disk for a reflector merely, in that place, was an old device.

MARSH *v.* DODGE, &c. MANUFACTURING CO., 6 FISH. 562.

N. D. OF N. Y., 1873. WOODRUFF, J.

Infringement of a patent (reissued to Marsh, Sept. 11, 1866, No. 2354) for an improvement in harvesters. The alleged invention was a change in the relative position in the machine of the "revolving raking and reeling device."

Woodruff, J.:—

" . . . The counsel for the defendants insists that the patentee is restricted to a location below the top of the driving-wheel of the principal machine, and within the limits of the circumference of that wheel; and in behalf of the defendants, it is insisted that the patent includes any location which is nearer the ground than a horizontal plane passing through the top of such driving-wheel. But, in either view, location is a chief feature in the complainant's claims. This, of course, suggests the question: Is the mere location of devices, such devices not being new, patentable? To this the answer must be that it is not. If the result is the same, and nothing new is required to adapt an apparatus to operate in its new location, nothing has been done which can be called invention. If such change of location produced a new combination of devices, producing a new result, then, indeed, something patentable may have been devised; but mere change of location is not

invention. On the other hand, where change of location involves the employment of new devices to adapt an apparatus for use in the new position, and a beneficial result is produced, then this location, in its connection with such new devices, — that is, the means by which the result is produced, and not the result itself, — is patentable. And where such change of location brings into existence a new combination of devices, operating by reason of such new combination to produce a new and useful result, such new combination is patentable."

The case was decided mainly on the ground that the defendants had not infringed.

GILBERT, &c. MANUFACTURING CO. *v.* TIRRELL, 12 BLATCH. 144.

S. D. OF N. Y., 1874. WOODRUFF, J.

The patent was for an improved apparatus for carburetting air, *i. e.* for producing illuminating gas by forcing atmospheric air through petroleum or other volatile oil. The apparatus in use for this purpose included the carburetter (containing heated coils for evaporating the oil), in which the gas was generated; a motor-wheel driven by any of the well-known motive powers, by means of which the air was pumped through a pipe into the carburetter; and a conduit for conveying the gas from the carburetter to the distributing pipes.

The patentee's alleged invention consisted merely in placing the carburetter in a vault or house by itself; the object being to avoid the danger of explosion in the building to be lighted, caused by gas escaping from the carburetter. There was evidence, also, that by the passage of the gas through the conduit, laid at the frost line from the carburetter to the building, a preliminary condensation of the gas was effected; whereas, if the carburetter were placed in the building, and the gas passed directly into distributing pipes running through cold rooms, condensation immediately took place, and the result was a dangerously inflammable liquid obstructing the pipes. This second benefit produced by the patentee's alleged invention was not adverted to in his claim;[1] but the court, Woodruff, J., proceeded as if

[1] Which ran thus: "The arrangement of the carburetter with a motor-wheel, said wheel being driven by a descending weight or other equivalent mechanical power, applied to force the air through the carburetter to the

it were, and sustained the patent, as follows (first quoting from his decision in Marsh *v.* Dodge, &c. Co., *ante*, page 213) : —

"'Where change of location involves the employment of new devices to adapt an apparatus for use in the new position, and a beneficial result is produced, then this location, in its connection with such new devices, — that is, the means by which the result is produced, and not the result itself, — is patentable. And where such change of location brings into existence a new combination of devices, operating, by reason of such new combination, to produce a new and useful result, such new combination is patentable.' This illustrates the nature and patentable character of the arrangement described in the patent in this case. By the new arrangement, the patentees bring into contributory and effective co-operation with a carburetter, and the machinery for supplying atmospheric air thereto, the earth and its even temperature below the surface, and obtain protection from the efflux of gas from the carburetter and its accumulation in the frequently visited location of the motor, and from the danger of consequent explosion, and also secure, by the passage of the gas from the carburetter through a cooler medium, the preliminary condensation which makes the use of the gas in the building, and its passage through the distributing pipes, safe, convenient, and valuable.

"It is no impeachment of the patent to say that this is only making use of the natural state of the ground, or the natural laws, which, operating below the surface, make such new location desirable, as a matter of mere judgment. It is more than that. It brings into conjoint operation and effect new elements, working actively, and also operating passively to produce the result, and to produce the ultimate and final result in a better manner, — in a manner which combines safety with convenience and utility, as had never before been done. The most important inventions ever made consist in subordinating natural elements, or controlling natural laws, to the production of useful results. I cannot doubt that the invention of the patentees was patentable, as truly so as it is abundantly proved to be greatly useful and valuable."

The judge held also that the arrangement was new, and that it was infringed by the defendants.

Subsequently, this patent was before Judge Shepley.[1] He

burners, said carburetter being placed within a vault, by itself, separate from the building to be lighted, the whole arranged and connected with pipes, substantially as herein described and set forth."

[1] Gilbert, &c. Mfg. Co. *v.* Walworth Mfg. Co., 9 O. G. 746 (1876).

held that the preliminary condensation mentioned above could not be considered as a part of the invention, inasmuch as the patentee omitted it from his specifications and claim, and gave no directions for effecting it, despite variations of temperature. He held, also, that the patentee's isolation of the carburetter had been anticipated; and he remarked upon its patentability as follows:—

"I am not prepared to say that the new arrangement and location, constituting a new form or mode of combination, . . . taking into consideration the new and useful result claimed for it, was not patentable, if it was novel."

CALKINS *v.* BERTRAND, 6 Biss. 494.

N. D. of Ill., 1875. Blodgett, J.

Patent granted to J. R. Smith, April 24, 1860, reissued to J. Gerber, April 26, 1870. Improvement in cultivators.

The claim of the reissued patent was:—

"*First*, an auxiliary frame carrying two or more shovel standards on each side, as shown, *when said frame is hinged to the pole between the evener and the neck-yoke*, as described, for the purposes set forth."

The gist of the invention thus claimed was putting the plough-beam forward of the evener, whereby a "long swing" was obtained, and objects in the way could be avoided. The court met the objection raised by the defence to the patentability of this change of situation as follows:—

"The suggestion that this is not a change of result, but is only a change in degree, is, I think, not sustained by the proof. The long radius, in other words, secures a practicable cultivator which can be guided along the side of a crooked row of plants so as to avoid disturbing them, while the short beams would seem to be practically useless, except in straight, or nearly straight, rows. This is a practically new result, and the proper subject of a patent as such. . . . The machines of Ganse & Whitehall, shown in the proofs, which antedate the Smith patent, show the shovel-beams hinged back of the evener, producing a jerky motion, and rendering it almost, if not wholly, impossible to guide the shovels so as to avoid hills out of line, or stones, roots, or other obstacles in the direct line."

CARSTAEDT *v.* THE UNITED STATES CORSET CO., 13 Blatch. 119.

S. D. of N. Y., 1875. Shipman, J.

"Improvement in take-up mechanism for looms for weaving irregular fabrics." Patent reissued to Hugo Carstaedt, Nov. 19, 1872.

The patentability of the invention described in the second claim was attacked. That claim ran thus:—

"The needles or points *k*, *k*, fixed on a stationary bar *K*, and arranged as specified, so that the fabric, being drawn by the take-up proper, is continuously carried across the needles, to be received by their points and to be arrested when a reverse movement of any part of said fabric is commenced, substantially," &c.

The object was to prevent, in the weaving of irregular fabrics, a difficulty thus described by the patentee:—

"The cloth being more full in some parts of the fabric than in others, and the take-up not having a firm hold upon the cloth, the cloth wrinkles and doubles itself towards the centre."

Said the court:—

"In order to obviate this fault, the take-up must be placed as close as possible to the needle-bar, which must also be placed as near as may be to the felt of the cloth. The complainant's needle-bar is placed in this relation to the cloth and to the take-up, and by means of such position it is enabled to accomplish a result which had previously been *unattained* in corset-weaving; namely, the arresting of the fabric when it is released from the tension of the take-up, and so holding the cloth that it is prevented from doubling up in the centre, and by this result the mechanical weaving of irregular fabrics is now successfully practised. The combination which produces this new and useful result is not simply a combination of the old needle-bar and the take-up, but the position of the needle-bar and its relation to the take-up and to the edge of the cloth has been so changed that a new combination of devices has been in fact created, and the new combination has accomplished a new and useful result which 'was not attained by the action of the old devices,' as they were arranged with relation to each other prior to the date of the plaintiff's invention. Hailes *v.* Van Wormer, 7 Blatch. 452; Marsh *et al. v.* Dodge & Stevenson Mfg. Co., 5 Official Gazette, 398.

"It is said that this change of position of the needle-bar required no inventive skill; . . . yet, prior to the plaintiff's invention, corset-weav-

ing was not successfully practised upon the looms which were then in use, and favorable results were only obtained after the complainant's needle-bar was applied to the existing looms," &c.

See also Knox *v.* Murtha, *ante*, page 104. And see page 478.

CHANGE OF FORM.

WOODCOCK *v.* PARKER, 1 GALL. 438.

D. OF MASS., 1813. STORY, J., AND A JURY.

Story, J., to the jury:—

"It is not necessary to defeat the plaintiff's patent that a machine should previously have existed in every respect similar to his own; for a mere change of former proportions will not entitle a party to a patent. If he claim a patent for a whole machine, it must in substance be a new machine; that is, it must be a new mode, method, or application of mechanism, to produce some new effect, or to produce an old effect in a new way."

DAVIS *v.* PALMER, 2 BROCK. 298.

D. OF VIRGINIA, 1827. MARSHALL, C. J., AND A JURY.

Infringement of a patent for an improvement in ploughs, which consisted in changing the shape of the mould-board, as thus described by the patentee:—

" . . . Instead of working the moulding part, or face of the mould-board, to straight lines, my improvement is to work it to circular or spheric lines."

Then follow particular directions as to distances, angles, &c.

Marshall, C. J., on the question of patentability, instructed the jury as follows (after quoting from the act of 1793, "And it is hereby enacted and declared, that simply changing the form or the proportion of any machine shall not be deemed a discovery"):—

"In construing this provision, the word 'simply' has, we think, great influence. It is not every change of form and proportion which is declared to be no discovery, but that which is *simply* a change of form

or proportion, and nothing more. If by changing the form and proportion a new effect is produced, there is not simply a change of form and proportion, but a change of principle also. In every case, therefore, the question must be submitted to the jury," &c.

DANE *v.* THE CHICAGO MANUFACTURING Co., 3 Biss. 380.

N. D. of Illinois, 1872. Blodgett, J.

Infringement of a patent granted to Conrad Gersten, Jan. 25, 1859, and reissued to Dane & Westlake, Sept. 16, 1867, for an "improvement in lanterns."

The important question in the case concerned the patentability of the improved cone or deflector used in the complainant's lantern. The complainant's lantern — or rather the lower part of it, which only was in question — may be described as follows: Upon the top of the oil-cup was a cylindrical metallic ring or band, divided into two compartments by a horizontal plate. The lower compartment had its walls perforated for the admission of air, and it was called the cooling-chamber, its office being to prevent the heating of the oil in the oil-cup. Above the horizontal plate forming the top of this cooling-chamber, the ring was again perforated for the admission of air into the upper compartment, in order to supply the flame with oxygen; and into the ring at this point fitted the deflector, — a cone-shaped covering of glass or metal, having at its centre a slot for the flame to pass through. The office of the deflector was to concentrate upon the base of the flame all the air that entered the flame-chamber. A wick-tube led from the oil-cup into this upper chamber, and so nearly through the slot in the deflector that the flame was above the apex of the deflector. The ring extended above the base of the deflector (being at this point also pierced by small openings for the passage of air to the flame). Into the top of the ring, immediately above the deflector, fitted the glass shade or globe of the lantern, which thus served as a chimney also.

In lamps (not lanterns) in use before Gersten's invention all these parts were found, but the flame-chamber and the cone were smaller, and a chimney fitted upon the ring, as the globe fitted upon the ring in Gersten's lantern. Therefore, all that

Gersten did was to extend the base of his cone or deflector until it touched the walls of the globe, so that the globe operated as a chimney. It was necessary that no space should be left between the deflector and the globe (or chimney in the old lamps); for if it were so left, the draught would not be sufficient to consume the rock-oils for which Gersten's lantern was intended.

Said the court: —

" . . . No experimenter or inventor had determined just how far outwardly the base of the cone should extend; but all had recognized the inexorable necessity of making the cone form a substantially tight bottom to the chimney, by which alone a draught through the cone could be obtained. Gersten did this, and nothing more, so far as the cone is concerned. . . . It required a mere mechanical alteration, and not an invention, to expand the base of the cone until it met and filled the walls of the globe at the base of the globe. . . ."

IN RE GREELEY, 1 HOLMES, 284.

D. OF MASS., 1873. SHEPLEY, J.

Appeal on a rejected application for a patent for an improvement in suspender-straps. A prior English patent described a link, fastened by a button-hole opening in a direction parallel to the link. Greeley's suspender was almost exactly like this, except that the button-hole in it opened in a direction at right angles to the link. This change was an improvement.

Shepley, J.: —

" . . . The differences between the two devices are merely structural changes. Such structural changes of form and proportion, although they improve the operation without changing the mode of operation, and produce a much better result, but one of the same kind, are only different and better forms of embodying the same idea, and illustrate the difference between mechanical skill and inventive genius."

EPPINGER *v.* RICHEY, 14 BLATCH. 307.

S. D. OF N. Y., 1877. SHIPMAN, J.

Infringement of a patent for an "improvement in plug and bunch tobacco," dated June 17, 1873. The claim of the patent was for

"plug or bunch tobacco made as herein described, the same consisting of a rope or strand, composed of a sweetened or prepared filler, enclosed in a binder, in turn enveloped in a wrapper, the said rope being coiled around a central core, forming a continuous part of the rope, and the bunch thus made being subjected to a pressure, as and for the purposes set forth."

The question was whether this, in the state of the art, was a patentable improvement. In the manufacture of plug chewing-tobacco, licorice or some other sweet and moist substance is used, in order that its qualities may be imparted to the tobacco; and the difficulty is that the tobacco thus moistened, if exposed to the air, is liable to ferment, or to be attacked by "dry rot."

"Before the date of the [plaintiff's] invention," said the court, "this kind of chewing-tobacco was made by enclosing strands of sweetened 'filler' tobacco in a binder. The wrapped tobacco was then spun upon a wheel, or twirled or rolled by hand into a roll, and, after being encased in a wrapper, was coiled and packed for market, or was subjected to extreme heat, and afterwards to pressure, before being put up in packages. Moisture was removed by this 'hot-house' process, and thus danger of fermentation was obviated, but the quality of the tobacco was made inferior. Another method of manufacture was by encasing the sweetened filler strands in an unsweetened binder, and also in a wrapper. The rope was then bent and braided, and the two ends of the braid were fastened by a cap of wrapper tobacco.

"The braids were subjected to sidewise pressure, but could not [this is important] be subjected to pressure endwise in consequence of their shape, and therefore were not pressed sufficiently to exclude the air, and the tobacco was liable to become mouldy. Each braid soon became quite dry in the pocket of the consumer, and lost its flavor."

The patentee formed his strand, in the ordinary way, of "filler" tobacco treated with licorice, enveloped in a "binder" of a brighter and larger leaf; the binder, in turn, being rolled in a "bright wrapper leaf" used in its natural condition.

"The rope or strand thus made [being a sort of long, flexible cigar] is coiled into a bunch around a central core, one end of the rope, either single or doubled, serving for the core." "The coil . . . thus made," the specification continued, "is . . . loose and unfinished. . . . The next step is to finish it, which is effected in the polishing-pot or finisher, — a strong receptacle of suitable shape and size to contain a number of plugs, provided with a follower forced down upon the plug or plugs in the pot by hydrostatic pressure or other sufficiently powerful agency. The bunches are first placed in the pots on end, and the follower is then forced down with great pressure upon them. After being allowed to set for about twenty minutes, the follower is removed, and the bunches are taken out and replaced in the pot on their sides, and side by side, and pressed again in like manner. . . . In conclusion, I wish to state that I do not here broadly claim plug or bunch tobacco put up in coils with a central core and then subjected to pressure; nor do I claim, separately, the combination of a filler, binder, and wrapper."

The claim itself we have given above.

The court said: —

"The important question which arises in the case is as to the patentability of the invention. A rope of strands of sweetened filler, enclosed in a binder, which in turn is enveloped in a wrapper, antedated the patent, and is disclaimed. Plug tobacco had always been coiled and braided in various forms, and had been subjected to pressure. The peculiarity of the invention is in the form and shape of the coil. Can any particular method of coiling, although both endwise and sidewise pressure are thereby made available for the purpose of excluding air, and although the method enables the consumer to use the whole coil in its desired state of moisture, be the subject of a valid patent?

"The argument of the defendants' counsel is, that the combination of filler, binder, and wrapper is old and is disclaimed, which is true; that subjecting a coiled rope of such tobacco to pressure is old and is disclaimed, which is true; that coiling or twisting a moist rope of tobacco has always been practised, which is also true; that the particular form of the coil is a matter of fancy; and that the form of the coil cannot involve the exercise of the inventive faculty. This is the precise question which is at issue.

"The article of plug tobacco has been long in use, and has been in constant demand. As it has been prepared for market, it has been liable to spoil in warm and damp weather, and to grow mouldy in any temperature. . . . The evils were notorious, but no remedy was found until this invention was made. . . . Two facts exist in this case. One

is, that an important improvement has been attained; the second is, that the improvement is in a staple article which has been manufactured in this country for a long series of years," &c. "The utility of the patented article has been evinced by its large sales, and by the unanimity with which rival tobacconists have commenced its manufacture. . . . Without giving to the general use of the invention, as a test of its patentability, any greater importance than the Supreme Court, in the case of Smith *v.* Goodyear Dental Vulcanite Co. (3 Otto, 486), indicate should be given to this circumstance, I am of opinion that the facts in the case fully establish the conclusions (1) that, however simple the change in the method of manufacture apparently may have been, yet it was a change which required invention for its accomplishment; and (2) that the improvement resulting from the changed method of manufacture has been so great that the article which is produced is, within the meaning of the Patent Acts, a new and useful article of manufacture."

PEARL *v.* THE OCEAN MILLS, 11 O. G. 2.

D. OF MASS., 1877. SHEPLEY, J.

Pearl's reissued patent, for an "improvement in bobbins and spindles for spinning-machines," No. 6036, dated Sept. 1, 1874.

Judge Shepley thus described the invention:—

"The device of Pearl consists in a combination of a modified form of the ring-spindles with a modified form of the bobbins, having frictional or adhesive bearings, uniting them to the spindles, and carried with it. This modified or improved spindle was shortened in the blade, and instead of extending, as before, substantially to the upper end of the bobbin, was only made of sufficient length above the bolster to enable an adhesive bearing, which he provided in the centre of the bobbin, to hold the bobbin firmly on the spindle.

"He correspondingly lightened the lower part of the spindle and whirl below the bolster, without destroying the proper proportional relation of the parts of the spindle to each other, necessary to insure steadiness of rotation.

"He also modified the form of the bobbin, making it of a light or thin shell, retaining the lower frictional bushing or adhesive bearing at the bottom, and adding a frictional adhesive bushing in the centre of the bobbin, the lower and the central bushings sustaining the bobbin on the spindle, in place of the former mode of sustaining it by adhesive bearings at the top and bottom of the bobbin. He added a plug, re-

enforce, or bushing also at the top of his bobbin, not having apparently any function in combination with the spindle, with which it did not come in contact, but only as one mode of strengthening the bobbin itself."

On the patentability of these changes Judge Shepley remarked as follows (after saying that mere change of form is not patentable):—

"No more difficult task is imposed upon the court in patent causes than that of determining what constitutes invention, and of drawing the line of distinction between the work of the inventor and the constructor. The change from the old structure to the new may be one which one inventor would devise with the expenditure of but little thought and labor, and another would fail to accomplish after long and patient effort. It may be one which one whose mind is fertile in invention will suggest almost instantaneously, when the skilled hand of the constructor will fail to reach the apparently simple result by the long and toilsome process of experiment.

"It may be one which, viewed in the light of the accomplished result, may seem so simple as to be obvious almost to an unskilled operative, and yet the proof may show that this apparently simple and obvious change has produced a result which has for years baffled the skill of the mechanical expert, eluded the search of the discoverer, and set at defiance the speculations of inventive genius.

"The change described in the specification of Pearl is a change in the form of the spindle, and a change in the form of the bobbin. It involves in the case of the bobbin a change in the location of the upper adhesive bearing from the top to about the centre of the bobbin. Without a knowledge of the results accomplished by these changes, they might at first glance appear to be merely structural changes.

"Nothing has a greater tendency to prove that these changes involve some functional difference beyond mere mechanical perfection and adjustment than the greatly improved result attending the change when viewed in connection with the failure of the many experiments previously made to accomplish similar results by mere structural changes, like those, for example, of diminishing the weight of the spindle in all its parts. It does seem impossible to reconcile the greatly improved results attained by the invention of Pearl with the theory that no functional, but only a mere structural, change was effected. Even if Pearl fails to describe accurately the precise law which governs the proper relations and proportions of the parts of the spindle as affected by the elements of leverage, gravity, friction, centrifugal force, and the transverse strain in one direction upon the spindle, yet if he has obtained

the practical result, and taught others how to accomplish it, he has made a patentable invention, however imperfectly he may understand the philosophy of it.

"And the defendants have none the less availed themselves of his invention, although by adding another change (whether structural merely or functional), by bringing the upper bolster nearer to the bobbin, they have still further improved upon the old device."

The opinion is not sufficiently full upon the matter of prior devices to warrant our taking up that subject.

CLOUGH *v.* GILBERT & BARKER MANUFACTURING CO., 15 O. G. 1009.

S. D. OF N. Y., 1878. BLATCHFORD, J.

The first claim of Clough's patent, dated June 14, 1870, No. 104,271, for improvement in gas-burners, held to be anticipated by burners called the Horace R. Barker burners.

Clough's patent said: —

"The object of my improvement is to adapt the slitted or bat-wing burner to the burning of air-gas. Said improvement consists, first, in perforating the base of the burner-tube with small holes or passages for gas to escape at the base of the burner, and surrounding the burner with a tube open at the top, but closed at the bottom, and united to the burner below the perforations in the burner-tube. . . . These improvements, by furnishing a regulated supply of gas outside of the burner, but directed to the tip of the burner by the surrounding tube, give steadiness and increased illuminating power to the flame of the bat-wing burner, and make it a desirable burner for burning air-gas. . . ."

He claimed

"1. . . . the bat-wing burner perforated at the base in combination with the surrounding tube, substantially as described."

Said the court: —

"The combination covered by the first claim of the plaintiff's patent is, I think, found in the Horace R. Barker burners, the existence of which prior to the plaintiff's invention is satisfactorily proved. In those burners, the burner was a bat-wing burner perforated at the base. The perforations did not consist of small holes, but the stem of the burner was slitted all the way down to the base, allowing the gas to escape through the whole length of the slit. There was a surround-

ing tube united to the burner below the lower end of the slit. The burner-stem had a cone near its top, and when the surrounding tube was screwed so as to be in a certain position with reference to such cone, the effect was to direct to the tip of the burner the supply of gas coming through the slit below, the surrounding tube being open at the top and closed at the bottom, and the flame was thickened, and a ring of flame was formed. The structure and mode of operation of the combination were the same as those of the combination covered by the first claim of the plaintiff's patent.

"The fact that the perforations in the Horace R. Barker burner existed not only at the base, but were continued in the form of a slit all the way up, makes no difference.

"Nor does it make any difference that the Horace R. Barker burner had a cone near its top. The first claim of the plaintiff's patent is broad enough to cover the Horace R. Barker burner, and that claim must be held to be invalid for want of novelty." [1]

ISAACS *v.* ABRAMS, 14 O. G. 861.

D. OF MASS., 1878. CLIFFORD AND LOWELL, JJ.

Marcus C. Isaacs's patent of August, 1876, No. 180,717, for an improvement in railway-track brooms.

Lowell, J.: —

" . . . He declares in his specification that 'heretofore brushes for cleaning railroad tracks have been made with a broom of even face; that is, the brush of the broom, of whatever material made, has been of uniform length.' He describes his improvement to consist of making the brush of unequal lengths; one part adapted to brushing the surface of the rail, and the other longer part to clearing either side of the rail, according to its construction. The claim is for 'a railway-track broom, constructed with a brush of uneven face, — that is, one portion of the brush longer than the other, — substantially as and for the purpose set forth.'

"The defendant has argued that, brushes with a uniform surface being well known, no invention was required to construct one with an uneven surface. We cannot take this view of the case. It is not invention to change one well-known material for another, or to apply a well-known process, without some adaptation more than every skilled mechanic

[1] This decision has been reversed by the Supreme Court, Clough *v.* Barker, 22 O. G. 2157; 106 U. S. 166.

could apply, to a new art or subject; but a change in the form of a machine or instrument, though slight, if it works a successful result, not before accomplished in a similar way in the art to which it is applied, or in any other, is patentable. There is evidence that this improvement did accomplish such a result, and that it was accepted and adopted by the trade and went into general use."

This decision is open to criticism.

CRANDALL *v.* RICHARDSON, 19 O. G. 1628.

S. D. OF N. Y., 1881. BLATCHFORD, J.

Improvements in children's carriages.

Head-note: "Whether the frames of a child's carriage are the profiles or the outlines of horses, or are solid, or whether they are in the form of horses or of eagles, or of any other bird or animal, is a matter purely of taste or design, and, so far as any mechanical effect or result in the combination is concerned, is of no importance."

See also —

SANGSTER *v.* MILLER, *ante*, page 92.
AIKEN *v.* DOLAN, *ante*, page 95.
STROBRIDGE *v.* LINDSAY, *ante*, page 175.
PACKING COMPANY CASES, *ante*, page 186.
GLUE CO. *v.* UPTON, *post*, page 267.
BUSSEY *v.* WAGER, *post*, page 456.
THE DOUBLE-POINTED TACK CO. *v.* THE TWO RIVERS MFG. CO., *post*, page 473.
JONES *v.* VANKIRK, 2 Fish. 586.
WICKS *v.* STEVENS, 2 Wood. & M. 310.

ENGLISH CASES.

HULLETT *v.* HAGUE, 2 B. & AD. 370.

COURT OF KING'S BENCH, 1831.

Kneller's patent of Nov. 28, 1828, for an apparatus for evaporating sugar, and the like, by forcing atmospheric air through it.

The defence set up a prior patent, of Knight & Kirk, which

accomplished the same objects; but the court (Lord Tenterden, C. J., delivering the judgment) held that there was a patentable difference between the two methods. He described both patents, beginning with that of Knight & Kirk, as follows: —

"This was, in substance, an invention of a process for the more rapid crystallization and for the evaporation of fluids at comparatively low temperatures; this object being effected by means of a coil of pipes lying at the bottom of the vessel, perforated with small holes, and thus operating on the liquid, or by a shallow cullender placed at the bottom of the vessel. It was proved that a pipe employed and acted upon in the manner described in the specification, namely, by forcing the air at the end of it, would accomplish that object. . . . Kneller . . . does not claim . . . the principle, but the apparatus by which the principle of causing evaporation is to be carried into effect. . . . The method . . . is to have a large horizontal tube (near the surface of the liquid) into which there are introduced a number of small perpendicular tubes, descending through the liquid to the bottom of the vessel, and having their lower ends exactly on a level, and parallel to the surface of the fluid. The air is then forced by the blowing apparatus from the open end of the large tube to the other end which is closed, and as soon as the large tube is filled, the air descends through the smaller tubes to the bottom of the vessel, and bubbles up through the liquid, and the evaporation is thereby kept up constantly and equally in all parts. It appears to us that this is a method or apparatus perfectly distinct from the other, and for that method or apparatus the patent was taken out."

WALTON *v.* POTTER, 4 SCOTT N. R. 91; 3 M. & G. 411; WEB. 584.

COMMON PLEAS, 1841.

Walton's patent of March 27, 1834.

The invention was of a new material for making cards for carding wool, &c. Thin sheets of india-rubber (sliced from a block with a sharp knife) were cemented to linen cloth, and wire dents were inserted in the rubber.

The defence set up a patent leather of one Hancock, made as follows: —

"A piece of cotton cloth was stretched on a board and coated with a compound of india-rubber and glue. It was then covered with a layer of carded cotton, upon which a fresh coating of the compound was spread. A second piece of cloth was placed over all, and the

material was compressed between plates of metal passed through rollers, thereby forming the patent leather."

The india-rubber, by this treatment, entirely lost its character as such, so as to be incapable of reproduction as caoutchouc by any known chemical means. Moreover, this substance had been tried as a carding material, and had not been successful.

Held, that this was no anticipation of plaintiff's invention. Tindal, C. J., Coltman, Erskine, Maule, JJ.

Erskine, J.: —

" . . . There are, therefore, two objections to the identifying of Hancock's plan with the plaintiff's plan: first, that the composition which he makes use of is not india-rubber, but india-rubber mixed up with other substances, which destroy its elasticity; and, next, that that composition when thus made is inserted between two non-elastic substances, instead of being next to the teeth of the card, which appears to me to be the main principle of Mr. Walton's improvement."

In another case,

WALTON *v.* BATEMAN, WEB. 613 (1842),

where this patent was again supported, Creswell, J., said to the jury: —

"I think that there is a new principle developed, carried out, and embodied in the mode of using that principle, and in availing himself of that which is sufficient to sustain the patent-right in this case."

MACNAMARA *v.* HULSE, CAR. & M. 471.

NISI PRIUS, 1842.

The plaintiff's invention was of a wooden pavement block "in the form of two solid rhombs, placed one in front of the other in opposite directions, so that each side of one of the plaintiff's blocks was bevelled both inwards and outwards."

The defence set up a prior pavement "in which each block was to have two bevels inwards and two bevels outwards on the same side of the block." And one block of this kind, if cut in two, would be the same as two of the plaintiff's blocks.

Held, by Lord Abinger, C. B., that this was an anticipation.

HILLS *v.* LONDON GASLIGHT CO., 5 H. & N. 312.

EXCHEQUER OF PLEAS, 1860.

Hills's patent of Nov. 28, 1849, No. 12,867, claiming (in substance),—

"1. The purifying of coal gas from sulphuretted hydrogen, &c., by 'passing it through the *precipitated or hydrated oxides of iron*, from whatever source obtained,' and made into a porous material by being mixed with sawdust," &c.

The defence set up as an anticipation the patent of one Croll (1840), claiming the use of oxides generally for the same purpose. Upon this point the court (through Bramwell, B.) stated and adopted the argument for the plaintiff, as follows (p. 362):—

"'It is true Croll said "oxides of iron," and it may be true that he meant all oxides. Take it to be so, that is not such a statement as precludes invention and discovery by the plaintiff, because there are many oxides, the hydrated and anhydrous, the natural and the artificial, some of which will and some of which will not answer the purpose, and therefore it is a matter of investigation and experiment to see which will.' Upon that argument it is impossible for us to say, as a matter of law, that it cannot be the subject of invention, and I think it may be made abundantly manifest in this way: Suppose Croll had said, 'Some of the oxides will do,' would the court in that case, as a matter of law, say there can be no investigation and invention on the part of the plaintiff? But let us take the case a little further. Suppose he had said, 'Some substances of which iron is the base, or into which iron largely enters,' would that be enough? If it would, why would not it do to say, 'some metallic substance;' and if that would do, why not say 'something'? The truth is, that, as a matter of law, assuming that a person says, 'Something will do, and something will not do,' it is impossible for the court to say that it is not a matter of research and experiment to ascertain what will do. It may be said that Croll does not say some oxides, but 'the oxides of iron.' But if it be true that the expression 'some oxides' does not preclude invention and discovery, how can saying that 'oxides will do,' which is the truth and something more, be such a statement as to preclude all further invention and discovery?

" . . . Upon the mere comparison of these two instruments Croll has not anticipated the plaintiff. . . . I need scarcely say that we do not decide in any degree contrary to Bush *v.* Fox, 5 H. L. Cas. 707.

"Further, we hold that there are certain cases in which, upon the mere collocation of the two specifications, or the specification of a patent and a previous written document, the court may say that the patentee has been anticipated. . . . I do not mean to say that the court . . . could not take upon themselves to say that iron is heavy, or that it will fall if left without support, because these are familiar properties of matter which all must know; but the court cannot know, and is not bound to know, which oxide of iron will purify gas from sulphuretted hydrogen."

A similar question arose in regard to Laming's patent of Nov. 4, 1847, No. 11,944. The court thus treated it (p. 367):—

"It was also objected that the mere application of the hydrated oxides to absorb the sulphuretted hydrogen from coal-gas is not the subject of a patent, that property of it being previously well known. With that we do not agree. The answer is, that the question is not properly stated. The application of the hydrated oxide is the principle. If a man were to say, 'I claim the use of hydrated oxide of iron for the purification of coal-gas,' without saying how it is to be applied, it is possible the objection might be well founded; but here the plaintiff says, 'I claim it in the manufacture of gas in the way I have described,' and he shows how it may be used. Therefore this objection fails. So in like manner does the next, namely, that the renovation of the hydrated oxide of iron by exposure to the air, being well known previously, was not the subject of a patent. We deal with that in the same way."[1]

This patent was also sustained by Lord Westbury, Lord Chancellor, in the case of Hills *v.* Evans, 4 De G., F. & J. p. 299.

POUPARD *v.* FARDELL, 18 W. R. 127.

VICE-CHANCELLOR MALINS, 1869.

Patent for a skid.

The difference between the patentee's skid and one previously used by the Royal Artillery was, that a "tail-piece," which in the latter skid was used only to hang the skid to the gun (there being an eye or hole in it), was longer in the patentee's skid, and

[1] Cf. Steiner *v.* Heald, *post*, page 292.

served the different office of keeping the skid in place when it was struck by the wheel. The patent was sustained.

Other English cases under this head are, —

HUDDART *v.* GRIMSHAW, Web. 85.
DOBBS *v.* PENN, 3 Ex. 427.
BETTS *v.* MENZIES, 10 H. L. Cas. 117.
BETTS *v.* NEILSON, L. R. 3 Ch. 429; L. R. 5 H. L. 1.

Other cases of anticipation may be found in Chapter III.[1]

See also the following cases, *post*: —

RUSSELL *v.* COWLEY, page 275.
BROWN *v.* HALL, page 322.
WHITNEY *v.* MOWRY, page 327.
ROBERTS *v.* DICKEY, page 328.
ROBERTS *v.* SCHREIBER, page 333.
THE UNION PAPER-COLLAR CO. *v.* VAN DEUSEN, page 335.
GROSJEAN *v.* THE PECK, STOW, & WILCOX CO., page 342.
IRWIN *v.* DANE, page 352.
RUBBER-STEP MFG. CO. *v.* METROPOLITAN R. R. CO., page 356.
COLGATE *v.* W. U. TEL. CO., page 359.
COLGATE *v.* GOLD & STOCK TEL. CO., page 359.
MUNSON *v.* THE GILBERT & BARKER MFG. CO., page 362.
WINANS *v.* THE SCHENECTADY, &C. R. R. CO., page 416.
WINANS *v.* EATON, page 419.
TUCK *v.* BRAMHILL, page 428.
TARR *v.* WEBB, page 437.
ROSS *v.* WOLFINGER, page 448.
INGELS *v.* MAST, page 450.
BLAKE *v.* RAWSON, page 444.
BLAKE *v.* ROBERTSON, page 447.
WILLIAMS *v.* THE BOSTON & ALBANY R. R. CO., page 468.
THE DOUBLE-POINTED TACK CO. *v.* THE TWO RIVERS MFG. CO., page 473.
BEATTY *v.* HODGES, page 477.
PUTNAM *v.* YERRINGTON, page 518.
MITCHELL *v.* TILGHMAN, page 594.
TILGHMAN *v.* PROCTOR, page 594.
LIVINGSTON *v.* JONES, page 658.
ADAMS *v.* JONES, page 660.
JONES *v.* MOREHEAD, page 660.

[1] And see Stow *v.* Chicago, 104 U. S. 547; Gosling *v.* Roberts, 106 U. S. 39.

The following cases, less important for our purpose, we have been obliged to omit: —

HOVEY *v.* STEVENS, 1 Woodb. & M. 290 (1846). Knife-grinding machinery.

HEINRICH *v.* LUTHER, 6 McLean, 345 (1855). Shears.

GOODYEAR *v.* N. Y. GUTTA-PERCHA, &c. Co., 2 Fish. 312 (1862). India-rubber.

HOWE *v.* WILLIAMS, 2 Fish. 395 (1863). Sewing-machine.

POTTER *v.* MULLER, 1 Bond, 600 (1864). Sewing-machine. See also 2 Fish. 102, and 4 Blatch. 206.

POTTER *v.* WHITNEY, 3 Fish. 77 (1866). Gun.

BIGELOW *v.* MATTHEWS, 7 Blatch. 77 (1869). Soda-water fountain.

ROGERS *v.* SARGENT, 7 Blatch. 507 (1870). Wire-staple.

SINGER *v.* BRAUNSDORF, 7 Blatch. p. 533 (1871). Sewing-machine.

DOUGHTY *v.* DAY, 9 Blatch. 262 (1871). Hoop-skirt.

BALDWIN *v.* SCHULTZ, 9 Blatch. 494 (1871). Straw bonnet.

THE PLASTIC SLATE-ROOFING, &c. Co. *v.* MOORE, 1 Holmes, 167 (1872). Roofing.

SANFORD *v.* MESSER, 5 Fish. 411 (1872). Sewing-machine.

YOUNG *v.* LIPPMAN, 9 Blatch. 277 (1872). Hoop-skirt.

JENKINS *v.* JOHNSON, 9 Blatch. 516 (1872). Steam globe valves.

UNION PAPER-BAG Co. *v.* NIXON, 6 Fish. 402 (1873). Paper bag.

BARCLAY *v.* THAYER, 12 Blatch. 107 (1874). Bracelet.

HAMILTON *v.* ROLLINS, 5 Dill. 495 (1877). Saw-mill.

SNOW *v.* TAYLOR, 14 O. G. 861 (1878). Collar-cutting.

ABBE *v.* CLARK, 13 O. G. 274 (1878). Toy.

FOOTE *v.* FROST, 14 O. G. 860 (1878). Bag-tie.

ADAMS *v.* ILLINOIS MFG. Co., 18 O. G. 412 (1879). Lantern.

ELASTIC TRUSS Co. *v.* PAGE, 16 O. G. 1045 (1879). Truss.

GORDON *v.* ANTHONY, 16 Blatch. 234 (1879). Photographic shield.

THE ODORLESS EXCAVATING APPARATUS Co. *v.* CLEMENTS, 16 O. G. 854. Apparatus for cleaning privies.

ASHCROFT *v.* BOSTON & LOWELL R. R. Co., 97 U. S. 189 (1877). Valve.

MUNSON *v.* THE MAYOR, &c. OF NEW YORK, 18 Blatch. 237 (1880). Bond Register.

THE BRIDGEPORT WOOD-FINISHING Co. *v.* HOOPER, 18 Blatch. 459 (1880). Polishing process.

WARING *v.* JOHNSON, 19 Blatch. 38 (1881). Check-book.

BOYKIN, CARMER, & Co. *v.* BAKER & Co., 9 Fed. Rep. 699 (1881). Fertilizer.

SAWYER *v.* MILLER, 12 Fed. Rep. 725 (1882). Cotton-gin.

CHAPTER III.

INGENUITY.

61. In this chapter we have collected those cases in which the patentability of an improvement is disputed on the ground that, taken by itself, it does not pre· ppose invention. It is referred not so much to any particular prior thing, as to the knowledge of things and of their relations, which men in general possess. These cases, of course, are closely allied to others, especially to those which we have designated by the terms *Anticipation* or *Identity*. In fact, we have hesitated to place them in a division by themselves. A few important cases, however, seemed incapable of any other disposition, and many less important cases properly belonged with them. Consequently we have put them all into this chapter, making such references in other chapters that no mistake or confusion, we trust, will arise from our classification.

In regard to this phase of patentability we can add nothing to the tests already proposed in the Introduction to this book and in the first chapter.

62. We have made one subdivision, by placing at the end of the chapter a few cases in which the alleged invention consisted not in any improvement of an article, but in an improved form of putting it up, or preparing it for sale. Chief among these cases is that of the Glue Co. *v.* Upton, *post*, page 267.

KNEASS *v.* SCHUYLKILL BANK, 4 WASH. C. C. 9.

D. OF PENN., 1820. WASHINGTON, J.

"The improvement or application I wish to secure," said the specification, "is to print copperplate on both sides of the note or bill, or copperplate on one side and letterpress on the other, or letterpress on both sides of a bank-note or bill, as an additional security against counterfeiture."

This was an action for infringement; and the defendants pleaded the general issue, objecting, among other things, that the improvement patented was not an invention.

The court said: —

" . . . What is the discovery for which this patent was granted? Printing with copperplates on the reverse face of bank-notes, &c. And can it be contended that this is not an art? Is not every species of printing an art? But it is contended that printing, either with types or copperplate, is not new. . . . In answer 'to which objection,' it is conclusive to observe that the court cannot *judicially* take notice of it, because it is precisely that kind of defence of which the plaintiff was entitled to notice," &c.

This case is mentioned as an authority by Mr. Justice Strong, in Smith *v.* Goodyear Dent. Vul. Co., *post*, page 497. He said: "In Kneass *v.* Schuylkill Bank, the use of steel plates instead of copper for engraving was held patentable."

This statement is incorrect. In Kneass *v.* Schuylkill Bank, the defendants used steel plates; and the court said that *if the use of steel plates was a patentable improvement* upon the use of copper plates, then the defendants did not infringe the plaintiff's patent. There is no other foundation than this for Mr. Justice Strong's remark, and for the frequent citation of this case in support of a proposition which it does not contain. The report is meagre and obscure, and the case does not possess the importance as an authority commonly attributed to it.

WOOD *v.* UNDERHILL, 5 How. 1 (1846).

The court below held that the following specification was so insufficient as to proportions that the patent was void: —

"Take of common anthracite coal, unburnt, such quantity as will best suit the kind of clay to be made into brick or tile, and mix the same, when well pulverized, with the clay before it is moulded; that clay which requires the most burning will require the greatest proportion of coal-dust; the exact proportion therefore cannot be specified; but, in general, three-fourths of a bushel of coal-dust to one thousand brick will be correct. Some clay may require one-eighth more, and some not exceeding a half-bushel. The benefits resulting from this composition

are the saving of fuel and the more general diffusion of heat through the kiln, by which the whole contents are more equally burned. If the heat is raised too high the brick will swell, and be injured in their form. If the heat is too moderate, the coal-dust will be consumed before the desired effect is produced. Extremes are therefore to be avoided."

The Supreme Court (Taney, C. J., delivering the opinion) held that the circuit judge erred in instructing the jury that this specification was "too vague and uncertain to support the patent;" adding, however, this qualification to their opinion:—

"It may be, indeed, that the qualities of clay generally differ so widely that the specification of the proportions stated in this case is of no value; and that the improvement cannot be used with advantage in any case, or with any clay, without first ascertaining by experiment the proportion to be employed. If that be the case, then the invention is not patentable. Because, by the terms of the act of Congress, the inventor is not entitled to a patent unless his description is so full, clear, and exact as to enable any one skilled in the art to compound and use it. And if from the nature and character of the ingredients to be used they are not susceptible of such exact description, the inventor is not entitled to a patent. But this does not appear to be the case on the face of this specification. And whether the fact is so or not is a question to be decided by a jury, upon the evidence of persons skilled in the art to which the patent appertains."

WILSON *v.* JANES, 3 BLATCH. 227.

S. D. OF N. Y., 1854. NELSON AND BETTS, JJ.

In this case there is a *dictum* by Judge Betts, that an invention which consisted in

"placing the fire-chamber in the middle of the oven, so that the latter may receive the heat of three sides thereof at once," is not patentable. "The plaintiff does not," he said, ". . . show any peculiarity of construction in his oven or fire-chamber, or point out any shape or size of the parts, or method of arrangement, that is original with him, other than leaving the space behind the fire-chamber open, as a part of the entire oven; that is, instead of forming three ovens or compartments around the fire-chamber, he removes the partitions behind the fire-chamber, and makes a single cooking-space, instead of the

three spaces into which that part of the stove in common use is divided. We are not convinced, if this be an original idea with the plaintiff, that the change is a patentable discovery," &c.

THE MUSCAN HAIR MANUFACTURING CO. *v.* THE AMERICAN HAIR MANUFACTURING CO., 4 BLATCH. 174.

S. D. OF N. Y., 1858. HALL, J.

Head-note: "Whether a claim embracing the use of any metallic sulphate, in connection with any alkali, or any sulphate having an alkaline base, could be sustained upon proof that substantially the same proportions of other sulphates than those named in the specification would not produce the required result, *Quære*."

JUDSON *v.* MOORE, 1 FISH. 544.

S. D. OF OHIO, 1860. LEAVITT, J., AND A JURY.

J. Judson's reissued patent of Jan. 10, 1854.

The object of this invention was to lessen the rocking movement of steam-engines, and also to prevent their sudden increase or decrease of motion. Any change in the amount of steam generated in the boiler increases or decreases the pressure upon the valve through which the steam passes from boiler to cylinder, and thus causes a greater or less amount of steam to pass from one to the other. Likewise, any decrease of resistance (of load to be moved, for instance) to the pressure in the cylinder produces less resistance to the passage of steam into the cylinder; and an *increase* of resistance to the action of the piston produces the opposite result. The patentee's object was to make these changes gradual instead of sudden, to make them pass into each other; and this he accomplished by forming the passages controlled by the governor-valves so that their areas, or the sum of their areas, should gradually increase in capacity from the closed to the open position. Thus, as the pressure upon the valve diminished, its capacity to let in steam increased; and as pressure upon it increased, its capacity to let in steam decreased; so that the passage of steam was made gradual instead of abrupt.

In his charge to the jury, Judge Leavitt said: —

"I think there can be no question . . . that this plaintiff has described an invention that is patentable under our laws. The invention is obviously an improvement on the structures before known as governor-valves, and is not a combination."

In another suit on this patent, before the same judge,

JUDSON *v.* COPE, 1 Fish. 615 (1860),

the jury were instructed on the point that utility is evidence of invention, as follows: —

"The court held, and I still think, correctly, that if the evidence as to novelty and originality involved the question in any serious doubt, proof of the actual performance of the valve itself was competent to go to the jury upon the question of the novelty of the invention. It will be obvious that where there is doubt upon the question of novelty, and where the evidence of the witnesses leaves it uncertain whether the principle of the valves was identical, that evidence of the superior performance and utility of the patented improvement would have a direct bearing upon the question of novelty. In other words, if the jury are satisfied that the invention patented produces a result decidedly and clearly different from any which had been produced by the action of any prior valve, and that it was decidedly superior to any other in its operation, it would certainly afford a ground for the presumption that the thing itself had not been known before. . . .

"If the jury are satisfied that any of the old valves, concerning which testimony has been given, have this principle of graduation throughout all their range of opening, of course it will lead them to the conclusion that the invention is not new and original. If they should find that this principle had been previously known and in use, though not carried into entire perfection, and yet be satisfied that the principle was clearly and perfectly known and understood beforehand, such proof, I apprehend, would go directly to the question of the novelty of this invention. If, on the other hand, they believe it is a new discovery and application of a new and important principle to the control of steam-engines, first invented and carried to perfection by this patentee, although there may have been imperfect contrivances before which did not accomplish the purpose, the claim of novelty on the part of the patentee is sustained." [1]

[1] See *post*, page 316.

BURR *v.* DURYEE, 1 WALL. 531 (1863).

Wells's patent for a hat-machine.

This case is exceptional. It covers forty-eight pages in the report, where it is illustrated by numerous elaborate diagrams. At the trial the defendants produced a beaver-skin and the necessary machines, and manufactured a hat in court for the benefit of the learned judges. The patent was sustained. Ingersoll, J., in the case of Burr *v.* Cowperthwait,[1] thus described the principle of the machine which it covered: —

"It is clear that before the discovery of Wells no machine was known or used that did, by any means, *direct* a sheet of fur on to a section of a revolving, exhausted, perforated cone, or other form, parallel with the axis, so as to form a bat of fur on the cone, or other form, of the desired shape and thickness, in properly regulated quantities, at the will of the operator.

"By the machines before known and in use, although bats of fur for making hat-bodies were sometimes formed by means of machinery on a perforated exhausted cone, yet, by such machines, no sheet of fur was *directed*, by the organization of the machine, on to the perforated cone or other form in a line parallel with its axis, so as to form the bat of fur thick where desired, and thin where desired, at the will of the operator. By such machines, the fur was deposited on the exhausted cone by the power of gravity, or the power of the exhaust, or by the combined power of both, and not by the power of the machine, *directing* how and in what manner the fur should be distributed on the cone."

JACOBS *v.* BAKER, 7 WALL. 295 (1868).

Four patents granted to the plaintiff in 1859 for *improvements in the construction of prisons*. They covered, (1) a secret passage around the outside of an iron jail; (2) prison-walls made of iron plates; (3) a method of joining iron plates; (4) an arrangement of iron cells.

Mr. Justice Grier delivered the opinion of the court as follows: —

"The Patent Act of 1836 enumerated the discoveries or inventions for which patents shall be issued, and describes them as 'any new and useful art, machine, manufacture, or composition of matter.'

[1] 4 Blatch. p. 168.

"We have been at some loss to discover under which category to class the four patents which are the subjects of this bill. The complainant alleges that he has invented a new and useful improvement in the construction of *jails*. Now, a jail can hardly come under the denomination of 'a machine;' nor, though made by hands, can it well be classed with 'manufactures;' nor, although compounded of matter, can it be termed a 'composition of matter,' in the meaning of the Patent Act. 'But if the subject-matter be neither a machine nor a manufacture, nor a composition of matter, then,' says an author on the subject of patents, 'it *must* be an art, for there can be no valid patent except it be for *a thing made*, or for the art or *process of making* a thing.' Now, without attempting to define the term an 'art' with logical accuracy, we take as examples of it some things which, in their concrete form, exhibit what we all concede to come within a correct definition; such as the art of printing, that of telegraphy, or that of photography. The art of tanning leather might also come within the category, because it requires various processes and manipulations. The difficulty still exists, however, under which category of the Patent Act an improvement in the construction of jails is to be classed, or whether under any.

"The Patent Act of 1842 gives a copyright for 'new and original designs for manufacture, whether of metal or other material, for bust, statue, &c., or any new and original shape or configuration of any article of manufacture, to any inventor who shall desire to obtain an exclusive property to make, use, and vend the same, or *copies* of the same.'

"Now, although the complainant might contend (as one would suppose from the immense number of plans, designs, and drawings with which the record in the case has been incumbered) that his patent could be supported under this act, yet still the difficulty remains, whether the erection of a jail can be treated as the infringement of a *copyright*.

"But waiving all these difficulties as hypercritical, and assuming the correctness of the positions taken, that whatever is neither a machine, nor a manufacture, nor a composition of matter, must (*ex necessitate*) be 'an art;' that a jail is a thing 'made;' and that the patent is for the '*process* of making it,'—let us examine the case as presented by the bill and answer.

"The bill relies upon four several patents, which it sets forth. They are dated January 7th and 20th December, 1859; 21st February and 24th July, 1860. It would seem from the quick succession of these patents, and before the plans for building jails which they severally suggested could well be put practically into operation, and before any

inquiry was made as to how other persons constructed jails, that as a new idea came into the complainant's mind, he immediately proceeded to the Patent Office to get it patented."

The learned judge then goes on to say that the improvements sought to be patented were not new. The evidence on this head is not reported or discussed.

TYLER *v.* BOSTON, 7 WALL. 327 (1868).

The patent was for a new compound oil thus made: "By measure, crude fusel-oil, one part; kerosene, one part;" and this combination, the patent said, might be varied by using in place of kerosene an equal quantity of naphtha or of crude petroleum: "the exact quantity of fusel-oil which is necessary to produce the most desirable compound must be determined *by experiment*." In regard to this last statement, Mr. Justice Grier remarked as follows: —

"Now, a machine which consists of a combination of devices is the subject of invention, and its effects may be calculated *a priori*; while a discovery of a new substance by means of chemical combinations of known materials is empirical, and discovered by experiment. Where a patent is claimed for such a discovery, it should state the component parts of the new manufacture claimed with clearness and precision, and not leaving the person attempting to use the discovery to find it out 'by experiment.' The law requires the applicant for a patent-right to deliver a written description of the manner and process of making . . . his new-discovered compound. The art is new, and therefore persons cannot be presumed to be skilled in it, or to anticipate the result of chemical combinations of elements not in daily use.

"The defendants used a burning-fluid composed of naphtha 72 and fusel-oil 28 parts; and expert chemists proved that 72 parts *in bulk* of naphtha was the *substantial equivalent* of 28 parts of kerosene.

"This term 'equivalent,' when speaking of machines, has a certain definite meaning; but when used with regard to the chemical action of such fluids as can be discovered only by experiment, it only means *equally good*.[1] But while the specification of the patent suggests the substitution of naphtha for crude petroleum, it prescribes no other pro-

[1] *Vide ante*, page 65.

portion than that of equal parts by measure. The explanation that kerosene must be replaced by an *equal quantity* of naphtha does not alter the case."

BARRY *v.* GUGENHEIM, 1 O. G. 382.

E. D. OF PENN., 1872. MCKENNAN, J.

Barry's reissued patent of Oct. 6, 1868, for a machine for making tin cans.

Head-note: "Where the seam between the body and the cover of a metallic can had been closed by compression between revolving swages so adjusted that their bevelled faces were parallel to each other: *Held*, that a change in the adjustment which destroys the parallelism of these faces, for the purpose of producing a wider and smoother seam, belongs to the category of mechanical skill."

WHEELER *v.* CLIPPER MOWER AND REAPER CO., 10 BLATCH. 181.

S. D. OF N. Y., 1872. WOODRUFF, J.

Infringement of C. Wheeler, Jr.'s mowing and reaping machine patents, reissued and numbered respectively 875, 877, 879, 2610, 2632.

Among other defences, the defendants set up as patentable improvements three changes made by them in the plaintiff's machine; but the court held that they were improvements in the way of superior workmanship only, not inventions, and therefore infringements of the plaintiff's patents.[1]

The first was the addition of a curved toe to a shoe, which in the Wheeler machine was attached to the finger-bar, and supported by a caster-wheel, placed in the centre of the machine, between the driving-wheels. The office of the shoe was to slide over the ground, and thus, through the mediation of the finger-bar, to regulate, by the inequalities of the surface passed over by the shoe, the height at which the cutter-bar operated. The shoe in the Wheeler machine had a rudimentary toe; the full-grown

[1] Although this case was one of infringement merely, it raised some important questions of patentability, which can be stated briefly. We therefore give it a place.

toe developed by the Clipper machine enabled the shoe to pass over obstructions which otherwise it would have ploughed into.

The second improvement was the omission of the caster-wheel and the attachment of the shoe directly to the cutter-bar, so that the position of the cutter-bar was always regulated by the shoe; whereas in the Wheeler machine the caster-wheel, as it passed over or into inequalities in the surface, raised or lowered the shoe. The advantage gained by this improvement was that the position of the cutter-bar was always determined by the inequalities over which it passed, and never (as was sometimes the case in the Wheeler machine) by inequalities lying in the path of the caster-wheel, but not extending to that of the cutter-bar.

The third change was an instance of mechanical equivalents: an arrangement of two levers, so that they might be operated as one, instead of two levers separately operated, as in the Wheeler machine.

In answer to certain parts of the argument for the defence, the court reiterated several propositions of law which are beyond question.

1. That it is not necessary to the validity of a patent that the contrivance it describes should have been made or used by the patentee. It is sufficient, if, from the specification and drawings, it is possible for one having the ordinary knowledge of the art concerned to construct and use the contrivance patented.[1]

2. That a device is patentable, though it is of no value in itself, but valuable only when used in connection with some previously existing machine.

3. That if the inventor of several new devices, all of which are useful in themselves, has applied for and receives a patent for the combination of them, erroneously thinking that such combination was useful, and it turns out not to be so, he is still at liberty to "surrender his original patent, and have it reissued in parts, which shall claim the respective new and useful devices or combinations of devices; pointing out, of course, in his specification, some mode or manner in which they may be reduced to practical use or value."

[1] *Vide post*, page 643.

HAWES *v.* WASHBURNE, 5 O. G. 491.

N. D. OF N. Y., 1872. WOODRUFF, J., AND A JURY.

Patent for a hotel register, in which the sides of the pages were used for printed advertisements, and the middle for the names of guests.

Woodruff, J., charged the jury that the patent was for a structure; that directories containing

"entries along every page, either by interleaving or by running an advertisement along the bottom or the top through the whole book, . . ." bear "no more analogy to this hotel-register than a newspaper, or than the idea of advertising in the fields and on the fences," &c. "But when a new combination is made, bringing about a new result, as here, if it be true, bringing to the eyes of the strangers that visit the town or city where it is kept, by a new combination,[1] a new result is produced in communicating to them information and furnishing the advertisers with a chance and probability that they may thereby obtain patronage, then it becomes patentable. It would be a new structure, a new arrangement of the material for advertising, a new mode of bringing things together that are sought to be brought together for a useful purpose."

Verdict for the plaintiff.

HAWES *v.* COOK, 5 O. G. 493.

N. D. OF N. Y., 1873. HUNT, J.

Hunt, J., said that he was bound by the above decision of Woodruff, J.; and accordingly he sustained the patent without discussion of the case.

HAWES *v.* GAGE, 5 O. G. 494.

N. D. OF N. Y., 1871. WOODRUFF, J.

The patent was for interleaving the register with bibulous (blotting) paper, upon which advertisements were printed. The question of patentability was not directly raised.

[1] This paragraph in the report is as here given.

GUIDET *v.* BARBER, 5 O. G. 149.

D. OF N. J., 1873. NIXON, J.

In this case it was decided that a pavement of stone blocks, of which the sides lying in the direction of the street are smooth and fit closely together, but the sides lying across the street are chamfered, so that there are spaces between them in which horses' feet may take hold, is a patentable invention.

The Guidet patent was reissued, and the reissue (No. 4106) came before the Supreme Court in the case of

GUIDET *v.* BROOKLYN, 105 U. S. 550 (1881).

Mr. Chief Justice Waite, delivering the opinion of the court, said: —

"The invention of Guidet covered by his reissued patent may fairly be stated thus: 'Take stone blocks in the form of parallelopipeds, with the ends sufficiently smooth, and the sides sufficiently rough, and put them together in a street pavement so that the ends will be parallel to the street, and the sides at right angles.' How large the blocks should be, how smooth the ends, or how rough the sides, is nowhere stated. All that is left to the judgment and skill of him who does the work.

"The evidence leaves no doubt whatever in our minds that pavements made of blocks of stone broken into the general form of parallelopipeds, and set on edge with their ends parallel to the street, and their sides across it, were in use long before the date of Guidet's invention. This is conceded, in fact, both in the original patent and the reissue. . . . The difficulty had been, undoubtedly, that the spaces between the sides of the blocks, in ordinary use before his invention, were not sufficient to furnish a firm foothold for draught animals, especially after the surfaces had been worn smooth. How to remedy this defect was the problem to be solved. Formerly it had been done, as is said in the reissued patent, by interposing between the adjoining blocks thin strips of wood or stone. As a substitute for this, he chamfered the edges of the broad sides, and thus got the advantage of placing the blocks close against each other, and keeping the pavement firm, while he secured on the surface the necessary open joint to furnish a good foothold. That, as it seems to us, was all there was of his invention, and we are by no means inclined to hold it was not patentable to him. By taking the block of stone in ordinary use, and substituting the chamfered edge on the broad side for the narrow strip of wood or stone, he got the space

needed for the joint, and he solidified the pavement by bringing firmly together the stones that furnished the surface to be used for travel.

"But after he had obtained his patent, he seems to have found that, by selecting blocks sufficiently rough on their sides, the joints could be made open enough for all practical purposes without chamfering, and so in his reissue he abandoned that feature of his patent, and claimed for rough-side surfaces only. In this way, as it seems to us, he left the field of invention, and entered that of mechanical skill only. Pavements of stone in the form of parallelopipeds being confessedly old, he has really done no more than suggest the best kind of stone to be used in that way. The pavements in Rochester and Buffalo, which it is agreed antedated his invention, were laid in all substantial respects like his. The quality of the stone was different, and the side surfaces were comparatively smoother than his, though to some extent they were rough. He, as has already been seen, does not say what degree of roughness is required. The effect of his specification and claim is, that if blocks are selected with their sides rough enough, joints can be made that will furnish a suitable foothold without the use of strips, and without chamfering. It is true that in Rochester and Buffalo sand may have been used to some extent to keep the blocks apart, but that was only another way of doing what it is agreed had been done before. What he did was to show that, if stone were used with rougher side-surfaces than those found in the old pavements, all artificial means of keeping the transverse joints open might be abandoned, and the requisite surface secured. This was simply carrying forward the old idea, and doing what had been done before in substantially the same way, but with better results. The change was only in degree, and consequently not patentable. Clearly the reissued patent cannot be sustained."[1]

[1] This decision is open to doubt. It may be that the reissue claimed what the original patent did not fairly include, and was therefore invalid. As to the patentability, however, of the improvement, described in the reissue, much may be said. So far as appears, roughened edges had been used before simply for the sake of cheapness and for convenience. They had not been used with the *intention* or with the *result* of obtaining a pavement such as the patentee had in view. He perceived the possibility of so using them; and his improvement, though in one sense a change in degree, was not a change in the degree of *effect* already produced, for it introduced an entirely new effect. The patentee made use of the roughened edges for a new purpose. *Vide post*, page 281.

NEEDHAM *v.* WASHBURN, 7 O. G. 649.

D. OF MASS., 1874. CLIFFORD AND LOWELL, JJ.

In this case there is a *dictum* by Clifford, J., to the effect that car-wheels having been made by placing a heated tire of cast-steel in a mould, and then pouring in molten cast-iron through a single opening at the centre of the mould, thus welding the iron and steel, it was not a patentable improvement to introduce the molten iron through openings, or a series of openings, made just inside of the heated tire.

RUBBER-TIP PENCIL CO. *v.* HOWARD, 20 WALL. 498 (1874).

Patent of J. B. Blair, dated July 23, 1867, for "a new and useful rubber-head for lead-pencils,"— a new manufacture.

The improvement consisted in making a hole somewhat smaller than the diameter of the pencil in a piece of india-rubber, and inserting the end of the pencil therein.

The claim was for "as a new article of manufacture, an elastic, erasive pencil-head, made substantially in manner as described." What that manner was appears from the opinion of the court, delivered by the Chief Justice. It runs as follows: —

". . . Blair's patent was for a 'new manufacture,' being a new and useful rubber-head for lead-pencils. It was not for the combination of the head with the pencil, but for a head to be attached to a pencil, or something else of like character. It becomes necessary, therefore, to examine the description which the patentee has given of his new article of manufacture, and determine what it is, and whether it was properly the subject of a patent.

"It is to be made of rubber, or rubber and some other material, which will increase its erasive properties. This part of the invention alone could not have been patented. Rubber had long been known, and so had rubber combined with other substances, to increase its naturally erasive qualities. It is to be of any convenient external form. It may have a flat-top surface, or its top may be of a semicircular or conical shape, or any other that may be desirable. This would seem to indicate clearly that the external form was not a part of the invention. . . .

"Again, the head is to have in it longitudinally a socket to receive one end of a lead-pencil or a tenon extending from it. This socket is

to be cylindrical, or of any other proper shape. Usually, the inventor says, he made it so as to extend part way through the head; but, if desirable, it might be extended entirely through. It must be within one end, but any particular location at the end is not made essential. This, clearly, is no more than providing that the piece of rubber to be used must have an opening leading from one end into or through it. This opening may be of any form and of any extent longitudinally. The form, therefore, of the inside cavity is not more the subject of the patent than the external shape.

"Any piece of rubber with a hole in it is all that is required thus far to meet the calls of the specifications, and thus far there is nothing new, therefore, in the invention. Both the outside and inside may be made of any form which will accommodate the parties desiring the use. But the cavity must be made smaller than the pencil, and so constructed as to encompass its sides, and be held thereon by the inherent elasticity of the rubber. This adds nothing to the patentable character of the invention. Everybody knew when the patent was applied for that if a solid substance was inserted into a cavity in a piece of rubber smaller than itself, the rubber would cling to it. The small opening in the piece of rubber not limited in form or shape was not patentable; neither was the elasticity of the rubber.

"What, therefore, is left for this patentee but the idea that if a pencil is inserted into a cavity in a piece of rubber smaller than itself, the rubber will attach itself to the pencil, and when so attached become convenient for use as an eraser?

"An idea of itself is not patentable, but a new device by which it may be made practically useful, is. The idea of this patentee was a good one, but his device to give it effect, though useful, was not new. Consequently he took nothing by his patent." [1]

[1] Whether or not the decision of this case is right, the reasoning of the opinion is open to criticism. Many combinations of old elements are patentable, not because invention was shown in the means by which the combination is effected, but because invention was shown in bringing together component parts apparently dissimilar; and these inventions are often of the highest class, the most difficult to make, and the most useful when made. The line of reasoning pursued in this case, as we understand it, would be fatal to patents for such inventions. *Vide ante*, pages 31, 32, 33.

VOGLER *v.* SEMPLE, 7 Biss. 382.

N. D. of Ill., 1877. Blodgett, J.

Vogler's reissued patent of Jan. 11, 1877, for an improvement in trunks, being a "removably hinged tray," thus described by the court: —

"The parts being so arranged and combined as to admit of the ready removal of the tray from the trunk, and yet so adjusted as to allow the tray to be turned up on its hinges, into or against the cover or top. This is accomplished by the peculiar form of the hinge, — one leaf of which is permanently fastened to the tray, and the other so arranged as to be inserted in sockets, which are firmly fixed to the back wall of the trunk; the whole being so arranged as to admit of a ready removal of the hinged tray from the trunk, and so adjusted as to allow it an up-and-down play."

This tray had three advantages: 1st, It was easily removed; and, 2d, It was removable by a "straight vertical lift," which did not disarrange the contents; 3d, It had free play up and down, so that it adapted itself to the pressure above and beneath it.

It was held that this invention was patentable, and not anticipated by a device for a removable tray hinged to the top of the trunk by slots and pins, but not capable of being fastened to the body of the trunk.

ANDREWS *v.* CARMAN, 13 Blatch. 307.

E. D. of N. Y., 1876. Benedict, J.

Infringement of a patent reissued to Nelson W. Green, May 9, 1871, numbered 4372. The claim was for

"the process of constructing wells by driving or forcing an instrument into the ground until it is projected into the water, without removing the earth upwards, as it is in boring, substantially as herein described."

Before Green had invented this "driven-well," as it is called, there were but two kinds of wells, both constructed upon the same principle; namely, the ordinary domestic well, and the artesian well. Both are made by sinking the well-pit until a water-bearing stratum of earth is reached, whence the water flows into the well-pit. The ordinary well stops when this point is

reached. The artesian well is sunk until it reaches a stratum where the water is under such pressure that it will flow into the well-pit and up through it to the surface; whereas in the ordinary well it has to be pumped or drawn up to the surface. In each case "the pit has uniformly been made by loosening the earth or rock and removing it upwards and out upon the surface, either by means of the spade, or the drill or auger, and the sand-bucket."

The plaintiff's process was a simple but an entirely new one. It was to pierce the earth with a small, hollow air-tight tube of iron, slightly contracted at the end, until the proper stratum was reached; then by means of a pump to exhaust the air from the tube and from the water-bearing stratum into which the tube projects. The water rushes in and up to fill the vacuum, and a constant and unlimited supply of water is obtained. The court held that the claim, construed in the light of the specification to which it referred, was neither for a process of making a well-pit, nor for an instrument or device, and still less (as was contended) for a process of making a hole in the ground, but for the application of a principle, which the court thus stated: —

"I therefore understand this patent to be a patent for a process, and that the element of novelty in this process consists in the driving of a tube tightly into the earth, without removing the earth upwards, to serve as a well-pit, and attaching thereto a pump, which process puts to practical use the new principle of forcing the water in the water-bearing strata of the earth from the earth into a well-pit, by the use of artificial power applied to create a vacuum, in the manner described."

Beside the obvious advantages of the driven-well, it has this advantage also, — water from the surface or from intervening strata cannot flow into it, but only the purer water from the deep stratum where the tube ends.

Upon the point that the new principle had previously been in some sort of undiscovered operation, the court made the following sagacious remarks: —

"It is of course true that, prior to Green's invention, water had been pumped from a hole in the ground, and from a small hole. Doubtless, it is also true that in some such case, where a pump had been inserted in a small hole, for the purpose of raising therefrom the water

found therein, the principle of Green's invention may at times have been called into operation. No such case is here proved; but if such fact were proved, Green's right to a patent would not thereby be defeated. A chance operation of a principle, unrecognized by any one at the time, and from which no information of its existence, and no knowledge of a method of its employment, is derived by any one, if proved to have occurred, will not be sufficient to defeat the claim of him who first discovers the prineiple, and, by putting it to a practical and intelligent use, first makes it available to man."

This patent was also sustained by Nelson, J., in Andrews *v.* Wright, 13 O. G. 969.[1]

ANDREWS *v.* CROSS, 19 BLATCH. 294.

N. D. OF N. Y., 1881. BLATCHFORD, C. J.

Blatchford, J., also sustained the driven-well patent, saying:—

"The evidence in the present case shows that any person, by using a pump, applied as directed, on the tube directed, in the well constructed as directed, will put to practical use what is in Andrews *v.* Carman defined to be the 'new principle.'

"Although the specification does not state what such new principle is, the evidence in the present case shows what it is, and that it is certainly and effectively developed, to the end of obtaining a copious, continuous, and unfailing supply of good water, and that it is what is thus set forth in Andrews *v.* Carman. It may be that the inventor did not know what the scientific principle was, or that, knowing it, he omitted, from accident or design, to set it forth. That does not vitiate the patent. He sets forth the process or mode of operation which ends in the result, and the means for working out the process or mode of operation. The principle referred to is only the why and the wherefore. That is not required to be set forth. . . . An inventor may be ignorant of the scientific principle, or he may think he knows it, and yet be uncertain, or he may be confident as to what it is, and others may think differently. All this is immaterial, if by the specification the thing to be done is so set forth that it can be reproduced."

[1] In the case of Green *v.* French, 11 Fed. Rep. 501, Nixon, J., sustained the driven-well patent.

ADAMS *v.* THE JOLIET MANUFACTURING CO., 12 O. G. 93.

N. D. OF ILL., 1878. BLODGETT, J.

H. A. Adams's patent of Oct. 15, 1872, for improvement in corn-shellers.

The claim was: —

"The combination with a corn-sheller of a series of wings, wheels, or projections, so arranged on a shaft as to revolve in the same direction the corn is running, and so placed relative to the throats as to force into the machine all misplaced or hesitating ears, substantially," &c.

A prior device, for the same purpose (that is, to prevent the ears from piling up at the throat of the machine, instead of passing into it), had similar projections, revolving in the *opposite* direction; but this device was not successful, whereas the plaintiff's was successful, and the change made by him, though it consisted simply in reversing the motion of the beaters or wings, was held to be patentable.

TUSSELL *v.* SPAETH, 14 O. G. 377.

D. OF N. J., 1878. NIXON, J.

Lovatt's patent for "improvement in skates," reissued to Tussell, May 30, 1876, No. 7151.

"Movable clamps," said the court, "had been used to hold the skate to the sole and to the heel of the boot, and were retained in position by bolts and nuts, the mechanism for the toe and heel being separate and acting independently one of the other. But here [*i. e.* in Lovatt's device], by the use of a single adjustable screw operating upon the lateral clamps, these clamps are caused to grasp the sole and heel of the boot with all the force necessary and requisite for firmly holding the skate to the foot. . . . I am of the opinion that Lovatt . . . brought out the true principle of clamp-fastening in skates, although he did not employ the most efficient instrumentalities for embodying and exhibiting the principle."

TERHUNE *v.* PHILLIPS, 99 U. S. 592 (1878).

The only description of the invention contained in the report is as follows: "It appears by the specification . . . that the invention . . . 'has for its object to provide a means for connecting the ends of the horizontal and vertical members of a show-case frame; and to that end it consists in a metallic corner-piece, provided with sockets adapted to receive the ends of the different members, whereby the same are firmly connected at the corners of the case.'"

We quote in full the opinion of the court, delivered by Mr. Justice Swayne:—

"The determination of this case is controlled by Brown *et al. v.* Piper, 91 U. S. 37. We cannot fail to take judicial notice that the thing patented was known and in general use long before the issuing of the patent. The substitution of metal for wood was destitute both of patentable invention and utility. The admission of improper testimony, if it occurred, was therefore immaterial. The case of the appellant [the patentee], as it appears in the record, without any testimony, is clear and conclusive against him."

BOWKER *v.* DOWS, 15 O. G. 510.

D. OF MASS., 1878. LOWELL, J.

Horace L. Bowker's patent of July 24, 1877, No. 193,476 for an improvement in sirups and mineral waters.

The improvement consisted in adding to such liquids a small quantity of saponine extracts, in order to "create and sustain a sparkling frothy foam or bead on any drink containing carbonic acid gas, when drank from the bottle or fountain." Directions for obtaining the extract (from soap-bark, &c.) were given in the specifications, and also directions as to the proportions in which it should be used. The objection that the discovery was not patentable being taken, Judge Lowell said:—

"We are of opinion that it is clearly a case of a patentable discovery of a new use in a combination to produce a better result than was known before."

EVERETT *v.* THATCHER, 16 O. G. 1046.

N. D. OF OHIO, 1878. BAXTER, J.

Baker's patent for a clapboard joint and siding for houses, reissued Jan. 19, 1869, No. 3268, held not valid. The alleged invention is described only in the following passage from the opinion of the court: —

"It is simply a piece of weather-boarding, grooved on one edge and bevelled on the other. The invention is not such a new and useful improvement in that branch of mechanism as in our judgment makes it patentable."

ALBRIGHT *v.* THE CELLULOID HARNESS-TRIMMING CO., 12 O. G. 227.

D. OF N. J., 1878. NIXON, J.

A. Albright's reissued patent, No. 5155, dated Nov. 26, 1872, for an improvement in the manufacture of rubber-coated harness-trimmings, consisting in dies, which, when a rubber-coated ring, or other like article, was placed between them, polished, trimmed, and finished it, — thus doing in one operation what previously had required several operations. Therefore, of course, held patentable.

LORILLARD *v.* RIDGEWAY, 16 O. G. 1231.

E. D. OF PENN., 1879. MCKENNAN, J.

Seidler's patent, reissued Oct. 24, 1876, No. 7362.

We cannot do better, and need not do more, than to quote the head-notes: —

"1. Tobacco having been marked by pressing into its surface metallic or other hard substances, the imprint of which was left upon the tobacco, it was no invention to provide such plates with prongs or projections, and allow them to remain upon the tobacco.

"2. Letters and other distinguishing marks having been produced upon tobacco, to put such marks upon a metallic tag, if greater prominence was desired, was readily suggested to the common mind, and did not rise to the dignity of an invention."

In an earlier case before the same judge, Lorillard *v.* McDowell, 11 O. G. 640 (1877), which was a motion for an interlocutory injunction, the patent was sustained, the invention not being limited by proof of the prior devices set forth in the first-quoted head-note.

PEARCE *v.* MULFORD, 102 U. S. 112 (1880).

Infringement of a patent reissued to Lewis J. Mulford and others, Feb. 24, 1874, for an "improvement in chains and chain links for necklaces," &c. The claims were: —

"1. An ornamental chain for necklaces, &c., formed of alternate closed links A, and open spiral links B, substantially as shown and described.

"2. The open spiral link B, formed of coils of tubing, substantially as shown and described."

There was no novelty in chains formed of alternate closed links and open spiral links, nor in chains formed of spiral links only, nor in chains formed of split rings "sprung" into each other. The novelty, therefore, of the plaintiff's invention consisted, if at all, in the use of gold tubing (itself an old article) for the open spiral links.

"Tubing itself, as understood in the jeweller's art," said the court, "is made by compressing a strip of gold around a brass or copper wire, and then forcing it through a draw-plate, the holes in which decrease gradually in diameter until the edges of the gold strip are completely united. The copper wire is then eaten out by an acid, and the tubing is complete. Both the product and the process have long been well known," the court continued. "And so have been spiral rings formed of gold tubing. The tubing, before the wire is removed, is wound into coils around a mandrel, and cut into desired lengths. The coils may then be pressed together by a wire and annealed, the wire having been removed, or the compressing and annealing process may be omitted. Such spirals have a certain degree of elasticity, which enables them to be sprung upon other links, and when thus sprung into other closed or open spirals they will form a chain. The well-known serpent bracelet was such an open spiral, such a double link, and several of them, sprung together alternately with closed links, would have formed a chain identical in principle with that of the patentee. There certainly is nothing patentable in merely reducing the size of the

bracelet so as to adapt it to use in a necklace. The record also contains evidence that other spiral rings or links made of gold tubing, some of them open and some closed, by soldering, were made before 1873. It is to be observed that the second claim in the patent is not for any process of making a link; not for making tubing or winding it into spiral form; not for tying or annealing the coils when they have been wound: but for an open link consisting of one or more coils of tubing of the proper length, so as to form a double spring link, into each end of which is soldered a small shot to give the link a finish. This is all the description the specification gives of the link. It is not intimated that the coils must be brought into close contact with each other, or annealed, and it is simply said the links may be colored or polished. The form of the link, when made of gold tubing, is all that is attempted to be patented. The constituents are not. The patentee has testified that as long as he had known anything about the manufacture of jewelry he had known tubing to be used in the art; that for many years he had known shot put into the ends of such tubing, and that for a number of years he had known links formed of tubing with shotted ends. We think, therefore, the evidence sufficiently establishes that the second claim is void for want of novelty in the alleged invention.

"The first claim read in connection with the description given in the specification and drawings is for an ornamental chain, consisting of solid links and open spiral links made of tubing, the latter being finished before they are sprung into the solid links, and the connection being made thus springing the links together. In considering whether this can be sustained, it is necessary to observe what was the state of the art and what was known when Cottle claims to have invented the device for which he obtained the patent. Chains having alternate open and closed links, the open links being spiral and sprung into the closed links, were known. So were chains made entirely of spiral links, and even of open spiral links. A chain had also been made and worn, and it was for sale in the stores, the links of which were hollow. They were made solid, with copper wire inside. The copper wire was then destroyed, leaving the links hollow, and they were then sprung together to form a chain. The chain was thus composed of open spiral links made of hollow metal; that is, of tubing. It is true, as appears from the model which is an exhibit in the case, the two ends of the spiral were bent outward and the coils were soldered together after the links had been sprung into each other. Still, when thus sprung into each other, they made a chain formed of open spiral links of tubing. The soldering was a distinct and after process. Omitting that process and the outward deflection of the ends, and alternating the links with other

links made closed and solid, the chain would have been substantially the same as that of the complainants. We cannot think the advance which the patentee made upon that can be called invention. Leaving the links open after they have been sprung into closed links, there being no novelty in the links themselves, cannot be patentable. It is nothing more than the exercise of ordinary mechanical skill. If in one of the complainants' chains, after the links had been joined, a person should solder the spirals together or to the closed rings, it could hardly be maintained that a new chain had been invented. Or if, when thus soldered, the soldering should be removed, the change would not deserve to be regarded as a product of invention. Yet this is substantially what the patentee has done. His chain may have been an improvement on the chains that preceded it. In some particulars it doubtless was. It left the elasticity of the spiral gold tubing more free by releasing the link from the attachment of the soldering, and it enabled the chain to be freely taken in pieces without injury to its structure. But all improvement is not invention, and entitled to protection as such. Thus to entitle it, it must be the product of some exercise of the inventive faculties, and it must involve something more than what is obvious to persons skilled in the art to which it relates."

THE COLLINS CO. *v.* COES, 3 FED. REP. 225.

D. OF MASS., 1880. LOWELL, J.

L. J. & L. E. Smith's reissued patent, No. 5294, dated Feb. 25, 1873, for an improvement in monkey-wrenches.

The court:—

" . . . Loring Coes, one of the defendants, made . . . the great improvement in these tools more than forty years ago. . . . He arranged a rod parallel to the main bar, and upon this rod worked the movable jaw by means of a rosette, which did not move up and down, but remained constantly in a convenient position close to the thumb of the operator. Coes made a plate of iron, called the step-plate, which fitted over the main bar, and projected on one side to receive the rod, which was pivoted into it. On the side towards the hand, this step-plate had a recess operating as a ferrule, to receive the wooden handle or sleeve, which was slipped over the iron bar and secured by a nut at the end. The handle and its nut kept the step-bar in place.

" The improvement set forth in the reissued patent of the plaintiffs

may be said to consist of cutting the step-plate in two, lengthwise, and putting a screw-thread upon the part nearest the hand, which thus becomes a nut, having a recess for the wooden handle. The utility of this change is said to be (1) that the step-plate is secured by the upper nut, independently of the nut at the end of the handle, and thus, if the handle becomes loose, the smooth and regular working of the rod on the step-plate is not affected; (2) that by securing the step-plate to the main bar, or iron body of the wrench, by this independent nut, much of the strain, which in Coes's wrench is brought upon the wooden handle, which is the weakest part of the tool, is transferred to the solid iron bar. The evidence bears out this claim of utility. . . .

"It is ably argued for the defendants that the mere addition of a nut to the Coes wrench has not invention enough to be patentable. Considering, however, that the change, simple as it is, was not made for some twenty-five years after Coes's wrench was patented, and came into common use, and that there appears to be a value in it which others have obtained in a different way, it seems to me that the combination is new and useful in the sense of the patent law."

Alleged anticipation: The "Dixie wrench" "was sometimes made with a nut, into which the handle of the wrench was inserted. . . . But there is no reason to suppose that the assignor of the plaintiffs knew of this form of wrench, which had been superseded by the Coes tool long before their original patent was granted. [Of what importance is this fact? The existence of the wrench as a tool once in public use, and not the patentee's knowledge of it, is the criterion.]

"Nor does it appear that the 'Dixie' wrench, with a recessed nut, was well known to all competent mechanics. [The same criticism applies.] This was not a Coes wrench. It had no rod parallel to the bar; but the movable jaw was worked upon the bar itself, — a form of tool which no one has been willing to use since Coes's invention was made public. Therefore, the plaintiffs' wrench is not, or was not, when made, such a mere obvious appropriation of the Dixie nut for the use of the Coes wrench as to be an alternative fairly within the knowledge of a constructor."

DENSMORE *v.* SCOFIELD, 102 U. S. 375 (1880).

Patent reissued to J. & A. Densmore, May 29, 1866.

The alleged invention consisted in combining two large wooden tanks with an ordinary railway car, for carrying oil, in such a manner that the tanks should form a part of the car itself (thus

avoiding the extra weight of barrels, &c., placed upon a complete car), and so arranged that the weight of the tanks should come directly, or nearly so, over the car-trucks. The patent claimed: 1. The two tanks, or their equivalent, in combination with the car, substantially, &c. 2. The two tanks, or their equivalent, when placed over the trucks, in combination, &c., substantially, &c. 3. The frames, bolts, and cleats, combined with the tanks, man-holes, man-heads, faucets, and runway, in combination with tanks and car.

The defence established the following points in evidence:—

1. That in 1863, and prior to that, oil was carried in whaling casks, permanently fastened to a car by spikes and cleats;

2. That in 1871, and thereafter, wooden casks, like the complainants', were not used, because they leaked, and, consequently, were apt to be burned; that a long iron tank, boiler-shaped, and placed horizontally upon the car, had gone into universal use, being tighter and stronger than the wooden tank; and,

3. That in loading freight cars it always had been the custom to place the weight as nearly as possible over the trucks.

This evidence being uncontradicted, the court (Swayne, J., delivering the opinion) remarked as follows:—

"This testimony leaves nothing of the substance of the plaintiffs' alleged invention. No one, we apprehend, would seriously contend for a moment that what is left is sufficient to constitute the basis of a valid patent. Brown *v.* Piper, 91 U. S. 37, and the authorities there cited. But irrespective of this testimony, and of any testimony, upon looking this reissue in the face, and examining its several claims by their own light, we find nothing that brings any of them within the sphere of what is properly patentable. There is no novelty and no utility. It does not appear (to use the language of appellants' brief) that there was 'a flash of thought' by which such a result as to either was reached, or that there was any exercise of the inventive faculty, more or less thoughtful, whereby anything entitled to the protection of a patent was produced. It strikes us that the entirety and all the particulars of the summary and the claims are frivolous, and nothing more."

WASHBURN & MOEN MANUFACTURING CO. *v.* HAISH, 4 Fed. Rep. 900.

N. D. of Ill., 1880. Drummond, J.

Many patents of William D. Hunt and of others for barbed-wire fences were in suit. The object of all these inventions was a fence armed with sharp points to prick the skins of beasts coming in contact with it, and thus to repel them without injuring them.

This was one of fifteen cases brought by the plaintiff, and there was a great array of counsel. The inventions are not described in the report;[1] nor are the devices alleged to anticipate them. Many witnesses having testified to the existence of barbed-wire fences in the past, the court quoted from Coffin *v.* Ogden, 18 Wall. 120, on the point of anticipation, as follows: "... The burden of proof rests upon him [the defendant], and every reasonable doubt should be resolved against him;" and the court also cited and quoted from Webster Loom Co. *v.* Higgins, 16 O. G. 675; Howe *v.* Underwood, 1 Fish. 175;

[1] But in a later case, a motion for rehearing, Washburn, &c. Co. *v.* Haish, 7 Fed. Rep. 906, where it was contended only that the reissues were not for the same inventions as the original patents, we find the following facts: —

(As we have said, the object of all these inventions was a fence having barbs of some kind, which would prevent cattle from breaking through it, as they could and did break through the ordinary wire fences, which were thus described by the court: —

"Wires had been used for fencing for many years before the date of these patents, and they were made single or double, of single wires, or of single wires twisted together. These did not fully answer the purpose, as it was not difficult for cattle to push through them.")

The Hunt reissue, No. 6976, described small spur-wheels, strung upon the wires of a fence. The spurs were sharpened, and the wheels had openings at the centre for the wires to pass through.

The *Kelley* patent, No. 6902. The barbs, said the court, "are cut in a diamond form from a plate by machinery, or otherwise, and each provided with a hole, so as to be strung on the wire at proper distances apart, and then they are compressed laterally upon the wire by a blow of a hammer or otherwise, so as to fasten them upon the wire. ...

"*Glidden* reissue, No. 6913, ... described the use of two wires coming together at various points, at which spurs are coiled around them, and which are spread apart between the coils, so as to prevent the latter from moving longitudinally on the wires. Equidistant between the posts is a slotted tube containing a coiled spring, the object of which was to keep the wires at a proper tension as affected by heat or cold. ... The number of coils is not material."

Hayden *v.* Suffolk Mfg. Co., 4 Fish. 108; Goodyear *v.* Day, 2 Wall. Jr. 283.

On the question of patentability the court remarked as follows: —

"The testimony as to the state of the art shows that fence-wire and wire fences, and wires for such purposes, composed of two or more strands twisted or laid together, were old at the time these inventors entered the field; also, that fences had been, long before Hunt's invention, armed with spikes, or other sharp projecting points, for the purpose of making them more effective in resisting . . . animals or other intruders. . . . It must be conceded both from the proofs in these cases, and from these common facts within the knowledge and observation of all intelligent persons, that the idea of furnishing a fence or wall with some kind of sharp spikes or prickers is old. The ordinary picket fence, the device of spikes on area railings to prevent loungers from leaning against them, the placing of broken glass, pottery, or sharp stones or spikes upon the tops of walls, to protect fruit-gardens, are well-known illustrations of what we refer to.

"The most that can be said of these old devices, as applicable to these patents, is that they narrow the field for the exercise of inventive faculty, and limit the range of the patents. . . .

"There is no doubt that a device, in order to be patentable, must be the result of inventive genius. The mere mechanical adaptation of old things to new uses is not usually invention, unless in combinations; and yet it is extremely difficult in many cases to say just where the inventive faculty asserts itself as the controlling force; and the authorities furnish us no satisfactory test to apply and determine this question; although there is usually little difficulty in determining, as a matter of fact, in each case, whether a device is or is not in some degree the result of invention. If there is any invention required, then the law will not attempt to measure its extent or degree. If, for instance, the proof had shown that wire, provided with barbs, spurs, or prickers, was a well-known article used for other purposes than fencing, there would be no difficulty in saying that it did not require invention or the exercise of the inventive faculty to substitute it for fencing purposes in place of plain wire, which had been used before.

"But we cannot say that the inventive or creative faculty is not required in devising a mode by which plain fence-wire can be armed with spurs so as to make it available as an effective fencing material. The proof does not show that such wire was known and applied to other uses. No one, so far as this record shows, had made or used it before for any other purpose; so that, to our minds, it seems quite

clear that it required invention to devise and produce a barbed wire which could be practically used for fencing purposes.

"In the absence of any other test, the courts have seemed to assume that the fact of the acceptance of a new device or combination by the public, and putting it into extensive use, was evidence that it was the product of invention; or, as one of the counsel for the plaintiff expressed it, 'utility is suggestive of originality.'"

In confirmation of this view, the court then cited, and quoted from, Smith *v.* Goodyear Dent. Vul. Co., 93 U. S. 486; Eppinger *v.* Richey, 14 Blatch. 307; Isaacs *v.* Abrams, 14 O. G. 861; Stanley Works *v.* Sargent, 8 Blatch. 344; and concluded as follows:—

"Tested by the rule of utility here suggested, this record abundantly shows that the device in question has been accepted by the public to an extent which has hardly heretofore followed the most successful inventions. Its utility must be considered as a conceded fact. From what has already been developed, it is clear that it has made possible the cultivation of the extensive prairies of the West, the pampas of Brazil, and the steppes of Russia, where, before the introduction of this cheap mode of fencing, it was impossible; and it has even to a great extent already superseded the use of wooden fences in the timbered portion of the country; and the question is, to whom but these inventors is the public indebted for this widely useful device?"

BRUMMIT *v.* HOWARD, 3 FED. REP. 801.

D. OF MASS., 1880. LOWELL, J.

Patent of Brummit, No. 177,466, dated May 16, 1876. The patent claimed "the method of utilizing the leather of old card clothing by heating it with gum tragacanth, and resetting it with teeth reversely to the original teeth, substantially as described."

The court:—

"... The actual discovery relied on is that of turning the leather so as to present a different side to the old tooth-setting machine, and, then, as the teeth are always set at an angle, the new holes will run across the old holes. If set in the same direction, it would be impossible to prevent their working into and enlarging the old holes."

The exhibit alleged to anticipate this invention was thus described by the court: —

"The exhibit differs from the clothing made under the plaintiff's patent in this, that, instead of turning the piece of leather round, the operator has turned it over, so that the teeth now come out at the flesh side, instead of the grain side, of the leather. In the plaintiff's opinion, this mode of manufacture is not so good as his; but it seems to have worked well, and if we omit from his claim the gum tragacanth, which the defendants do not now use, and which the complainant insists is not essential to his claim, this exhibit clearly anticipates it, because it utilizes old card clothing by resetting it with teeth reversely to the original teeth." [1]

NEW YORK GRAPE-SUGAR CO. *v.* AMERICAN GRAPE-SUGAR CO., 10 FED. REP. 835.

N. D. OF N. Y., 1882. WALLACE, J.

Head-note: "The employment of sheet-metal as a lining for the bottom of a vessel to contain liquids involves no invention."

ARTICLE OF SALE.

LANGDON *v.* DE GROOT, 1 PAINE, 203.

S. D. OF N. Y., 1822. LIVINGSTON AND VAN NESS, JJ.

The specification said: —

"This improvement consists in folding the thread and floss cotton into skeins or hanks of a convenient quantity for retailing, with a sealed wrapper round the same, and a label containing the number and description of the article."

Mr. Justice Livingston: —

"The invention is for folding the thread and floss cotton in a manner a little different from the ordinary mode, in which form the cotton will sell quicker and higher by twenty-five per cent than the same cotton

[1] Compare this case with that of Adams *v.* The Joliet Mfg. Co., *ante*, page 252.

put up in the common way. The cotton thus folded is imported from the factory of Holt, in England. The article itself undergoes no change; and the whole of the improvement — for it is a patent for an improvement — consists in putting up skeins of it, perhaps of the same size in which they are imported, decorated with a label and wrapper; thus rendering their appearance somewhat more attractive, and inducing the unwary, not only to give it a preference to other cotton of the same fabric, quality, and texture, but to pay an extravagant premium for it. When stripped of these appendages, which must be done before it is used, the cotton is no better in any one respect than that of Holt's retailed in the way put up by him.

"Now, that such a contrivance . . . may be beneficial to a patentee, if he can exclude from the market all other retailers of the very same article, will not be denied; and if to protect the interest of a patentee, however frivolous, useless, or deceptive his invention may be, were the sole object of the law, it must be admitted that the plaintiff has made out a satisfactory title to his patent. But if the utility of an invention is also to be tested by the advantages which the public are to derive from it, it is not perceived how this part of his title is in any way whatever established. Is the cotton manufactured by himself, which is put up in this way? The very label declares it to be that of another man. Is anything done to alter its texture, or to render it more portable, or more convenient for use? Nothing of this kind is pretended. Does the consumer get it for less than in its imported condition? The only ground on which the expectation of a recovery is built is, that he pays an enormous additional price, for which he literally receives no consideration.

"It is said that many ornamental things are bought of no intrinsic value, to gratify the whim, taste, or extravagance of a purchaser, and that for many of these articles patents are obtained. This may be so; but in such cases there is no deception, no false appearances, and the article is bought to be used with all its decorations and ornaments, which may have been the principal inducements to the purchase, and which will last as long as the article itself. In this the sight or pride of the party is gratified. But here it is the cotton alone which it is intended to buy; and the little label and wrapper appended to it, and which constitute the whole of the improvement, however showy, are stripped off and thrown away before it can be used. And when that is done, which may be done at the very moment of its purchase, the cotton is no better, whatever the buyer at the time may think, than when it first left the factory.

"When Congress shall pass a law, if they have a right so to do, to encourage discoveries by which an article, without any amelioration of

it, may be put off for a great deal more than it is worth and is actually selling for, it will be time enough for courts to extend their protection to such inventions, among which this may be very fairly classed."

PENNSYLVANIA SALT-MANUFACTURING CO. *v.* GUGENHEIM, 3 Fish. 423.

E. D. of Penn., 1868. Grier, J.

George Thompson's patent, reissued April 16, 1867, in three divisions, numbered respectively 2569, 2570, 2571.

Two of the reissues were for "improvements in the manufacture of caustic alkali," and one was for an "improved process of putting up caustic alkali."

The result of the invention was to bring into common use, in the making of soap, what before had been merely an article of the laboratory. Caustic alkali is difficult to keep, because of its tendency to seize carbonic acid and moisture from the air, and thus to become a solution of carbonate of soda; and also because it destroys most substances which it touches. For these reasons, before the patentee's invention it was not used in soap-making. Soap was made chiefly in large factories by taking the soda-ash of commerce, making it caustic by boiling it with lime, and then treating the solution of caustic soda with fat. This was a nice chemical operation, which could not be carried on in families.

The patentee's invention was thus described by the court (Grier, J.):—

"He conceived the idea of forming the lye or solution of hydrate of soda by the use of carbonate of soda and lime, and then to syphon off the lye, and evaporate down this clear lye until the caustic soda (hydrate of soda) reached a solid state. In this condition it could be melted at a temperature near to the degree of redness, and moulded or broken. But the trouble was how to keep this article in its caustic state, and how to overcome its tendency to pass back to the condition of a carbonate, and also to avoid its destructive action upon other substances. The idea then occurred to him to divide the solid caustic soda into such small portions as would answer for a single ordinary operation, and seal up hermetically each portion by itself as soon as

produced. His first experiments were tried by moulding the solid fused caustic soda into one-pound pieces, and enclosing each in an air-tight envelope composed of paper or muslin, saturated with rosin, and dipped in tar or varnish. He also then adopted the plan of at once sealing up the caustic soda in tin, soldering it in small hermetical one-pound enclosures, as soon as produced. Finally, Thompson adopted the plan of preparing an iron case or mould, made tight at the joints by infusible cement, and at once pouring the hot fused soda into it, and immediately sealing it up. By these several means he produced an article of uniform strength that could be safely transported, which could be certainly used in the manufacture of soap in families, by merely adding a fixed quantity of water and fat, and which material could not pass back to the state of a carbonate. . . ."

" The testimony . . . clearly establishes the fact of the novelty and practical utility of Thompson's invention or discovery, and his improvement in the art. It is therefore the proper subject of a patent."

This is the only reference — if it be one — to the patentability or ingenuity of the improvement. This aspect of the patent, however, was discussed in the succeeding case of Penn. Salt-Mfg. Co. *v.* Thomas,[1] by McKennan, J., who followed the previous decision. He said: —

" . . . A patentable subject must involve some exercise of the inventive faculty, and it must not be merely the application of an old thing to a new use. It is undoubtedly true that small metal cans and infusible cement were in use before Thompson's invention, and that caustic alkalies were preserved from deliquescence by enclosure in air-tight packages of glass, iron, and wood; but still the fact remained that caustic soda was unavailable for general use, and especially for the domestic manufacture of soap. By Thompson's method it was invested with commercial properties and practical adaptabilities which did not pertain to it before. . . . The patentability of an alleged invention is in many cases most satisfactorily shown by its utility. In Webster on 'Subject-Matter,' 30, it is said: 'The utility, then, of the change, as ascertained by its consequences, is the real practical test of the sufficiency of an invention; and since the one cannot exist without the other, the existence of one may be presumed in proof of the existence of the other. Wherever the utility is proved to exist in any great degree, a sufficiency of invention to support the patent must be presumed.'"

[1] 5 Fish. 148 (E. D. of Penn., 1871).

The learned judge then quoted the following able remarks of Mr. Commissioner Mason, who granted the original application of the inventor: —

"'Had he discovered an ingredient which, mixed with alkali, would, without injury to its properties in other respects, have prevented it from a tendency to deliquescence, he would have made a patentable discovery. Is this not equally so? In fact, the packages of alkali, done up as proposed, may in substance be deemed a new commodity, a new article of merchandise; for although its constituent ingredients are the same as were before known and used, a new property has in reality been communicated to it. In point of fact, the article now offered for sale is the alkali without any tendency to deliquescence. This, though chemically not new, is so commercially, and is so proved by the affidavits filed.'"

This view of the improvement skilfully, and not unfairly, rescues it from the imputation of being a double use, to which otherwise it would be subject.

THE MILLIGAN, &c. GLUE CO. *v.* UPTON, 6 O. G. 837; 97 U. S. 3.

D. OF MASS., 1874. CLIFFORD, J.

Patent reissued to Milligan & Higgins, dated July 12, 1870, numbered 4072, for a new article of commerce, — comminuted glue.

By a rasping or grinding process, described in the original patent, the patentee reduced the flakes of glue to a powder, which was alleged by him to be a new article. Its patentability was defended on three grounds: first, that it was more soluble than the flakes, and consequently more conveniently used; secondly, that it was more easily and cheaply put up in small packages; and, thirdly, that its color was lighter and more pleasing to the eye than the color of ordinary glue. Admitting the truth of these assertions, and assuming that ground glue was not known before the patentee made it, Clifford, J., held, nevertheless, that it was not patentable,

"for the reason that the change effected by the described process does not involve the exercise of any invention or discovery. . . .

"Comminuted glue differs in no respect from the ordinary glue of

commerce, from which it is manufactured, except in the degree of its fragmentary condition. . . . Other substances of various kinds, it must be conceded, have been mechanically reduced in size in like manner, and inasmuch as such articles, or some of them, bear a close resemblance to glue in flakes, which is unchanged in any of its properties, I am of the opinion that the reduction of the glue, as manufactured in flakes, to small particles, as described in the . . . complainant's patent, does not involve the exercise of invention or discovery, without which it is clear the product of the described process or apparatus cannot be regarded as a patentable improvement."

In sustaining this decision, in Glue Co. *v.* Upton, 97 U. S. 3 (1877), the Supreme Court (Mr. Justice Field delivering the opinion) said : —

"A distinction must be observed between a new article of commerce and a new article which, as such, is patentable. Any change in form from a previous condition may render the article new in commerce; as powdered sugar is a different article in commerce from loaf sugar, and ground coffee is a different article in commerce from coffee in the berry. But to render the article new in the sense of the patent law, it must be more or less efficacious, or possess new properties by a combination with other ingredients; not from a mere change of form produced by a mechanical division.

"It is only where one of these results follows that the product of the compound can be treated as the result of invention or discovery, and be regarded as a new and useful article. The three advantages attributed to comminuted glue over the flake glue were, previous to the alleged invention of Goddard, recognized as following from a division of soluble objects into small particles, in the treatment of a great variety of articles in constant use in the kitchens of families and in pharmacy. When certain properties are known to belong generally to classes of articles, there can be no invention in putting a new species of the class in a condition for the development of its properties similar to that in which other species of the same class have been placed for similar development; nor can the changed form of the article from its condition in bulk to small particles, by breaking, or bruising or slicing, or rasping, or filing, or grinding, or sifting, or other similar mechanical means, make it a new article, in the sense of the patent law."

REED *v.* REED, 12 BLATCH. 366.

N. D. OF N. Y., 1874. WALLACE, J.

G. Reed's patent of March 11, 1873.

The claim was: —

"... A new article of manufacture, barrel-head linings prepared in the manner specified, when bundled, as shown and described."

The lining of a barrel-head is a strip of wood applied to the chimb (*i. e.*, that part of the staves which projects above the barrel-head and forms the rim of the barrel) after the barrel has been packed, in order to support the chimb and to keep the head in place.

The plaintiff's linings differed from others previously used only in that they were crimped or bent by a suitable machine, so as to take on the curved shape of the barrel.

The reason for crimping them was to obviate the necessity of soaking or steaming the linings in order to bend them to the shape of the barrel when the time came to apply them. Linings which were thus soaked or steamed required more nails to keep them in place after they became dry, and were more liable to split than the patentee's linings. He made, therefore, an article more valuable for the purpose than any in use before it; but the machine or process by which his linings were crimped was the same as that used to crimp barrel-hoops. The court, therefore, held that this was a case of double use, not involving invention, and they described the patentee's lining as

"an article which is, in all its essential features, a crimped machine-made hoop on a small scale, except that it is of uniform width and thickness, and has rectangular ends. It is a hoop adapted to fit inside instead of outside the staves of the barrel, and to support the chimb instead of the body of the barrel."

The court further held that the patentability of the article was not redeemed by that portion of the specification relative to bundling the linings, which ran as follows: —

"I accomplish another result, that is, that I can pack the linings in square bundles ready for the market, and that each lining will always retain its circular form, owing to the corrugated condition of the fibres, and at the same time I dispense with soaking."

The corrugation of the fibre was the result of the crimping. On this point the court said: —

"The hoops could be bundled as well as the linings, and are usually transported in bundles, but not so tidily or compactly as the linings, owing to their bevel and greater length. The sole merit of this feature of the improvement is that it renders the commodity more attractive to purchasers and more convenient for the purposes of sale. There is nothing in this result that is patentable. If the subject of the patent was a machine which accomplished the result of manufacturing a product more convenient for transportation and sale, as an article of trade, than that which had preceded it, such result might be important and controlling as determining the utility of the invention. But no such test is applicable, when the product itself is the subject of the patent."

BUZZELL *v.* FIFIELD, 7 FED. REP. 465.

D. OF MASS., 18Ɛ.. LOWELL, J.

Buzzell's patent, No. 178,994, dated June 20, 1876, for an improvement in abrasive paper, for finishing the heels and edges of boots and shoes. The paper was coiled in rolls and sold to manufacturers, who, cutting it into pieces of the length which they desired, used it upon the peripheries of wheels. The manner of preparing it was as follows: The paper (cloth might be used) was first covered with powdered glass, sand, emery, or other abrasive material, "after which said strip is moulded so as to cause said abrasive surface to have a convex form, transversely and longitudinally" (quoted from the specification).

The court: —

"Now I am convinced by the evidence that sand-paper had been moulded in a comparatively imperfect manner, but so as to be actually applied to and used upon this class of finishing wheels with effect, before the time of his [Buzzell's] discovery. One Busell did this with a block and mallet, long before well known to shoemakers, and used by them in moulding leather.

"The patentee has described no better way; he has merely directed that the thing should be done. It is, therefore, in my opinion, no answer to Busell's anticipation to say that his strips would never have become articles of commerce. They served the purpose, and would

if now for the first time made or used, though not good enough to find a sale, be an infringement of the patent, and they, therefore, invalidate it."

SELIGMAN *v.* DAY, 14 BLATCH. 72.

S. D. OF N. Y., 1876. JOHNSON, J.

Philip Lippman's patent, dated Sept. 30, 1873, No. 143,359. The patent claimed,

"as a new article of manufacture, a covered corset-clasp, the cloth of which forms a marginal flap or flaps along its length, suitable for, and adapted to, being sewn upon the corset, substantially as described, and for use in the place of broken, injured, or worn-out clasps or cloth, as herein set forth."

Such corset-clasps did not differ from those which formed a part of new corsets; and it was also in evidence that, when corset-clasps have become worn, they are "frequently, and as matter of business, removed and replaced by new ones, sewn on to the old corsets by means of the flaps."

"These," said the court, "in a legal sense, are the uses to which the patentee contemplates that his article shall be put; but he insists, inasmuch as he manufactures these clasps with covers, as a separate article of trade, in assorted sizes, and applicable by purchasers to the making or mending of corsets generally, that a quality of patentable novelty is imparted, not exactly to the article itself, but to the manufacture of the article. It is the thing made that is patentable or not. The use made of it is not patentable. The right to make the thing involves the right to use it, when made, at the pleasure of its owner. To make and sell a part of a known thing, as a separate article, is not patentable. If knife-blades had never been made and sold separately from their handles, or the handle separately from the blades, it would not be patentable to introduce either of those manufactures."

ALCOTT *v.* YOUNG, 16 BLATCH. 134.

S. D. OF N. Y., 1879. BLATCHFORD, J.

Infringement of a patent granted to J. Wesley Webber, Aug. 17, 1869, the claim of which was as follows: —

"The accompanying or fastening one or more fire-lighters, A, to or with the bundle of the common article of manufacture known as bundle or kindling wood, the fire-lighter to be suitably moulded or pressed, and to be made of a combustible material, such as resin or tar, the ingredients of which I do not claim, my invention consisting wholly of accompanying or fastening a fire-lighter, A, to or with the bundle, or at the string, B, of the bundle of the common article of manufacture known as bundle or kindling wood."

Blatchford, J.: —

". . . I do not think that the subject-matter of the claim is a patentable invention. On the part of the plaintiffs, it is sought to distinguish this case from cases in which inventions have been held not to be patentable by the contention that, in this case, the uniting of the fire-lighter with the bundle of kindling-wood contributes towards the common result of lighting a fire, and that expense is saved and convenience is promoted. It may be true that, as a matter of trade, a bundle of kindling-wood with a fire-lighter inserted in it, or attached to it, will sell more readily than a bundle of kindling-wood alone, or than a bundle of kindling-wood separately and a fire-lighter separately; and that a bundle of kindling-wood with a fire-lighter inserted in it, or attached to it, will bring a higher price than a simple bundle of kindling-wood.

"It may also be true that the Webber bundle has the advantages in use that are claimed for it. But there is no patentable invention in accompanying the bundle with the kindler by attachment or insertion. It might as well be claimed that it was a patentable invention to tie a match to a cigar, or a straw for drinking to a drinking-glass, or a fork to a can of food. The case is not unlike that of Langdon *v.* De Groot (1 Paine, 203). . . . In the present case, the purchaser of the Webber bundle gets a bundle of kindling-wood and a fire-lighter. He gets no more than if he purchased the two separately. . . . The mere aggregation of the two things is not a patentable combination. Until the kindler is lighted, there is no joint result consequent on the aggregation of the two. The lighting or combustion of the Webber kindler presents nothing new in contrast with the lighting or combustion of a kindler which was never tied to or inserted in the bundle."

KING *v.* TROSTEL, 16 O. G. 956.

S. D. OF WISCONSIN, 1879. DRUMMOND, J.

King's patent of June 30, 1874, for a method of putting up plastering-hair in bales.

Theretofore plastering-hair had been put up in large parcels, from which such a quantity as the customer called for was taken; but by reason of the filthiness of the hair it was a disagreeable task thus to separate it. The patentee put up the hair in small parcels, pressed and fastened together in one bale. He said:—

"I first place a bushel of hair in a paper sack loosely, or only so far as may be readily done by hand. Several of these one-bushel packages are then placed side by side in a baling-press. I use for this purpose the baling-press heretofore patented to me. They are thus compressed forcibly together, so that the bale produced will be a compact, firm bale, occupying only about one-fifth of the original bulk. The paper bags which still envelop the individual bushels of the bale keep said bushels separate, and serve at the same time to protect the hair."

The claim ran thus:—

"As an article of manufacture, the bale, B, of plasterer's hair, consisting of several bundles, A, containing a bushel each by weight, enclosed or encased in paper bags of similar material, united, compressed, and secured to form a package, substantially as specified."

The court said:—

"The question is whether the plaintiff is entitled to a patent for putting plasterer's hair in packages, and fastening them together in the manner described so as to constitute a bale. I am of the opinion that he is not. It is not necessary to decide in this case whether taking the whole package together, compressed in a baling-press which has been patented to him, as he states, it is such an article as the patent law protects, because I do not understand that the bale of the defendants, which is claimed to be an infringement of the plaintiff's patent, has been compressed in the same manner as the bale of the plaintiff, and therefore, strictly speaking, it is not the bale described by the plaintiff. If the plaintiff's patent is construed so as to include any mode of pressure by which the bale is formed out of small packages of plasterer's hair, as his counsel seems to claim, then I think the patent cannot be sustained; because a person can put most articles of merchandise in

distinct and separate packages, and then compress them together, and that would infringe the patent of the plaintiff, if the construction be as broad as has been intimated.

"It may be true that this mode of putting up plasterer's hair has met a want in the trade; but, after all, independent of the particular mode of compression by the apparatus which the plaintiff speaks of in his specifications, it was nothing more than a method which any person might adopt, and which did not require any inventive skill.

"It is something which might occur to any person, to take almost any article of merchandise, put it in separate parcels and bind them together. It is the exercise of the ordinary skill possessed by any person.

"I had occasion some years ago to examine the principle involved in this case very fully, in a bill filed to protect a package which was claimed to be a new article of manufacture for enclosing lard. There were many claims to that patent. All of the claims were rejected except one, which was sustained as a new article of manufacture. It appeared in that case that the article produced a revolution in the trade in lard, which was put up in such a way as to stand all climates, and so as it could be transported any distance without injury.

"With a good deal of hesitation and doubt as to the correctness of the ruling of the court in that case, one claim of the plaintiff's patent was sustained. The case never went to the Supreme Court, the parties having acquiesced in the decision of the court and settled their controversy.

"I am not willing to go beyond that case, nor to encourage patents for such things as this, and to hold that nobody else can take plasterer's hair and make it up into small parcels, and bind them together no matter how, and to say that any one who does this infringes the patent of the plaintiff."

See also —

MAGIC RUFFLE CO. *v.* DOUGLASS, *ante*, page 91.
WOOSTER *v.* CALHOUN, *ante*, page 197.
COLLAR CO. *v.* VAN DEUSEN, *post*, page 335.
FAULKS *v.* KAMP, *post*, page 367.
SAWYER *v.* BIXBY, *post*, page 326.

ENGLISH CASES.[1]

RUSSELL *v.* COWLEY, Web. 463.

Exchequer, 1834.

Whitehouse's patent of Feb. 26, 1825, for a new mode of making gas-pipes.

The report[2] says:—

"Sir James Scarlett . . . described the two former modes of making gas-pipes,[3]—the one by boring in a lathe out of the solid, the other by turning up the edges of a flat plate, so as to make them lap over, and then heating the iron to a welding heat, when the metal could be united by means of hammers, and the use of a mandrel or metal rod inserted within the tube, for the purpose of keeping it of a circular form, and resisting the blows applied to the metal.

"The invention of Whitehouse, which had been assigned to the plaintiff, consists in turning up a piece of plate of iron so that the edges abut on each other, or nearly so, heating the iron so prepared, and drawing it, when at a welding heat, through dies having a conical hole, which admits a rather larger tube on one side than on the other, and by the compression which the edges receive in the drawing the tube becomes perfectly formed and welded, without the use of the mandrel.

"The effect of this mode of manufacturing tubes produced a complete revolution in the trade, at once reducing the price of tubes by one-third; besides, the tubes so made are of much greater length and greater uniformity, both internally and externally, and the trade of making tubes came immediately after the patent almost entirely into the hands of the plaintiff."

This was held to be a patentable invention. Lord Lyndhurst, C. B., saying:—

"The invention, as I understand it . . . is to make pipes of this description without the use of the mandrel, that it is to weld them

[1] On the general subject of Ingenuity.

[2] Of the case at *Nisi Prius*, page 459.

[3] These modes and the plaintiff's invention are more shortly stated in Higgins' Digest, page 24, as follows: "Before the patent . . . iron tubes were made by drawing them through rollers, a mandrel being placed inside the tube so as to form an internal support. The patent in question was granted for a process of manufacturing iron tubes by drawing them through fixed dies or holes *without the use* of a mandrel. The tubes made by this process were of greater length, were more uniform, and could be manufactured at a cheaper rate than by the old process."

without hitting them upon any solid surface, or without hammering them upon any solid surface; and though that seems to be a very simple invention, it has been productive of great advantages; inasmuch as it has enabled the manufacturer to construct pipes for gas and other purposes very correctly, and also of lengths much beyond what could be done previously to this discovery."

It was alleged by the defence that this invention was anticipated by James & Jones's patent of July 26, 1811, for an improvement in the manufacture of gun-barrels. On this point, Parke, B., said: —

" . . . The whole turns on the meaning of the specification. If it is, as alleged by the Attorney-General, a claim for every mode of uniting pipes by passing iron [*sic*] heated to a state of welding heat, then it is bad, because there was a mode before in existence . . . described in James & Jones's specification, by which the same thing might be done; but if the claim is, as was alleged on the part of the plaintiff, a claim only of a different mode of making iron pipes in the particular manner described, by passing that iron in a state of welding heat through a circular hole, without any mandrel or internal support, then it certainly is not the same thing that was done before." And he so construed the specification.

Alderson, B., thus described the difference between the two processes: —

"When you examine the specification that the plaintiff has put in, after making it clear that the iron is first brought into the form of a long cylindrical tube, the operation then is thus described: 'This tube is then put into a hollow fire, heated by a blast, and when the iron is upon the point of fusion it is to be drawn out' (that is, the tube) without any mandrel. . . . In James & Jones's patent I find the process just the reverse; for, after describing that the tubes are to be heated to a proper heat, the mandrel is to be expeditiously put in, then the beating it by the hammer, as described, is consecutive," &c.

HELLIWELL *v.* DEARMAN, Web. 401, note; Higgins' Digest, No. 46.

Queen's Bench, 1842.

The following patent was supported: —

"The object of the plaintiff's invention was the rendering fabrics waterproof, but at the same time leaving such fabrics

pervious to air. Before the plaintiff's patent a solution of alum and soap was made, and the fabric to be rendered waterproof was immersed therein. By this means a waterproof surface was produced on the fabric, but it was not of a lasting nature; it wore off. According to the plaintiff's invention, the fabric was immersed first in a mixture of a solution of alum with some carbonate of lime, and then in a solution of soap. The effect was, that by the first impression every fibre became impregnated with the alum, the sulphuric acid of the alum being neutralized by the carbonate of lime; and by the second immersion the oily quality rendering it repellant of water was given to every fibre, so that every fibre was rendered waterproof instead of the surface only; but the whole fabric continued pervious to air."

(The report of this case is as above given, both in Webster's Patent Cases and in Higgins' Digest.)

WALLINGTON *v.* DALE, 7 Ex. R. 888; 23 L. J. Ex. 49.

EXCHEQUER CHAMBER, 1852.

G. Swinbourne's patent, enrolled May 24, 1848.

The patent was for a new process of making gelatine. Formerly gelatine was made by subjecting strips of hide to the action of caustic alkali, or by reducing the strips to pulp in a paper machine, and then purifying the pulp by the use of blood.

The plaintiff's specification said:—

"I take the parts of hides, usually called glue pieces, and my process commences by reducing the whole into shavings, or thin slices or films, by any suitable instrument. [He then recommended the ordinary carpenter's plane for the purpose, and continued:] The shavings are to be soaked for about five or six hours in cold water, at the end of which time the water is to be changed; and such changing is to be repeated two or three times each day until no smell or taste is to be detected either in the water or in the shavings. The shavings are then to be subjected to heat, with a quantity of water sufficient to cover them when pressed down in any suitable vessel, . . . the heat applied . . . not to exceed that of boiling water. The gelatine, when thus dissolved, is to be strained through linen or other fabric, subject to a slight pressure by the hands. The product . . . thus obtained is to be run in thin films on to a smooth surface of slate to set, and then

removed on nets to dry, and the dry gelatine is to be cut up by an isinglass cutter."

The defendants objected that this improvement was not patentable. The court, however, sustained the patent; Pollock, C. B., delivering the opinion, but not discussing the question of patentability.

FOX *v.* DELLESTABLE, 15 W. R. 194.

MALINS, VICE-CHAN., 1866.

Dictum by the Vice-Chancellor to the following effect:—

A tubular rib for umbrellas being in use, it is no invention to make such a rib with one side open, like a trough.

WHITE *v.* TOMS, 37 L. J. CH. 204; 17 L. T. R. N. S. 348.

MALINS, VICE-CHAN., 1867.

J. White's patent of April 27, 1864, No. 1055, for "improvements in ladies' mourning-bonnets and hat-falls." The patentee simply made falls for bonnets so that both sides should be alike. A fold of crape was to be applied on both sides of a fall above the bottom fold, instead of on one side only, as had theretofore been done, and the edges of the folds were to be pressed down so as to hide the stitches.

Malins, V. C.:—

"Whereas formerly the fold was sewn on one side only, now it is sewn on both sides, so that whichever way it is turned it has a good side outwards. There is no invention in it. However meritorious as an improvement, which might probably have been registered for one or two years, it is not the subject of a patent."

PARKES *v.* STEVENS, L. R. 5 CH. APP. CAS. 36; 18 W. R. 233.

LORD HATHERLEY, LORD CHANCELLOR, 1869.

J. Parkes's patent of Oct. 10, 1865, No. 2615, for a railway-station lamp. "The door was formed of a light framework of metal containing one pane of glass, and was opened by being

slid on the surface of the globe so as to overlap the adjoining pane." "The panes were segments of a sphere." The question of patentability arose with regard to this door. It was thus stated and decided by the Lord Chancellor: —

"It was argued before me that the sliding-door was in itself a novelty as applied to a spherical lamp; but many instances were given of glass in the shape of a cylinder having been made to slide over glass; and it is impossible to say that a sliding-door can be the subject of a patent because it is spherical and not cylindrical."

FREARSON *v.* SLOE, 9 Ch. D. 48.

Jessel, M. R., 1878.

Frearson's patent of July 12, 1870, No. 1971.

A curved nick in a screw-head, having its greatest depth at the centre, the value of the invention arising from the depth of the nick at that point, is patentable.

A screw-head so made was proved to have advantages over all other kinds of screw-heads. The screw-driver could take a firmer hold upon it, and was less apt to break it.

Other less valuable English cases are: —

Simpson *v.* Holliday, L. R. 1 H. L. 315; 35 L. J. Ch. 811.
Elliott *v.* Aston, 1 Web. P. C. 222.
Sturtz *v.* De la Rue, 1 Web. P. C. 33; 5 Russ. 322.
Campion *v.* Benyon, 3 B. & B. 5; 6 B. Mo. 71.

See also —

Stainthorp *v.* Elkinton, *ante*, page 86.
Hussey *v.* Bradley, *ante*, page 89.
Magic Ruffle Co. *v.* Douglass, *ante*, page 91.
Knox *v.* Murtha, *ante*, page 104.
Waterbury Brass Co. *v.* Miller, *ante*, page 106.
Bailey Washing, &c. Co. *v.* Lincoln, *ante*, page 108.
Carew *v.* Boston Elastic Fabric Co., *ante*, page 111.
Bridge *v.* Brown, *ante*, page 113.
The Stanley Works *v.* Sargent, *ante*, page 116.
Stuart *v.* Shantz, *ante*, page 125.
Renwick *v.* Pond, *ante*, page 128.

PLATT *v.* THE U. S. PATENT BUTTON, &c. Co., *ante*, page 182.
DECKER *v.* GRIFFITH, *ante*, page 136.
FRINK *v.* PETRY, *ante*, page 142.
DALTON *v.* JENNINGS, *ante*, page 142.
GOULD *v.* BALLARD, *ante*, page 166.
In re APPLICATION OF JAMES ARKELL, *ante*, page 170.
PACKING CO. CASES, *ante*, page 186.
WOOSTER *v.* CALHOUN, *ante*, page 197.

Also —

THE UNION PAPER-COLLAR CO. *v.* VAN DEUSEN, *post*, page 335.
THE SAME *v.* WHITE, *post*, page 351.
THE SAME *v.* LELAND, *post*, page 339.
IRWIN *v.* DANE, *post*, page 352.
BROWN *v.* DEERE, *post*, page 521.
COLGATE *v.* THE W. U. TEL. CO., *post*, page 359.
COURSE *v.* JOHNSON, *post*, page 363.
TARR *v.* WEBB, *post*, page 437.
ROGERS *v.* ENNIS, *post*, page 467.
PERRY *v.* CO-OPERATIVE FOUNDRY CO., *post*, page 521.
NEWALL *v.* ELLIOTT, *post*, page 684.
PUTNAM *v.* YERRINGTON, *post*, page 518.
FOOTE *v.* SILSBY, *post*, page 564.
HARTLEY'S CASE, *post*, page 604.
ADAMS *v.* EDWARDS, *post*, page 650.
LIVINGSTON *v.* JONES, *post*, page 658.
ADAMS *v.* JONES, *post*, page 660.
JONES *v.* MOREHEAD, *post*, page 660.
DUNBAR *v.* ALBERT FIELD TACK CO., 4 Fed. Rep. 543.
ROOT *v.* E. N. WELCH MFG. CO., 17 Blatch. 478.
PERFECTION WINDOW CLEANER CO. *v.* BOSLEY, 2 Fed. Rep. 574.

See also the Appendix for a list of comparatively unimportant cases on this subject.

CHAPTER IV.

NEW USE AND DOUBLE USE.[1]

63. STRICTLY speaking, a "new use" is a use different from that with which it is compared, — different in the sense that invention was required to reach it, and therefore it is patentable; whereas

[1] It is often hard to determine whether the facts of a particular case make it one of combination, or of substitution, or of new use; for these three classes, the first two especially, run into each other, and certain cases might apparently be referred to one of them as rightly as to another. Thus, in the case of Stimpson *v.* Woodman, the subject of the patent was a machine for "boarding or pebbling" leather; that is, impressing designs upon it by means of an engraved roller, operated by machinery. It was proved that before the patentee's alleged invention a *smooth* roller had been worked by similar machinery in order to press leather, and an engraved roller had been worked by hand, in order to stamp designs upon it. In this case, therefore, the patentee might have been held either (1) to have combined the engraved, handworked roller with the automatic mechanism of the smooth roller, or (2) to have substituted the engraved roller in place of the smooth roller. *Post*, page 429.

This patent, however, hardly could be called an instance of new use. But there is an English patent which might be referred to any of the three classes. It is set out in the case of Jordan *v.* Moore, L. R. 1 C. P. 624 (1866). Byles, J., thus described and disposed of the alleged invention: —

"Can the application of wooden planking to the iron frame of a vessel (without any peculiarity in the nature of that planking) be the subject of a patent? We think it cannot. It is not only the *substitution* of one well-known and analogous material for another, that is, wood for iron, to effect the same purpose, on an iron vessel, but it is [also a *new use*, namely] the application of the same old invention — namely, planking with timber, which was formerly done on a wooden frame — to an analogous purpose, or rather the same purpose on an iron frame;" and he might have added: it is also a combination of wooden planking and iron frame. The noted English case of Crane *v.* Price, *post*, page 376, is another instance.

It is possible, however, to state a few rules, which will be of some assistance in referring these cases to their proper categories: —

1. As between substitution and combination, it is substitution only when there is already an existing combination, from which the patentee withdraws one element, and into which he puts another. But where elements are simply put together, or one is added to another, it is a case of combination.

2. As between substitution and new use, it is a case of substitution when

a "double use," as it is called, is a second employment of some process or contrivance so like to the previous employment of it, that, given the first, inventive genius was not needed to attain the second, — the skill of the workman was sufficient for that purpose. The second use, therefore, is not patentable; it is not a "new use," but an imitative or "double use." A new use, then, is, and a double use is not, patentable.

64. Again, it is often said that an analogous use is not, but a non-analogous use is, patentable. An analogous use means a use between which and that alleged to anticipate it there is a logical connection of such a character that the second use is fairly to be inferred from the first by one who was familiar with it. The first use logically includes the second.[1] The transition from the existing use to the analogous use involves no surprise, and no exercise of any uncommon mental process. Whereas, a non-analogous use is one not so connected with that to which it is referred as to be plainly deducible from it. In this case, the transition from the first to the second use is not such as could fairly be expected from the skilled workman. Knowledge of the first use cannot be said to carry with it a knowledge of the possibility or practicability of the second use. The second use, when suggested, is in the nature of a surprise; it is reached by a mental jump, so to say; it requires the genius of the inventor to attain it.

65. In fact, the three definitions just stated follow each other in a natural order, the second limiting the first, and the third explaining the second.

A new use — a use referable to inventive genius, a non-analogous use — is patentable. A double use — a use referable to the skill of the workman, an analogous use — is not patentable.

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the improvement of an old contrivance, rather than the new use of the device imported, so to say, is the gist of the invention.

3. As between combination and new use, it is a case of combination when the patentability of the new contrivance depends upon the co-action of its elements; of new use, when it depends upon the new employment of some one element.

According to these rules, the improvement in the case of Stimpson *v.* Woodman would belong to combination rather than to substitution.

The improvement in the English case belongs to substitution rather than to combination, to substitution rather than to new use, to combination as well as to new use, — on the whole, then, to substitution.

[1] In Brown *v.* Piper, *post*, page 349, the Supreme Court say of an analogous use: "The thing was *within the circle* of what was well known before, and belonged to the public."

66. Lord Chief Justice Cockburn thus stated the matter: [1]—

"Although the authorities establish the proposition that the same means, apparatus, or mechanical contrivance cannot be applied to the same purpose, or to purposes *so nearly cognate and similar*, as that the application of it in the one case naturally leads to application of it when required in some other, still the question in every case is one of degree, whether the amount of affinity or similarity which exists between the two purposes is such that they are substantially the same, and that determines whether the invention is sufficiently meritorious to be deserving of a patent."

This was in the Court of Exchequer Chamber. When the same case came before the House of Lords,[2] Mr. Justice Blackburn said: —

"In order to bring the subject-matter of a patent within this exception [to the statute against monopolies], there must be *invention* so applied as to produce a practical result. And we quite agree with the Court of Exchequer Chamber that a *mere* application of an old contrivance in the old way to an analogous subject, *without any novelty or invention* in the mode of applying such old contrivance to the new purpose, is not a valid subject-matter of a patent. . . . In every case arises a question of fact, whether the contrivance before in use was so similar to that which the patentee claims that there is no invention in the differences, if any, between the old contrivance and that for which the patentee claims a monopoly; and if there is none, there arises a farther question of fact, — namely, whether the purpose to which the contrivance was before applied and the new purpose are so analogous or cognate that there is no discovery or invention in the new application; whether, in short, it is a *mere* application or not. For if there is invention or discovery producing a practical benefit, as in the case of Crane *v.* Price (1 Web. 377), it is the valid subject of a patent. And we think it always must be a question of degree, — a question of more or less, — whether the analogy or cognateness of the purposes is so close as to prevent their being an invention in the application. Mr. Grove, in his very able argument, contended, we believe correctly enough, that if there was any real invention, though a slight one, producing a practical beneficial result, the patent was good."

67. In the case of Tucker *v.* Spaulding,[3] the patent was for an improvement in saws. The defendants, in the Circuit Court, offered in evidence a patent to one Newton, "for cutting tongues

[1] Harwood *v.* Gt. N. Ry. Co., 2 B. & S. p. 208; *post*, page 385.

[2] 11 H. L. Cas. p. 666.

[3] 13 Wall. 453.

and grooves, mortices," &c., and they proposed to prove that the processes of the plaintiff and of Newton were substantially the same.

This evidence being rejected, the defendants moved for a new trial. In granting the motion, the Supreme Court (Mr. Justice Nelson delivering the opinion) said:—

"The court, in rejecting the patent of Newton, seems to have been mainly governed by the use which was claimed for it, and also that no mention is made of its adaptability as a saw. But if what it actually did *is in its nature the same as sawing, and its structure and action suggested to the mind of an ordinarily skilful mechanic this double use to which it could be adapted without material change*, then such adaptation to the new use is *not* a new invention, and is not patentable."

Invention in the Means of Application.

68. Sometimes, however, the question of new or double use takes a different shape. It is admitted that the new purpose to which some old contrivance or process has been applied is an analogous purpose; but it is asserted that invention was shown in *adapting* the old contrivance or process to its new use. And this contingency is provided for in the passage just quoted[1] by the words "without material change." It is obviously of importance not to confuse invention that is shown in such adaptation with invention that is shown in the selection or conception of a new use. In fact, however, such confusion often arises from the different senses in which the term "application," in its various forms, may be understood. Thus, if one says: "There is sometimes invention in applying an old contrivance to a new use," he may mean either that invention consists in the fact that such an application is made, or that invention consists in the manner in which it is made.[2] In one case, invention is said to reside in conceiving or discovering the idea of applying the old contrivance to the new use; in the other case, it is said to reside in the device whereby the old contrivance is enabled to operate in its new situation.

69. In practice, however, it is not always possible to discriminate between cases where the new purpose is not analogous, *and*

[1] And also, as the reader will have observed, in the propositions of Mr. Justice Blackburn.

[2] For an example, see the case of Penn *v.* Bibby, *post*, page 390, where the Lord Chancellor misunderstood the language, which he quotes, of Lord Campbell.

the new application is therefore patentable, and those other cases where the new purpose is an analogous one, but invention is shown in adapting the old contrivance to the new purpose; for the two sets of cases sometimes run into each other.

In fact, it does not often happen that invention is shown *in the manner* of adapting a contrivance to some *analogous* use; but the case supposed is possible, and may easily occur when the inventive adaptation is an alternative one; that is, a mode better than the obvious one. Such a case would not be one of new use, strictly speaking, but practically it would be considered as such.

New Use without Alteration.

70. At any rate, it is clear on principle that the simple transfer of a process or of an article to a new situation may be patentable, for it may not follow as a matter of obvious reasoning from the old use that the contrivance will work well in the new use. The second use, so far from being cognate with or analogous to the first use, may have required "inventive genius" for its conception. Cases which illustrate this proposition we shall cite presently. We are, however, bound to state that a different doctrine may be found in the *dicta* of the Supreme Court, — at least with regard to machines. Thus, in the case of Roberts *v.* Ryer[1] they say: —

"It is no new invention to use an old machine for a new purpose. The inventor of a machine is entitled to the benefit of all the uses to which it can be put, no matter whether he had conceived the idea of the use or not."

The case, however, in which this *dictum* occurs was not in any sense one either of new or of double use, though it is treated as such in the opinion of the court. Furthermore, in the same volume of Supreme Court reports, the leading case of Brown *v.* Piper,[2] presently to be set forth, is found; and in that case, one of double use, the non-patentability of the second use is rightly rested on the ground that the second use did not imply invention. The court say of the alleged invention: —

"This was simply the application by the patentee of an old process [really an apparatus] to a new subject, without any exercise of the

[1] 91 U. S. 150.

[2] 91 U. S. 37.

inventive faculty, and without the development of any idea which can be deemed new or original in the sense of the patent law."

71. Judge Story, in the cases of Howe *v.* Abbott[1] and Bean *v.* Smallwood,[2] — in both of which the patent was plainly for a double use, — went out of his way to state broadly that no second use of a process or machine, without alteration of it, can be patentable. But the illustrations which he gave show that he was contemplating merely the analogous use of an old process or machine. And the same remark applies to an earlier case decided by the same judge.[3]

From another point of view, also, modifications of or additions to an old contrivance, in order to fit it for a new use, are necessary to be considered, though they do not amount to invention, for they tend to show that the new use is not an analogous use.

72. The subject of new use was treated by Clifford, J.,[4] as follows: —

"Invention or discovery is required as the proper foundation of a patent; and where both are wanting, the applicant cannot legally secure the privilege.

"Consequently, where the claim rests merely upon the application of an old machine to a new use or to a new purpose, or upon the application of an old process to a new result, the patent cannot be sustained, because the patentee under those circumstances has not invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement on any art, machine, manufacture, or composition of matter, not known or used by others, for which *alone* a patent can be legally granted. Judge Story held, nearly twenty years ago, in Bean *v.* Smallwood (2 Story, 408), that the application of an old machine to a new purpose was not patentable; and the same principle has since been adopted in the highest court in England and in the Supreme Court of the United States. Kay *v.* Marshall, 8 Cl. & Fin. 245;[5] Phillips *v.* Page, 24 How. 167.[6]

[1] 2 Story, 100.
[2] 2 Story, 408.
[3] Ames *v.* Howard, 1 Sumner, 482.
[4] Bray *v.* Hartshorn, 1 Cliff. 538.

[5] This is a peculiar case. The real invention of Kay seems to have consisted in doing two things: first, macerating flax, so that its fibres should be

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[6] This case decides only that its particular instance of a second use was not patentable. *Vide post*, page 318. The general proposition stated by Mr. Justice Clifford is neither found in it nor implied by it.

"New contrivances, though applied to old objects, are patentable; but old contrivances, whether the objects to which they are applied are new or old, are not patentable, because the mere application of the contrivance, without more, involves neither invention nor discovery. . . . Particular changes, however, may be made in the construction and operation of an old machine, so as to adapt it to a new and valuable use not known before, and to which the old machine had not been, and could not be, applied without these changes; and under these circumstances and conditions, if the machine, as changed and modified, produces a new and useful result, it may be patented and upheld under existing laws. Losh *v.* Hague, Web. Pat. Cas. 207; Hindm. on Pat. 95.

"Such change in an old machine may consist alone of a new and useful combination of the several parts of which it is composed, or it may consist of a material alteration or modification of one or more of the several devices which enter into its construction, or it may consist in adding new devices; and whether it be one or another of the suggested modifications, if the change of construction and operation actually adapt the machine to a new and valuable use, not known before, and to which the machine had not been applied, and, without the change suggested, was not in any degree fitted to be applied, and actually produces a new and useful result, then the case falls within the rule already laid down, and a patent may be granted for the same and be upheld. Phillips *v.* Page, 24 How. 166; Norman on Pat. 25. . . . Respectable authorities may be found which advance the doctrine that

shortened for spinning; second, altering the relative positions of the drawing and retaining rollers, so that they should not be more than two and a half inches apart, which was the distance that separated the rollers in *cotton*-spinning machines. The maceration of the flax made its fibres of the same length as the cotton fibres, so that the same arrangement of rollers became possible. But the specification stated the two things as separate inventions; and the court therefore held that it was no invention to transfer the roller arrangement from the spinning of cotton to the spinning of flax *in its changed condition*.

Mr. Webster has the following note on this patent: —

"The real defect was not in the subject-matter, but in the subject-matter as disclosed on the face of the letters-patent and in the specification. The result of the invention was the introduction of a new mode of spinning, which has since been applied to many other manufactures, and the placing the flax on a similar footing with the cotton manufacture. No one can doubt inventions such as those being the subject-matter of letters-patent; but Kay, and his great forerunner, Arkwright, in the other branch of the manufactures of the country, both failed to secure to themselves the full benefit of their industry and ingenuity from the same cause, — namely, a defective specification." Webster on Patents, p. 400, note.

the new use of an old machine or invention may be so different from that to which the machine has been applied, and may so clearly produce a new article of machinery, that the inventor or discoverer may be entitled to a patent; but it is not necessary to decide the point at the present time, and it is accordingly dismissed with the remark that other authorities affirm that an inventor is fairly entitled to any profits arising from the unforeseen applicability of his invention as an equivalent for the risk he incurs of ill success and corresponding loss.[1] Coryton on Pat. 63, 64."

From this it appears that Mr. Justice Clifford was uncertain whether the new use of an old machine could be supported solely on the ground that it was a non-analogous use, without there having been any exercise of invention in order to adapt the old machine to its new use.

73. Before citing some of the cases in which the non-analogous use of an old machine or other article, without alteration thereof or addition thereto, was held patentable, it might be well to consider the tests proposed by Mr. Justice Clifford for determining the patentability of a new use. It is to be observed that he does not clearly distinguish between changes necessary to fit an old contrivance for a new use that imply invention, and changes for the same purpose that do not. It is obvious that an old contrivance might be applied to some analogous use, thereby, perhaps, producing a new effect, and yet the change or addition necessary to adapt the old contrivance to its new use might be such as

[1] Judge Lowell, in a recent case (Dunbar *v.* Albert Field Tack Co., 4 Fed. Rep. 543), went even further than Mr. Justice Clifford; and he said broadly that "if an old machine or process is put to a new use, invention is positively excluded, although the new use may apparently be very remote from the old, requiring experiment to ascertain its practicability, and though the actual operation of the machine or process may not be exactly the same in the new as in the old application, provided no new means are in fact employed."

In a still later case, however (Moffitt *v.* Rogers, 8 Fed. Rep. 147), the same judge remarked as follows:— "I do not mean to say that a patent cannot possibly be supported for a process or method which consists only of applying an old contrivance to a new use. Many of the ablest writers and jurists assert that such a claim is possible. I have never seen a case in which a patent of this sort has been sustained, and there are some in which it has been rejected. If one is ever supported, it will be when the new use is so remote from the old use that a court or jury can say that a new idea has been discovered." And yet, a few years before, the learned judge had himself supported such a patent on the ground here indicated by him. This case we shall notice presently; it is that of Munson *v.* The Gilbert, &c. Mfg. Co., 18 O. G. 194.

any one skilled in the art concerned could supply. In such case, therefore, there would be no invention in selecting or conceiving the new use, and none in adapting the old contrivance to it.

It is probable, however, and fairly suggested by the language, that the modifications which Mr. Justice Clifford intended as furnishing ground for a patent, by fitting the old contrivance to its new use, must be such as to imply invention.

74. The fact is, that in almost every instance some modification of or addition to the old contrivance will be required to fit it for its new use. If such modification or addition is too difficult for the skilled workman, and requires invention to produce it, then the new use is patentable upon that ground; and this, according to the authorities we have mentioned, is the only case in which a new use is patentable.

If, however, the modifications of the old contrivance necessary to adapt it for its new use are such as any one skilled in the art to which it belongs could supply, when the new use was suggested to him, then the patentability of the alleged invention depends entirely upon the character of the new use to which the old contrivance is put, — as much so as when no such modification is necessary. This last case, where no modification at all is needed, is the third possible case of new or double use, and consists in the simple transfer of a contrivance from one situation to another.

Enlargement without Alteration.

75. We may add, in this connection, that mere enlargement of an apparatus or device, even though it thereby be enabled to produce a new effect, does not necessarily constitute invention. This point was decided by the Supreme Court in the case of Phillips *v.* Page,[1] where the patent was for an improvement in a portable circular saw-mill, which consisted in the manner of "affixing and guiding the circular saw." The same device had been used before in sawing shingles and other small articles. The patentee by enlarging it made it useful in sawing logs. A defective specification prevented his claiming it as a machine for sawing logs; but the court held that, had he not so been pre-

[1] 24 How. 164.

cluded, such a claim would be invalid. The enlargement of the apparatus necessary to adapt it for the new use did not change its identity, and there was no other alteration of it. A very similar case is the recent one of The Planing Machine Co. *v.* Keith,[1] where it was held that the new use of a machine to plane heavy planks, it having before been used to plane small things, and its adaptation thereto by *enlargement* and *strengthening* of its parts, was not a patentable invention.

Examples of New Use without Alteration.

76. We proceed now to set forth certain cases in which an old contrivance modified not at all, or modified without exercise of invention, has been applied to a non-analogous and therefore patentable use.

An early case is that of Knight *v.* The Baltimore & Ohio R. R. Co.,[2] before Taney, C. J., and a jury. The patent, granted originally in 1829, was for an improvement in car-wheels, namely, the introduction of end-bearings, the office of which was to diminish lateral friction. The learned Chief Justice took the view of the law for which we have contended, holding that where the new use is non-analogous, it is patentable, but that where the new use is analogous, invention must be shown in adapting the old contrivance to the new use in order to make it patentable. He said:—

"The public use of end-bearings, for the purpose of transferring friction from the shoulders to the ends of the axles on a cotton-mill or other stationary machine, before the patent of 1829, as described in the testimony, will not render the plaintiff's patent void, provided the jury find that he was the original inventor of the combination he claims *in relation* to railway carriages, and that his invention is useful in the transportation of burthens and passengers on railways. But if before his first patent was obtained, the same principles in the same combination which he describes as his improvement were in public use in ordinary carriages upon common roads, the plaintiff was not entitled to a patent for applying the same thing to railway carriages, *unless the improvement he claims contains something new and material, either in principle, in combination*, or in the mode of operation, in order to adapt it to its new use."

[1] 101 U. S. 479.

[2] 3 Fish. 1.

77. In the case already referred to,[1] decided by Judge Lowell, the claim was as follows: —

"The *application and use* of the meter-wheel with its case and contents as an air-blast apparatus, operated by weights or otherwise, not meaning to claim the method of using the meter for measuring gas."

The object was to drive a current of air through a reservoir containing benzole or other hydrocarbon, for the purpose of generating an illuminating gas or vapor therefrom. It thus appears that the claim was, in so many words, for the *new use* of the old machine, without modification thereof. Judge Lowell said: —

"We think the slight change [a change not in the thing, but in the use of it], obvious perhaps to an inventor, of admitting air into a meter, and using the meter-wheel as an air-pump, although it had before been used with similar machinery to increase the force of the gasometer, was a patentable invention." [2]

78. In the celebrated English case of Crane *v.* Price,[3] a patent was held valid for the new use of the hot blast with anthracite coal in smelting iron, it having before been used with bituminous coal for the same purpose. This case, however, is somewhat discredited.[4]

79. The new use for shirt-collars of a fabric previously used for maps and other like purposes was held patentable by Judge McKennan, on the ground that it was a non-analogous use, as appears from his opinion. He said: —

"It is true that paper and muslin, or linen cloth, were before united and used as a fabric for maps, &c.; but this was not analogous to the use to which Hunt adapted them, nor was it in any wise suggestive of his invention. He was the first to discover the adaptability of this material to a use *not cognate* to any to which it had before been applied, and, by appropriate manipulation, to give it a useful and practical form. He thus not only supplied the public with a new article of manufacture, but he demonstrated unknown susceptibilities of the material

[1] Munson *v.* The Gilbert & Barker Mfg. Co., 18 O. G. 104.

[2] In the case of Conover *v.* Roach (4 Fish. p. 16), Hall, J., said to the jury: —

"When the inventor has obtained a patent for his invention, he is entitled to the exclusive use of it, if that invention is a machine, for all the uses and purposes to which that machine, *without the exercise of any inventive power*, can be usefully applied."

[3] Web. 303.

[4] *Post*, page 378.

out of which it was made. This is something more than the mere application of an old thing to a new purpose. It is the production of a new device by giving a new form to an old substance, and by suitable manipulation making its peculiar properties available for a use to which it had not before been applied, thereby distinguishing it from all other fabrics of the class to which it belongs.

"This seems to me to involve an exercise of the inventive faculty, and, in view of the great practical benefits resulting from it, to invest the product with special patentable merit."[1] (*Post*, page 351.)

80. Where the new use works a chemical change, it is perhaps more likely to be non-analogous than where the new use is of a machine; but it is not apparent why a different rule should prevail in the case of machines. The National Filtering Oil Co. *v.* The Arctic Oil Co.[2] is a case in which the use of bone-black, by filtration, to purify petroleum, it having previously been used to purify water and rancid oils, was held patentable by Judge Blatchford.

81. We come now to an English and to an American case, which, taken together, excellently illustrate a non-analogous use. The English case is that of Steiner *v.* Heald.[3] The patent in suit was Steiner's, of Feb. 7, 1844, for "a new manufacture of certain coloring matter called garancine."

Before the plaintiff's invention, madder dye was obtained from fresh madder in the following manner: The madder was first ground to powder, and then put into a bottle of hot water, along with cloth and other absorbents, which took up the coloring matter; the cloth, &c., being taken out, there was found in the bottle a residuum, called *spent* madder, supposed to be valueless, though it was known that it still contained coloring matter. Subsequently it was discovered that, by the application of heat and acids to *fresh* madder, the whole coloring matter could be extracted. The dyestuff so obtained, called garancine, differed from the ordinary madder dye.

The plaintiff discovered that by a similar application of heat and acids garancine could be extracted from *spent* madder also, and this garancine was exactly like the other.

On these facts at the trial below, the judge instructed the jury to find for the defendant. The plaintiff excepted to the ruling,

[1] See also Poillon *v.* Schmidt, *post*, page 321.

[2] 8 Blatch. 416.

[3] 6 Ex. 607 (1851).

and the exception was sustained by the court, the opinion being delivered by Patteson, J., who said: —

"If . . . the patent be good, it must be on account of the old contrivance being applied to a new object under such circumstances as to support the patent.

"Now, 'spent madder' might be a very different thing from 'fresh madder' in its properties, chemical and otherwise. Or it might be in effect the same thing as 'fresh madder' in its properties, chemical and otherwise, with the difference only that part of its coloring matter had been already extracted.

"Again, the properties, chemical and otherwise, of both might or might not have been known to chemists and other scientific persons, so that they could tell whether 'fresh madder' and 'spent madder' were different things, or substantially the same thing. . . . We think, therefore, that the learned judge was wrong in treating the conclusion to be drawn from the evidence as matter of law, and that the exception is well pointed in treating it as matter of fact which should have been left to the jury, with such observations, of course, as the learned judge might think proper to make for their assistance."

This opinion implies the true distinction to be drawn in such cases; that is, applying it to the facts of this case, if spent madder were so unlike fresh madder that there was no analogy between the two as regards extracting dyestuff from them, then the application of the old process to the new material — spent madder — was the fruit of invention, and therefore patentable. In the American case, precisely the state of facts contemplated by the court in this case arose. We refer to Spill *v.* The Celluloid Mfg. Co.[1]

82. Spill's patent, No. 101,175, dated March 22, 1870, for an improvement in the manufacture of xyloidine, an artificial substance, and its compounds, was in question. The second claim only was in suit. It ran thus: "The process of bleaching xyloidine in the manner herein specified."

Before Spill's invention, the ordinary means of bleaching were applied only to fibrous material, which was useful merely by reason of its being fibrous; and it was supposed that xyloidine (or pyroxyline), which is very different in composition from the old bleachable material, and but slightly fibrous (not at all so after the bleaching process is completed), could not be bleached;

[1] 18 Blatch. 190.

but the patentee discovered that the ordinary bleaching agents would act upon xyloidine in the course of its manufacture, if applied (quoting from the specification)

"directly after the removal of the acids, and before removing it from the vat. This I do by any of the well-known means, preferring a solution of chlorine, or a solution of chloride of lime or soda, which I add to the xyloidine, making use of alternate stirrings and rests, . . . until the xyloidine is whitened," &c.

This discovery, though simple, was not obvious, for a reason stated by the plaintiff's expert and quoted in the opinion, as follows: —

"The theory of ordinary bleaching is that the coloring-matter of goods to be bleached is of a complicated and unstable character, and is destroyed by the powerful chemical action of the bleaching agents, chlorine, oxygen, &c. Inasmuch as pyroxyline, in its manufacture, has been exposed to the action of some of the most powerful chemical agents which are known, it is unreasonable to suppose that any of the unstable coloring-matter could be left in it. The bleaching of pyroxyline has often been proposed and attempted. It was especially desirable in this art; but it is my opinion that a chemist would exhaust all other theories before he would think of ordinary bleaching agents for the purpose."

The patent was sustained.

Cases of Principles involving a New Use.

83. There is another class of cases which directly contradict the theory that no new use of an old machine, without alteration thereof or addition thereto, can be patentable. We mean those cases where some new law of nature or property of matter — a principle — is discovered, and the method of employing it involves the use of an old contrivance. In such case, the patentability of the discovery depends upon the practical application of the principle discovered, and it makes no difference whether the mechanism or apparatus used for the purpose be new or old. An instance is the celebrated case of Le Roy *v.* Tatham,[1] where the discovery was of an unknown property in lead; namely, that when lead is melted its particles will, at a certain temperature, reset.

[1] 22 How. 132.

This property was made use of to construct lead pipe, but the mechanism employed was an old one, formerly used, perhaps (the report is not clear), for making lead pipe, — certainly used for other purposes. In this case, therefore, the discoverer was entitled to a patent for his new process of making lead pipe, though the mechanism used was old. We need not pursue these cases any further in this connection. They are treated fully in the chapter on Principle, page 527.

84. In many of the cases above stated some slight change in the old contrivance or some additional device was necessary in order to fit the old contrivance for its new use; but in none of them was the validity of the patent maintained upon that ground. It could not be so maintained, for the invention resided not in such modification of, or addition to, the old contrivance, but in the discovery that the old contrivance was susceptible of the new application.

What is an Analogous Use.

85. When, however, we come to inquire what is an analogous or a non-analogous use, it is plain, from the nature of the subject, that no criteria can afford much assistance.

In other cases of patentability, as, for instance, cases of combination, there are, as we shall see, certain tests of invention, such as a new effect or a new mode of operation; but in cases of a new use we are referred directly to the fundamental inquiry, Is the new use an analogous use, *i. e.* is it fairly deducible from that with which it is compared, so as to be within the range of the workman's skill; or did it require invention to pass from the old use to the new use?

86. Utility, of course, *under the conditions stated* in the first chapter,[1] is evidence of invention here, as elsewhere. A case where it was so held is that of Penn *v.* Bibby.[2] The invention was the use of wooden bearings for the shafts of screw-propellers, by placing fillets of wood upon the inner surface of the bearing, so as to prevent the shaft from coming in contact with the metal of the bearings, and so as to allow the water freely to flow between the shaft and the inner surfaces of the metal bearings, thereby keeping the wood constantly lubricated.

[1] Page 62.

[2] L. R. 2 Ch. App. 127.

The defence set up as anticipating this invention the well-known use of wooden bearings for grindstones and common water-wheels. The Lord Chancellor (Lord Chelmsford) said: —

". . . It would be an extraordinary fact if an invention of this kind, so long wanted, and of such great utility, should have been lying in everybody's way who knew anything of the construction of a water-wheel or grindstone, and yet should never before have been discovered."

87. There is another consideration, also, which often assists the inquiry into the nature of a new use, namely, the fact that experiments were necessary in order to prove the possibility of applying the old contrivance to the new purpose; for the fact that such experiments were necessary tends to show that the new use was not analogous to the old use, but required inventive thought to conceive, as well as experiments to prove, the possibility of its successful employment. This consideration was much relied upon by Judge Blatchford in The National Filtering Oil Co. *v.* The Arctic Oil Co., *ante*, also in The Locomotive, &c. Co. *v.* The Erie Railway Co.,[1] and, again, in Strong *v.* Noble,[2] where he held that the new use of a well-known tubular knit fabric, namely, its use to cover whip-handles, was patentable. He said: —

" . . . In the present case, the points of advantage . . . are ornament, economy, and durability. It could not be told necessarily, *a priori*, without experiments, that these advantages would accompany the application of the knit fabric as a covering for the whip."

88. From the same opinion we quote what may be called an extreme view of the doctrine of new use, — extreme, that is, in the latitude accorded to the patentability of new uses: —

" Although a tubular knit fabric was old, and although a whip was old, and although the idea of covering a whip and a whip-handle with something was old, it by no means follows that the application in the manner shown by the specification of such a knit fabric to the covering of a whip so as to produce a whip or a whip-handle covered with such a fabric . . . is merely applying the knit fabric to a new use, in the sense in which, in the law of patents, the mere application of an old article to a new use is held not to be the subject of a patent. Such applications are of this character, — using an umbrella to ward off the rays of

[1] 10 Blatch. 292.

[2] 6 Blatch. 477.

the sun, it having been before used to keep off the rain; eating peas with a spoon, it having been before used to eat soup with;[1] cutting bread with a knife, it having been before used to cut meat with. To apply the principle here invoked, to avoid the first claim of the patent, would render void the mass of patents that are now granted.

"There is scarcely a patent granted that does not involve the application of an old thing to a new use, and that does not, in one sense, fail to involve anything more. But the merit consists in being the first to make the application, and the first to show how it can be made, and the first to show that there is utility in making it."

The Rule of Analogy in the Supreme Court.

89. That the principles laid down by Blatchford, J., do not obtain in the Supreme Court of the United States appears from the decision in a recent case,—perhaps the most important case on the subject in this country,—namely, Brown *v.* Piper,[2] to which we have referred already. The patent was for a sort of ice-box device, used to preserve fish. The court found that substantiall, the same thing had previously been used for preserving corpses, and also, on a small scale, for freezing ice-cream; and they held that its use as a fish-preserver, in relation both to the corpse-preserver and to the ice-cream freezer, was a double or analogous use, and therefore not patentable.

The difference between an ice-cream freezer and a fish-preserver, as to their objects, is so great, although the device in each may be substantially the same, that this decision might be interpreted to mean that *whenever* an old device is put to operate in a new situation, and even for a new purpose, if there is no inventive change necessary to adapt it to the new use, then there can be no invention in the transfer, and the new use is not patentable. But, as we have already stated, no such proposition is laid down in the opinion of the court, which declares that the new use was

"simply the application by the patentee of an old process [*apparatus*, rather] to a new subject, *without any exercise of the inventive faculty*, and without the development of any idea which can be deemed new or original in the sense of the patent law."

[1] This is a favorite illustration, originated, we believe, by Lord Abinger. *Vide post*, page 301.

[2] 91 U. S. 37.

90. Whether, in this particular case, there really was or was not invention in using an enlarged ice-cream freezer as a fish-preserver, it is plain that there might be a new use of the ice-cream freezer, which, not requiring any alteration thereof or addition thereto, should, nevertheless, be so non-analogous, if we may use that expression, to the original use, that no court could hold it to be within the purview of the workman's judgment or skill,— could hold, in other words, that it did not imply invention, that is, patentability. Thus, if the discovery were made that an enlarged ice-cream freezer might, by means of a vacuum produced by it, or otherwise, be made to serve as a ventilator for rooms, such a new use could not be termed an analogous use, and it could not be said that invention was not required to perceive it.[1]

As bearing upon the actual case in the Supreme Court, it is further to be observed that a new effect or result, the preservation of fish, was obtained by the new use. It was brought about, to be sure, by the same means, namely, freezing, which also rendered the device efficacious as an ice-cream machine; but to make a device designed to prepare ice-cream serve, not to prepare, but to preserve, fish is to produce a new effect. And many authorities hold that a new use producing a new effect or result is patentable.

91. This case, therefore, suggests three degrees of analogy. 1. Starting with the corpse-preserver, we have the same device

[1] An even plainer case is the actual one of Tilghman *v.* Morse (9 Blatch. 421), where the patent was for a method of engraving glass by projecting upon it a jet of sand and steam. This was alleged to be a double use of a contrivance or process, thus described by Judge Blatchford: "Grave reference is made on the question of novelty to patents granted for projecting a stream of sand combined with a jet of steam from a locomotive engine, for the purpose of driving cows from the track of a railroad; and the learned expert, who makes an affidavit on the subject, says, with great truth, that the only difference between such use, in combination, of a jet of steam and a stream of sand, and the use by the plaintiff of the combination of a jet of steam with a stream of sand, is that in the former case the sand, after having had velocity imparted to it, came in contact with cows, while in the latter case it comes in contact with glass, stone, &c. This is the only difference; but in this difference lies the distinction between the two. No one, from observing the temporary operation of the process on the animal, would infer that he could, by the same means, produce the results which the plaintiff describes. Nor is there any resemblance in kind between those results and the result produced on the animal."

A less grotesque case is that of Spill *v.* The Celluloid Mfg. Co., already stated. See also Irwin *v.* Dane, 9 O. G. 642.

applied to preserve fish. This is an analogous use, producing no new effect, and therefore it is not patentable. 2. Starting with the ice-cream freezer, we have the same device applied to the preservation of fish. Here is a new effect, the *preservation* of fish, as compared with the *preparation* of ice-cream; but the device operates in the same way, and, said the Supreme Court, the new use is an analogous use, and therefore not patentable. 3. We have, by supposition, an enlarged ice-cream freezer used to ventilate rooms. Here is a new effect, and a use which no one could term analogous; and if not analogous it was inventive, and if inventive, then patentable.

On the whole, then, we conclude that this case does not imply that no new use, without modification of the thing used, can be patentable. Such a rule, as we have shown, would violate the fundamental principle of the patent law, — that invention is that on account of which a patent is granted. But the case establishes a stricter limit for analogous uses than that laid down by Judge Blatchford; and in so doing it also implies that the production of a new effect or result (new in kind, that is) is not sufficient to prove that the new use required inventive genius for its conception.

Summary.

92. We may sum up the principles which govern this class of cases as follows: 1. A non-analogous, in other words, a non-inferrible or deducible, use is patentable. 2. Invention may be shown in the means whereby the old contrivance is adapted to the new use, and the new use may be patentable on that account. 3. Such means of adaptation, though not implying invention, may tend to show that the new use is a non-analogous use. 4. Experiments made to ascertain the practicability of the new use are strong evidence to prove that invention was required to conceive of it; in other words, that it is a non-analogous, and therefore patentable, use.

93. It is scarcely necessary to add that the existence of an analogy between the old and the new use cannot be determined by the seeming similarity of the two uses, or by the fact that they are both connected with the same object or class of objects. This is true, for the obvious reason that the new use may depend for its efficacy upon some property in the old contrivance or pro-

cess, or in the new object to which it is applied, entirely different from any called into play by the former use. Furthermore, despite the external similarity of the two uses, the knowledge and judgment of one skilled in the art where the new use is made might lead him to suppose that the new use was impossible; whereas the genius of the inventor discovers the hidden cause which reverses this rational but incorrect judgment, and discloses the practicability of the new use. The English and American dye cases, already stated, illustrate this truth. So, also, the case of Irwin *v.* Dane,[1] where, by a slight change, the bell and tube in a kerosene lamp, formerly used to conduct the products of combustion back to the flame, were employed by the patentee to carry off those products and to introduce fresh air.

Additional English Cases.

94. Before leaving this subject, it might not be amiss to notice certain other English cases. In an early case,[2] it was decided that the use on railway carriages of wheels previously used on ordinary carriages was not patentable.[3] In this case, Lord Abinger, C. B., instructed the jury as follows:—

"The learned counsel has stated to you, and very properly, and it is a circumstance to be attended to, that Mr. Losh has taken out his patent to use his wheels on railways. Now, he says, the wheels made by Mr. Paton, or by the other workmen who were called as witnesses, were never applied to railways at all.

"That opens this question, whether or not a man who finds a wheel ready made to his hand, and applies that wheel to a railway, shall get a patent for applying it to a railway. There is some nicety in considering that subject. The learned counsel has mentioned to you a particular case,[4] in which an Argand lamp burning oil having been applied for singeing gauze, somebody else afterwards applied a lamp supplied with gas for singeing lace, which was a novel invention, and for which an Argand lamp is not applicable, because gas does not burn in the same way as oil in an Argand lamp. But a man having discovered by the application of gas he could more effectually burn the cottony parts of the gauze by passing it over the gas, his patent is good. That was the application of a new contrivance to the same purpose; but it is a differ-

[1] 2 Biss. 442.

[2] Losh *v.* Hague, 1 Web. P.C. 207.

[3] A similar decision was made by Judge Story in the case of Winans *v.* B. & P. R. R. Co., 2 Story, 412.

[4] Hall *v.* Boot, Web. 100.

ent thing when you take out a patent for applying a new contrivance to an old object, and applying an old contrivance to a new object, — that is a very different thing. If I am wrong, I shall be corrected.

"In the case the learned counsel put, he says, if a surgeon goes into a mercer's shop, and sees the mercer cutting velvet or silk with a pair of scissors with a knob to them, he, seeing that, would have a right to take out a patent in order to apply the same scissors to cutting a sore or a patient's skin. I do not quite agree with that law. I think if the surgeon had gone to him and said, 'I see how well your scissors cut,' and he said, 'I can apply them instead of a lancet by putting a knob at the end,' that would be quite a different thing, and he might get a patent for that; but it would be a very extraordinary thing to say that because all mankind had been accustomed to eat soup with a spoon, that a man could take out a patent because he says you might eat peas with a spoon. The law on the subject is this: that you cannot have a patent for applying a well-known thing which might be applied to fifty thousand different purposes, for applying it to an operation which is exactly analogous to what was done before.

"Suppose a man invents a pair of scissors to cut cloth with; if the scissors were never invented before, he could take out a patent for it. If another man found he could cut silk with them, why should he take out a patent for that? I must own, therefore, that it strikes me, if you are of opinion this wheel has been constructed, according to the defendant's evidence, by the persons who have been mentioned, long before the plaintiff's patent, that although there were no railroads then to apply them to, and no demand for such wheels, yet that the application of them to railroads afterwards by Mr. Losh will not give effect to his patent, if part of that which is claimed as a new improvement by him is in fact an old improvement, invented by other people, and used for other purposes. That is my opinion on the law, and on that I am bound to direct you substantially."

95. In the case of Boulton *v.* Bull,[1] Buller, J., said: —

"Suppose the world were better informed than it now is how to prepare Dr. James's fever-powder, and an ingenious physician should find out that it was a specific cure for a consumption, if given in particular quantities, could he have a patent for the sole use of James's powders in consumptions, or to be given in particular quantities? I think it must be conceded that such a patent would be void; and yet the use of the medicine would be new, and the effect of it as materially different from what is now known as life is from death. So in the case of a late

[1] 2 H. Bl. 487.

discovery, which, as far as experience has hitherto gone, is said to have proved efficacious, that of the medicinal properties of arsenic in curing agues, could a patent be supported for the sole use of arsenic in aguish complaints? The medicine is the manufacture, and the only object of a patent; and, as the medicine is not new, any patent for it, or for the use of it, would be void."

The more recent case of Harwood *v.* The Great Northern Railway Co.[1] is perhaps the most important English authority upon this subject. It is too complicated to be summarized here, but a full abstract of it will be found among the cases *post*, at page 385.

Illustrations of Analogous Use.

96. We may add the following illustrations of analogous use, taken from the English and from the American decisions: —

In an early and important English case, Brunton *v.* Hawkes,[2] the patent was for making ships' anchors in one piece. It being proved that mushroom anchors, that is, anchors for mooring stationary vessels, as lightships, and also the common hammer and pickaxe, were made in substantially the same form, the court held that there was no invention in the improvement patented. In the case of Course *v.* Johnson,[3] Judge McKennan held that it was no invention to transfer from an alcohol lamp to a kerosene stove certain devices which, in their new situation, fulfilled no new office. Mr. Justice Field, in the case of Knox *v.* Quicksilver Mining Co., held that the application to limekiln furnaces of a device used in quicksilver furnaces was not patentable.[4] Between a barrel-head lining and a barrel hoop there is such an analogy that it is no invention to apply to the one a crimping or bending process that has been applied to the other. Reed *v.* Reed.[5] There is the same analogy between a pepper-box and a box to hold blueing, so that it is no invention to perforate the top of a blueing-box in the way that a pepper-box was perforated, and for the same object. This was the decision of Woodruff, J., in the case of Sawyer *v.* Bixby.[6]

97. To make whips in sections, as fish-poles are made, and, as it was proved, a travelling agent had made one whip for show,

[1] 11 H. L. Cas. 654.
[2] 4 B. & Ald. 540.
[3] 16 O. G. 719.
[4] 3 Sawyer, 422; 14 O. G. 897.
[5] 12 Blatch. 366.
[6] 9 Blatch. 361.

but not for use, is not invention, according to Judge Lowell.[1] But in this case he held that there was invention in the device by which the close union of joints required in the whip was effected. The idea of impressing figures upon a paper collar is anticipated by that of impressing figures on smooth enamelled surfaces. Judge Blatchford so decided in the case of the Union Paper-Collar Co. *v.* Van Deusen.[2] To use as an *escape*-valve, in an organ, a valve which formerly had been used as a supply-valve in pedal organs, is not invention. This decision was made in the English case of Willis *v.* Davison.[3]

98. Finally, it was held by McKennan, J., that, given a portable machine for extinguishing fires by discharging a stream of carbonic-acid gas and water, it is no invention to make a different machine for the same purpose by applying therein a device used before in a soda-water fountain.[4] It is true, as the learned judge remarked, that the only difference between the two uses is that

"in the one case a stream of this water is directed into a vessel where it may be used as a beverage, and in the other upon a mass of ignited matter;"

but the distinction here noted reminds us of that taken by an expert in the case of Tilghman *v.* Morse, *ante*, between the cow to be scared and the glass to be engraved.

Newly discovered Function or Property.

99. We come now to the consideration of a few very difficult cases, not logically separable, perhaps, from others involving a new use, which, however, for the sake of clearness, we have reserved to be treated by themselves. We mean those cases where some new property has been discovered in an old article or contrivance, so that a new employment of it becomes possible, and others in which it is discovered that a benefit unforeseen by

[1] American Whip Co. *v.* Hampden Whip Co., 1 F. R. 87.

This decision, at first sight, appears open to doubt, fishing-poles and whips are in general so differently used; but when the use of a fly-rod, for salmon or trout fishing, is considered, the step from a jointed fishing-rod to a jointed whip seems less difficult.

[2] 10 Blatch. 100. See also 23 Wall. 530.

[3] 1 N. R. 234.

[4] The N. W. Fire Extinguisher Co. *v.* The Philadelphia Fire Extinguisher Co., 6 O. G. 34.

the inventor of a patented thing springs from the use of it, or may, under certain circumstances, do so.

100. In the first place, we shall, at the cost of redundancy, refer the reader again to those three principles, of which, so often in the course of this book, we have ventured to remind him. They are: 1. That a benefit to the public is the consideration for which a patent is granted; 2. That an inventive idea is that on account of which a patent is granted; 3. That a patent should be commensurate with the invention or discovery to protect which it is granted.

101. In view of these principles, it is plain that the following propositions need no argument to support them:—

(*a*) A newly discovered benefit, if it result from the ordinary use of the contrivance (whether patented or not) which produces it, is not patentable; and this whether the newly discovered benefit is in degree or in kind.

(*b*) But a newly discovered property in some existing article or contrivance (whether patented or not), whereby it can be put to a new use, is good ground for a patent.

(*c*) So, also, if a patent describe a process or a contrivance in such a manner that an unforeseen benefit, or, rather, its possible occurrence, is included thereby, — but so included that its happening or not is a mere matter of chance, — then a subsequent discoverer of it is entitled to a patent.

102. (*a*) In the first of the cases here supposed, it may be that the second discoverer has shown real invention;[1] but the benefit which would result from his patent the public are already in possession of. Moreover, the patent of the first inventor (assuming that the contrivance is patented), in order to be commensurable with his invention, should cover every benefit which must spring from the use of it, although of some of the benefits, or of the value of some one of them, he may be ignorant. If his invention be more manifold in its usefulness than he thought, he is none the less entitled to have a patent covering every form of usefulness which the actual employment of it calls into play.

103. In the case of Tinker *v.* Wilber Eureka Mower & Reaper Mfg. Co.,[2] it was found that, in a mowing-machine, rollers in-

[1] This is not probable, however. It is much more likely that he will have used mere observation.

[2] 1 Fed. Rep. 188.

tended by the patentee simply to roll down the grass to be mowed also discharged the office of preventing the grass from tangling with the machine at the sides of it. It was held that the invention included the use of the rollers for this purpose, as well as for that contemplated by the patentee; but inasmuch as he had neglected to cover this use of the rollers by the terms of his patent, the defendant could not be held for infringing it.[1] See also Stow *v.* Chicago, 104 U. S. 547.

104. In The Bailey Washing & Wringing Machine Co. *v.* Lincoln,[2] the patent was for a wringing-machine. Claim No. 5 was for —

"Rollers for washing or wringing machines made of, or covered with, vulcanized rubber or any other elastic substance or compound impervious to water, when used in combination with an adjusting spring or springs."

It was found afterward that india-rubber was far superior to any other substance for this purpose; and the point being taken that the patentee was not aware of its peculiar value, Lowell, J., before whom the case was tried, remarked as follows: —

"It does appear to be true that he either did not understand the full value and scope of his machine, or was induced or obliged not to claim it. Taking the strongest view against him, namely, that he was not informed of the peculiar value of india-rubber as a covering for the rollers, but thought any flexible material would do as well, or nearly as well, still he points out india-rubber as the covering which he considers the best; and no one who should afterwards discover its peculiar value could patent its use in the same combination."

105. In another case before the same judge, Richardson *v.* Lockwood,[3] a *reissued* patent for the Davidson syringe[4] was in suit. The claim ran as follows: —

"So forming the connection between the bulb and its flexible tube that the bulb can be used separately with a jet pipe as well as with its flexible tube, thus adapting the syringe to all the various operations for which it may be required, as described."

[1] "A patentee is entitled to all the necessary and legitimate results attained by his invention, including even such as were unexpected." Wells *v.* Jacques, 5 O. G. 364.

[2] 4 Fish. 379.

[3] 4 O. G. 398.

[4] *Vide* Morey *v.* Lockwood, 8 Wall. 230.

Judge Lowell, in supporting the patent, said: —

"It may be that the Davidsons did not perceive all the advantages which this mode of connection would give to a syringe. In their *caveat* they seem to consider that the chief value of making the syringe in parts is, that it may be easily cleaned and dried. But if they made the syringe, for whatever purpose, in this way, it seems to us they can allege that no one else is entitled to a patent for making one in that way." [1]

106. (*b*) We pass now to the second of the propositions above stated. The leading English case upon the point is that of Muntz *v.* Foster.[2] The patentee had discovered, in a composition of zinc and copper previously used for ordinary purposes, a peculiar property, namely, slight, and but slight, oxidation in sea-water. He applied the compound to the new use of a sheathing for ships' bottoms. In this situation it was very valuable, inasmuch as it oxidized, or rusted, enough to prevent accretion of barnacles upon it, but not enough to destroy it. This new use of the old compound was held patentable. It is plain that in this case the patentee made a real discovery, as much as if he had found the same valuable property in a hitherto unknown substance. Moreover, it is equally clear that he conferred a benefit upon the public, inasmuch as he pointed out the valuable use of an old compound, of which use the public was ignorant. If, however, the compound had already been applied to ships' bottoms, because it was a strong material, for instance, and in ignorance of its peculiar property of slight oxidation in sea-water, then it would not have been patentable to a discoverer of that property; for in the case supposed the discoverer would have conferred upon the public nothing of which they were not, though ignorantly, already in possession. Moreover, he would have discovered neither a material nor an unused property in a material, but simply a physical truth, which, by itself, is not patentable.[3]

107. It is true that, if the compound was itself the subject of a patent, no one could use it for any purpose without infringing; but we apprehend the subsequent discoverer could obtain a patent for *his* use of it, just as an improvement upon a machine

[1] See also Tetley *v.* Easton, 2 C. B. N. S. 706. And see page 598.
[2] 2 Web. P. C. 96, a *Nisi Prius* case, but one of unquestioned authority.
[3] *Post*, page 529.

is patentable, though the machine with the improvement cannot legally be used by the patentee of the improvement without license from the patentee of the machine. As Judge Shepley remarked in the case of Jenkins *v.* Walker,[1] —

"The patenting a material for one purpose does not necessarily invalidate patenting it for another different and not analogous purpose;"

and he referred to the English case of Newton *v.* Vaucher,[2] where the patentee had discovered a new property in soft metal, so called; namely, that it is "incompetent to take up the motion of heat by friction." This made it very valuable for lining the inner part of boxes to support gudgeons or axles; for by its use heating and abrasion were prevented. The new use was held patentable, although substantially the same material had been used as a packing for the pistons of hydraulic engines, in order to exclude air and water.

108. In the case of Colgate *v.* The Western Union Telegraph Co.,[3] Judge Blatchford held that an "improvement in insulating submarine cables," by covering the wire with a solution of gutta-percha, was patentable. Gutta-percha was not new, but, as the learned judge remarked, —

"The gist of the invention is the discovery of the fact that gutta-percha is a non-conductor of electricity, and the application of that fact to practical use by combining gutta-percha, by the means specified, with a metallic wire, in the manner described, and then using the cable formed by such combination for the purpose of conducting electricity along the enclosed wire. . . . The *claim* is valid even though a metallic wire covered with gutta-percha existed before the plaintiff's invention,[4] if it was not known that gutta-percha was a non-conductor of electricity, and could be used to insulate the wire. The use by the patentee of the wire so covered to conduct electricity was not a double use of the covered wire, even though the covered wire existed before."[5]

[1] 1 Holmes, 120.

[2] 6 Exch. 859.

[3] 15 Blatch. 365.

[4] Supposing, we presume, that such covered wire had not been used to transmit electricity, though in ignorance of its value as an insulator. In case the wire had so been used, the patent, we apprehend, would not be valid.

[5] In a subsequent suit upon the same patent, Judge Blatchford (16 Blatch. 503) held that the patent would still be valid, even though it were proved that the patentee was not the first discoverer of the insulating

109. The discovery of a new power or function in a machine or other contrivance stands upon the same footing. But in such a case the patent must be, not for the machine or contrivance, but for the *art* of using it to produce the new result.[1]

110. (*c*) As to the third proposition, it is true that anticipation is proved when it is shown that the public might have had the benefit of the invention in question, — that they had access to it;[2] but so much cannot be affirmed when neither the possible existence of a certain benefit nor the means to produce it have been stated or indicated in any way. It is not sufficient that a process or a contrivance has been described, in the production or in the use of which, it is afterward discovered, the benefit in question may be chanced upon. In the case of Ransom *v.* Mayor of New York,[3] Hall, J., made some remarks which are in point, though they were in regard to the novelty of a combination. He said: —

"If the parties who made the combination, although seeing with the eye perceived not, or hearing with the ear understood not, what would be the result of this combination, they added nothing to their own stock of knowledge; and the fact, if observed by other men (if they understood it not), added nothing to the knowledge of science upon that subject. Therefore the invention was not made until the parties contriving, or others observing the existing combination, saw that it could be made available for the purpose of producing a result similar to the one which the plaintiffs have mentioned in their specification."

111. In the case of The Atlantic Giant Powder Co. *v.* Rand,[4] the patent was for a mixture of nitro-glycerine with infusorial earth, or other absorbent substance, the object being absorption of the nitro-glycerine, whereby the dangerous qualities of liquid nitro-glycerine are got rid of. Judge Blatchford held that this patent was not anticipated by one for a mixture of nitro-glycerine and gunpowder, which did not contemplate the advantages resulting

property of gutta-percha. In this case the decision was put upon the ground that the contrivance described — the cable of peculiar construction — was new and patentable; that it was a matter, not of construction, but of invention, to apply the known principle, that gutta-percha was an insulator, to the practical purpose of a submarine cable.

[1] *Vide* Elastic Fabrics Co. *v.* East Hampton Rubber-thread Co., 1 Holmes, 372; also Conover *v.* Roach, 4 Fish. 12.

[2] *Vide* chapter on Prior Knowledge or Use, *post*, page 621.

[3] 1 Fish. 252.

[4] 16 Blatch. 250 and 289 (1879).

from the plaintiff's patent, and which, if its directions were followed, might or might not lead to their attainment. He said (page 289):—

"The prior description, to invalidate the patent, must be such as to show that the article described in the patent can be certainly arrived at by following the prior description; and it is not enough to show that by the lucky accident of taking gunpowder of the proper quality a compound may be obtained which is like that indicated by such description."[1]

112. A singular case is that of The Eagleton Mfg. Co. *v.* The West, Bradley, & Cary Mfg. Co.[2] The patent was for a process of japanning helical steel springs. It was found that the heat used in the process had the beneficial effect of tempering the steel; but this effect was unknown to the patentee. Wheeler, J., remarked upon the patent as follows:—

"It is said in argument that it is not necessary he should have known the full effect of the process he invented in order to uphold the patent; and that, if he invented japanning, it might not be necessary for him to know that japanning would temper. It is doubtless true that an inventor need not know all the uses to which his invention is capable of being put, and equally true that there must be some patentable invention patented before any use of it can be covered by the patent. Here japanning by itself was not patentable. Eagleton described no mode of japanning which would temper or strengthen the steel. The temper and strength are produced by the heat altogether, and not at all by the japan. He did not even mention that the japan was to be applied with heat. . . . He did not invent or discover anything patentable of which any one use can be made, and, *a fortiori*, not anything of which more than one use could be made."

If, however, the japanning had been a patentable invention, and the application of heat, in terms or by the necessity of the case, had been included in the process, — in that case, we conceive, the invention would cover tempering the steel springs.

113. There is an important case in the Supreme Court (Jones *v.* Morehead[3]), where not a prior patent, but a prior article, was held to contain, *in posse* as it were, a later improvement, and therefore to anticipate it. The alleged invention consisted in

[1] See also Hussey *v.* Bradley, 2 Fish. p. 376, *ante*, page 90; and Kelleher *v.* Darling, 14 O. G. p. 675.

[2] 17 O. G. 1504.

[3] 1 Wall. 155.

making the cases of door-locks double-faced, — that is, finished on both sides, so that either side might be used as the outside; and thus the lock could be used as a left-hand or as a right-hand lock; whereas before this invention locks were made to be used as left-hand locks only, or as right-hand locks only. The defence produced several locks taken from doors on the outside of public buildings in the city of New York. These locks were finished on both sides, apparently for the single purpose of protecting the inside; but they were capable, by being turned upside down, of use as right or left hand locks indifferently, although they were not intended for such use; and it did not appear that the possibility of it had ever occurred to any one. The Supreme Court, however, overruled the decision of the circuit judge,[1] and held that these locks anticipated the plaintiff's invention.[2]

PARK *v.* LITTLE, 3 WASH. 196.

D. OF PENN., 1813. WASHINGTON, J., AND A JURY.

A patent for alarm-bells on fire-engines.

We quote from the report: —

"The specification states the bell to be attached to a horizontal piece of iron, fixed into an upright elastic piece, the vibrations of which are regulated by a ball of four or five pounds on the top; the whole frame being fastened on the engine, and the bell made to ring by the motion of the wheels on which the engine is fixed. These bells were used on the Philadelphia fire hose engine . . . for the purpose of informing the members at night where to find it."

Washington, J., instructed the jury as follows: —

". . . The question is not whether bells to give alarm or notice are new, but whether the use and application of them to fire-engines, to be rung, not by manual action, but by the motion of the carriage, for the purpose of alarm or notice, is a new invention or improvement of an old one. The power of steam is not new, and yet its application for propelling boats would be considered as such. Nevertheless, you must decide on the evidence [it is not reported] whether the application of these bells to fire-engines is new.

[1] Mr. Justice Grier. *Vide* Livingston *v.* Jones, 1 Fish. 521.

[2] *Vide post*, page 660.

"As to the question of its utility, it is proved that the plaintiff has received fifty dollars from one fire company in Baltimore for the privilege of using his invention; and the fire insurance companies of this city, by voting sums of money to the Philadelphia fire company, on account of their using them, is [*sic*] some evidence of their opinion."

KNIGHT *v.* BALTIMORE & OHIO RAILROAD CO., TANEY, DECIS. 106; 3 FISH. 1.

D. OF MD., 1840. TANEY, C. J., AND A JURY.

Infringement of a reissued patent, granted originally in 1829, for improvement in railroad car-wheels.

The specification: —

"And in order to get rid of the lateral friction caused by the collars or shoulders of the axles, the ends of all the axles are to be reduced to a point, and plates of steel so fixed, either in a frame or on the sides of the carriage, so as that the ends of the axles would work at a point against those plates, by which arrangement we avoid nearly all the friction occasioned by collars in the common way, and perhaps some of that produced by the flanges of the road-wheels against the side of the rails; and, in order to enable this improvement to be applied to the curvature of the road, there must be left sufficient room for the main axle to play within these collars, and also between the small rollers."

The defence having set up that this was but a double use of an old device, the court charged the jury as follows: —

". . . That the public use of end-bearings for the purpose of transferring friction from the shoulders to the ends of the axles on a cotton-mill, or other stationary machine, before the patent of 1829, as described in the testimony, will not render the plaintiff's patent void, provided the jury find that he was the original inventor of the combination he claims in relation to railway carriages, and that his invention is useful in the transportation of burdens and passengers on railways. But if, before his first patent was obtained, the same principles in the same combination which he describes as his improvement were in public use in ordinary carriages upon common roads, the plaintiff was not entitled to a patent for applying the same thing to railway carriages, unless the improvement he claims contains something new and material either in principle, in combination, or in the mode of operation, in order to adapt it to its new use."

HOWE *v.* ABBOTT, 2 STORY, 190.

D. OF MASS., 1842. STORY, J.

The patent was for "an improvement in the application of . . . palm-leaf or brub-grass to the stuffing of beds, mattresses," &c.

It was proved that the process described was identical with that in common use to prepare hair, Manilla grass, &c., for the same purposes.

Story, J.:—

". . . It is . . . the mere application of an old process and old machinery to a new use. It is precisely the same as if a coffee-mill were now for the first time used to grind corn.

"The application of an old process to manufacture an article to which it had never before been applied, is not a patentable invention. There must be some new process or new machinery used to produce the result."

BEAN *v.* SMALLWOOD, 2 STORY, 408.

D. OF MASS., 1843. STORY, J.

Patent for improvements in rocking-chairs. There were three claims. The first two were admitted not to be new. The third was for

"the manner of reclining the back of the seat at any angle required, by the lock-plates and notches in the hanging-plates, which receive them, as before described."

The report contains no account of the plaintiff's device, or of the devices alleged to anticipate it, other than what appears in the opinion of the court, as follows:—

"The third . . . claim, upon the testimony of Mr. Eddy, which is admitted to be true, is equally unsupportable. He says that the same apparatus stated in this last claim has been long in use, and applied, if not to chairs, at least in other machines, to purposes of a similar nature. If this be so, then the invention is not new, but at most is an old invention, or apparatus, or machinery, applied to a new purpose. Now, I take it to be clear that a machine, or apparatus, or other mechanical contrivance, in order to give the party a claim to a patent therefor, must in itself be substantially new. If it is old and well

known, and applied only to a new purpose, that does not make it patentable. A coffee-mill applied for the first time to grind oats, or corn, or mustard, would not give a title to a patent for the machine. A cotton-gin applied without alteration to clean hemp would not give a title to a patent for the gin as new. A loom to weave cotton yarn would not, if unaltered, become a patentable machine as a new invention by first applying it to weave woollen yarn. A steam-engine, if ordinarily applied to turn a grist-mill, would not entitle a party to a patent to [*sic*] it, if it were first applied by him to turn the main wheel of a cotton factory. In short, the machine must be new, not merely the purpose to which it is applied. A purpose is not patentable, but the machinery only, if new, by which it is to be accomplished. In other words, the thing itself which is patented must be new, and not the mere application of it to a new purpose or object."

WINANS *v.* BOSTON & PROVIDENCE RAILROAD CO., 2 Story, 412.

D. of Mass., 1843. Story, J.

The patent was for an improvement in the axles of railway *and other wheeled carriages*. It being shown that the improvement as applied to *wheeled carriages other than railway carriages* was not new, the patent was held invalid by Story, J.

PITTS *v.* WHITMAN, 2 Story, 609.

D. of Maine, 1843. Story, J.

The report does not state clearly what the invention was, but we take the following description of it from the report of a later case, Pitts *v.* Wemple, 1 Biss. 87, tried before Drummond, J., and a jury:—

"A new and improved combination of machinery for separating grain from the straw and chaff as it proceeds from the threshing-machine. The chief feature was the endless belt or apron, provided with a series of narrow wooden compartments, of a sufficient height above the apron to permit the grain which was separated from the straw and chaff by the agitation of the machine when in operation to fall through into the cells. By this means the straw and chaff were

carried along on the tops of the boxes, and kept from being commingled with the grain below, until, by the action of the machine, the compartments were carried forward, and emptied the separated grain into the fan-mill, and the straw and chaff passed off over the end of the apron."

At the trial before the district judge, the counsel for the defendants asked for the following instruction: —

"If an endless belt of troughs or cells was known and used at the time of, and prior to the supposed invention of [the plaintiffs], then the mere application of an endless belt of troughs or cells to the new purpose of separating straw and grain, in a machine for threshing and cleaning grain, is not the subject of a patent. . . ."

The judge refused to give this instruction, and on appeal to the Circuit Court, Story, J., sustained the refusal as follows: —

". . . If this combination was new, and invented by the patentees, then it was valid in point of law. . . . And this disposes, in effect, of the next objection [*i. e.* to the refusal of the instruction quoted]; for if the combination was new, it is a patentable matter, although a part of the apparatus might have been applied to similar purposes in other and different machines. Under such circumstances, it would not be a mere application of an old apparatus to a new purpose, but a new combination of machinery, incorporating in part an old apparatus for a new purpose. The third instruction [that quoted], asked [*sic*] and refused by the court, is objectionable in several respects. It proceeds upon the assumption of the existence of facts, which it was no part of the duty of the court to assume or affirm. It undertakes to put a construction upon the invention, as claimed by the patentees, which is not . . . correct. It separates the consideration of the endless belt of troughs from the other machinery, with which it was combined, as though it were claimed as a distinct invention, and not in combination, and asks the court to give an instruction founded upon that supposition. It was no part of the duty of the court thus to break up the case into fragments, or to give an instruction as to abstract points not actually presented by the state of the cause."

In the suit mentioned above, before Drummond, J., the validity of the patent was not contested, but the defendants sought to limit it. For this purpose they set up, as showing the state of the art, Lane's patent. This patent, apparently, was that on which the defendants relied in the case before Judge Story; for we learn from the report of the case before Judge Drummond

that the invention covered by it was as follows: An endless apron proceeding from the threshing-machine to an endless sieve connected with a fan-wheel. It had no compartments, and its office was simply to transport the grain mixed with chaff and straw from one machine to the other.

The plaintiff's apron, on the other hand, separated the grain from the straw *in transitu*. Judge Drummond held, therefore, that the Lane patent did not affect the plaintiff's. He said: —

"It is because the apron, with its appliances and combinations, the moment the grain and straw and chaff proceed from the threshing-machine, produces the process of separation, and thus has a different force or function from that of Lane's apron, that the plaintiff's first, second, and third claims[1] can be considered valid.

"If the apron of the plaintiff's machine is not constructed for that purpose, and does not produce that result, — that of separation, — then these first three claims cannot be sustained consistently with the validity of Lane's patent.

"But it is said that Lane's patent can have no influence in this case, because his machine was not a practicable machine. This may be true, and still it cannot be disputed but that Lane invented the combination of an endless apron with a threshing-machine, and a winnower for the purpose of carrying the straw and grain from the one to the other; and any one would have the right to use such an apron as that of Lane's for a similar purpose, and by other machinery or improvements (not including that of the plaintiffs) he might have a practical machine, and by so doing he would not infringe as to the plaintiff's apron. This is so because the machine of Lane might not have been practicable from some other defect in the machine which had nothing to do with the office of the apron as a conveyer or carrier. Whether Lane's machine was a practicable machine is a question of fact for the jury. It is not necessary that it should have been actually used for the purpose contemplated; but it must have been capable of such use, and a mechanic of competent skill should be able in the then state of the art to construct the machine so as to produce the result from a mere inspection and examination of the . . . letters-patent.

"A man may obtain a patent for an invention, and let it lie in the

[1] The claims were: "1. The construction and use of an endless apron, divided into troughs or cells in a machine for cleaning grain, operating substantially in the way described. 2. The revolving rake for shaking out the straw, and the roller for throwing it off the machine, in combination with such a revolving apron, as set forth. 3. The guard slats in combination with a revolving apron, as set forth."

Patent Office without use, and no one else would have the right to use such invention, because it is his property; but while this is true as a matter of law, still, in ascertaining whether the machine is capable of use, it may become important to know that the inventor had never made or used the machine, because the presumption is that a person obtains a patent for something practical, and not for a mere experiment."

This patent was sustained on the same ground by McLean, J., in the case of Pitts *v.* Wemple, 6 McLean, 558.

JUDSON *v.* MOORE, 1 FISH. p. 555.

S. D. OF OHIO, 1860. LEAVITT, J.

In this case the patent was for a valve for steam-engines. (*Vide ante*, page 237, where the invention is described.)

On the subject of new use, Judge Leavitt, comparing the plaintiff's valve with the prior valve of one Thom, said:—

"As for Thom's valve, it provided for certain openings, but not throughout the whole range of motion. It was designed to be used on railway locomotives, and it never has been used otherwise. . . . The mere use of a mechanical structure for a different purpose is not of itself patentable, and if Judson had merely adopted Thom's valve, and applied it to another purpose, without addition or improvement, he would not be entitled to a patent, — that is, if he had merely applied it to other than railway purposes, he could not be entitled to a patent; but if his valve be a different structure, applicable to *all* engines, and producing a new and useful result, it *is* a patentable subject; and if Judson has changed the structure of the Thom valve, and it has been applied to a new and useful purpose, the knowledge of the prior valve would not affect the originality of Judson's valve."

BRAY *v.* HARTSHORN, 1 CLIFF. 538.

D. OF MASS., 1860. CLIFFORD, J.

Bray's patent of Aug. 5, 1854, for a

"certain new and useful improvement in spring rollers or fixtures for the hanging and balancing of house-curtains, maps, and drawings, and for other similar uses."

The invention consisted in the combination of (1) a tubular, or hollow, curtain-roller, (2) a long, spiral spring within the roller, for the purpose of balancing the curtain in any position in which it might be placed, and (3) a weighted bar or tassel.

The claim was: —

"Providing the tubular or hollow curtain-roller with a long spiral spring within it, when said spring is used for the purpose not merely of drawing up the curtain by its recoil, as that is not new, but of balancing it in any position in which it may be placed, substantially as herein described."

A verdict having been given for the plaintiff, the defendant moved for a new trial, on the ground, chiefly, that this was but a new use of an old invention, "to wit, the use of the old spiral spring in balancing a curtain in any position in which it may be placed."

Clifford, J. (after laying down the propositions quoted *ante*, page 286), said: —

". . . Recurring to the language of the application in this case, it will be seen that the claim is not for the use of an old machine, in any sense in which that phrase is employed or understood in the decisions of the courts."

The learned judge then quoted the claim given above, and continued: —

". . . He claims to be the original and first inventor of the combination described in his patent, and of course it is not absolutely necessary that any one of the elements or devices so combined should be new, provided the combination is new, and produces a new and useful or better result. Having confined his claim to a mode of balancing curtains in the manner and by the means described, it is not sufficient to defeat his patent, if it produces a new and useful result, to prove that other and different modes of balancing curtains were known prior to his invention. His patent, as limited and defined, cannot be defeated, unless it be shown that, prior to his invention, curtains had been balanced substantially in the same manner by substantially the same means, or mechanism so operating as to produce substantially the same result.

"Respectable authorities may be found which advance the doctrine that the new use of an old machine or invention may be so different from that to which the machine has been applied, and may so clearly produce a new article of machinery, that the inventor or discoverer may

be entitled to a patent; but it is not necessary to decide the point at the present time, and it is accordingly dismissed, with the remark that other authorities affirm that an inventor is fairly entitled to any profits arising from the unforeseen applicability of his invention as an equivalent for the risk he incurs of ill-success and corresponding loss. Coryton on Pat. 63, 64."

PHILLIPS *v.* PAGE, 24 How. 164 (1860).

The patent was for an improvement in a portable circular saw-mill, consisting in

"the manner of affixing and guiding the circular saw, by allowing end-play to its shaft, in combination with the means of guiding it by friction rollers, embracing it near to its periphery, so as to leave its centre entirely unchecked laterally."

This device had been used before for sawing shingles and other light materials. The patentee designed it for sawing ordinary logs. A defective specification, however, prevented his claiming it as a machine for that purpose; but the court, Nelson, J., delivering the opinion, held, that were he not so precluded, the alleged invention was not patentable, it being merely the application of an old organization to an analogous use. The enlargement of the apparatus did not change its character; and the patentee claimed no new appliances for adapting the old contrivance to its new use.[1]

"It may very well be," Mr. Justice Nelson said, "if he had set up in his claim the improvements or particular changes in the construction of the old machine, so as to enable him to adapt it to the new use, and one to which the old had not and could not have been applied without these changes, the patent might have been sustained. The utility is not questioned, and for aught there appears in the case, such improvements were before unknown, and the circular saw-mill for sawing logs the first put in successful operation."

[1] *Vide* Planing-Machine Co. *v.* Keith, a similar case, *ante*, page 201.

TREADWELL *v.* PARROTT, 5 BLATCH. 369.

S. D. OF N. Y., 1866. NELSON, J.

Patent of Daniel Treadwell, granted Dec. 11, 1855, reissued Feb. 4, 1862, for an "improvement in the manufacture of cannon."

Treadwell's alleged invention consisted in hooping with bands of wrought-iron a cast-iron cannon. The interior diameter of the hoops was less than the exterior diameter of the barrel by a $\frac{1}{1000}$ part of the latter. The hoops were heated to a high degree of heat, and when thus expanded they were put around the cannon. In cooling, they contracted, and formed a homogeneous mass with the cast-iron cannon.

The claims were as follows: —

"*First.* In making a cannon consisting of a body (in which the calibre is formed), the walls of which are of one piece, surrounded by rings, hoops, or tubes, in one or more layers, placed upon said body, under great strain, by which said body is compressed, and the natural equilibrium of the molecules or particles of which it is composed, disturbed by their being brought nearer together; and this is accomplished in the manner herein set forth, namely, by making the hoops smaller than the part which they are to surround, and then expanding them by heat, and suffering them to shrink or contract after having been put in their places.

"*Second.* I also claim the method of securing the hoops to the body of the gun, and the several layers of hoops to each other, by screw-threads, when they shrink to their places, as above described."

It was proved that such hoops had been applied in the same way to a wrought-iron cannon, or rather to a cannon "the body of which was not entirely of cast-iron, longitudinal strips of wrought-iron being immersed in the metal in the casting of the cast-iron body."

But the court said: —

"I agree that although the use of wrought-iron hoops in the way stated, and used for strengthening the barrel of a gun, had been known as early as 1834 or 1840, yet, if the patentee was the first to apply the device to a cast-iron gun, he must be regarded as the original inventor, and entitled to a patent; and that the application of it to a wrought-iron gun, or a barrel composed of a combination of cast and wrought

iron, prior in point of time, would not of itself be an objection.[1] Hence, I lay out of the case the Thiery gun as a defence to this patent; but the state of the art as found in this publication is important in another branch of the case;"

namely, in reference to the English patent of Frith, granted in 1843. This patent described the same process as the plaintiff's, except that it did not state the exact difference in diameter which should exist between the hoop and the barrel. It called, however, for "firm adhesion," produced in the manner described; and the evidence was that an intelligent mechanic, employed in the business, considering the state of the art as established by the Thiery and other inventions, would know to what extent wrought-iron bands might be distended by heat without impairing their elasticity. The walls of the Frith gun and the walls of Treadwell's gun were about equally thick; and so were their respective hoops. Moreover, the court construed the patent of Treadwell, as embracing not only the precise difference in diameters stated by him, but any difference which would accomplish the object desired.

The value of this process is thus explained: Hollow cylinders do not increase in strength in proportion as the thickness of their walls increases; but, after a considerable degree of thickness, the gain in strength is very slight. This law is called, after its discoverer, "Barlow's law." The court held that the Frith cannon was an anticipation of the plaintiff's.

WEST *v.* THE SILVER-WIRE AND SKIRT MANUFACTURING CO., 5 BLATCH. 477.

S: D. OF N. Y., 1867. SHIPMAN, J.

"Whether a brass wire in the form of a spiral, with a thread of catgut running through it and forming a cone, used as a hoop for women's skirts, would be patentable, in view of the fact that the large strings of bass-viols were previously formed in the same way, except that the wire in the hoop was heavier and stiffer than that in the string for the musical instrument, *quære*."

[1] Is not this *dictum* incorrect? It would seem that this was a clear case of double or analogous use.

POILLON *v.* SCHMIDT, 6 BLATCH. 200.

S. D. OF N. Y., 1869. BLATCHFORD, J.

Gale's patent, dated July 21, 1857, for a process of making pistons and other steam joints steam-tight.

It consisted in using a grooved surface with an opposing smooth surface; the grooves to be made either on the surface of the piston or on the interior surface of the cylinder. Directions were given for the best shape, size, and relative position of the grooves; but the grooved surfaces were not claimed as a part of the invention, they having been used before, as the specification stated, for a similar purpose in *air*-engines.

Before the patentee's invention it was always supposed that two contiguous smooth surfaces could be rendered steam-tight only by their actual contact, or by the interposition of some kind of elastic packing; but the patentee effected the object as follows: —

"The steam, as it is let into the cylinder, rushes in between the piston and cylinder, and fills up the grooves and the intervening space between the piston and cylinder, where it practically forms a complete packing. The steam which fills the grooves and intervenes between the piston and cylinder also acts as a cushion, partially to relieve the piston and cylinder from contact and friction."

The defence was the prior invention of the air-engine, already mentioned, in which similar grooves filled with air formed a packing that made the engine air-tight. As to which Blatchford, J., remarked as follows: —

". . . It is insisted . . . that the grooves and the grooved surfaces being alike in the two, and the air and the steam, as used, being equivalents for each other, there is no patentable novelty in using the grooves in connection with steam, but that it is merely the application of an old apparatus to a new use. Opposed to these suggestions is the fact that, until this patent was issued, the idea was not promulgated that steam could be made self-packing, and the publication in the 'Schauplatz,' that air could be made self-packing in an air-engine, remained before the world ten years prior to [the patentee's] invention, without that being suggested which is now asserted to be so obvious, in view of [the air-engine].

"The invention as set forth in the specification is a highly meritorious

and useful one, and one which a court will desire to sustain, if consistent with the principles of law.

"The claim is to the 'method herein described of causing steam to become a packing to itself, in steam cylinders or other parts of steam machinery, by allowing the steam to act in one or more grooves, substantially as specified.' It is not possible to mistake the tenor and purport of this claim. . . . It is a claim to an art or process. It is not a claim to the grooved surfaces. But it is a claim to the process of the self-packing of steam, used in steam machinery, when effected by allowing the steam to act in one or more grooves, as described in the specification. Gale [the patentee], undoubtedly, was the first to discover that steam could be made to pack itself, and that it could be made to do so by causing it to act in the way described, in one or more grooves.

"The grooves used in an air-engine were, indeed, old. But it by no means followed, because air would work successfully in the apparatus of Cavé, that steam could be made to pack itself, or to do so by means of grooves, or to do so in the apparatus of Cavé.

"There was room for experiment as to the capability of steam to act in that way, and as to the character of the grooves to be used, and as to what space might or might not be left between the contiguous surfaces. And it does not detract from the novelty or patentability of the invention, that in carrying it out in practice the use of grooves like those in Cavé's apparatus was found beneficial.

"The claim is not to all methods of causing steam to become a packing to itself, in steam machinery, but to the method described in the specification, whereby the property of steam discovered by Gale is made to subserve a useful purpose, by being carried into effect in a practical mode. The newly discovered property of steam, and the practical adaptation of it to a useful end, by the means described, is the invention made and claimed." (He goes on to compare this case with that of Le Roy *v.* Tatham, 22 How. 132.)

BROWN *v.* HALL, 3 BLATCH. 401.

S. D. of N. Y., 1860. BLATCHFORD, J.

Patent for an improvement in paint-cans. The claim was: —

"The employment of strengthening wire within the bead, as and for the purpose herein shown and described."

Blatchford, J., said: —

"... The point of the invention ... is placing a wire within a bead or semicircular projection, near the top edge of the body of the can, and at such a distance from such top edge that the cover, when the same is on, comes down close to the upper side of the bead. The object of the wire in the bead is to strengthen the sides of the can, and prevent them from collapsing by the side pressure of weight of contents. The liability of a can of paint to collapse, when held by a bail, is pointed out, and the cause assigned is the great weight of the paint. The specification states that the invention is claimed 'as new in the construction of paint-cans;' and the patent is granted for an 'improvement in paint-cans.' But the specification states that no covered vessel, so far as the patentee is aware, has ever been made having a wire secured within a bead, near and below the mouth, as shown by him. If a can so constructed be old as a structure, it is of no consequence what substance was or was intended to be carried or contained within it, provided it employed within a bead, located substantially in the same place, a wire to strengthen the can against side pressure from its contents, and prevent the wall from collapsing by such side pressure.

"... A witness for the defendants ... shows that ... [prior to the plaintiff's invention] he made vessels for freezing ice-cream, the vessel ... having an exterior bead from three-fourths of an inch to an inch and three-fourths from the top, and a wire inside of the bead to strengthen or stiffen the vessel, the cover going down on the outside to the bead. This ice-cream freezer had no bail or handle by which it could be held up or carried. It had a handle on the top of the cover by which to revolve it in a freezing composition. The plaintiff's paint-can is described ... as provided with a handle by which it can be lifted or carried. ... The wire was twined and then covered with solder in the bead, as nearly as could be, so as to make a smooth interior surface, and to prevent the rusting of the wire.

"It is quite apparent that, as a structure, having a wire within the bead to give strength and prevent the collapsing of the walls of the vessel from side pressure, the patented can and the ice-cream freezer are alike. This is irrespective of any handle or bail. The claim of the patent does not embrace a handle or bail. ... In the paint-can, when lifted, the pressure on its sides would be outward from within, while in the ice-cream freezer, when revolved in the freezing composition, — which was the way of using it as stated by Price, — the pressure would probably be that of the freezing composition exerted inwardly from without. But this makes no difference.

"Whether an amendment of the claim to introduce the handle or bail as an element in the combination would distinguish the can from the ice-cream freezer, is a point not necessary or proper now to be determined. The only point I now decide is, that in claiming the employment of a strengthening wire within the bead, for the purpose described in his patent, the patentee was anticipated by the ice-cream freezer, and that the claim is void for want of novelty."

STRONG *v.* NOBLE, 6 BLATCH. 477.

S. D. OF N. Y., 1869. BLATCHFORD, J.

E. F. Woodbury's patent of Dec. 18, 1866, for an improvement in whips, which consisted in covering the handle with a knit fabric. The claims were for (1) a whip having the handle so covered; and (2) covering the handle or other portion of a whip with a tubular knit fabric. Directions were given for drawing on and fastening the knit fabric. But the process was a very simple one. This improvement, though manifestly a case of double use, was held to be patentable by the court, as follows: —

"Although a tubular knit fabric was old, and although a whip was old, and although the idea of covering a whip and a whip-handle with something was old, it by no means follows that the application, in the manner shown in the specification, of such a knit fabric to the covering of a whip, so as to produce a whip or a whip-handle covered with such a fabric, . . . is merely applying the knit fabric to a new use, in the sense in which, in the law of patents, the mere application of an old article to a new use, is held not to be the subject of a patent."[1]

TUCKER *v.* SPAULDING, 13 WALL. 453 (1871).

The plaintiff's patent claimed the forming of recesses or sockets in saws or saw-plates for detachable or removable teeth on circular lines, and in combination with these recesses, teeth having their base or bottom parts formed on circular lines. At the trial in the Circuit Court the defendant offered in evi-

[1] The rest of the opinion is quoted *ante*, page 296.

dence a prior patent to one Newton, having "cutters of the same general shape and form, including circular base, as the saw-teeth of the other patent, attachable to a circular disk, and removable as in the other, but attached by screws or nuts; the claim being "for cutting tongues and grooves, mortices," &c. The defendant also offered to prove that the processes of the two patents were substantially similar. The Circuit Court having rejected this evidence, the defendant appealed to the Supreme Court, which granted a new trial; Miller, J., who delivered the opinion, remarking as follows: —

". . . The court, in rejecting the patent of Newton, seems to have been mainly governed by the use which was claimed for it, and also that no mention is made of its adaptability as a saw. But if what it actually did is in its nature the same as sawing, and its structure and action suggested to the mind of an ordinarily skilful mechanic this double use, to which it could be adapted without material change, then such adaptation to the new use is *not* a new invention, and is not patentable."

THE NATIONAL FILTERING OIL CO. *v.* THE ARCTIC OIL CO., 8 Blatch. 410.

S. D. of N. Y., 1871. Blatchford, J.

The patent claimed "the use of bone-black [charred bones finely ground] for purifying petroleum or coal oils by filtration." The description of the process was in very general terms as follows: —

"The filter is made of wood and iron, of any suitable form or height. The filter is filled up with the bone-black, as high as may be necessary according to the quality of the oil. The oil is run in on top of the filtering material, and allowed to filter through the perforated bottom of the filter, where it is collected. The operation is continued by feeding the oil into the top of the filter as fast as it runs through the filtering material, until the filtered oil shall begin to assume a dark color, when the operation is suspended, and the filter replenished by fresh material."

Blatchford, J.: —

"I do not think the various publications adduced by the defendants anticipate the invention on the point of novelty. It is true that they state that animal charcoal, prepared from the bones of animals, will

render filthy water inodorous; that rancid oils are deprived of their smell and taste by repeated filtration through a stratum of such charcoal; that bone-black will render colorless, water charged with almost any vegetable or animal solution; that bone-black is used as a decoloring agent in various chemical purposes; and that the yellowish tint of oil of olives may be removed by mixing with it animal charcoal, and the oleine be obtained colorless by subsequent filtration. But notwithstanding all this, it was impossible to tell without experiment whether coal-oil or petroleum could be filtered through bone-black at all, much less so as to produce a useful result."

SAWYER *v.* BIXBY, 9 BLATCH. 361.

S. D. OF N. Y., 1872. WOODRUFF, J.

The alleged improvement consisted in perforating one end of a box, intended to hold "bluing," or other powders, and covering the perforations with wax, wafers, paper, or other substance, properly secured, and removable when the contents of the box are to be used.

Woodruff, J.:—

" . . . Pepper-boxes, sand-boxes," &c., "either of which are [*sic*] exactly adapted to the distribution of powder of any kind, are not new, and are not claimed to be new. . . . The closing of packages of various forms, and of bottles, by wax or wafer," &c., "is no more new than the other; and when these, or either of them, are applied to the openings in the plaintiff's boxes, they produce no new result. They close the openings, and that is all; they are old means, and produce their old and obvious well-known result. In combination there is no other effect; each performs the same office in the same manner as it does when employed for any other purpose, and precisely as it must, whatever be the form of the package, or the particular use to which the package is applied. The employment of these instrumentalities in putting up packages for transportation is therefore the exercise of judgment in selecting, not of invention, or devising or combining. At most, it consists in applying old devices to a new use, which, when it involves no new means, and produces no new effect, is not patentable, notwithstanding it may be useful to combine the two results by uniting the two instrumentalities."

It was also proved that the plaintiff's box was not new even for the object to which he applied it.

MOWRY *v.* WHITNEY, 14 WALL. 620 (1871).

Whitney's patent (dated April 25, 1848), for an improvement in the process of making cast-iron railroad wheels, thus described in the specification: —

"My improvement consists in taking railroad wheels from the moulds in which they are ordinarily cast, as soon after being cast as they are sufficiently cool to be strong enough to move with safety, or before they have become so much cooled as to produce any considerable inherent strain between the thick and thin parts, and putting them, in this state, into a furnace or chamber that has been previously heated to a temperature as high as that of the wheels when taken from the moulds. As soon as they are deposited in this furnace or chamber, the opening through which they have been passed is closed, and the temperature of the furnace or chamber and its contents gradually raised to a point a little below that at which fusion commences, when all the avenues to and from the interior are closed, and the whole mass left to cool no faster than the heat it contains permeates through, and radiates from, the exterior surface of the materials of which it is composed.

"By this process, all parts of each wheel are raised to the same temperature, and the heat they contain can only pass off through the medium of the confined atmosphere that intervenes between them and the walls of the furnace or chamber; consequently, the thinnest and thickest parts cool simultaneously together, which relieves them from all inherent strain whatever when cold."

The patentee stated that he used anthracite coal to heat the furnace, but he provided for the use of other kinds of fuel. He declared that, however the heat is produced, the furnace must be so constructed that the operator can control the amount of heat admitted into it, and he disclaimed the annealing of castings in the ordinary way, or the invention of any particular form or kind of furnace in which to perform the process.

It will thus be seen that the object of the plaintiff's invention was to cause the thin and the thick parts of the wheel to contract equally, and so to avoid the inherent strain between the periphery or tread and the inner parts of the wheel, caused by unequal contraction. Several earlier processes to accomplish this object had been patented, but none of them had been entirely successful; and the difficulty was completely overcome only by the plaintiff's invention, which, therefore, was of great value.

The court: —

"Annealing some kinds of castings was known and practised before 1847, . . . and various modes of annealing plain castings had been described by scientific writers both in this country and abroad before that time. But there is no evidence that we have been able to discover that cast-iron car-wheels had ever been subjected to an *annealing* process, in connection with slow cooling, before the process was discovered or invented by Whitney. In all the experiments made for annealing other castings the object sought was different, and in them all, as well as in the process described in the publications given in evidence,[1] the effect upon the annealed metal or glass was not to leave them in the condition in which it was sought to bring car-wheels, with the crystallization or chill of the periphery unimpaired, and the plate or thin part unaffected by strain. Cast-iron railroad wheels are castings of a peculiar kind. The methods of slow cooling, or of annealing and slow cooling, which were applied to other castings before 1847, were not adapted to their peculiarities, or to what they needed. They are not homogeneous throughout. They are of different thickness in their several parts, and hardened at the tread, while the plate and hub are not crystallized, but are soft and tough.

"These different qualities of the different parts it is necessary to preserve, and what was needed when Whitney's invention was made was to preserve them, and at the same time relieve against any strain, caused by unequal cooling, which might impair the strength of the wheel."

ROBERTS *v.* DICKEY, 4 Fish. 532.

W. D. of Penn., 1871. Strong and McKennan, JJ.

Patent of E. A. L. Roberts, dated Nov. 20, 1866.

The invention was of a process for increasing the productiveness of oil-wells. Oil lies in crevices and seams of the rock,[2] and the patentee's object was to open new crevices and to clear out those old ones from which oil had flowed into the well, until they became clogged. This he accomplished as follows: A flask of powder is let down to the bottom of the well, or to that portion of it which passes through the oil-bearing rock; the flask being a

[1] The evidence as to anticipation is not reported.

[2] Apparently the patentee discovered this fact. *Vide* opinion of the court, *post*, page 330.

little less in diameter than the bore of the well. The well is then flooded (if not already full of water), so that the effect of the explosion shall be confined to the vicinity of the flask by the weight of the column of water upon it; this being done, the powder in the flask is ignited by fulminating powder, electricity, or other means used to explode shells, &c., under water; and the explosion opens new avenues and clears old ones for the passage of oil into the well. The patentee claimed

"the above-described method of increasing the productiveness of oil-wells, by causing an explosion of gunpowder, or its equivalent, substantially as above described."

Strong, J.: —

". . . Now that such an invention, if it was novel, was a proper subject for a patent, hardly admits of question. It was a new and useful art. It was a process combining instrumentalities before known, but not employed together, to accomplish a new and useful result. . . . There are many cases in which the materiality of an invention, whether it be a machine or a process, can be judged of only by its effect on the result, and this effect is tested by the actual improvement in the process of producing an article, or in the article itself introduced by the alleged invention." (The learned judge then refers to Curtis, § 9, and Webster, p. 30.)

". . . It was insisted at the argument that the claim of the patentee is for that which is known and denominated as a double use, and it was urged that if Roberts was the first to use torpedoes in oil-wells with success, it was only obtaining a different fluid from what had been obtained before by the same means. This argument proceeds under a misapprehension of the subject of the patent. It would be of weight were the invention claimed only the application of an old and known process to a new use. But that is not what was patented. It has already been seen that the invention claimed is not the employment of explosive materials as a mechanical force, nor is it enclosing such materials in flasks of specified forms, or any particular mode of merely producing an explosion. Nor is it simply causing an explosion in a well, or under water. Nor is it a result, — obtaining oil. It is doing these things under peculiar and novel arrangements. It is a process of which some or all [*sic*] these things are a part — instruments or agencies in the process. Until, then, it is shown that the process, as described in the specification, was known as a process before this patent was issued, and that it had been applied in the same way to some use cognate to that to which this patentee applied it, the argument of the defendant,

that the claim is only for a new use of an old thing, or, in other words, for a double use, must fail. It is an incorrect view of the patent to consider it as an attempt to secure the exclusive use of a well-known mechanical force operating in the usual manner, and applied by familiar mechanical devices, for a purpose existing in the mind of the operator, in the same way in which it had been applied for other purposes, by other operators.

"It has been further urged that all Roberts discovered was that the seams or rifts in oil-bearing rock would, if opened by a blast, yield oil, and that this was merely a discovery of a law of nature, a geological truth, and not the invention of a new art or manufacture. If this were all, doubtless it would not have been patentable. But it was not all. He devised a mode of turning to practical account this geological truth; and if the means thus devised were novel, if the process was the product of invention and was useful, it was a proper subject for a patent."

In an earlier part of the opinion we find the following remarks upon the same subject:—

"Construing the claim in connection with the specification, the method claimed appears to be definitely and distinctively set out. Plainly, it is only one of many methods that might be adopted, having its essentials distinguishing it from others, and constituting its individuality. The patent is therefore not obnoxious to the objection successfully made against the eighth claim of the Morse patent in O'Reilly *v.* Morse, 15 How. 62. . . . If this were a claim for any mode, or all modes, of increasing the productiveness of oil-wells, or any mode, or all modes, of blasting, or for any or all modes of causing explosions in oil-wells, there would be some resemblance to the eighth claim of Morse's patent. But the explosion of the cartridge and the flask in the well are only parts of the patentee's process or practical method of increasing the production of the well. Every other process, though securing the same results, is left open for the appropriation of other inventors."

On the point of anticipation the court remarked as follows:—

"He [the defendant] has given in evidence a description of the employment of a percussion blast for sinking a shaft in the Mansfelt copper mine, in Saxony, published by Dr. Karsten, at Berlin, in 1834, in the 'Archiv für Mineralogie, Geognosie, Bergbau und Hüttenkunde.' The description of that operation, so far as it is necessary to state it, is substantially this: A miner's shaft had been sunk to the depth of over a hundred feet; it then ... tially filled with water, so that the work of further excavation was impeded. In order to draw off this

water, a bore-hole, three inches in diameter, was pierced from the bottom of the shaft, with a view to opening a connection with an existing underground gallery.

"The bore-hole, however, in consequence of a mistake in calculation, did not intersect the gallery, but passed about twenty inches from its side. Attempts were then made to blast the rock from the inside of the gallery so as to connect it with the bore-hole; but the attempts were only partially successful. The rock was fractured, and so much water escaped from the bore into the gallery as to compel the retreat of the workmen. An elongated cartridge, containing two and a half pounds of powder, was then constructed, with a diameter a little less than that of the bore. It was made water-tight, and fitted with percussion-caps on its upper end, protected against displacement, yet so arranged as to be easily exploded. It was then lowered by means of a cord to its place opposite the gallery, about one hundred and fifty feet below the surface. A ram or punch of the exact diameter of the bore-tube (three inches), attached to the end of a bore-rod in length about twenty-five fathoms, and weighing about nine hundred pounds, was then let down to within a quarter of a fathom of the cartridge, so that by its fall through that distance the percussion-caps might be exploded, causing a blast. At the time there were thirteen fathoms of water in the bore. When the bore-rod and ram were let fall, the cartridge was exploded, and the fractured side of the bore was successfully blown out into the gallery.

"This operation, undoubtedly, had some points of resemblance to the Roberts process. It was a mode of blasting under water in a deep bore of small diameter, and some of its details are like those made use of by this patentee. But we have already seen that the invention now claimed is not that of any mode of blasting in wells or under water. Nor does it consist in any of the details which it has in common with the Mansfelt mine operation. Considered as processes, combinations, and arrangements of details, there are very marked and substantial differences to be observed. In the first place, the objects sought to be accomplished, and the results attained, are entirely unlike. What was attempted in the . . . Mansfelt mine was the destruction of the bore by blowing out its side, thus rendering it incapable of gathering and retaining water.

"What is sought and attained by the Roberts process is, not the destruction of the well, but an increase of its capacity to gather and hold oil from the reservoirs surrounding it. And the modes of operation are also unlike. To say nothing of the structure of the flasks, or torpedoes containing explosive material, and nothing of the modes of ignition, the tamping contemplated and used in the Roberts invention

is entirely novel. In the Mansfelt mine operation the tamping made use of was an iron rod and ram weighing nine hundred pounds, the ram fitting the bore-tube, and the whole weight dropped a quarter of a fathom upon the cartridge. It is true there was also water in the bore, in depth thirteen fathoms; but the water does not appear to have been relied upon for tamping. The bore was not filled as it is in the Roberts invention, and the presence of water was accidental, unavoidable, and plainly undesired. It was apparently no essential element of the process in the mind of the operator. Certainly it was not consciously employed as such, and there is nothing in the description that suggests the probability of using efficiently mere water-tamping for blasts in deep bores, much less anything that can serve as 'a direction for doing or practising the thing,' which the Roberts process does accomplish through the agency of filling the wells with water. It is, in our judgment, one of the distinctive and most valuable features of the Roberts invention that it reveals and makes use of the sufficiency of water-tamping alone for deep underground blasting or vertical bores of small diameter, and that it has applied this discovery, not to the destruction, but to the enlargement, of the capacity of wells designed for the collection of subterranean fluids.

"The specification of the patent states it as an essential element in the process, and claims it particularly. There is nothing in the Berlin publication that revealed it. To an inventive mind that publication may have been suggestive, but it often happens that most ingenious and useful inventions are the development of ideas suggested in some way to the mind of the inventor. They are not the less novel on that account.

"There are other elemental differences between the Boltze operations and the method of this patentee, among which are the arrangements of the latter for locating and suspending the torpedo at the proper position in the bore, so that it may be exploded opposite the oil-bearing rock, — neither above nor below. These are important requisites, inasmuch as the bore of oil-wells is often sunk through the strata of such rock, at some distance below. There was no such arrangement, nor any equivalent therefor, in the operation at the Mansfelt mine. The explosion was necessarily made at the bottom of the bore, and there were no instrumentalities for suspending the cartridge after the tamping-rod and ram were introduced; for the ram, being three inches in diameter, must have filled the bore-tube, and interfered with the cord by which the cartridge was lowered.

"It is, however, unnecessary to dwell upon these differences. It is enough that the employment for tamping of a superincumbent column of water filling the bore, of sufficient gravity to give a lateral direction

to the explosive force of the torpedo, and the use of such tamping alone, distinguishes the Roberts method or process radically from the operations described in the *Archiv* by Dr. Karsten."

Other less important prior inventions and abandoned experiments are discussed in the opinion at some length.

There was a later suit on this patent, namely,

ROBERTS *v.* SCHREIBER, 2 FED. REP. 855.

W. D. OF PENN., 1880. STRONG, J.

The patent (reissued for the second time, Jan. 6, 1875, and numbered 6258) was again sustained.

The claim of this reissue is not reported, but the court said that it was "almost identical" with that of the original patent. The devices here relied upon by the defence, and not presented in the earlier case, were as follows: 1. That of George W. Beardslee. (We quote from the opinion.)

"In 1844, at Rochester, New York, he excavated an ordinary well six feet in diameter, and twelve to fifteen feet down to limestone rock of a peculiar formation, and then from two to five feet into the rock. The strata were thick, — two or three feet, — and without fissures. Finding it difficult to blow out the rock by ordinary blasting, he drilled a two-inch hole in the centre of the excavation to the depth of four or five feet, without striking the water he anticipated. He then put a charge of powder in a tin case into the hole, and fired it by a fuse. When fired, the water had risen over the hole, as he says, three or four feet. The result of the explosion was, he thinks, to reach a substratum of water, for which he was seeking. Before the blast, he could bail out the well with a bucket, and afterward he could not. It would, we think, be a very unwarranted conclusion to draw from Beardslee's evidence that his experiment was an anticipation of Roberts's process. The well was in no sense an artesian well. The cartridge was thirteen or fourteen inches long, and it was of such a diameter as to fill the hole during its length. It was not arranged in a position having particular reference to the place where the effect of an explosion was desired. It rested on the bottom of the hole, without being suspended. Obviously it was a case of ordinary blasting. The proportion to which the hole was filled with powder — about one-third — is the proportion required and ordinarily adopted in common blasting (1 Knight's Mechanical Dictionary, 295). Plainly the purpose was to blow out the rock above the cartridge into the well. We fail to see the identity of

such a process with exploding a torpedo many hundred feet below the surface of the ground, and below the top of the rock through which an artesian well has been sunk, and exploding it at the exact point in the well where the effect of such an explosion is desired with a water-tamping sufficient to confine the effect to the vicinity of its location. But this is not all of Beardslee's testimony. It does not appear that he repeated his experiment for years. In May, 1865, after Roberts had applied for a patent, he went to the oil region, having meanwhile made experiments and manufactured apparatus to determine the best method of firing, and then experimented in firing torpedoes in oil-wells. . . . His trials were substantial failures. Evidently he did not regard them as anything more than experiments, and unsuccessful ones," &c.

2. "Mr. Thomas, in 1858, made an application of a blast in a bore-hole sunk in the bottom of an ordinary well. The well was sunk about eighty feet through clay, the inside diameter being six feet and four inches. When the rock was reached, some water was found. The excavation was then continued some fifteen or sixteen feet through solid rock, the water somewhat increasing. A bore-hole about four inches in diameter was then sunk from the centre of the bottom thirty-seven feet deep. The water increased during this process. A cartridge, of powder was then placed in the bottom of the bore-hole and exploded by a fuse leading to a cartridge through a gas-pipe. The cartridge was an india-rubber tube made to fit the hole, and it contained about twelve feet of powder. The water filled the hole above the cartridge, and a foot or two was in the bottom of the well. There was no other tamping. The result of the blast seemed to be some increase in the water. A second blast was then made, after the hole had been extended five or six feet deeper; but there was still an insufficiency of water. In regard to this experiment, it is to be observed that it had the characteristics of ordinary blasting. The blast was at the bottom of the hole. The hole was filled by the cartridge twelve feet,—about one-third of its depth,—the proportion to common blasting. There was an open space above of about thirty-six square feet. It might have been expected that the rock between the blast and that open space would have been broken and lifted, if not blown out. A much greater quantity of rock has been moved in some cases. The second blast below seems to indicate such an intention.

"However this may have been, Thomas's was a single experiment. He never repeated it. . . . It seems never to have occurred to him, or to any person who saw it, that it was a process that was useful, or that could be applied to artesian wells hundreds of feet deep, — some of them fifteen hundred or more, — of uniform bore from the surface of the

ground. Though it was tried in public and was somewhat remarkable in its character, it never suggested to Mr. Thomas or to any one that it could be applied to increase the productiveness of oil-wells, though some successful process of causing explosions at particular points in such wells was very much needed and very much considered. It may, we think, very properly be denominated an abandoned experiment, never perfected so as to reveal the process Roberts afterward discovered."

Other less important devices are discussed in the opinion, but none of them was successful; whereas by the process of Roberts the yield of oil was increased at least fifty per cent. "The cause that works such results," said Judge Strong, "cannot be the same as that exhibited in the abandoned experiments."

Another patent (No. 47,458, dated April 25, 1865), for a method of exploding gunpowder in artesian wells, was also in suit, and its novelty was contested; but the prior devices set up are not of sufficient importance to require description here.

THE UNION PAPER-COLLAR CO. *v.* VAN DEUSEN,
10 BLATCH. 109.

S. D. OF N. Y., 1872. BLATCHFORD, J.

There were many patents in suit. One of them claimed "as a new article of manufacture" an embossed paper collar.

The embossing consisted in figures formed on the collar by elevations and depressions in its surface, so as to make it an exact imitation of a linen collar. A method of producing this result was described, but the patentee did not confine himself to it.

Another patent claimed as *a new article of manufacture* a paper collar "ornamented by printing or otherwise marking on the surface plain or colored devices." There were no directions as to how the printing was to be done; and it was proved that printing had been done before on a smooth, white enamelled surface.

Both patents were adjudged invalid on the ground that there was no invention in producing upon an old fabric an effect which had been produced before upon similar fabrics, there being noth-

ing new in the appliances by which the effect was produced. Blatchford, J.:—

"If experiments were necessary before an embossed or a printed collar, of the fabric and surface indicated, could be produced, resulting in overcoming difficulties which were met with, the invention really consisted in the means or process of producing the embossed or printed collar; but the specifications and the collars produced alike fail to indicate any novelty in any such means or process, or any difficulties which can be overcome by following specific methods of operation.

"Calling the thing produced a new article of manufacture confers upon it no quality of patentable novelty, when there is no such novelty in the process or instrument for producing the embossed or printed collar, and when the substance of the whole invention claimed is merely embossing or printing on a surface imitating starched linen."

Another patent was for folding a turn-over collar of paper, or of paper and cloth, so that the line of folding should be regular, and space for a necktie should be left between the folded parts. These objects were accomplished either by impressing the line of folding by means of a die or pointed instrument, or by turning the collar over the edge, running in a curved line, of a pattern or block. But it was shown that long before this alleged invention shapers of steel had been used to impress the lines of paper envelopes before they were folded, and of the tops and bottoms of paper and cardboard boxes; and, again, that collars of paper or of cloth had been folded over the curved edge of a block; so that this patent also fell through.

A third patent had two claims, — one for a wristband or cuff of paper, the other for making such cuff reversible. The cuff was new or peculiar only in the material — the paper — of which it was made; and the court, having decided that the patentee was not the inventor of that material, held, of course, that this claim for the cuff was invalid. The other claim was supported, the form of the cuff being new and effectual. The only description of it in the opinion is as follows: —

"It has six button-holes, three on each end, the middle and outer ones alone being necessarily in use at any one time, and the inner ones being capable of being left to be first used when the wristband or cuff is reversed. There is something new, useful, and patentable in such a construction."

This decision was affirmed by the Supreme Court in the case of

COLLAR CO. *v.* VAN DEUSEN, 23 WALL. 530 (1874).

In this case but two patents were relied on: that for the fabric; and the Gray patent, for turning and folding the collars. Upon the first, the court, through Mr. Justice Clifford, remarked as follows: —

"Improvements in the manufacture of paper have often been made, and it may be that the discovery at that period of the constituents for making such paper, or of the process by which paper possessing the described properties could be produced, would have been the proper subject of a patent. Sufficient appears to show that the patentee learned from his experiments that he wanted paper of the qualities described in the reissued patent, and the evidence proves that he said so to the paper manufacturer; but it is clear that he did not communicate any information to the manufacturer respecting the process by which such paper could be produced, nor did he give the manufacturer any directions upon the subject. Information of the kind he could not communicate, for the best possible reason, which is, that he was utterly destitute of any knowledge as to the constituents of such paper or the process by which it could be manufactured. Such paper was eventually produced by the manufacturer to whom the patentee applied to make the attempt, after many experiments as to the character of the materials suited to the end, and as to the mode of operation best adapted to effect the desired result, without any assistance whatever from the patentee.

"Good paper collars may unquestionably be manufactured from that product, but it is nevertheless true that the patentee is not entitled to a patent for the collars as a new manufacture, for several reasons: 1. Because he did not invent either the product or the process by which the product is obtained. 2. Because the collars, apart from the paper of which they are made, are identical in form, structure, and arrangement with collars previously made of linen, paper of different quality, and other fabrics. 3. Because it appears that the patentee is not the original and first inventor either of the paper or of the process by which the paper is made, or of the collar which is denominated a new manufacture.

"Articles of manufacture may be new in the commercial sense when they are not new in the sense of the patent law. New articles of commerce are not patentable as new manufactures, unless it appears in the given case that the production of the new article involved the exercise

of invention or discovery beyond what was necessary to construct the apparatus for its manufacture or production. Glue Co. *v.* Upton, 6 Official Gazette, 840.

"Nothing short of invention or discovery will support a patent for a manufacture any more than for an art, machine, or composition of matter, for which proposition there is abundant authority in the decisions of this court. Hotchkiss *v.* Greenwood, 11 How. 265; Phillips *v.* Page, 24 How. 167; Jones *v.* Morehead, 1 Wall. 162; Stimpson *v.* Woodman, 10 Wall. 121.

"Suffice it to say that it is not pretended that the original patentee invented either the paper or the process; but the claim in argument is that he was the first person to conceive the idea that paper possessing the described qualities was desirable for the purpose of making such collars, and that inasmuch as he was not a paper manufacturer he had a right to employ trained skill to produce the desired product, and that he, under the circumstances, should be regarded as the actual inventor, because he made known to the manufacturer that paper of such qualities would be useful, and because he employed the manufacturer to engage in the effort to produce the desired article; but the patentee communicated no information to the manufacturer as to the constituents or ingredients to be used, or as to the mode of operation by which they were to be compounded in order to produce the desired result.

"Where a person has discovered a new and useful principle in a machine, manufacture, or composition of matter, he may employ other persons to assist in carrying out that principle; and if they, in the course of experiments arising from that employment, make discoveries ancillary to the plan and preconceived design of the employer such suggested improvements are in general to be regarded as the property of the party who discovered the original principle, and they may be embodied in his patent as part of his invention.

"Doubt upon that subject cannot be entertained; but persons employed, as much as employers, are entitled to their own independent inventions; and if the suggestions communicated constitute the whole substance of the improvement the rule is otherwise, and the patent, if granted to the employer, is invalid, because the real invention or discovery belongs to the person who made the suggestions."[1]

As to the folding patent, the evidence to show that it had been anticipated is set out at length in this opinion; but the point is so clear, that we think it unnecessary to add anything to what has already been said.

[1] Agawam Company *v.* Jordan, 7 Wall. 602.

UNION PAPER-COLLAR CO. *v.* LELAND, 1 HOLMES, 427.

D. OF MASS., 1874. LOWELL, J.

The first patent mentioned in the preceding case had been reissued [1] so as to claim the "imitative surface" of the paper collar, as well as the ornamentation upon it.

Said the court:—

"It will be seen that the present form of the patent follows the suggestion, if it be one, of the court, and does lay claim to the imitative surface itself, as used for making collars, and thus avoids, as is contended, the reasoning of that case.

"But the evidence, in the case at bar, discloses that paper, as well as linen, was embossed, in various modes and for many uses, before the date of Lockwood's patent. There is the English patent of De la Rue, taken out in 1834, for embossing paper in parallel lines; and one granted to John Evans, in 1854, for ornamenting paper with an imitation of the patterns of textile fabrics. It may be doubted whether Evans produced upon his paper the surface as well as the ornaments of textile fabrics; but there is proof that paper, made in imitation of such fabrics, including linen, was well known and in use for paper-hangings and some other purposes. Samples are produced from papers actually made before 1859 which are of this character. It is said that these imitations are not very well done; but they appear to have been accepted as good enough for the purposes for which they were used, and the patent is not for any improvement in the imitation or in the mode of producing it.

"Collars and similar articles made of paper were patented to Walter Hunt in 1854 as a new manufacture, and Lockwood was the owner of this patent when he made the improvement now in controversy. In this state of the art, collars and cuffs made of paper being known, and paper embossed in various modes, some of which were imitations of the surface of textile fabrics, being known, we are of opinion that there was in 1859 no patentable novelty in the application of paper embossed in imitation of linen to the making of collars and cuffs. Hotchkiss *v.* Greenwood, 11 How. 248."

[1] The reissue was dated Jan. 24, 1873. The number is not stated.

AMERICAN SADDLE CO. *v.* HOGG, 1 HOLMES, 133.

D. OF MASS., 1872. SHEPLEY, J.

Patent for an improved harness-saddle pad.

The improvement consisted in making an impervious bearing-surface of vulcanized rubber or of gutta-percha. It had the advantages (1) of protecting the stuffing of the pad from animal exudations; (2) of preventing galls on the horse's back, by reason of the smooth rubber surface; and (3) of possessing a curative property for galled backs, owing to the sulphur used in vulcanizing the rubber. This was held to be a patentable invention.

A previous patent for a rubber horse-collar was admitted in evidence to show the state of the art; but the defendants, having neglected to set it up in their answer, were unable to take advantage of it as anticipating the invention of the assignor to the complainant; otherwise, the court intimated, the complainant's patent would have been held invalid, the rubber in the horse-collar being used in the same way and for the same purposes as that in the saddle-pad.

DENNIS *v.* CROSS, 3 BISS. 389.

N. D. OF ILLINOIS, 1872. BLODGETT, J.

Patent of Charles Waters, dated July 17, 1855, for a "spring-catch and lips," as applied to securing the glass globe of a lantern to the bottom thereof, held invalid, inasmuch as such catches had previously been used for securing the oil-cup to the bottom of the lantern.

GALLAHUE *v.* BUTTERFIELD, 10 BLATCH. 232.

S. D. OF N. Y., 1872. WOODRUFF, J.

Patent reissued to the plaintiff, July 6, 1869.

One claim ran as follows: —

"The combination in a pegging-machine of a gauge for the edge of the sole to rest against, and an awl-carrier driven by a spring, substantially as herein described."[1]

[1] The gauge is not described in the report otherwise than in the claim for it as a separate device, which ran as follows: "The use in a pegging-

In regard to this combination, the court said:—

"It was not claimed by the complainant's counsel on the hearing, that if this claim be regarded simply as a claim to 'combination,' as such, it was valid, and for this reason: a gauge operated in the same manner, and produced the same effect, by whatever means the awl-carrier was driven; and the awl-carrier driven by a spring operated in the same manner, and produced the same effect, by whatever means the boot or shoe was brought to the proper position for receiving the peg. In such case (mere 'combination' being the subject of the patent), the doctrine proceeds upon the ground that the parts are old, and that nothing new results from their contiguous or contemporaneous action which is due thereto. But where one or more of the parts are new, and the combination is for that reason made to produce a new result, in the greater rapidity and economy with which the shoe can be pegged, — as where the use of the new device of driving the awl-carrier by the spring made to operate automatically cannot be usefully employed without the gauge, — then there is something more than mere aggregation, in the sense above stated. Then there is a new result, due to the employment of the awl-carrier driven by a spring, and operating automatically in connection with a gauge, without which it could not be operated to produce the advantageous results contemplated, and in fact attained, by the use of both. All machines are, in a certain sense, combinations; but it is not true of machines, as such, that because every one of its members performs in it the identical office which it would perform howsoever used, the conjoint action in their new combination may not produce a result new and useful, and never before attained. In this view, I deem this claim valid."

A question of double use also arose in this case on another claim of the same patent, which ran thus: —

"Making the gauge, against which the edge of the sole bears, adjustable, for the purpose of enabling the shoe to be so adjusted as to have two or more rows of pegs inserted therein."

In regard to this the court said: —

"The Briggs hand-machine [a prior machine] had, as already stated, an adjustable gauge; but it was only adapted to one change. This enabled the workmen to insert two rows of pegs only; and it was

machine of a gauge arranged in relation to the part that supports the boot or shoe, to form a bearing for the edge of the sole, and thus insure the insertion of the pegs at a uniform distance from the edge of the sole, without the use of patterns, substantially as described."

not adjusted in the same manner as was that of Gallahue. The former was attached to the machine by a screw, which, being loosened, permitted it to be turned so as to present to the edge of the shoe, first its longer and then its shorter end. The gauge of Gallahue was attached by a screw, which, being loosened, permitted the gauge (in which was a slot through which the screw was inserted) to be drawn forward or to be pushed back so as to regulate the insertion of pegs at any desired distance nearer or more remote from the edge of the sole. But this construction of a gauge was not novel; and the circumstance that it was here applied to a pegging-machine, and guided the shoe so that any number of rows of pegs could be inserted, does not make it patentable, except when used with other devices so as to constitute either a new machine or a new and patentable combination. In such machine or combination it may be a part of the complainant's invention; but the making of the gauge adjustable not being new, the mere application of it to a new use is not separately and independently patentable. Others of the claims of the patent may embrace all to which the patentee is entitled in respect to the use of the gauge; but the claim to the mere making of the gauge adjustable, as expressed in this claim, I think, cannot be separately sustained."

Of a prior machine, made by one Whittemore, the court said: —

"It was an abandoned experiment, within the rule on that subject, not brought into effective operation, cast aside and taken apart, and, without any intention to reconstruct it, portions of its machinery were appropriated to other uses, and the remaining parts were wholly useless as a machine for any purpose within the purview of the invention of Gallahue."

GROSJEAN *v.* THE PECK, STOW, & WILCOX CO., 11 BLATCH. 54.

S. D. OF N. Y., 1873. BLATCHFORD, J.

Grosjean's reissued patent of July 16, 1867, for "an improvement in spoons and forks."

The invention consisted in giving such a form to the handles of spoons, &c., formed of *sheet-metal*, that they should be rigid and strong, and also of good shape, and thus resemble the handles in silver and plated ware. This was done by imparting

"one or more of the following characteristic peculiarities, viz.: *First.* A central corrugation or hollow ridge, extending along the central part

of the narrow portion of the handle, and vanishing or ending in the central part of the broad portion, or palm, of the handle, by tapering sidewise and flatwise, in contradistinction to spreading sidewise to the rim of the said palm.

"*Second.* A central corrugation or hollow ridge, extending along the central part of the narrow portion of the handle, and vanishing or ending in the central part of the bowl (or the substitute thereof), by tapering sidewise and flatwise, in contradistinction to spreading sidewise to the rim of the said bowl or its substitute.

"*Third.* Two lateral corrugations or hollow beads, extending into the palm of the handle, and along the narrow part of the handle, with a space between them which may be occupied by one or the other of the central hollow ridges above described, or by a central hollow ridge having the terminal peculiarities of both those above described."

The question arose whether this was a patentable improvement upon former spoons, and, more especially, upon a candle-snuffer which was set up by the defence.

The court said: —

"The change and its consequences, from the former sheet-metal spoon, as well as from the snuffers, were considerable and important. A spoon of sheet-metal, with a corrugation, was found in existence; but the species of corrugation was not such as to develop in the spoon the properties and results desired by the plaintiff, as expressed by him in his patent, — that is, that the handle should have not only the requisite stiffness for practical use, but should be, at the same time, of good shape and finish, so as to resemble, in rigidity and appearance, the solid thick handle of a silver or plated spoon, and be capable of being formed of one piece with the bowl of the spoon by swedging in dies.

"These properties and results were capable of being derived from applying to the handle of the spoon the species of corrugation suggested by the snuffers. But this species of corrugation in the snuffers was not applied to what can properly be called a handle in the snuffers, in the sense in which the part of a spoon which is not the bowl of the spoon is called the handle of the spoon. In the snuffers, the part outside of the line of junction crossed by the corrugation is of equal width with the part inside of such line of junction. In the spoon and fork, the part outside of such line of junction is very much narrower than the part inside of such line of junction. The wide-spread metal outside, in the snuffers, of such line of junction had to be narrowed in width very considerably, not only absolutely, but so as to be very narrow compared with the width of metal inside of such line of junction; and it is very

difficult to say that it did not require experiment and invention to determine, by a practical test, whether it was possible to apply usefully, in the narrow part of the handle of the spoon, the species of corrugation found in the snuffers. It is true that the object of the use of this species of corrugation in the snuffers was to resist a strain, and to counteract a tendency to bend or break, and to strengthen weakness; and that the same object exists in the use in the spoon, of the same species of corrugation. But the object of every corrugation of thin metal, applied as in the snuffers and the spoon, is to resist strains, and to counteract tendencies to bend or break, and to strengthen weakness. . . .

"I cannot resist the conclusion that the new application in the spoon, of the method of corrugation found in the snuffers, is not merely a double use, and that it involves something beyond the mere skill of a constructor, in adapting such method to a new occasion, . . . and not a mere analogous occasion or purpose. . . . There is a new method of operation, as well as a new effect developed in the spoon as compared with the snuffers, in applying to the spoon the method of corrugation found therein. The surface of the bottom of the bowl in the snuffers is flat with the part outside of the bowl, and the corrugation runs in its whole length along a flat plane. But in the spoon and fork the corrugation runs through a curving handle on one side of the line of junction, and into a curving part on the other side of such line of junction. The relations to each other of the two parts through which the corrugation extends in the snuffers is thus different from the relations to each other of the two parts through which the corrugation extends in the spoon and fork. A principle of bracing is developed, by the combination of the corrugation with the curvature in the handle, and the reverse curvature in the other part, of the spoon or fork, which introduces a new mode of operation in the combined action of the corrugation and the two curvatures, and produces a new effect, as compared with the mode of operation and the effect found in the snuffers, where no such curvatures exist."

Beside the above, there is in the opinion a long and minute description of the snuffers.

BOSTON ELASTIC FABRICS CO. *v.* EAST HAMPTON RUBBER-THREAD CO., 1 HOLMES, 372.

D. OF MASS., 1874. SHEPLEY, J.

The patent of Liveras Hull, dated Jan. 23, 1863, for an "improved machine for cutting caoutchouc."

The claim was as follows: —

"I claim my improved caoutchouc cutting-machine, having its several parts constructed and arranged in manner and so as to operate substantially as described, such machine not only having a single drum or cylinder to support, and a revolving knife to cut, a sheet of caoutchouc as explained, but having machinery for traversing the rotary knife, with reference to the drum, and also having machinery for moving such knife toward and away from the drum, as specified."

The gist of the improvement really made by the patentee was the new use of a prior machine, rendered possible by a slight change in that machine. The court, however, held that the patent described and claimed, not an *art*, but a *machine*, and that it was anticipated by the prior invention referred to, namely, the "Middletown" machine.

The court then described this machine and the plaintiff's invention as follows: —

"The mode of cutting on the Middletown and other machines, called sometimes bottle-machines, was to construct a bottle or a tube of rubber upon a cylindrical drum or a drum which was a *frustum* of a cone; the revolving circular knife cut a strip of rubber from this tube or bottle; the knife, as it traversed along the drum, cutting one continuous strip, which was afterward, in another machine, cut into narrower filaments or strips. But if a thin sheet of rubber, several times longer than the circumference of the drum, be wound about the drum, 'in a spiral or watch main-spring curve,' and the knife or rotary cutter be forced into the strip, so as to cut at once through all the layers of the caoutchouc, although the path cut by the rotary cutter will be a helix extending around the main drum from end to end, it will be found, on removal of the piece of caoutchouc from the drum, that such piece of caoutchouc will be cut lengthwise from end to end of it in a series of parallel strips. This Hull discovered. He invented no new machine, but he operated an old machine in a different manner, and produced a new and different result. *That he did not make a patentable invention we are not disposed to*

decide;[1] but the discovery of a new mode of operating an old machine to produce a new result does not give him a right to the monopoly of the old machine. Broadly as courts are disposed to construe patents for the sake of upholding a meritorious invention, yet when it is too clear to admit of a doubt that the patent is for a machine, the court cannot change it into a patent for an art."

THE NORTHWESTERN FIRE-EXTINGUISHER CO. *v.* THE PHILADELPHIA FIRE-EXTINGUISHER CO., 6 O. G. 34.

E. D. of Penn., 1874. McKennan, J.

Carlier & Vignon's patent (No. 88,844), reissued to Dawson Miles, July 16, 1872, numbered 4994.

The date of the invention was June, 1862.

"Its object," said the court (p. 39), "is to render available for the extinguishment of fires carbonic-acid gas and water in mechanical union with each other, and propelled by the elasticity of the gas. This is accomplished by means of a mechanical structure, consisting of a strong metallic vessel containing a solution of an alkali in water; a plug or lid fitting into an opening in the top of this vessel, with which is combined a tube extending into the alkaline solution, and containing an acid suitable for evolving carbonic-acid gas, and provided with a smaller tube or rod, extending above the top and down to the bottom of the acid-chamber, by lowering which an orifice in the bottom of the acid-chamber may be opened, and the acid and alkali be brought immediately into contact; a stop-cock to control the discharge of the contents of the strong vessel; a hose and nozzle to give direction to them; and handles or loops to facilitate the transportation of the apparatus."

It was proved by the defence that the plaintiff's machine was not the first for this purpose; a machine made by one Graham, to which we shall recur, having anticipated it. The plaintiff, therefore, was restricted to the peculiar contrivance, different from Graham's, by which the gas and water were mixed in and discharged from his extinguisher. But it was proved that substantially the same device was used in soda-water fountains. In one case, the gas and water were discharged from a faucet into a hose for putting out fires, and in the other case they were dis-

[1] The italics are ours. *Vide ante*, page 308.

charged from the faucet into a tumbler, for a beverage. These uses, it would seem, are not analogous;[1] but the court held otherwise, remarking: —

"It must be observed that there is a marked analogy in the means employed and the result produced by both machines up to the point of divergent application. The function of both is the prompt generation of carbonic-acid gas and the impregnation of water with it, and the same projectile force is employed to expel the acidulous water from the vessel containing it. In the one case, a stream of this water is directed into a vessel where it may be used as a beverage, and in the other upon a mass of ignited matter. This difference, then, in the ultimate application of the same agencies, marks the line of distinction between them.

"Now, the art of extinguishing fires by means of carbonic-acid gas and water intermingled was not new, for it had previously been practised by Graham; and the real question, therefore, is, Does the application of old mechanical devices, without material change, to a use in which they were not employed before, but which was known, and had been practised, constitute a patentable invention? A decisive answer to this question is furnished by Mr. Justice Story in Bean *v.* Smallwood (2 Story, 408), where he thus states the law: 'Now, I take it to be clear that a machine or apparatus or other mechanical contrivance, in order to give the party a claim to a patent therefor, must in itself be substantially new. If it is old and well known, and applied only to a new purpose, that does not make it patentable.'"

Judge McKennan then quoted from Curtis on Patents (3d ed. § 56), and he concluded as follows: —

"It is apparent, therefore, that where an effect or result has been before produced, the mechanical agencies by which it is reproduced, if they are not in themselves new, are not the subject of a patent. This rule is decisively applicable to the present case, both as to the result achieved and the means employed to effectuate it."

As to Graham's prior machine for putting out fires, the defence was that it was an abandoned experiment. The facts in regard to it were as follows: It was invented by Dr. Graham in 1837. He applied for a patent; but his application was rejected, Nov. 25, 1837, on the false ground that his invention was incompatible with the employment of any mechanical auxiliaries whatever.

[1] *Vide ante*, page 303.

This decision was reaffirmed in the December following, on the 29th of which month an amended specification was filed, and the case stood thus until December, 1851, when a model, drawing, and third specification were filed, and the application was renewed, and finally rejected. During all this time the inventor was very poor. The several specifications and the drawing were in evidence in this case, and it was contended that they, of themselves, proved the priority of the invention, being a *publication* thereof. This the court held that they were not, — not being published, but only printed, and incidentally accessible in the Patent Office; but the court held that they were "valuable guides in ascertaining the date of the invention, the design of the inventor, and the principle, intended functions, and mode of operation of his mechanism," and that they must, therefore, be considered in connection with it.

The publicity and success of the invention were proved by evidence of a trial made by Dr. Graham in 1852 or 1853, "in the presence of a large number of witnesses," when a fire was "promptly arrested" by the use of his apparatus; moreover, its practicability was proved by a trial of it in court, where a stream of gas and water was thrown to a distance greater than that mentioned by Dr. Graham in his specifications.

The court, therefore, held that he had invented a successful apparatus, which the error of the Patent Office and his poverty prevented him from making and selling: —

"An experiment may be a trial, either of an incomplete mechanical structure, to ascertain what changes or additions may be necessary to make it accomplish the design of its projector, or of a completed machine, to illustrate or test its practical efficiency. Obviously, in the first case, the incompleteness of the inventor's efforts, if they were then abandoned, would have no effect upon the rights of a subsequent inventor. But if the experiment proves the capacity of the machine to effect what its inventor proposed, the law assigns to him the merit of having produced a complete invention. . . . The most that can be predicated of his inaction is that he abandoned his invention to the public; although I do not affirm this hypothesis. But if he did, it will not reduce his matured invention to the grade of a mere experiment, and open the way to the complainants to appropriate the title of first inventor."

BROWN *v.* PIPER, 91 U. S. 37 (1875).

Patent, No. 732, dated March 19, 1861.

The alleged invention consisted "in a method of preserving fish and other articles in a chamber, and cooling the latter by means of a freezing mixture, so applied that no communication shall exist between the interior of the preserving chamber and that of the vessels in which the freezing mixture is placed." After stating that the patentee does not claim to have invented "the means of artificial congelation, or to have discovered that no decay takes place in animal substances so long as they are kept a few degrees below the freezing point of water," and that the apparatus may be made in various ways and shapes, the specification describes an apparatus as follows: —

"A box of wood or other suitable material, surrounded by a packing of charcoal or other non-conducting substance, is to be provided, and the fish in small quantities laid in it on a rack. Metallic pans filled with a freezing mixture, such as salt and ice, are then to be set over them, and a cover shut over the pans. In about twenty-four hours, the freezing mixture having been changed once in twelve hours, the fish will be frozen completely through. After being frozen, the fish or meat may, if desired, be covered with a thin coating of ice; and this coating may be preserved by applying the substances named, which will exclude the air, and prevent the juices from escaping by evaporation. The fish are then *to be packed closely* in a large preserving box, which is enclosed in a still larger box, the space between the boxes being filled with charcoal or other non-conducting material to exclude the heat.

" . . . I do not desire to be understood as confining myself to the specific apparatus above described, nor to the use of either or both the preliminary processes of freezing and cooling; but I have described the mode of operation, which, by experience, I have found best for preserving the most delicate varieties of fish.

" . . . What I claim as new, and desire to secure by letters-patent, is preserving fish or other articles in a close chamber by means of a freezing mixture, having no contact with the atmosphere of the preserving chamber, substantially as set forth."

Swayne, J., delivered the opinion of the court, holding that the alleged invention was merely the application to a new subject of an old process, — for preserving corpses, — set forth in the defendant's answer, and thus described by the learned judge: —

"The apparatus . . . was an outer case with a close-fitting lid. The case was made double, there being a partition to within four or five inches, more or less, of the top of the outer one, leaving a space between the two of several inches, which was to be filled with ice. There was a false bottom with holes in it in the inner compartment; it rested upon ledges, which kept it four or five inches above the bottom; the intervening space was a receptacle for ice; the corpse was deposited upon a false bottom; a tray was placed over it, and under the lid. The tray was four or five inches deep, used to contain the freezing mixture, and had a flange to prevent the mixture from escaping. Proper outlets were provided for the passage of the water from the melting ice. There was no communication between the tray containing the freezing mixture and the inner compartment containing the body. Swartz, an intelligent and unimpeached witness, . . . testified that he was an undertaker, and had used the apparatus for about twenty years, sometimes with ice under the false bottom, and sometimes without it. In either case, he applied a sufficient degree of cold to prevent putrefaction before interment. He thought the bodies were sometimes frozen, but was not certain. The material point in his business was the prevention of decay for the time being, and that was always accomplished.

"Here was the application of the requisite degree of cold exactly in the manner called for in the specification of the appellee. This is hardly denied; but it is insisted that the process was never applied by the witness to the preservation of fish and meats.

"The answer is, that this was simply the application by the patentee of an old process to a new subject, without any exercise of the inventive faculty, and without the development of any idea which can be deemed new or original in the sense of the patent law. The thing was within the circle of what was well known before, and belonged to the public. No one could lawfully appropriate it to himself, and exclude others from using it in any usual way, for any purpose to which it may be desired to apply it. This is fatal to the patent. Ames *v.* Howard, 1 Sumn. 487; Howe *v.* Abbott, 2 Story, 194; Bean *v.* Smallwood, id. 411; Winans *v.* B. & P. R. R. Co., id. 412; Hotchkiss *et al. v.* Greenwood *et al.*, 11 How. 248."[1]

The learned judge then went on to say that the court would take judicial notice of the ordinary ice-cream freezer, although it was not set forth in the defendant's answer, and that it anticipated the plaintiff's alleged invention.

[1] *Vide ante*, page 297, where this case is discussed.

"In the former [the ice-cream freezer], as in the apparatus of the appellee, 'the freezing mixture' has 'no contact with the atmosphere' of the chamber where the work is to be done. If the freezer be full, and the preserving chamber be full, there would be room for but little air in either. If either were only partially full, the vacuum would be filled with that substance. The cold is generated by the same materials, and applied under the same circumstances. If the cream were taken out of the freezer, and fish put in, there would be, in all substantial respects, the same apparatus, process, and result. If the preserving chamber were as tight as the freezer, either might be convertibly used for the purpose of the other."

THE UNION PAPER-COLLAR CO. *v.* WHITE, 7 O. G. 698.

E. D. OF PENN., 1875. MCKENNAN, J.

W. Hunt's patent, reissued Oct. 22, 1872, No. 5109, for an invention thus stated by the court:—

"A shirt-collar composed of paper and muslin, or its equivalent, united by paste, glue, or other appropriate sizing, by means of which union the fragility of the paper is re-enforced by the fibrous strength of the muslin, and the fabric thus made cohesive."

As to its patentability, the court said:—

"It is true that paper and muslin, or linen cloth, were before united, and used as a fabric for maps, &c.; but this was not analogous to the use to which Hunt adapted them, nor was it in any wise suggestive of his invention. He was the first to discover the adaptability of this material to a use not cognate to any to which it had before been applied, and, by appropriate manipulation, to give it a useful and practical form. He thus not only supplied the public with a new article of manufacture, but he demonstrated unknown susceptibilities of the material out of which it was made. This is something more than the mere application of an old thing to a new purpose. It is the production of a new device by giving a new form to an old substance, and, by suitable manipulation, making its peculiar properties available for a use to which it had not before been applied, thereby distinguishing it from all other fabrics of the class to which it belongs. This seems to me to involve an exercise of the inventive faculty, and, in view of the great practical benefits resulting from it, to invest the product with special patentable merit."

The claim ran as follows: —

"A shirt-collar composed of paper and muslin, or its equivalent, so united that the muslin will counteract the fragile character of the paper."

The defence asserting that this was a claim for an "abstract result," the court remarked as follows: —

"Certainly, it is the settled law that a mere principle or result or mode of operation is not patentable. . . . Is the claim in this patent obnoxious to this objection? In one sense it is for a result, but only in the sense in which any fabric or device is the result of the means employed to produce it. It is not for the mere result of a union of paper and muslin in a shirt-collar independent of the corporeal substance which embodies it; but it is for a thing fabricated in a given form, for a specific purpose, and out of materials so united that the combined fabric is impressed with the peculiar qualities which belong to each of its constituents. A collar made of these materials in mere juxtaposition is not within the range of the patentee's conception; but when they are incorporated so as to constitute substantially a single fabric, and are used for the purpose for which he was the first to discover their adaptability, it is an invasion of his right.

"The claim is not, then, for the mere effect resulting from a union of paper and muslin, nor for the fabric thus produced, nor for the special mode of preparing of it; but it covers the use of it for making collars where its constituents are incorporated with each other so that the textile strength of the one is made available to re-enforce the fragility of the other. And such original application of it to the production of a most useful article the inventor can lawfully claim to appropriate."

IRWIN *v.* DANE, 9 O. G. 642.

N. D. of Ill., 1870. Drummond and Blodgett, JJ.

Five patents of John H. Irwin, for improvements in lamps and lanterns.

1st. No. 65,230, dated May 28, 1867.
2d. No. 73,012, dated Jan. 7, 1868.
3d. No. 89,770, dated May 4, 1869.
4th. No. 86,549, dated Feb. 2, 1869.
5th. No. 99,443, dated Feb. 5, 1870.

The first patent covered a new mode of supplying air to the burner. Above the flame of the lamp, at a proper distance to catch the heated air rising from it, was an inverted bell or funnel, from which a curved tube was carried downward to a close reservoir, surrounding the oil-pot, and communicating directly with the cone of the burner.

"It was necessary that the bell or funnel, the tube, and the reservoir into which the tube entered, should be close, and have no apertures for the escape of the air therefrom, except at the exit into the burner; the object being to create such an arrangement of the parts as that the sole supply of air should be forced through the funnel and pipe into the reservoir, and thence to the burner, as the same was needed to secure combustion."

The second patent was for an addition (in combination with the devices of the first patent), which rendered the lamp a portable, out-door lantern. It consisted in a "protector," as the patentee called it. This was an ordinary glass globe, surrounding the flame, and extending upward nearly to the mouth of the bell.

The third was for several devices (in combination with the above), thus described by the court: —

"The theory of Mr. Irwin seems to have been, and is, that the products of combustion, such as carbonic-acid gas, steam, and other matters, rise with the current of air to the top of the protector, and are there thrown off from the outside of the rising column, and pass out over the top of the protector, and between it and the bell; while the air which passes into the bell is mostly pure atmospheric air, uncontaminated by, and unmixed to any considerable extent with, the products of combustion. In order to secure the exit of these products of combustion from the top of the lantern, a sufficient space is left between the protector and the bell, which is occupied by the perforated rim, *g*; and the top of the rim is so curved or deflected in and upward as to prevent currents of external air from passing down the globe and extinguishing the flame. The globe also rested upon a perforated plate or disk, E, which formed the bottom of the globe, and which also by its perforations admitted the air freely, so that the same could become heated, and crowd, so to speak, into the bell so as to create the blast required for furnishing the air to the burner."[1]

[1] The fourth and fifth patents (for minor improvements) involve nothing of value for our purpose.

It was proved by experiment in court that both the space between the globe or protector and the bell, and the perforations at the bottom of the globe, were necessary: the first, for the escape of the products of combustion; the second, for the requisite supply of air. These devices of Irwin resulted in a brilliant, steady light; and his lantern could be swung rapidly, in a lateral or vertical direction, without extinguishing or diminishing the flame. His devices were intended for lamps burning kerosene oil.

"He claims broadly," said the court, "the invention of the bell and tube, or tubes, for the purpose of producing the results aimed at; and the important question in this case is, Does the evidence shown entitle him to this broad claim?"

Funnels and tubes were old, and so was an air-chamber at the base of the burner, through which air was supplied to the flame.

"Cassel and Crihfield had both conducted the air into an air-chamber through tubes [whence leading does not appear], and drawn the same by means of an induced blast through the burner, the globe acting as a chimney to induce the blast."

Irwin dispensed with the chimney, and obtained his draught by other means, as we have seen.

In all the other prior devices shown (they are not specifically described in the report), the bell and tube, in various forms, were used to catch the products of combustion, and either to return them to the flame or else to collect them in a condensing reservoir.

Of these prior devices the court said: —

". . . Although upon trial of this case we had various exhibitions and experiments tending to show that by very slight alterations these old smoke-consumers could be made to perform substantially the function of Irwin's device, yet it is most palpably evident that none of the inventors ever intended they should perform such functions. They never intended that their bells and pipes should be the sole source for the supply of air to support combustion, which is the leading idea in the Irwin device," &c.

So much for Irwin's first patent. As to the second, — that for the globe, — the court, remarking that globes had been used

before only to protect the flame from draughts or as a shade, decided that Irwin's globe performed an additional function: —

"It directs the rising current of air into the funnel; and by keeping the rising column of air surrounded and isolated from the external air, assists in heating it, and thereby causes it to rise more rapidly and freely into the bell, and by its pressure in the tubes produces a stronger and more steady blast. This is a new function performed by this globe, and as such, it seems to us, entitles Irwin to a patent upon the globe in combination with the bell and tubes, . . . because it not only secures a better operation of the bell and tubes, but it makes the bell and tube operative under circumstances where they would not be operative without the globe."

The third patent: —

"The same line of remark will apply to the perforated plate E, forming the bottom of the globe.

"Galleries and other devices for holding the bottom of the globes, and holding the globe in its place, were old, but this perforated plate, while allowing the entrance of an ample supply of air into the globe, at the same time breaks up the currents by the perforations, so as to prevent the rush of an air-current, which would extinguish or endanger the flame; and as an element for securing the perfect and complete operation of the Irwin device as a practical operative lantern, we think the plate E may be considered as a patentable device when used in the combination and for the purposes shown."

STEAM-GAUGE & LANTERN CO. *v.* MILLER & CO., 8 FED. REP. 314.

D. OF CONN., 1881. SHIPMAN, J.

Two of the patents, No. 8611 and No. 8598, were reissues of two original patents, numbered respectively 73,012 and 89,770, which were sustained in the preceding case. The decision in that case was followed here.

MANN *v.* BAYLISS, 10 O. G. 789.

N. D. OF OHIO, 1876. EMMONS, J.

Patent for improvement in harvesters, namely: —

"The stationary concave receiver, I, having a continuous surface, arranged as described, at the side of a harvesting machine, having an elevated side-delivery, so as to receive the cut grain from the elevating and delivery apparatus, and collect the same into gavels preparatory to their being discharged from the machine."

This device having been used before in connection with a horizontal delivery, the court held that its use with an elevated delivery, though a *new*, was not a patentable, use. (The case turned mainly on a question of infringement.)

KEYSTONE BRIDGE CO. *v.* PHŒNIX IRON CO., 95 U. S. p. 276 (1877).

In this case there was an *obiter dictum* by Mr. Justice Bradley, to this effect: —

Spike-heads, nail-heads, bolt-heads, &c., having been formed by *upsetting* and compressing, that is, "by placing the ends, after the bars have been rolled into proper shape and size, and the ends heated, into a die-box of the regular form, and then firmly locking them in place, and with great power pressing them up endwise, with a movable head-die, until the hot iron fills the die-box," "probably" a patent for so upsetting and compressing chords to support the trusses of a bridge, would not be valid.

RUBBER-STEP MANUFACTURING CO. *v.* METROPOLITAN RAILROAD CO., 13 O. G. 549.

D. OF MASS., 1878. SHEPLEY, J.

The Keene invention.

The court: —

"The Keene invention consists in covering the tread of a carriage-step with a vulcanized-rubber clothing, having an undulating surface, whereby projections of rubber are presented upward to receive the

pressure of the foot, and also in providing a permanent surface to the step resilient under the foot, the coating of rubber being somewhat adhesive to the foot, thereby having a tendency to prevent slipping in either dry or wet weather; and in snowy or sleety weather, when trodden upon, adhering ice or snow is broken by the yielding of the rubber projections under pressure, and loosened upon the removal of the pressure of the foot, by reason of the resiliency of the rubber, so as to be readily brushed off.

"The fact that rubber had been used as a soling to stirrups and applied to shoe-soles does not establish any anticipation of this invention. The use of iron treads, with channels running to the margin, for door-steps and stairs, or for carriage-steps, did not anticipate this invention. The metal projections became slippery, instead of adhesive to the foot by wear, and there was no resiliency, under the pressure of the foot, to effect the removal of the snow and ice.

"The rejected application for a patent of Charles Ray is not of itself a bar to the patent of Keene, there being no evidence in the case that the alleged prior invention of Ray was ever perfected or brought to actual use, and not abandoned and never revived by the original inventor. The Corn-Planter Patent, 23 Wall. 181, 210."

The court also held that Keene's invention was not anticipated by Chaffee's (described in Brown *v.* Rubber-Step Mfg. Co.,[1] 13 O. G. 369). Chaffee's invention was a flexible door-mat, having ridges of rubber for scraping dirt from the feet, and spaces to contain the dirt so scraped off. Of this invention, in the suit referred to, Judge Shepley said:—

"Three things only are necessary, and these are indispensable, to constitute the thing secured by the patent. *First*, a flexible gum mat; *second*, flexible gum ridges, to serve as scrapers; *third*, cells, or enclosed spaces, to contain the dirt."

Judge Shepley then showed that the two devices were dissimilar in purpose and in result,—the mat being intended and fitted to hold the dirt scraped from the foot, and the step having the effect of throwing off, or letting out, dirt so deposited; the ridges of the mat being flexible and yielding, to allow the foot to slip over them easily, whereas the projections in the step "are designed . . . to give a firm, frictional bearing for the foot, and to prevent any slipping or sliding over the surfaces of the elevations, and not intended 'to serve as scrapers to clean the feet.'"

[1] This was a suit for infringement of the Chaffee patent by use of the Keene device.

THE AMERICAN MANUFACTURING CO. *v.* LANE, 14 BLATCH. 438.

S. D. OF N. Y., 1878. BLATCHFORD, J.

A patent granted July 14, 1863, to A. Stewart Black, for improvements in tempering umbrella ribs and similar articles.

The invention was one by which the ribs could be tempered equally in all parts, and tempered and straightened at the same time. That part of the device which accomplished the second of these two results is all that we need consider.

The claim embracing it read as follows: —

"1. Constructing the tempering die with a square hole, corresponding in size to the wire to be tempered, in order that the wire may be straightened in all directions, and the flattened portions of the wire be brought in line with each other, as and for the purposes specified."

In regard to this claim, and the invention alleged to anticipate it, the court remarked as follows: —

"The whole tenor of the specification shows that the meaning of the claim is that the hole or groove shall be of such size and shape as to allow the body of the wire to go through and be straightened while it is being tempered, and also to allow the flattened parts of the wire to go through and be kept in line with themselves and with the body of the wire. For a round wire a square hole will accomplish all of these results. The corners of the square are merely supplementary spaces for the passage of the wider parts. . . . It is contended by the defendants that the first claim claims merely a die with a square hole, as a structure, and that if a square hole in a metallic die is shown to have existed before, the first claim is void for want of novelty. But the fair construction of the first claim, in connection with the body of the specification, is a claim to the mode or process of tempering and straightening a rib which has a body, and flattened portions other than such body, by drawing the rib through a straight hole or groove in a heated metallic die, of the proper size and shape to at once embrace closely the body of the rib, and yet, by supplemental spaces in the groove, to allow such flattened portions to pass through freely and be brought in line with each other. . . . The invention is declared to be one of an improvement in tempering the rib. . . . The square hole or groove may have existed before and been used for the purpose of drawing through it square bars or strips of metal, to compress them and straighten them; but such prior existence and use of the square groove does not anticipate the invention claimed in the first claim of the Black

patent, as such invention is above defined. In such aspect, the use of the square groove in the manner and for the purpose indicated in such first claim is not the mere use of an old thing for a new purpose, or the mere application of the square groove to a new use."

COLGATE *v.* THE WESTERN UNION TELEGRAPH CO., 15 BLATCH. 365.

S. D. OF N. Y., 1878. BLATCHFORD, J.

COLGATE *v.* THE GOLD & STOCK TELEGRAPH CO., 16 BLATCH. 503.

S. D. OF N. Y., 1879. BLATCHFORD, J.

Simpson's patent of May 21, 1867 (No. 65,019), for "an improvement in insulating submarine cables," which consisted in making gutta-percha solvent, and applying it, with a brush or by immersion, to a telegraph wire, so as to form a uniform and compact covering thereon. The claim was: —

"The combination of gutta-percha and metallic wire in such form as to incase a wire or wires, or other conductors of electricity, with the non-conducting substance (gutta-percha), making a 'submarine-telegraph cable' at once flexible and convenient, which may be suspended on poles in the air, submerged in water, or buried in the earth to any extent, for atmospheric and submarine telegraphic communication, and for other electric, galvanic, and magnetic uses, as hereinbefore described."

"It is manifest," said the court, in the first of the above cases, "that the gist of the invention is the discovery of the fact that gutta-percha is a non-conductor of electricity, and the application of that fact to practical use by combining gutta-percha, by the means specified, with a metallic wire, in the manner described, and then using the cable formed by such combination for the purpose of conducting electricity along the enclosed wire. The point of the invention is not the mere mechanical covering of a metallic wire with gutta-percha, as a mechanical protection from abrasion or injury from without, or for any purpose aside from a use of the covered wire as a conductor of electricity. . . . The claim is valid even though a metallic wire covered with gutta-percha existed before the plaintiff's invention, *if it was not known that gutta-percha was a non-conductor of electricity and could be used to insulate*

the wire.[1] The use by the patentee of the wire so covered to conduct electricity was not a double use of the covered wire, even though the covered wire existed before."

1. These remarks were in answer to the assertion of the defence, that the claim of the patent included any wire so covered by gutta-percha that the gutta-percha confines electricity to the wire.

The court disposed of the two remaining objections to the patentability of the invention as follows: —

2. "It is further contended . . . that as it was known that resins and gums, as a genus of articles, were electric insulators, it did not require or involve any invention, when gutta-percha became known, to cover wire with it, to insulate the wire. It is very easy for wisdom, after an event, to say that it was a natural conclusion that gutta-percha would be an insulator, from the known insulating properties of gums and resins generally. But the evidence in this case shows that although gutta-percha was known, and the means of softening and manipulating it were known, many experienced men engaged in the business of telegraphy groped about, experimenting first with one device, and then with another, in the fruitless effort to secure a practical means of crossing watercourses with lines of telegraph wires, until it was at length found out that gutta-percha was the needed insulator. It is also shown that Faraday, the distinguished scientist, announced to the world as a new thing the fact that he had discovered that gutta-percha was a good electrical insulator. The position taken is therefore untenable.

3. "Equally unsound is the view urged on the part of the defendant, that the use of gutta-percha instead of india-rubber to insulate a wire was a mere change of material, and an obvious substitution, and therefore not patentable. The cases of the door-knob and the button and the wagon-reach have no application to a case like the present. Those who were seeking a practically perfect insulator had india-rubber

[1] The italics are ours. In the second of these cases the court remarked on this point somewhat differently, as follows: —

"The affidavits of the experts for the defendant, and the argument of its counsel, are largely founded on the erroneous view that Simpson's patent is invalid if he was not the first discoverer of the insulating property of gutta-percha. It is true that in the former case it was held on the evidence that Simpson was the first discoverer of the insulating property of gutta-percha, being prior to Faraday, and the publication in 'Dingler's Journal' not being an account of a completed invention; but, as before stated, the claim of the patent is not for that discovery, but is for the means and manner by which that discovery is made use of to construct such a cable as the specification describes, for such use as is specified."

and tried it, and found it not to be what was needed. The present case is not merely one of producing a better or cheaper or more durable article to attain the same result, nor is it one falling within the principle that a change involving only mechanical skill is not patentable."

Next came the defence of anticipation. The invention chiefly relied upon in this regard was that of John I. Craven. Judge Blatchford said that he had concluded that this invention was not prior to Colgate's; but he does not state the evidence.

There was also set up, in both cases, an extract from a German work, 'Dingler's Polytechnic Journal,' of 1848; and, in the second case, an extract from the 'Bremen Gazette,' of Dec. 19, 1847.

The first was as follows:[1] —

"Insulation of the wires of electric telegraphs. The public papers announce that the experiments which the Prussian government is having tried at present in respect to the most serviceable mode of constructing electric telegraphs are turning out very favorably for the laying of the wires underground in coatings of gutta-percha, so that probably all public telegraphs will be laid in this manner. . . . If the insulation of the wires underground, discovered by Lieutenant Siemens, keeps good, all important towns can easily be connected with the capital."

This, Judge Blatchford said,

"gives an account merely of experiments then in progress, and not of a completed invention, even if the part of it in question was published prior to Simpson's invention, and it does not set forth the insulating or non-conducting property of gutta-percha for use with a telegraphic wire under water."

The 'Bremen Gazette' extract was as follows: —

"The trials which the government here is at this time causing to be made, concerning the introduction of electro-magnetic telegraphs best answering the purpose, do result in the highest degree in favor of laying the wires underground in coatings of gutta-percha, so that probably all government telegraphs will be constructed in this manner," &c.

Judge Blatchford said: —

"It is very manifest that the article in the 'Bremen Gazette' conveys no more information than the article in 'Dingler's Journal,' so that this

[1] From this point the quotations are from the second of the two cases.

defence was passed upon in the former case. Neither of them describes, or would enable any person to construct, a telegraph cable consisting of a telegraph wire covered, as Simpson's specification states, 'on all sides with a uniform coating of gutta-percha,' such cable being 'flexible and convenient,' and capable of being 'suspended on poles in the air, submerged in water, or buried in the earth.' All this is embraced within the definition of the invention and the construction of the claim given in the former case. There must not only be insulation by means of gutta-percha, but insulation 'by the means specified,' and 'in the manner described.'

"The extent of the article in the 'Bremen Gazette' is that the wires are laid 'underground in coatings of gutta-percha,' and thus insulated. How the coatings of gutta-percha are applied, or what their extent is, is not stated; nor is it said that the wire is covered on all sides with the coating, or that the covered wire is flexible, or is capable of being suspended on poles in the air, or submerged in water. . . .

"The foregoing observations apply also to the Rutter patent of Dec. 23, 1847 [not otherwise described in the opinion], except that the wire cords of Rutter were flexible. As pointed out by Mr. Burrill, in his affidavit, the Rutter patent does not describe or suggest the insulating or non-conducting property of gutta-percha for use with a telegraph wire under water, nor does it describe a wire completely covered with a uniform coating of gutta-percha, and adapted for use as a submarine telegraph cable, or even as a subterranean cable. . . . Undoubtedly, if the structure of Simpson, as described and claimed by him, was described in a publication, or patented of a date earlier than Simpson's invention, but stated to be made for underground or aerial use, and not stated to be made for submarine use, it could not be subsequently patented for submarine use. But as Simpson was the first inventor of such structure, he has the right, under his patent, to the exclusive use of it for all telegraphic or electric uses to which it is adapted."

MUNSON *v.* THE GILBERT & BARKER MANUFACTURING CO., 18 O. G. 104.

D. of Mass., 1878. Lowell, J.

John C. Pedrick's patent of March 13, 1855, No. 12,535. The fourth claim, that in suit, was as follows: —

"The application and use of the meter-wheel, with its case and contents, as an air-blast apparatus, operated by weights or otherwise, not meaning to claim the method of using the meter for measuring gas."

The object was to drive "a current of air through a reservoir, containing benzole or other hydrocarbon, for the purpose of generating an illuminating gas or vapor therefrom."

Said the court: —

"Two English patents are produced, which, taken together, would have made up, perhaps, the air-blast apparatus of Cunningham. In Lowe's patent, he recommends the use of a weight to drive a gas-meter; but his purpose appears to us to have been to increase and regulate the action of the gasometer, and not to make an air-blast apparatus. Critchett, on the other hand, admitted air into his apparatus for certain purposes, but did not have an air-pump at all resembling the plaintiff's.[1]

"We think the slight change, obvious perhaps to an inventor, of admitting air into a meter, and using the meter-wheel as an air-pump, although it had before been used with similar machinery to increase the force of the gasometer, was a patentable invention.

"The claim itself is attacked as too broad. It is said to claim a mere use or result. The language is not very well chosen; but we think, taking the claim and specification together, it is intended to claim the meter itself as described for the purposes set forth, contra-distinguished from an ordinary meter for measuring the flow of gas. Possibly it may have been intended to claim such a meter used as an air-pump in other combinations of machinery, if it should be found useful in any such; and there is nothing in the record to show that such a claim might not be supported."

COURSE *v.* JOHNSON, 16 O. G. 719.

W. D. of Penn., 1879. McKennan, J.

The invention was of a stove in which kerosene oil was the fuel.[2]

The second claim ran thus: —

"The attaching of one or more air-guides, cones, or deflectors in the diaphragm, C, and the adjustment of the same in the stove or range, F, substantially," &c.

[1] *Vide ante*, page 291.

[2] The name of the grantee of this patent, as well as its date and number, are not stated in the report.

The court held that the devices mentioned in this claim, having been used in lamps where alcohol was burned, were not patentable in the patentee's kerosene stove.

"The use of kerosene oil to produce both heat and light was not new, nor is any new function performed by the devices employed by the patentee to feed the lamp-flame with air and to promote and govern the escape of the products of combustion. The application of old mechanical devices, without material change, to a use in which they were not employed before, but which was known and had been practised, does not constitute a patentable invention. Bean *v.* Smallwood, 2 Story, 408."

The third claim was for an air-space between the oil-holder and the stove, to prevent radiation of heat from the burners to the oil in the holder below. In regard to this, the court said: —

"An air-chamber . . . around the wick-tubes and below the burner is an indispensable adjunct to every petroleum-burning lamp to supply the air needed for combustion. Hence it is found in most of the exhibits produced in evidence, and doubtless its contemplated use was as a reservoir of air to supply the burners; but at the same time it 'prevents the heat from being thrown' upon the oil-holder. It is the same device operating in the same way and producing the same result with that embraced in this claim, and therefore the complainant cannot appropriate it as his exclusive property."

The fifth claim: —

"The insulation of the lamp or oil-holder by non-contact with the heater, stove, or range."

"In simple phrase," said the court, "the import of this is, that the body of the stove and the oil-holder are to be made in detached parts, which are not to be placed in contact with each other. 'Insulation' is effected by making the legs of the stove long enough to allow the lamp to be placed under it without touching. The object is to avoid the transmission of heat from the stove to the oil-holder by conduction. To call this invention is to misapply the term."

STRAUSS *v.* KING, 18 BLATCH. 88.

S. D. OF N. Y., 1880. BLATCHFORD, J.

Davis, Strauss, & Co.'s reissued patent of March 16, 1875, for an "improvement in pantaloons."

The specification: —

"My invention relates to a fastening for pocket-openings, whereby the sewed seams are prevented from ripping or starting from frequent pressure or strain thereon; and it consists in the employment of a metal rivet or eyelet at each edge of the pocket-opening, to prevent the ripping of the seam at those points. The rivet or eyelet is so fastened in the seam as to bind the two parts of cloth which the seam unites together, so that it shall prevent the strain or pressure from coming upon the thread with which the seam is sewed. . . . I am aware that rivets have been used for securing seams in shoes, . . . and hence I do not claim broadly fastening of seams by means of rivets."

The claim was: —

"As a new article of manufacture, pantaloons or other garments having their pocket-openings secured at the edges by means of rivets or their equivalents, substantially," &c.

The objections to the patentability of this improvement were thus stated and met by the court: —

"On the point that there is no invention in the thing patented, the defendants contend that the want of patentability consists in the fact that the invention is nothing more than the employment at the corners of a pocket-opening of the old and well-known rivet, and that no new function is performed by the rivet in that place from what is performed by it in any other place. The invention is claimed as an improvement in the pocket-opening of a garment which has a pocket-opening. It does not extend to anything but a pocket-opening. It requires that the seam which unites two pieces of cloth laterally shall terminate at the commencement of the pocket-opening; that such seam shall be made by means of sewing the two pieces of cloth together laterally by thread; that the rivet shall be of metal; that it shall be placed in the seam at the edge of the pocket-opening, — that is, where the seam ends and the pocket-opening begins, but still in the seam; that it shall be so located and fastened with reference to the two lateral pieces of cloth which the seam unites as to bind together such two lateral pieces of cloth by pressing tightly upon both of them; that this shall be

effected by putting the rivet through a hole and heading it down on both of the two opposite faces where the hole begins and ends; that the operation of the rivet when so set shall be to receive the strain which results from pressure from within on the edge or end of the pocket-opening, and keep such strain from coming on the thread of the seam, and thus protect such thread from ripping or starting and allowing the seam to open; and that the practical advantages of the arrangement shall be to get rid of the frequent renewal by sewing of the thread in the seam at the edge of the opening.

"In view of the testimony as to the state of the art, and prior to the invention of Davis, all the foregoing features are involved in such invention. They all appear on the face of the specification of the patent, and are embraced in the claim. They amount to invention, and they embody patentability. The result of them was new and useful. The case is not one of mere double use, or of the use of an old rivet in a new place. It is not merely the usual through and through binding or uniting function of the rivet that is availed of.[1]

"It is argued for the defendants that there is no combination between the rivet and the sewed seam, but a mere aggregation; that the claim is not confined to the application of a rivet to a sewed seam; that a stay of sewed thread is the equivalent of a rivet; that in view of the prior use of a stay of sewed thread at the corner of a pocket-opening, there was no invention in the change to a metal rivet; and that a button had before been sewed on with thread at the upper end of the seam, at the edge of the pocket-opening, to prevent the thread of the seam from being worn away, and the seam had been stayed by sewing in leather or other fabric; and there was no invention in passing from these arrangements to Davis's. It is sufficient to say that there is no force in any of these suggestions as against the validity of the patent;

[1] The learned judge sets out in great detail the exact application and working of the plaintiff's device; but after all is said and done, was it anything more than using a rivet in a new place? And the function of the rivet being merely to hold fast, does it require invention to perceive that a rivet which holds fast in one place will do so in another? If it is known to bind two pieces of leather, for instance, is not the inference that it will bind two pieces of cloth an obvious one? It may be that in the case of the pantaloons there was this new circumstance, — namely, that the pressure which the rivet resisted was, as regards the cloth, a lateral pressure; that is, a pressure which would tend to separate the two pieces of cloth, not by pulling them apart, but by bearing down on the point of contact, and so severing them. But this, if it was a new circumstance in the use of rivets, was a very slight one. It did not affect the operation of the rivet, or call for any change in the mode of its application, — certainly for no change that mechanical skill would not effect.

nor is it shown that the invention as before defined was known or in use before it was made by Davis.

QUIROLO *v.* ARDITO, 17 BLATCH. 400.

S. D. OF N. Y., 1880. WHEELER, J.

It is no invention to mount stereoscopes upon a stand such as has been used before for surveyors' compasses, theodolites, telescopes, &c.

FAULKS *v.* KAMP, 17 BLATCH. 432.

S. D. OF N. Y., 1880. WHEELER, J.

Charles Brown's patent of Aug. 27, 1867, No. 68,282, for baling short hay.

Its validity doubted, but not determined, the court saying: —

"There is considerable doubt whether the patent, as between the owners and the public generally, is of any validity. Hay has long been baled, to the common knowledge of all. The whole invention in controversy consists in baling hay cut short in the same manner. The well-known process of baling hay was applied to another kind of hay. The short-cut hay was well known before, and the process made no change in its properties or quality. When baled, it could be more conveniently handled, as common hay could be. Langdon *v.* De Groot, 1 Paine, 203; Alcott *v.* Young, 16 Blatch. 134."

THE AMERICAN WHIP CO. *v.* THE HAMPDEN WHIP CO., 1 FED. REP. 87.

D. OF MASS., 1880. LOWELL, J.

C. R. Shelton's reissued patent, No. 7382, for an improvement in whip-tips.

Lowell, J.: —

"The specification represents that driving-whips, especially long whips without a lash, are expensive, and frequently broken or frayed out at the tip end, and that several inconvenient and imperfect devices have been resorted to for repairing them.

"The patented improvement is to make a whip-tip independent of the stock, and providing it with a socket which may be fitted to the stock. The particular mode described, which is mentioned as one of many possible modes, is to make a screw-thread on the inside of the socket of the tip, whereby the tip can be readily screwed upon the stock, and again removed at pleasure.

"The first claim is: 'As a new article of manufacture, a whip-tip provided with a socket, so as to be attached to the stock proper, as and for the purpose set forth.'

". . . It is in evidence, and is well known, that fishing-rods had been made in sections before the invention of Shelton, and the tips of these rods were so made with sockets as to be fitted to or removed from the next joint, at pleasure. These sockets were not usually fastened with a screw-thread, and I doubt if any were so fastened in the mode of the patent before its date. The joints which came together were so nicely fitted by their ferrules that they were held for a practically useful purpose by adhesion or friction.

"Before the date of the patent, whips had been made in sections by a travelling agent, not, however, for sale in that form, but for convenience of packing in a trunk. The plaintiffs' expert testifies that a sample of these sectional whips would not work well, because the parts were so loosely united that the tip would come off when a smart blow was struck. This is a matter of adjustment. There can be no doubt, I suppose, that a whip-tip might be united to the stock in a useful way, after the old fashion of the fishing-rod. These being the facts, although the merits of the adoption of this form of manufacture in the trade are great, I feel constrained by the authorities to hold that the patent is for little more than the application of an old art to a new use, analogous to that of making fishing-rods. To sustain the patent, therefore, it must be confined to the particular improvement of the screw-thread; and so construed, I do not find it infringed by the defendants."

TINKER *v.* WILBER EUREKA MOWER & REAPER MANUFACTURING CO., 1 Fed. Rep. 136.

S. D. of N. Y., 1880. Wheeler, J.

J. B. Tinker's patent, No. 51,364, dated Dec. 5, 1865, for an improvement in mowing-machines.

The court: —

"There is no doubt but that, as argued for the orator, the patent would give an exclusive right to the patented invention for all uses to

which it could be put, whether contemplated by the inventor, or discovered by himself or others afterwards. Roberts *v.* Ryer, 91 U. S. 150. But the invention must in some way be covered by the patent before he can acquire an exclusive right to it for any purpose.

"Although Tinker constructed rollers in advance of the shoes, so they would roll down the grass, and without anything before them that would divide the grass and prevent it being rolled, he does not appear to have apprehended what their utility would be in preventing tangling of the grass over the parts of the machine next to the grass left uncut, [*sic*] to their hindrance, nor to have obtained a patent for that device. The use of such rollers is what the orator complains of; but the patent she owns does not appear to cover them, therefore the defendant does not appear to infringe her patent as it was granted."

PROCTOR *v.* BRILL, 4 FED. REP. p. 419.

E. D. OF PENN., 1880. BUTLER, J.

If a certain device for sustaining the pole of a horse-car, so that its weight should not bear upon the horses' necks, had previously been used on "carriages or wagons," "the application of such old device to a street-car is not patentable."

AMERICAN WHIP CO. *v.* HAMPDEN WHIP CO., 4 FED. REP. 536.

D. OF MASS., 1880. LOWELL, J.

D. C. Hull's reissued patent, No. 5651, dated Nov. 11, 1873, for an improvement in the mode of making whip-stocks.

In turning the legs of chairs, &c., it had been the practice to leave a "stump-shod" or piece to be cut off; this method applied to whip-stocks, in combination, was held patentable with some hesitation, Lowell, J., saying: —

"I think, upon the whole, it may be supported as being something more than the new application of an old method. The invention does not consist either in making a 'stump-shod,' or in sawing it off, but in combining the metallic load-piece of a whip-stock with the stump-shod in such a way that the stump-shod may be sawed off."

KNOX *v.* QUICKSILVER MINING CO., 4 Fed. Rep. 809.

D. of Cal., 1880. Field, J.

A device in common use for limekiln furnaces is not patentable for use in a quicksilver furnace.

MOFFITT *v.* ROGERS, 8 Fed. Rep. 147.

D. of Mass., 1881. Lowell, J.

J. R. Moffitt's patent, No. 178,809, granted June 20, 1876, for a process of making counter stiffeners for boots and shoes, and for the machine employed to make them.

The specification said: —

"My invention relates to the shaping of the counter from the blank; and consists, primarily, in using a double process for effecting this, as will be more fully explained hereafter, — the first process consisting in shaping them by means of a former moving upon an axis, and suitable means for holding the blank up to the former; and the second process consisting in moulding the counter so formed over a male mould of the desired form. By this double process a counter is formed which suits the wants of the consumer much better than any other known to me."

Lowell, J., said: —

". . . The defendants . . . do not use the specific improvements in machinery described in patent No. 178,869, but they do use the process of the first claim [the claim is not given in the report]. As I intimated at the hearing, I am not aware that a patent has ever been sustained for a process or method which consisted of employing an old machine for the very purpose for which it was made.

"If any person discovers how to use an old machine to the best advantage, he is only a skilful workman, not an inventor. The plaintiff undertakes to prevent the owners of a machine made for moulding counters from using it to finish counters already begun upon another old machine for making counters. He might as well, in my opinion, claim a patent for passing a counter twice through the same machine.

"I do not mean to say that a patent cannot possibly be supported for a process or method which consists only of applying an old machine to a new use. Many of the ablest writers and jurists assert that such a claim is possible. I have never seen a case in which a patent of this

sort has been sustained,[1] and there are some in which it has been rejected. If one is ever supported, it will be when the new use is so remote from the old use that a court or jury can say that a new idea has been discovered. In the case of Brook *v.* Aston (8 E. & B. 478, affirmed 32 L. T. Rep. 341), the patentee applied to fibres of wool and hair a process which had been before used for burnishing threads of cotton and linen; but it was held, as matter of law, to be a mere double use, and the court refused to leave to the jury the question whether a new result was obtained. Certainly hair is less like cotton than a counter-blank partly made into a counter is to the counter-blank."

WESTERN ELECTRIC MANUFACTURING CO. *v.* ANSONIA BRASS & COPPER CO., 9 Fed. Rep. 706.

D. of Conn., 1881. Shipman, J.

Two reissued patents, dated Feb. 29, 1876, numbered respectively 6954 and 6955, for "improvements in insulating telegraph wires,"—the first for a process, the second for its product.

The specification ran as follows:—

"The method of insulating now in use consists in braiding over the wire a fibrous covering, after which it is dipped in wax, for the purpose of filling and closing its pores, and, after a subsequent scraping to remove the surplus wax, it is ready for use.

"This method is, however, objectionable, inasmuch as it leaves the covering in a very rough and soft condition, and fails to secure perfect insulation. In my improved method, after the wire has received its coating I dip it in paraffine or wax, after which, instead of scraping off the surplus coating, I pass the whole through a suitable machine, which compresses the covering, and forces the paraffine or wax into the pores, and secures perfect insulation. By so compressing the covering, the paraffine or wax is forced into the pores, and the surface becomes and appears polished. Wire insulated in this manner is entirely impervious to the atmosphere, of greater durability, and less cumbersome than any heretofore made."

The claim of the process patent was for

"the method of insulating telegraph wire by first filling the pores of the covering and subsequently compressing this covering, and thereby polishing its surface, substantially as specified."

[1] *Vide ante*, page 291.

The claim of the product patent was for

"an insulated telegraph wire, the covering of which has its pores filled and its surface polished, substantially as described."

"The defect in the article coated with uncompressed paraffine," said Judge Shipman, "was a leakage of electricity, which was probably owing to the shrinkage of the paraffine in the interstices of the fibrous covering while the melted paraffine was cooling. The paraffine which was compressed while in a plastic state was thereby forced into the interstices of the fibres, and the defect was obviated."

The invention or discovery was of the fact that compressing paraffine is a superior way of causing it to fill all the pores of the fibrous covering. Both paraffine, as applied to the fibrous covering of the wire, and the mechanism by which the patentee compressed it, were old. Moreover, this same process of compression had been applied to cloth coated with bitumen or fatty substances, as a covering for telegraph wire. Its use to compress paraffine for the same purpose was therefore a double use, which is not patentable; and the court so held, concluding thus: —

"The old process was applied to the new use without substantial alteration or change. The process patent not stating a patentable invention, the product patent is in no better condition."

ENGLISH CASES.

BRUNTON *v.* HAWKES, 4 B & Ald. 541.

King's Bench, 1820.

T. Brunton's patent of March 26, 1813, for "improvements in the manufacture of ships' anchors, windlasses, and chain cables." There were two improvements, one in chain cables, one in the anchor.

"As to the first invention, chain cables had been formerly made with twisted links, a wrought-iron stay being fixed across the middle of the opening of each link to keep it from collapsing. The alleged improvement consisted in making the links with straight sides and circular ends, and in substituting a cast-iron stay with broad ends adapted to the sides of the link and embracing them. This combination of the

link and the stay was calculated to sustain pressure better than the old form;"[1]

and the court intimated that it was patentable, but they held the whole patent void because the other improvement which it claimed — that of the anchor — was a mere double use. This we shall consider presently.

Of the cable, Bayley, J., said: —

"The improvement in that respect, as it seems to me, is shortly this: so to apply the link to the force to operate on it, that that force shall operate in one place, namely, at the end; and this is produced by having a bar across, which has not the defect of the bar formerly used for similar purposes. The former bars weakened the link, and they were weak themselves, and liable to break, and then if they broke, there might be a pressure in some other part. Now, from having a broad-ended bar instead of a conical one, and having it to lap round the link instead of perforating it, that inconvenience would be avoided; and, therefore, the present impression on my mind as to this part of the case is that the patent might be supported."

The anchor. Formerly, each arm of a ship's anchor was welded to the shank separately. In the plaintiff's anchor,[2] "the two arms were formed in one piece, having a conical opening in the centre, through which the shank was passed, the coned end of the shank being welded to the arm-piece. The patentee relied for strength on the impossibility of drawing a thick conical piece of iron through the smaller aperture of a conical opening into which it was fitted." Moreover, injury to the iron from repeated heating was avoided, only one heating being necessary to unite the end of the shank perfectly with the side of the conical hole. But it was proved that the same form of construction had been employed before in what were called *adze* or *mushroom*[3] anchors, which were used for mooring stationary vessels

[1] We take this lucid description from Curtis on Patents, § 37.

[2] We quote from Goodeve's Abstract of Patent Cases, page 61.

[3] The only further description of these anchors contained in the report is in the argument for the plaintiff. It is as follows: —

"The mode pointed out in the specification has never before been applied to the manufacturing of ships' anchors. It is true that it has been applied to that which, from the poverty of language, is embraced under the same generic word, namely, a mushroom-anchor. That, however, is never taken on board a ship, but is deposited. A quantity of sand is thrown on it, and it then becomes fixed to the spot, and, though called an anchor, is in fact a submarine post."

only, such as lightships. And the same mode of uniting flukes and shank was employed in common hammers and pickaxes.

Abbott, C. J.:—

"... It appeared in evidence ... that the mode of making cables and anchors, introduced by the plaintiff into general use, was highly beneficial to his Majesty's subjects, and I should wish that he who introduced it might be entitled to sustain the patent. ... The mode of joining the shank to the flukes of the anchor is to put the end of the shank, which is in the form of a solid cylinder, through the hollow and conical aperture, and it is then made to fill up the hollow, and to unite itself with it. Now that is precisely the mode by which the shank of the mushroom-anchor is united to the mushroom top, — by which the shank of the adze-anchor is united to its other parts. It is, indeed, the mode by which the different parts of the common hammer and the pickaxe also are united together.

"Now, a patent for a machine, each part of which was in use before, but in which the combination of the different parts is new, and a new result produced, is good, because there is a novelty in the combination. But here the case is perfectly different. Formerly three pieces were united together; the plaintiff only unites two; and if the union of those two had been effected in a mode unknown before, as applied in any degree to similar purposes, I should have thought it a good ground for a patent; but, unfortunately, the mode was well known and long practised. I think that a man cannot be entitled to a patent for uniting two things instead of three, where that union is effected in a mode well known and long practised for a similar purpose."

Bayley, J.:—

"Could there be a patent for making in one entire piece what before had been made in two pieces? I think not; but if it could, I think that still this would not be new.

"In the mushroom and the adze anchors, the shank is introduced into the anchor by a hole in the centre of the solid piece; and in reality the adze-anchor is an anchor with one fluke, and the double-fluke anchor is an anchor with two flukes. After having had a one-fluked anchor, could you have a patent for a double-fluked anchor? I doubt it very much. After the analogies alluded to in argument, of the hammer and pickaxe, I do not think that the mere introducing the shank of the anchor, which I may call the handle, in so similar a mode, is an invention for which a patent can be sustained. It is said in this case that the mushroom-anchor and adze-anchor are not ships' anchors, but mooring anchors.

"I think they are ships' anchors. They are not indeed such anchors as ships carry with them, for the purpose of bringing the ship up; but if the ship is required to be stationary at a particular place, then the common mode of making it stationary is by the mushroom-anchor. So the mode adopted to bring a ship containing a floating light to an anchor is by mooring her to one of these mushroom-anchors. That is the description of anchor for a holdfast to the ship. The analogy between the case of the mushroom-anchor and of the adze-anchor is so close to that of the present anchor, that it does not appear to me that this discovery can be considered so far new as to be the proper ground of a patent. In reality, it is nothing more than making in one piece what before was made in two, and introducing into this kind of anchor the shank in the way a handle is introduced into a hammer or pick-axe."

HALL *v.* BOOT (OR JARVIS), WEB. 100.

K. B., 1822. COR. ABBOTT, C. J.

The patent was for a method of removing the superfluous fibres of lace by means of a flame of gas, which, passing up through the interstices of the lace, singed off those fibres or ends of fibres, which formed not an integral part of the meshes, but a kind of fur or wool about them. Over the flame and the lace was a chimney, producing a current of air which drew the flame up through the meshes of the lace. The lace was passed over the flame by means of rollers, the velocity of its passage being regulated according to the nature of the lace, so that the fur should be burnt off without injury to the lace itself. This had not been done effectually until the plaintiff made his invention, which, therefore, was of great value, and was generally used in England.

The defence was, first, that the same result had been accomplished by other kinds of flame, which was not substantiated;[1]

[1] The report says: "The witnesses for the defendants proved that the flame of charcoal, of waste paper, wood, shavings, or common pit-coal, had been used for many years to singe the fibres from silk, cotton, or lace sleeves, but the articles for this purpose had been placed on a wooden leg or a sleeve-board; that bellows had been used to force the flame against the article, which it was said would produce the effect of burning the interstices." That none of these means accomplished the object aimed at is plain from the fact that the plaintiff's process revolutionized the manufacture of lace in England.

and, secondly, that the flame of gas being well known, its use for the particular purpose of the plaintiff's invention was not patentable.

The jury found for the plaintiff, the court refused to disturb the verdict, and the patentee enjoyed the benefit of his patent for the whole of the term.

KAY *v.* MARSHALL, 8 Cl. & Fin. 245.

The plaintiff had a patent (1) for maccrating flax, so that its fibres were shortened for spinning, and (2) for altering the relative positions of the drawing and retaining rollers, so that they should be not more than two and a half inches apart.

It being shown that the rollers in cotton-spinning machines were so placed, — *Held*, that it was no invention to transfer the arrangement to the spinning of flax in its changed condition.[1]

CRANE *v.* PRICE, Web. p. 408.

Common Pleas, 1842. Sir N. C. Tindal, C. J., Erskine, J., Maule, J.

Crane's patent of Sept. 28, 1836, for an "improvement in the manufacture of iron." This patent followed that of Neilson[2] in the same art. Neilson discovered that a hot blast is better than a cold blast in an iron furnace, — this fact being exactly contrary to the universal opinion before his discovery. Neilson's patent was for the interposition of a heated receptacle between the air-blast and the furnace, wherein the blast should be heated on its way to the furnace. At the time of Crane's discovery, bituminous coal only was used in the manufacture of iron. Attempts had been made to use anthracite coal with the cold blast, but they were unsuccessful. About eight years after Neilson's patent issued, Crane discovered that, with the hot blast, anthracite coal could be used in smelting iron. This new use of the hot blast improved the quality of the iron, and greatly diminished its cost. In his patent, Crane gave directions as to the proportions of coal and ore, the temperature of the air-blast, and the size of the coal.

[1] *Vide ante*, page 286.

[2] *Vide* Neilson *v.* Harford, *post*, page 611.

These matters, it was shown, were not determined without experiments, which consumed time and money.

Sir N. C. Tindal, C. J., delivered the opinion of the court as follows: —

" . . . What he [the patentee] claims as his invention is the application of anthracite or stone coal, and culm, combined with the using of the hot-air blast, in the smelting and manufacture of iron, from iron-stone, mine, or ore. And the question, therefore, becomes this, — whether, admitting the using of the hot-air blast to have been known before in the manufacture of iron with bituminous coal, and the use of anthracite or stone coal to have been known before in the manufacture of iron with cold blast, but that the combination of the two together (the hot blast and the anthracite) were not known to be combined before in the manufacture of iron, whether such combination can be the subject of a patent.

" We are of opinion that if the result produced by such a combination is either a new article or a better article, or a cheaper article to the public than that produced before by the old method, that such combination is an invention or manufacture intended by the statute, and may well become the subject of a patent. Such an assumed state of facts falls clearly within the principle exemplified by Abbott, C. J.,[1] where he is determining what is or what is not the subject of a patent; namely, it may, perhaps, extend to a new process to be carried on by known implements or elements acting upon known substances, and ultimately producing some other known substance, but producing it in a cheaper or more expeditious manner, or a better or more useful kind. And it falls also within the doctrine laid down by Lord Eldon,[2] that there may be a valid patent for a new combination of materials previously in use for the same purpose, or even for a new method of applying such materials. But the specification must clearly express that it is in respect of such new combination or application.

" There are numerous instances of patents which have been granted where the invention consisted in no more than in the use of things already known, but producing those effects so as to be more economically or beneficially enjoyed by the public."

The learned Chief Justice then mentioned the cases of Hall *v.* Jarvis, *ante*, page 375; Derosne *v.* Fairie, Web. p. 152; Hill *v.* Thompson, Web. p. 229; The King *v.* Daniell, reported in Godson on Pat. 274; and he continued: —

[1] The King *v.* Wheeler, 2 B. & Ald. 319.

[2] Hill *v.* Thompson, Web. 237.

"The only question, therefore, that ought to be considered on the evidence is, was the iron produced by the combination of the hot blast and the anthracite a better or a cheaper article than was before produced from the combination of the hot blast and the bituminous coal; and was the combination described in the specification new as to the public use thereof in England. . . . We think there is no doubt that the result of the combination of the hot blast with the anthracite on the yield of the furnaces was more, the nature, properties, and quality of the iron better, and the expense of making the iron less, than it was under the former process, by means of the combination of the hot blast with the bituminous coal.

"It is to be observed that no evidence was produced on the part of the defendants to meet that given by the plaintiff on these grounds; and that it was a necessary consequence, from the proof in the cause, that from the substitution of the anthracite coal, in whole or in part, instead of . . . bituminous coal, the manufacture of the iron should be obtained at less expense.

"It was objected in the course of the argument that the quality or degree of invention was so small, that it could not become the subject-matter of a patent; that a person who could procure a license to use the hot-air blast under Neilson's patent had a full right to apply that blast to coal of any nature whatever, whether bituminous or stone coal. But we think, if it were necessary to consider the labor, pains, and expense incurred by the plaintiff in bringing his discovery to perfection, that there is evidence in this cause that the expense was considerable and the experiments numerous. But, in point of law, the labor of thought or of experiments, and the expenditure of money, are not the essential grounds of consideration on which the question, whether the invention is or is not the subject-matter of a patent, ought to depend. For if the invention be new and useful to the public, it is not material whether it be the result of long experiments and profound research, or whether by some sudden and lucky thought, or mere accidental discovery. . . . If the combination now under consideration be, as we think it is, a manufacture within the statute of James, there was abundant evidence in the cause that it had been the great object and desideratum, before the granting of the patent, to smelt iron-stone by means of anthracite coal, and that it had never been done before; there was no evidence on the part of the defendants to meet that which the plaintiff brought forward."

This decision was questioned by Willes, J., in the case of Horton *v.* Mabon.[1] He said that the only ground upon which it

[1] 16 C. B. N. S. 141.

could be supported was that the iron produced by Crane's process was materially better than any which had been made before.

In the case of Rushton *v.* Crawley,[1] Sir R. Malins, V. C., said of Crane *v.* Price: —

"It is now generally considered that such a case would not succeed in the present day."

In the case of Murray *v.* Clayton,[2] Sir W. M. James, L. J., also criticised this decision, but not the ground of it, as stated by Tindal, C. J., in the following passage (quoted above): —

"We are of opinion that if the result produced by such a combination is either a new article, or a better article, or a cheaper article to the public, than that produced before by the old method, such combination is an invention or manufacture intended by the statute, and may well become the subject of a patent."

In the case of Smith *v.* The Goodyear Dent. Vul. Co.,[3] Mr. Justice Strong said of Crane *v.* Price: —

"This case has been doubted, but it has not been overruled; and the doubts have arisen from the uncertainty whether any new result was obtained by the use of anthracite."

MUNTZ *v.* FOSTER, 2 WEB. P. C. 96.

COMMON PLEAS, 1844. COR. SIR N. C. TINDAL, C. J., AND A JURY.

Muntz's patent of Oct. 22, 1832, for "an improved manufacture of metal plates for sheathing the bottoms of ships or other such vessels."

It described plates made of a mixture containing sixty parts of copper and forty of zinc. This compound was cast in ingots, and rolled while at a red heat. Full directions were given for making the sheathing. The merit of it was that in sea-water it rusted enough to prevent accumulation of barnacles upon it, and yet it did not rust so much as the sheathing ordinarily used. It was therefore both effective and durable, and a very valuable invention.

[1] L. R. 10 Eq. 522. [2] L. R. 7 Ch. App. 570. [3] 93 U. S. p. 492.

Tindal, C. J., thus instructed the jury: —

" . . . I cannot think, as at present advised, that if it was shown (as possibly it might be) that sheets had been made of metal before in the same proportions which he has pointed out; that if this hidden virtue or quality had not been discovered or ascertained, and consequently the application never made, — I cannot think the patent will fail on that ground. That is the opinion which I form upon it. I look upon it that there is as much merit in discovering the hidden and concealed virtue of a compound alloy of metal, as there would be in discovering an unknown quality which a natural earth or stone possessed.

" We know by the cases that have been determined, that where such unknown qualities have, from the result of experiments, been applied to useful purposes of life, that such application has been considered as the ground, and a proper ground, of a patent; and therefore when I came to that part of the case in which they seek to show this is not so, because these metal plates have been invented before, — that is, persons have used them before, — in my judgment it will not go far enough, unless they can show there has been some application of them before to this very useful purpose." [1]

REGINA *v.* CUTLER, 3 C. & K. 215; 14 Q. B. 372, note.

Queen's Bench, 1849. Cor. Lord Denman, C. J., and a Jury.

Head-note: "A patent for the application of iron tubes coated with brass to form the tubular flues of steam-boilers cannot be supported; for, although the application of the tubes was new, neither the tubes themselves nor the mode of applying them was new."

Lord Denman, C. J.: —

"If he had introduced a new article which required the application of a new principle to the production of it, it might have formed a subject for a patent; but the mere application of a thing which existed before does not appear to me to be a subject for a patent. And, in general terms, I think that the application of an article to produce any particular result, the party having no claim either to the mode of producing the article or to the mode of applying it for attaining that result, forms no ground for a patent."

[1] The prior patent of one Collins was also set up in defence; but as this was passed upon by the jury only, we do not report it. The case was compromised at the end of the jury trial.

At a subsequent trial, Wightman, J., gave the same direction to the jury.

The case was compromised, and never brought before a court of error.

NEWTON *v.* VAUCHER, 6 Ex. R. 859; 21 L. J. Ex. 305.

Exchequer Chamber, 1851.

W. E. Newton's patent of May 15, 1843, No. 9724, for "improvements in the construction of boxes for the axles of carriages and for the bearings or journals of machinery." The patent provided for lining the inner part of the boxes used to support gudgeons or axles with a metal compounded of fifty parts tin, five antimony, and one copper. The use of this soft metal prevented heating and abrasion, because (and this was the patentee's discovery) such soft metal was "incompetent to take up the motion of heat by friction."

The defendant had an earlier patent, No. 7800, dated Sept. 8, 1838, for a soft-metal compound for packing the pistons of hydraulic engines, which consisted in forty parts of tin, sixty of zinc, and four of antimony. It was cast in grooves running around the piston.

Parke, B.: —

"... After the date of the defendant's patent it was discovered ... that soft metal could be used beneficially, not merely for the purpose of excluding air and water, but that it produced this remarkable effect, — that where there was pressure upon it, friction was in a great degree diminished.

"That probably arises, as my Brother Alderson has suggested, from the circumstance that the particles of the soft metal (which may be said to approach more nearly in their nature to those of a fluid) have comparatively a more easy motion among themselves than those of a hard metal. If water could be confined in the same way as soft metal is, and the axis could be made to revolve in the water so confined, the invention might possibly answer as well. It was, however, discovered that by the action of soft metal no heat or friction, comparatively speaking, would take place.

"Then the question is, whether the plaintiff's patent is for the application of that principle. Now, upon looking at his specification, which embodies a new principle in a new machine, it differs materially from

the defendant's, which is for the purpose merely of packing; for in the plaintiff's invention it is essential that there should be not only the intervention of soft metal, but that there should also be a hard rim covered in part with that soft metal, or some other means to prevent the soft metal from expanding and getting out of its place. But any other hard rim covered with soft metal, or substances covered with soft metal, are part of that machine; that is no part of the defendant's invention. Therefore, I think the discovery by the person under whom the plaintiff claims is not merely the discovery of a new principle, but of a new principle embodied in a new machine. Then, that being so, if the plaintiff claims a patent for that new principle embodied in a new machine, and that only for the purpose of diminishing friction, and the application of it is only to cases where there is pressure as well as motion, that patent is perfectly good; but if he has also claimed in it the application of soft metal to all cases of stuffing, to exclude fluids of every description, his patent in that respect is for an old invention, and is void."

BUSH *v.* FOX, 5 H. L. CAS. 707; 2 JUR. N. S. 1020.

HOUSE OF LORDS, 1856.

A patent, dated Sept. 21, 1841, for "improvements in the means of, and in the apparatus for, building and working under water."

"What I claim is," said the patentee, "the mode of constructing the interior of a caisson, in such manner that the work-people may be supplied with compressed air, and be able to raise the materials excavated, and to make or construct foundations and buildings, as above described."

The means and apparatus consisted chiefly in a caisson, which became part of the foundation.

The report contains no description of the contrivance; but it was substantially the same as that described in Lord Cochrane's patent of Oct. 20, 1830, and intended to be used in mines or other subterranean places. It was therefore *held* that the plaintiff's use of it *under water*, instead of on land, was not patentable.

BROOK *v.* ASTON, 8 E. & B. 478.

QUEEN'S BENCH, 1857.

Brook & Hirst's patent of Feb. 23, 1856, for finishing yarns of wool or hair by a process substantially like that applied before to yarns of cotton and linen, held void.

Lord Campbell, C. J.:—

"It may well be that a patent may be valid for the application of an old invention to a new purpose; but, to make it valid, there must be some novelty in the application. Here there is none at all. . . . In all the cases in which a patent has been supported, there has been some discovery, some invention. It has not been, as in this case, merely the application of the old machinery, in the old manner, to an analogous substance. That cannot be the subject of a patent."

On writ of error, this decision was affirmed by the Court of Exchequer Chamber, 5 Jur. N. S. 1025 (1859).

TETLEY *v.* EASTON, 2 C. B. N. S. 706; 26 L. J. C. P. 269.

COMMON PLEAS, 1857.

The invention was an improvement in machinery for raising and impelling water by centrifugal force, and it consisted in the introduction of water at both sides of the wheel, instead of at one side only, as was the case before.

The defence set up a patent to one Ruthven (of 1841) for a mode of increasing the power of air or water when acted upon by rotary fans or other similar apparatus. The court thus remarked upon it:—

"Another drawing of the inner case with its fans showed that there was an opening in the rim of the case at the front of each fan,—the fans, in fact, dividing the inner case into six compartments, or any other number, dependent, of course, on the number of fans. And this inner case so divided by fans, with the openings in the rim, and admitting water at both sides, was almost identical with the wheel used by the plaintiff, except that it had not a central disk, and was attached to the axle by spokes extending from the axle to the outer edge of the opening, for the admission of air or water.

"Ruthven was mistaken in supposing that, by the use of these fans,

he should obtain an increase of force; and it did not appear that his machine was brought into use. And the question is, whether, notwithstanding the information given to the public by Ruthven's specification, the plaintiff can claim to be the first inventor of 'the means of increasing the action of the machine by causing the liquid to enter the wheel at both sides.' The form of the wheel used by the plaintiff was not new, nor does he claim it as new; nor was the plan of admitting water at both sides for the purpose of being projected forwards by centrifugal force new, it having been made known by the specification enrolled by Ruthven, and the drawings annexed to it.

"It may be true that the plaintiff first explained the full benefit obtained by so introducing it; but the discovery that a particular advantage was obtained by the use of a wheel known before, in a manner known before, cannot be called an invention or application to sustain a patent. Losh *v.* Hague, 1 Web. P. C. 202; Hindmarch on Patents, 94."

THE PATENT BOTTLE-ENVELOPE CO. *v.* SEYMER, 5 C. B. N. S. 164; 5 JUR. N. S. 174.

COMMON PLEAS, 1858.

The plaintiffs' patent was for a mode of making bottle envelopes, which included the use of a model or mandrel.

Said the court, through Willes, J.:—

"The defendant's method resembles the plaintiffs' in the product, which is not the subject of the patent, and in one other material particular only; namely, the use of the model or mandrel. . . . The question therefore is, whether the plaintiffs could have taken out a patent simply for applying a model or mandrel in the form of a bottle, or indeed a bottle itself, in making envelopes for bottles. We are of opinion that he could not.

"The use of a model or mandrel for producing given forms of pliable materials was admitted at the trial, and indeed, without such admission, is well known to have been for ages common and usual in various arts. Such use was part of common knowledge, and a model or mandrel, for purposes similar to that of this patent, an ordinary and well-known tool. It is merely in respect of the sort of material to which it is applied, and the form of the utensil produced by it, that the plaintiffs' application of the model possesses any novelty," &c.

WILLIS *v.* DAVISON, 1 N. R. 234.

QUEEN'S BENCH, 1863.

H. Willis's patent of Feb. 28, 1851, No. 13,538, for "improvements in the construction of organs." The alleged invention was the combination of a compound valve with a pneumatic lever, as an *escape* valve.

It being proved that a similar valve "had been fitted to pedal organs as a *supply* valve, in order to obtain greater ease in working," it was *held* that the patent was void.

HARWOOD *v.* THE GREAT NORTHERN RAILWAY CO., 29 L. J. Q. B. 193; 6 JUR. N. S. 993; 11 H. L. CAS. 654 (1865).

Wild's patent, granted in 1853, for "improvements in fishes and fish-joints, for connecting the rails of railways."

The specification said:—

"The fishes are made with a groove or recess in their outer surfaces, which groove serves to receive the square heads of the bolts, and prevent them turning round when the nuts are screwed on or off. Washers are placed in the groove of the fish which is next to the nuts, so as to allow of the nuts being turned around; or the fish on this side may be made without the groove. The position of the bolts and nuts may be reversed, if preferred, so that the nut may be prevented from turning round while the bolt is screwed into it. *The groove renders the fish lighter for an equal strength, or stronger for an equal weight of metal,* than a fish which is made of an equal thickness throughout. The top and bottom of each fish is a plane surface, and the parts of the rail with which they come in contact are also plane surfaces, forming the same angle as the top and bottom surfaces of the fish. The fishes are thus made to fit into their places with greater facility than if these surfaces were of curved or irregular forms. If, however, the surfaces of the rails are curved, the fishes may be made to fit them."

The specification next describes the thickness of the heads of the bolts, or nuts, or rivets, and says that the effect of their being in grooves is to make them

"project less with the same thickness of head than when plain, ungrooved fishes are employed. This is a matter of great advantage,

as avoiding the danger of the flanges of the wheels of the carriages coming into collision with the rivets."

Contrivances alleged to anticipate this improvement are thus described in the report (11 H. L. Cas. p. 657):—

"It was proved that before the date of the patent the rails of railways had been connected by fishes and fish-joints, attached to each side of the rails at the joints by means of bolts and nuts. In some cases flat fishes had been used. These were of different kinds; but until the time of Wild's patent, fishes for connecting the rails of railways had never been made with a groove or recess in their outer or lateral surfaces, so as to receive the square heads of the bolts, and at the same time, in the words of the specification, to 'render the fish lighter for an equal strength, or stronger for an equal weight of metal, than a fish made of equal thickness throughout.'

"But it was also proved that before the date of the patent, and under the superintendence of the late Mr. Brunel, in the construction of bridges beams of timber had been laid horizontally, one above the other, and fastened or bolted together with bolts and nuts; that horizontal bars or plates of iron were placed beneath, and parallel to and in contact with the horizontal beams, and were also fastened or bolted by the same bolts and nuts; and that each of these bars or plates of iron was constructed with a groove in its under surface, which received the square or horizontal heads of the bolts. This was done for the purpose of strength, and also to prevent the heads of the bolts from turning. But in these bridges there were not joints to be fished by the bars or plates of iron, nor were there corresponding bars or plates of iron above the horizontal beams; and it was therefore insisted that there was no fishing in the proper sense of the word. . . . It was further proved by the defendants that in 1847 Mr. Brunel had constructed a timber bridge, known as the 'Hackney Bridge,' for carrying the South Devon Railway over the Teign Canal. The span of this bridge was too great to be conveniently crossed by any single beam, and the bridge was constructed so as to have upon each side two horizontal, longitudinal beams of timber, the ends of which met, and were joined together in the middle of the bridge by scarf-joints. Beneath these beams were placed transverse planks, which extended from side to side of the bridge, and constituted its flooring or roadway; and immediately beneath the ends of the planks were longitudinal bars of grooved iron, one upon each side of the bridge, running parallel to and under the longitudinal beams along the whole length of the bridge, with the grooves or channels downwards. Bolts with square heads passed

through the grooved iron bars, transverse planking, and longitudinal beams from the lower to the upper end of the bridge, the square heads of the bolts resting in the grooves of the iron bars, and being prevented from turning round within the grooves, and the nuts were screwed on to the upper ends of the bolts.

"In answer to questions specially put by the Lord Chief Justice, the jury found 'that the channel irons upon the railway bridges (independently of the particular instance of the Hackney Bridge) were used before the patent, for the double purpose of obtaining increased strength and preventing the bolt-heads from turning round, but they were not used for the purpose of fishing. Secondly, that the fastening of the scarf-joint of the longitudinal beam at the Hackney Bridge was a fishing of that joint, but that the use of the channel iron as one of the plates of the fish arose from its being already there for the purpose of fastening the beam and this iron together, and was not adopted by Mr. Brunel in reference to, or in contemplation of, the special advantages in fishing contemplated by Wild's patent.'"

On these findings the Lord Chief Justice directed a verdict for the plaintiffs, "with leave reserved to move. A rule was obtained to have a verdict entered for the defendants pursuant to leave, or for a new trial on the ground of misdirection with respect to the use of the grooved iron in Hackney Bridge. This rule was afterward discharged. On appeal to the Exchequer Chamber that decision was reversed; and it was ordered that the verdict be entered for the defendants upon the pleas denying that the invention was new, and that it was the subject-matter of a patent. This appeal was then brought. The judges were summoned, and Mr. Justice Williams, Mr. Baron Channell, Mr. Justice Blackburn, Mr. Justice Keating, Mr. Baron Pigott, and Mr. Justice Shee attended." The appeal was dismissed.

Mr. Baron Channell (after rehearsing the evidence):—

"The point for consideration is thus reduced to this: whether the fishing of rails meeting but-end to but-end with iron plates bolted together, and the strengthening of solid timbers by iron plates also bolted to the timbers, as above stated, are analogous subjects.

"It seems to us . . . (though being a question of mere mechanics, we desire to express our opinion with diffidence) that they are analogous. . . . The fact, however, seems to be that a grooved iron plate, when used as a binding support, is as strong at least as the same plate would be if ungrooved; and this discovery was made before the patent, and was given to the world, and, in the language of the court of

Exchequer Chamber, 'though not immediately applied, it was immediately applicable, to all forms of pieces of iron used for holding together other materials.'

"But it was argued at the bar of your Lordships' house that there was invention at all events in this, that whereas the grooved iron as used in the bridges had been applied for the purpose of binding together pieces of material laid one upon another horizontally, the grooved iron in fishing the rails was applied laterally, in binding together the material, and that its great merit consisted in its performing the novel function of resisting the vertical pressure to which it was exposed, and did so by means of a plate equally strong, but rendered lighter than that previously in use by the removal of that portion of the plate which was useless in resisting such pressure. . . . Wild . . . certainly does state . . . that the groove renders the fish lighter for equal strength, or stronger for equal weight, but that, as to grooved iron, was previously well known, and is a very different thing from claiming the invention as now put forward. If he had intended to claim the discovery that, by the removal of a certain quantity of material from a particular part of the solid plate, in the shape of a groove, the power of resistance to vertical pressure would not be diminished, he would surely have described the sort of groove that would produce that effect with the greatest certainty. . . . What appears to us to show that no such claim was contemplated by the patentee is this, that if the power of resisting vertical pressure produced or effected by the groove would be a merit in the fishes, it would be equally applicable to both; not to one more than the other; yet the patentee himself suggests in one part of his specification that the inside fish need *not* be grooved.

"Then, as regards the second advantage of the groove in receiving the bolt head, it seems impossible to say, after its use for the identical purpose in the bridges, whenever it became necessary to fit an iron plate to another material by screws and nuts, that the analogy, for that purpose at all events, is not clear and obvious. It is in this respect only a bare transference. . . ."

The Lord Chancellor (Lord Westbury), Lord Cranworth, and Lord Wensleydale also delivered opinions to the same effect.

Mr. Justice Blackburn, with whom concurred Mr. Justice Shee, dissented from the opinion of the majority. "We differ," he said, "not as lawyers, but as mechanics and engineers." And he, as well as Mr. Baron Channell, from whose opinion we have just quoted, cited with approval the language of Chief Justice Cockburn in the court below. It may be found at page 283, *ante*.

Mr. Justice Blackburn said: —

"The essence of the invention lay in the thought that inasmuch as the fish was intended to resist a strain in its own plane, the metal in the centre of the fish, which was comparatively inert for the purpose of resisting such a strain, might with advantage be partially removed. The patentee does not in his specification state that the heavy train was to run along the tops of the rails, and that the fish was placed with its plane vertical to resist the vertical strain so produced, nor that the reason why the groove might be made, producing economy of material without diminution of strength, was because the plate was so placed, and that such was the strain it had to resist; but we think that all this might be supplied and was supplied by evidence. . . .

"Mr. Brunel . . . used a channelled iron for the purpose of strengthening the beams of a bridge, and in the case of the Hackney Bridge for the purpose of strengthening a scarf-joint; but the iron was placed horizontally, for the purpose of resisting vertical pressure. The channelled iron would have been a bad form for resisting a pressure such as is borne by the fish-uniting rails. The two wings would, under such a pressure, we apprehend, collapse together, and the centre snap; but it was a good form for the purpose of resisting a flexure transverse to the plane of the iron for which it was used; and what Mr. Brunel did in no way anticipated the plaintiff's idea, founded on the uselessness of the centre part of a plate placed vertically for the purpose of resisting vertical pressure, and used for the purpose of counteracting a tendency to flexure in the plane of the plate. In truth, in the plates and channelled iron used by Mr. Brunel in his bridges, the grooves and channels were not formed by removing useless or inert material, but on, as we apprehend, a totally different principle. He, in effect, added rims or wings to strengthen the flat plate against transverse flexure; he did not make a groove by removing the part of a plate used to resist flexure in its own plane."

PENN *v.* BIBBY, L. R. 2 Ch. App. 127.

Lord Chelmsford, L. C., 1866.

John Penn's patent, dated Oct. 2, 1854, for "an improvement in the bearings and bushes for the shafts of screw and submerged propellers."

The improvement consisted in employing wood, instead of

metal, in the manner described by the specification, as follows: —

"The object of the invention is that the parts of a propeller-shaft which are within bearings shall not come in contact with metal of the bearings, but against pieces of wood fixed therein, in such manner as to admit of water flowing freely between the pieces of wood, and between the inner surfaces of the metal bearings and the outer surfaces of the propeller-shaft."

The difficulty with the old bearings was that, metal being made to work upon metal, they soon wore out; also, the propeller thus made gave to the vessel a violent and irregular motion. The plaintiff's propeller overcame these difficulties, and it was of great utility.

Lord Chelmsford, L. C.: —

"It was objected that . . . the alleged invention was merely a new application of an old and well-known thing.

"It is very difficult to extract any principle from the various decisions on this subject which can be applied with certainty to every case; nor, indeed, is it easy to reconcile them with each other. The criterion given by Lord Campbell in Brook *v.* Aston (8 E. & B. 485) has been frequently cited (as it was in the present argument), that a patent may be valid for the application of an old invention to a new purpose, but to make it valid there must be some novelty in the application. I cannot help thinking that there must be some inaccuracy in the report of his Lordship's words, because, according to the proposition, as he stated it, if the invention is applied to a new purpose, there cannot but be some novelty in the application.[1] Lord Chief Justice Cockburn approaches much nearer to the enunciation of a principle, or at least of a rule, for judging these cases, in Harwood *v.* Great Northern Railway Co. (2 B. & S. 208), where he says: 'Although the authorities establish the proposition that the same means, apparatus, or mechanical contrivance cannot be applied to the same purpose, or to purposes so nearly cognate and similar as that the application of it in the one case naturally leads to application of it when required in some other, still the question in every case is one of degree, whether the amount of affinity or similarity which exists between the two purposes is such that they are substantially the same, and that determines whether the invention is sufficiently meritorious to be deserving of a patent.

[1] Did not Lord Campbell mean *mode* or *means* of application? *Vide* that there must be novelty in the page 284, *ante*.

"'In every case of this description one main consideration seems to be whether the new application lies so much out of the track of the former use as not naturally to suggest itself to a person turning his mind to the subject, but to require some application of thought and study.'

". . . Applying this test. . . . The only examples of old use alleged by the defendants were in grindstones and water-wheels. No doubt these have what may be called bearings, but they are of a totally different character and for a totally different object from the bearings patented. In neither water-wheel nor grindstone is there a wooden bearing in which the wheel revolves, but the wheel is merely supported on wood, not encased or submerged, nor constructed for the purpose of admitting the water to flow freely within the bearing; and the revolutions of each of them are at a very slow pace. It is difficult to believe that bearings of this description could ever have suggested the application of wood to the bearings of screw-propellers in the way described in the patent. It is to my mind not merely a different application, but something in itself essentially different.

". . . It would be an extraordinary fact if an invention of this kind, so long wanted, and of such great utility, should have been lying in everybody's way who knew anything of the construction of a water-wheel or grindstone, and yet should never before have been discovered; and equally remarkable, if the invention had been anticipated in these familiar machines, that the admiralty and the mercantile marine, and upwards of fifty firms, should have submitted to pay royalties for the privilege of being permitted to use it."

RUSHTON *v.* CRAWLEY, L. R. 10 Eq. 522.

SIR R. MALINS, VICE-CHANCELLOR, 1870.

Rushton's patent of June 24, 1867, for an improvement in the manufacture of artificial hair, for use as head-dresses, and in other ways.

The specification concluded thus:—

"I claim the use and application of wool, particularly that kind known as Russian tops, or other similar wools or fibre, in the manufacture of artificial hair, in the imitation of human hair, and also in the manufacture of crisped or curled hair for furniture, upholstery, and other like purposes."

"'Russian tops,'" the report says, "was a name given to Russian wool of a coarse description, the long pieces of the fibre being combed out and separated from the rest, and then designated as 'wool tops.'"

The Vice-Chancellor dismissed the bill with indignation, on the ground that the invention claimed was neither novel nor patentable. He said: —

". . . The witnesses in cross-examination have proved beyond doubt that it has been the common course of the trade to make these things from wool of all kinds for certainly the last fourteen or fifteen years. . . .

"It is a gross violation of the privilege conferred upon inventors for a person to take out a patent for a known article which has been used for years, because he finds he can produce a thing cheaper or better by a new material, or to suppose that directly he uses the new material it can be a subject for a patent. Suppose any one should discover some other well-known material for making these things, such as paper, is he to take out a patent for it? and afterwards some one else should find out they could be made of straw, is he also to have a patent? So far as my opinion goes, and I desire it to be distinctly understood, the use of a new material to produce a known article is not the subject of a patent, but there must be some invention, something really new, something more valuable to the public than the simple use of a new material to produce a known article."

Of Crane *v.* Price (*ante*, page 376), he said: —

"The patent was established, but it is now generally considered that such a case would not succeed in the present day."

And of Brook *v.* Aston (*ante*, page 383): —

"It is conclusive against the plaintiff."

See also —

PARKES *v.* STEVENS, *ante*, page 278.
POW *v.* TAUNTON, 9 Jur. 1056.
DANGERFIELD *v.* JONES, 13 L. T. N. S. 142.

American cases on the subject of New Use elsewhere in this book are the following: —

WATERBURY BRASS CO. *v.* MILLER, *ante*, page 106.
TILGHMAN *v.* MORSE, *ante*, page 122.

JENKINS *v.* WALKER, *ante*, page 124.
CLARK *v.* SCOTT, *ante*, page 129.
In re APPLICATION OF J. ARKELL, *ante*, page 170.
ATLANTIC GIANT POWDER CO. *v.* RAND, *ante*, page 173.
GRIFFITHS *v.* HOLMES, *ante*, page 183.
PEARCE *v.* MULFORD, *ante*, page 255.
PENN. SALT MFG. CO. *v.* GUGENHEIM, *ante*, page 265.
GLUE CO. *v.* UPTON, *ante*, page 267.
REED *v.* REED, *ante*, page 269.
STEINER *v.* HEALD, *ante*, page 292.
SPILL *v.* THE CELLULOID MFG. CO., *ante*, page 293.
THE LOCOMOTIVE, &C. TRUCK CO. *v.* THE ERIE RY. CO., *post*, page 440.
RUBBER-COATED HARNESS-TRIMMING CO. *v.* WELLING, *post*, page 457.
DALTON *v.* NELSON, *post*. page 519.
LE ROY *v.* TATHAM, *post*, page 574.
BELL *v.* DANIELS, *post*, page 616.

See also VINTON *v.* HAMILTON, 104 U. S. 485.

CHAPTER V.

COMBINATION.

114. Two preliminary remarks are necessary: —

(1.) Some or all of the elements in a combination may be old. They may have been used before, separately, or in other combinations. This does not necessarily affect the patentability of a combination of those elements.[1]

(2.) Any newly invented or discovered thing,[2] or anything in which a new function or property[3] has been discovered, may be claimed in combination with any other thing or things.

Note. — The substitution of an equivalent (*vide ante*, page 63) in a combination, as elsewhere, is not invention.

115. When we come to consider the nature of a patentable combination,[4] we find it very difficult to obtain a definition which

[1] Ryan *v.* Goodwin, 3 Sumner, 514; Parks *v.* Booth, 102 U. S. 96; Hailes *v.* Van Wormer, 20 Wall. 353; Lister *v.* Leather, 8 El. & Bl. 1004.

[2] The Russell, &c. Mfg. Co. *v.* Mallory, 10 Blatch. 140; Watson *v.* Cunningham, 4 Fish. 528; Potter *v.* Holland, 4 Blatch. 238.

[3] Goold *v.* Rees, 15 Wall. p. 193.

[4] Much confusion arises from another use of the word "combination," especially in the specification of a patent, where it sometimes intends, not a technical combination, but a machine, or part of a machine, more or less complex. In these cases, "combination" is used as a convenient term, and for want of a better, to denote an entity composed of several parts, all of which are new. Thus a machine is often described as consisting in a combination of the part A with the part B and with the part C; or as consisting in the part A, *combined* with B and with C, although all the parts are new, and the validity of the patent does not depend upon their *combining*, in the patent-law sense.

Sewing-machines, for instance, are often described in this manner. Thus, a man having invented a feeding mechanism to move the cloth under the needle, and also a needle to sew the cloth, describes the machine as consisting in the combination of the feeding mechanism and the needle; meaning that the machine invented is composed of those two new parts, not that the invention lay in combining them (one or both of them being old) into a new machine.

Mr. Justice Clifford, in the case of Howe *v.* Williams (2 Fish. p. 401), remarked upon the two uses of the word "combination" as follows: —

"Like other sewing-machines in

will fit all cases. It is commonly said that a combination, as distinguished from an aggregation, is patentable. The one is a union, the other an assemblage, of elements. Co-action is the badge of the first; mere juxtaposition is the badge of the other.

For instance, in Reckendorfer *v.* Faber,[1] a leading case, the patentee had joined together a lead-pencil and a rubber-eraser by making a groove in one end of the pencil for about a quarter of its length, and glueing the rubber therein. The court held that this was a mere aggregation. The juxtaposition of the pencil and the eraser might be a convenience; but

"no effect is produced, no result follows from the joint use of the two. A handle in common, a joint handle, does not create a new or combined operation."

use at the present time, the one described in the patent of the complainant is composed of various devices; but the claim is for the *organized machine* as an *existing whole*, and not merely for some or all of the separate devices of which it is composed, or for some or all of those devices as a mere technical combination. Undoubtedly the several devices operate in combination, and consequently the invention itself consists, in a certain sense, of a combination of those various elements so constructed and moulded into harmonious action as to accomplish the described result; but still the invention is not a technical combination of old devices, where, in order to maintain an infringement, it is necessary to show that the respondent has pirated the whole. On the contrary, the claim under consideration obviously is, that the complainant is the original and first inventor of the organized sewing-machine, whose several devices are described in the specification when viewed as an existing whole, and operating to accomplish the desired result."

So also Mr. Justice Curtis, in Foster *v.* Moore, 1 Curtis C. C. R. p. 292: —

"Very nice and difficult questions have been made concerning what are often called combinations, but the elements of which are not capable of being distinctly defined and separated. If a combination, properly so called, consist of two or more distinct things, and the patent is for combining them into one whole, it is familiar law that if all are not used the patent is not infringed.

"But the first claim in this patent is not for such a combination. It is for an operative part of a machine, and in substance covers that operative part, just as a patent for an entire machine covers the whole machine. In some sense it may be called a combination, for it consists of different parts united together, as an entire machine does. But it is not strictly and technically a combination, any more than an entire machine is; and it may be improved, and a patent taken for that improvement, and at the same time the improvement cannot be used without the consent of the original patentee."

[1] 92 U. S. 347. See also Rubber-Tip Pencil Co. *v.* Howard, 20 Wall. 498; The Double-Pointed Tack Co. *v.* The Two Rivers Co., 18 O. G. 683; Ross *v.* Wolfinger, 5 O. G. 117; Alcott *v.* Young, 16 Blatch. 134.

116. On the other hand, where two functions are combined in one thing, there is such co-action of the parts that one part is merged in the other. This is the simplest and most obvious case of patentable combination. An example given by Mr. Justice Hunt, in the case just mentioned, is that of a stem-winding watch-key. He said: —

"The office of the stem is to hold the watch, or hang the chain to the watch; the office of the key is to wind it. When the stem is made the key, the joint duty of holding the chain and winding the watch is performed by the same instrument. A double effect is produced or a double duty is performed by the combined result." [1]

117. So far it is plain sailing; but when we come to consider what sort of co-action is required to make a combination patentable, a difficulty arises. It need not be simultaneous co-action. The elements of the combination may act at different times. Thus there are patentable and patented combinations of machinery in which the parts operate, not simultaneously, but one after the other.[2] Is it sufficient, then, that the several elements of the alleged combination should form a part of the same contrivance, each element contributing to the efficacy thereof? No; for this is true of many cases of mere aggregation. For instance, in Hailes *v.* Van Wormer,[3] the patentee had taken a fire-pot from one stove, a revertible flue from another, and a reservoir or feeder from a third, and combined them in a new and improved stove.

Of these three elements, each contributed its share to the efficacy of the stove; and, each being particularly good of its kind, the new stove may have been better than any in use before it. But the three elements did not bring about a common result, as, for instance, the combustion of coal; for one element served to radiate the heat from the base of the stove, another carried off the products of combustion, and the third operated to economize the coal used. The elements did not aid or affect each other in the discharge of their several duties.

Their joint employment, therefore, amounted to a mere aggre-

[1] Such seems to have been the combination in the case of Bussey *v.* Wager, 9 O. G. 300.

[2] Forbush *v.* Cook, 2 Fish. 668; Herring *v.* Nelson, 14 Blatch. 293; Hoe *v.* Cottrell, 18 O. G. 59; Birdsell *v.* McDonald, 6 O. G. p. 682.

[3] 20 Wall. 353. See also Mahn *v.* Harwood, 14 O. G. 859.

gation and not to a patentable combination; whereas, if they had all contributed to a common result, that of combustion, for instance, then perhaps the combination would have been held patentable, — as was the combination in a similar case,[1] where various devices in a lamp united to produce a brilliant flame.

In the stove case, the court[2] said: —

" . . . The three devices . . . have no relation to each other. Neither the form of the feeder nor the shape of the fire-pot bears at all upon the direction of the draft-passages. There is no novel result flowing from the joint operation of the three devices. The revertible flues have no more to do with a stove supplied by a feeder than they would have with a stove supplied by hand. . . .

" . . . It must be conceded that a new combination, if it produces new and useful results,[3] is patentable, though all the constituents of the combination were well known and in common use before the combination was made. But the results must be a product of the combination, and not a mere aggregate of several results, each the complete product of one of the combined elements. Combined results are not necessarily a novel result, nor are they an old result obtained in a new and improved manner. Merely bringing old devices into juxtaposition, and there allowing each to work out its own effect without the production of something novel, is not invention. No one by bringing together several old devices without producing a new and useful result, the joint product of the elements of the combination and something more than an aggregate of old results, can acquire a right to prevent others from using the same devices, either singly or in other combinations, or, even if a new and useful result is obtained, can prevent others from using some of the devices, omitting others, in combination."

118. From this it may be gathered that the elements of a patentable combination must contribute to a new mode of operation or produce a new and common result. It may be that the language of the Supreme Court, just quoted, requires a more strict interpretation than we have given it. This point we shall consider presently; but we may remark here, that it is almost if not quite impossible to frame a definition which shall cover all possible cases of combination. In the stove case, the elements had each a separate and, so to say, detachable effect, whereas in the lamp case, to which we have referred, the effect of each ele-

[1] *Vide post*, page 402.

[2] Mr. Justice Strong delivered the opinion.

[3] The results need not be new; an old result is as good as a new one, if it be produced in a new way.

ment was lost in the common effect; namely, combustion of the oil. In another case the combination may be a chemical union. Again, it may be a combination of two mechanisms which, together, produce a new result. Finally, a mere rearrangement of parts might amount to a new and patentable combination, although it produced no new mode of operation. Thus, if one should rearrange the parts of a lamp, without, however, altering or diminishing them, so that in the new arrangement the lamp was of a smaller and more convenient size, there might be invention in so doing.[1] The difficulty of bringing all these cases under one head, at the same time excluding all non-patentable combinations, is obvious. The courts, however, and the Supreme Court especially, have proceeded as if this difficulty did not exist. Devising a rule to fit the case before them, they go on to state it as one of universal application.

119. But to return, we have said that the elements of a combination must produce a new mode of operation or a new and common result, in order that it should be patentable. We do not, however, undertake to say that the converse is true, — that whenever a new mode of operation or a new and common result is produced, there is a patentable combination; although we recall no case which would conflict with such a proposition, and there are many authorities to support it.

It is plain that there may be a new mode of operation and not a new result; for the new mode of operation may consist in a new way of doing an old thing. It is often assumed, however, that a new result implies a new mode of operation. But in the lamp case (of rearrangement), just suggested, there would be a new result, but no new mode of operation. Therefore, we say, that a patentable combination must produce either a new mode of operation or a new result.

120. Mr. Justice Curtis, in his charge to the jury in the case of Forbush *v.* Cook, *supra*, where a combination of machinery was the subject of the patent, said: —

"If it was a new and useful combination of parts, and he [the patentee] was the first to make the combination, he is an inventor, and

[1] The case here supposed is, to say the least, infrequent. A new arrangement which introduces a new function, or renders operative an incompetent one, is of course a more probable invention. It is found in the case of Woodward *v* Dinsmore, 4 Fish. 103.

may have a valid patent. When I say it must be new, I do not refer to the materials out of which the parts are made, nor merely to the form or workmanship of the parts, or the use of one known equivalent for another. These may all be such as never existed before in such a combination, and yet the combination may not be new, in the sense of the patent law. To be new in that sense, some new mode of operation must be introduced. And it is decisive evidence, though not the only evidence, that a new mode of operation has been introduced, if the practical effect of the new combination is either a new effect, or a materially better effect, or as good an effect more economically attained, by means of the change made in the combination of the patentee. A new or improved or more economical effect, attributable to the change made by the patentee in the mode of operation of existing machinery, proves that the change has introduced a new mode of operation, which is the subject-matter of a patent; and when this is ascertained, it is not a legitimate subject of inquiry, at what cost to the patentee it was made, nor does the validity of the patent depend upon an opinion, formed after the event, respecting the case or difficulty of attaining it."

121. Doubtless this language was appropriate to the case at bar, but surely the learned judge goes too far in stating broadly that

"a new, or improved, or more economical effect, attributable to the change made by the patentee in the mode of operation of existing machinery, proves that the change has introduced a new mode of operation, which is the subject-matter of a patent."

It might well be that the change made was so slight and so obvious that it was referable to mechanical skill and not to the genius of the inventor; and this, whether the change was the addition of something new or an improvement in something old.

122. It is also to be remarked that there may be a new result, without a new mode of operation. The case we suggested, however, and others like it, where there is a new result, although it cannot be said that there is a new mode of operation, are not so much exceptions to the rule laid down by Mr. Justice Curtis, as cases to which that rule does not apply. He had before him *operative* parts, as of machinery, whereas an article composed of, so to say, inert parts (like a lamp, considered as a portable article, and not as a machine to burn oil), can scarcely be said to have any mode of operation. In such cases, a new result is the test of invention.

123. We proceed to consider the decisions of the Supreme Court in regard to combinations. There are but three cases in which there is any important discussion of this subject; namely, Hailes *v.* Van Wormer and Reckendorfer *v.* Faber, *supra*, and a recent case, Pickering *v.* McCullough.[1] We have already quoted the court's statement of the law in the first of these cases, *ante*, page 397.

In the case of Reckendorfer *v.* Faber the court said (Mr. Justice Hunt delivering the opinion) :—

" . . . The combination, to be patentable, must produce a different force or effect, or result in the combined forces or processes, from that given by their separate parts. There must be a new result produced by their union: if not so, it is only an aggregation of separate elements. An instance and an illustration are found in the discovery that, by the use of sulphur mixed with india-rubber, the rubber could be vulcanized, and that without this agent the rubber could not be vulcanized. The combination of the two produced a result or an article entirely different from that before in use. Another illustration may be found in the frame in a saw-mill which advances the log regularly to meet the saw, and the saw which saws the log; the two co-operate and are simultaneous in their joint action of sawing through the whole log: or in the sewing-machine, where one part advances the cloth, and another part forms the stitches, the action being simultaneous in carrying on a continuous sewing. A stem-winding watch-key is another instance. The office of the stem is to hold the watch, or hang the chain to the watch; the office of the key is to wind it. When the stem is made the key, the joint duty of holding the chain and winding the watch is performed by the same instrument. A double effect is produced or a double duty performed by the combined result. In these and numerous like cases the parts co-operate in producing the final effect, sometimes simultaneously, sometimes successively. The result comes from the combined effect of the several parts, not simply from the separate action of each, and is therefore patentable."

124. In Pickering *v.* McCullough the facts are so obscurely stated that little can be made out of them. The court, by the

[1] 104 U. S. 310.

The case of the Rubber-Tip Pencil Co. *v.* Howard (20 Wall. 498) really involved a question of combination, but the alleged invention therein described was treated by the court as a manufacture, — as an article simply, and not as a combination or aggregation, and its patentability was discussed solely from that point of view. We have therefore placed the case in the chapter on Ingenuity, where it will be found at page 247, *ante*.

mouth of Mr. Justice Matthews, after approving the two former cases, said: —

"In a patentable combination of old elements, all the constituents must so enter into it as that each qualifies every other.[1] To draw an illustration from another branch of the law, they must be joint tenants of the domain of the invention, seized each of every part, *per my et per tout*, and not mere tenants in common, with separate interests and estates. It must form either a new machine of a distinct character and function, or produce a result due to the joint and co-operative action of all the elements, and which is not the mere adding together of separate contributions. Otherwise, it is only a mechanical juxtaposition, and not a vital union."

125. Now, it may be gathered from these three opinions,[2] and especially from the last one, that in a patentable combination there must be a new interaction of some sort between the several elements. Or, to state the rule a little differently, it is not sufficient that one element is ineffective without the others, — that its function is useless, except in combination with other functions, — but the function of one must be modified in some way by the function of another, so that the function of one element is not the same in the combination that it was in the place whence it was taken; a *peculiar* function must be developed in the combination. This need not be true of every element in the combination, but it must be true of some one element or of several elements; and the virtue of the combination must inhere in this peculiarity of function developed by it.

126. A somewhat different rule may be drawn from the language of the court in Reckendorfer *v.* Faber, *supra.* We refer chiefly to the following passage: —

"The combination, to be patentable, must produce a different force or effect, or result in the combined forces or processes, from that given by their separate parts."

In other words, as we understand the proposition, the effect of the combination must be something more than, or different from, the sum of the several effects of the various parts.

[1] This is obviously an overstatement. It is sufficient if any two of the elements qualify each other, provided that the virtue of the combination resides chiefly in such qualification.

[2] But see Judge Blatchford's construction of the first two, *post*, page 404.

127. Both of these rules work well, as the reader will perceive, in the cases of Hailes *v.* Van Wormer and Reckendorfer *v.* Faber, properly excluding the combinations therein alleged to be patentable. So, also, in the case we are about to set forth, where the combination was patentable, the rules apply. It is that of Winans *v.* The Schenectady & Troy Railroad Co.[1]

128. In this case, the patentee had made an improved railroad-car by combining, in its running part, two four-wheel trucks (instead of the two-wheel trucks in use before) with a peculiar swinging bolster, under which they turned.

The result was that the four-wheel trucks could be placed one at each end of a long car (instead of toward the middle of a short car, as the two-wheel trucks, which they superseded, were placed), and they could, nevertheless, run on curves, though placed so far apart, because the bolster allowed them to turn under the car, and adjust themselves to the track.

In this manner the patentee made a car which was longer and larger, and which ran more smoothly, than any in use before it. Here, then, (1) there was a peculiarity of function brought out by the combination, and (2) the effect of the combination was something more than, and different from, the sum of the several effects of the two elements of the combination. One element was nothing without the other; the withdrawal of one would have paralyzed, so to say, the other. The swinging bolster, to be sure, would have been such on a two-wheel truck, but it would have been of no use there, for two-wheel trucks must run near together in order to support the car.

So, also, the four-wheel trucks would have been of no advantage without the swinging bolster; they must have been put near together in order to run on curves, and, so placed, they would have been no better than two-wheel trucks. In this case, therefore, the conditions stated in the two rules given above are fulfilled.[2]

129. We come now to a more difficult case, that of Williams *v.* The Rome, &c. Railroad Co.,[3] to which we have already referred. The patent was for an improved locomotive headlight-lamp, in which kerosene was the oil used. As in the stove case, all the

[1] 2 Blatch. 279.
[2] A similar case is that of Sarven *v.* Hall, 5 Fish. 415.
[3] 15 Blatch. 201.

devices of the combination were old; but, unlike the devices of the stove, they all united to produce a common result, namely, a flame of better quality than any obtained before by the burning of kerosene oil. In fact, the headlight made by the patentee was the first in which kerosene oil was used successfully. The case is an important one, and we set it out in full.

The object of the combination was to produce a light which should be brilliant, steady, and concentrated as nearly as possible in the focus of the reflector, which throws it forward of the locomotive.

The patentee thus described the result of the invention: "A lamp which is suitable for burning coal-oil in a locomotive headlight, and is more efficient for that purpose than any lamp heretofore known, because it furnishes the greatest quantity of light from a wick of a given size without material flickering."

130. The defence contended that the improved lamp was a mere aggregation of well-known devices, not a true combination. The devices were as follows (in number, five): —

"1. A circular, hollow wick-tube, having an interior and an exterior cylinder, which are separated by an annular space for the wick, but connected together at their lower ends so as to retain the oil. It was also furnished with a thimble wick-holder, by means of which the wick can be moved up as it burns.

"2. A perforated air-screen consisting of one or two cylinders of perforated metal, the inner cylinder being sustained by the wick-tube, and the outer by the inner. The object of this screen is to regulate the passage of air to the flame, to prevent flickering of the light.

"3. A cap-deflector supported by the inner perforated cylinder, composed of two parts, the lower cylindrical, the upper conical, with an orifice at the top, through which the flame issues. The cap-deflector extends above the wick when it is at its highest, and makes a combustion chamber above the wick in which the flame forms. A current of air comes up through the hollow wick-tube, and upon this current the flame is contracted so that a high degree of combustion is produced by the current of air which passes through the perforations of the air-screen into the cap-deflector.

"4. A button above the orifice of the cap-deflector to spread the flame. This button is supported by a stem, sustained in the middle of the wick-tube by perforated diaphragms, which also act as screens for the interior current of air.

"5. A lateral reservoir of oil placed behind the reflector of the head-

light, and feeding the wick by gravitation through a tubular passage into the wick-tube, there not being space enough for the reservoir between the wick-tube and the reflector."

131. The court, Blatchford, J., held that this was a valid combination, and not a mere aggregation of independent elements.

In giving his opinion, Judge Blatchford stated the case of Hailes *v.* Van Wormer and that of Reckendorfer *v.* Faber, *supra*, and he quoted the propositions laid down in the first case.

"The doctrine . . . is," he said, "that a new combination, if it produces new and useful results, is patentable, though all the constituents of the combination were well known and in common use before the combination was made; that the results, however, must be a product of the combination, and not a mere aggregate of several results, each the complete product of one of the combined elements; that merely bringing old devices into juxtaposition, and there allowing each to work out its own effect without the production of something novel, is not invention; and that no one, by bringing together several old devices without producing a new and useful result, the joint product of the elements of the combination, and something more than an aggregate of old results, can acquire a right to prevent others from using the same devices, either singly or in other combinations."

But he added: —

"These doctrines are not applicable to the present case. The flame of the lamp and its illuminating character, as to brilliancy, steadiness, size, and position is the result to which all the devices used contribute. They all co-operate to affect and modify such illuminating character of the flame of the lamp.[1] A locomotive headlight must be large, brilliant, steady, easy of adjustment as to the position of its wick, concentrated as nearly as possible in the focus of the reflector, and supplied freely with oil without interfering with the projection of the light forward, and without pumping mechanism. The circular, hollow wick-tube enables the light to be concentrated near the focus of the reflector. The perforated air-screen for the exterior current of air promotes the steadiness of the flame. The cap-deflector increases the volume and brilliancy of the flame. The lateral oil-reservoir supplying the oil by gravitation enables the light to be projected forward without interference, and also enables a wick of a given size and a chimney of a

[1] Judge Blatchford apparently understood the Supreme Court cases to imply that a combination is patentable if its elements produce a common result.

given height to insure the consumption of the maximum quantity of oil, and the production of the maximum quantity of flame. The button gives such shape to the flame that it is concentrated more nearly in the focus of the reflector. The thimble wick-holder enables the flame to be readily adjusted by raising or lowering the wick. The perforated air-screen for the interior current of air contributes to the steadiness of the flame, and so does the close chimney gallery. . . . There can be no doubt that the combinations made by the plaintiff were the results of invention, and were patentable. The evidence shows that they were the results of careful and patient investigation and experiment. His lamp was the first one which successfully burned kerosene oil in a locomotive headlight. He was successful in becoming able to employ the great brilliancy of an oil rich in carbon, under the peculiar and disadvantageous circumstances of burning it in a lamp in rapid motion and subject to great vibrations. The merit of his lamp is generally acknowledged. It has superseded those previously in use, and it is used on nearly all the railroads in the United States."

132. Here the legal conclusion is arrived at by working backward, so to say, instead of forward. The result is perceived to be a new thing; hence the conclusion is fair that the mode of operation is new, although, considering the separate elements, without regard to the result, it may be impossible to see that one modifies another, or that the total effect was anything more than or different from the sum of the separate effects.

It might be objected that this is only a way of saying that the aggregation was a good and successful one. The result of adding one improvement to another was indeed a lamp better than any which had preceded it; but, none the less, it was a mere aggregation, because each element discharged its office no otherwise than it would have done had it been used without the others. In a certain sense, every new aggregation must result in a new thing. There is some force in this argument, and it might seem that the line to be drawn between this case and that of Hailes *v.* Van Wormer is a narrow one. But, as we have seen, in the stove case the separate elements did not contribute to a common result; whereas in the headlight case the elements did so contribute, and the result was an entirely new one, namely, a headlight lamp that would burn kerosene oil successfully. And this new result implies a new mode of operation, fairly enough; for if the mode of operation, by which we understand the working of the various

elements, considered as an entity, to which entity each element has contributed its part, — if this was not new, how could the result be new?[1] If the mode of operation here was the same as that in other combinations for the same purpose, it could not have succeeded where the others failed.

The truth is that the Supreme Court, in the opinions which we have been considering, left out of view this sort of combination, in which the separate parts cannot be said to have any operation by themselves, because the operation of the parts is entirely lost in the operation of the whole. We cannot compare these cases with those like the pencil case, where each element is entirely independent of the other; nor even with those like the car case or the stove case, where each element, though useless without the other, has yet a separate action, which can separately be observed and considered. In the stove case and in the car case we can perceive to what extent one element acts upon, assists, or effects the other; but in the lamp case it is impossible to do so. In that case (and we take it as a type) it may be that the new result was attained because the patentee had picked out from several lamps the best single part in each, or because the parts which he selected, and his arrangement of them, produced some new interaction, one part modifying or enabling another. It would be impossible to say which of these suppositions is the true one. Moreover, in these cases it is commonly unnecessary to make such an inquiry, for if the combination produce a new mode of operation, it is immaterial whether that be due to the excellency of the separate parts, or to some peculiarity of function developed by the combination.[2]

[1] Different results argue substantial change in the mode of operation. Mr. Justice Curtis, in Forbush *v.* Cook, *supra;* and Woodbury, J., in Davoll *v.* Brown, 3 West. L. J. 151.

[2] We append some additional remarks upon the criterion which we have spoken of already as set forth by the Supreme Court in the case of Reckendorfer *v.* Faber, *supra.* To repeat it, according to our understanding of it: —

The effect of the combination must be something more than, or different from, the sum of the separate effects of the several elements. The application of this test is plain enough in the pencil case. In the car case, which we take as the type of many others, it is not quite so plain; for it cannot be said that either of the elements there has any effect when taken by itself. So of the lamp, a tube or an oil-reservoir has no effect taken by itself; that is, it is useful only when employed with other devices. But each of these elements has a *function* which it discharged in the combination from which it was taken by the patentee.

We will take the car case first.

To take an extreme case, however, we may suppose a lamp made up of old devices newly combined, which, though it burns as well, burns no better, and is not cheaper than other lamps previously in use. In such a case there would be no new result from which to infer a new mode of operation, and therefore we

Supposing the patentee to have found the four-wheel truck in use without the bolster, and the bolster in use with a two-wheel truck, then the office of the four-wheel truck was only to support half of the car in a position remote from either end thereof, whereas its peculiar function was to support a long car by the ends thereof.

And the peculiar function of the bolster, which was to allow the truck on which it rested to move laterally, was of no use with the two-wheel truck and, consequently, short car. These, then, were the *separate* effects of the two elements; that is, all the effects they had, or could exercise successfully, when used apart from each other. The peculiar function of the truck was not called out at all, and the peculiar function of the bolster was used without advantage. But when the bolster and the truck were combined by the patentee, a new effect was called forth. One enabled the peculiar function of the other to be exercised. The capability of the four-wheeled truck to support a great weight, and the swinging capability of the bolster, came into play. The effect, therefore, of their combination was something different from the sum of their separate effects.

It is true that it was not different from the sum of their possible functions, — their latent functions, so to say, — which were drawn forth by their combination. But in considering their separate effects, we must take them as the patentee found them; and as he found the two elements, their latent effects had no actual operation.

In the lamp case there is a difference. The several elements were selected from as many lamps. Now, there is nothing *except the result* to show that in their new situation they played any different part from that which they had in their old positions. They may have failed to make as good a lamp in the old combinations, because the other elements with which they were there combined were defective.

In this case there was certainly no latent function in each element called forth by the combination. One did not depend for its usefulness upon another; that is, the reservoir, for instance, did not depend upon the peculiar character of the tube (as the bolster depended upon the four-wheel truck). So far as the reservoir is concerned, it may have been just as good in its old combination as in the new. On the other hand, it may be that the several elements of the lamp, though they did not call out any new function in each other, still assisted each other, were adapted to each other to such an extent that the operation of each separate element was somewhat different in the new combination from what it was in its old situation.

The rule, then, that a new combination, to be patentable, must produce an effect more than, or different from, the sum of the separate effects of the several elements as they existed in the places whence they were taken, cannot always be applied.

There may be a new result and a new mode of operation, although the co-action of the elements is perceptible in the new result only.

should be forced to inquire whether any new interaction was obtained by the combination; and if such interaction was not perceptible, there would be a strong probability, if not a certainty, that invention was not exercised in putting together the constituents of the new lamp, — that the lamp was a mere aggregation, not a true combination.

133. Recurring to the headlight case, if the question be asked, How is *invention* shown in putting together well-known lamp devices so as to make a more effective lamp? we reply, that the *selection*[1] amounted to invention.

It is not invention to improve an article by adding to it one well-known element after another, simply because each is good in its way. Here there is no adapting, harmonizing, and balancing of effects to produce a desired result; there is simply addition of effects.

But given an ideal article, — an article that shall have certain properties, or that shall have them to a certain degree, theretofore unknown, — may there not be invention shown in selecting such known elements as shall produce the desired result; elements that shall best perform the office needed of each, and so adapted one to another, so balanced and harmonized, that the resulting article or process fulfils the required conditions?[2]

The present case we conceive to be such a one.

Viewing it in this light, it becomes material to consider how much labor and thought were required to make the improvement; for in so far as the result was difficult to arrive at, so far is it likely that its production required invention as well as care. And this consideration was not overlooked by the court.

134. To recapitulate: —

A combination to be patentable must produce a new mode of operation, if it has any mode of operation; and of such new mode of operation a new result is decisive evidence, though not the only evidence.

If the combination is, so to say, an inert article, as a compound, or a piece of furniture, so that it cannot be said to have

[1] *Vide* the Introduction, *ante*, page 31.

[2] Woodruff, J., in Gallahue *v.* Butterfield, *ante*, page 340: —

"It is not true of machines, as such, that because every one of its members performs in it the identical office which it would perform, however used, the conjoint action in their new combination may not produce a result new and useful, and never before attained," and patentable.

any mode of operation, then no *test* of invention can be proposed. We are referred directly to the fundamental inquiry, Was invention required to conceive the idea of putting together the elements of the combination, or was it shown in the device or devices by means of which they were put together?

We hesitate, however, to say that every combination which produces a new mode of operation is patentable.

135. The question next arises, What is a new mode of operation, and what is a new result?

As we have seen, mere contiguous and simultaneous action of separate parts in one device or mechanism, the whole producing no common and no new result, though each part contributes to the efficacy of the device or mechanism, does not amount to a new mode of operation. Such was the action of the parts in the case of Hailes *v.* Van Wormer; so also in the case of Reckendorfer *v.* Faber, — except that in the last case the action of the parts was not simultaneous. But it is not a sufficient objection to the patentability of a combination that its parts operate successively, not simultaneously.[1]

136. If, however, the combination produces a peculiarity of function in one or in several of its elements, and the virtue of the combination resides in such peculiarity of function; or if the total effect of the combination is something more than, or different from, the sum of the several effects of the elements, — then there is a new mode of operation, and the combination will fulfil the severest test of invention proposed by the Supreme Court or by any other court. The Winans Car case and the case of Sarven *v.* Hall (*post*, page 435) may be taken as illustrations.

137. If, again, no such peculiarity of function or total effect can be perceived except from the result, still, if the several elements of the combination unite to produce a common result, and that result is a new one, then a new mode of operation is presumed, and there is a strong presumption of invention. This was the lamp case.[2]

138. Finally, if in a case like that of the lamp there is no new

[1] *Vide* the cases cited at page 396, *ante*.

[2] The reader is again reminded that a stricter doctrine may be drawn from the *dicta*, though it is not required by the decisions of the Supreme Court.

result, but only a better or cheaper result, an improvement in degree simply, then we are referred to the ultimate inquiry in all cases of patentability, namely, was there *invention* in the improvement?[1]

In the case supposed, this question would be asked: Did the maker of the new lamp exercise merely the skill of a mechanic in picking out one device rather than another from the various lamps with which he was familiar; or did the *selection* amount to invention? Or, again, was there invention, if not in the selection, yet in the manner by which the devices selected were adjusted and fixed in the new combination?

139. The last remark applies to all kinds of combinations, and should qualify what has been said by way of definition; for there may be no invention in the idea of bringing together certain elements, and yet invention may be required to adjust them in the new combination. This certainly is not often the case, but the contingency exists.[2]

It is possible, in fact, to imagine a combination the several elements of which were associated in thought without invention, and produced, when so associated, no new mode of operation and no new result, although invention was shown in adjusting them. The combination would, of course, be patentable; and although such an invention would not, strictly speaking, be a case of combination, it would probably be considered as such.

140. In truth, all the various criteria that we have examined are but aids, and often very slight aids, to the final inquiry, Is there invention in the improvement?[3]

Mr. Chief Justice Taney thus defined a patentable combination:—

"The patent is for a combination; and undoubtedly it is patentable if the combination is new, although the elements which compose it may be old, provided it was *invented* by the complainant, and is not the

[1] The case of Mahn *v.* Harwood (14 O. G. 859), *post*, page 462, illustrates this proposition.

[2] Hoe *v.* Cottrell (18 O. G. 59), *post*, page 472, would seem to be an instance.

[3] Since this chapter was written, the case of the Loom Co. *v.* Higgins has been reported (105 U. S. p. 591, *post*, page 475). In that case the Supreme Court say:—

"It may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result never attained before, it is evidence of invention."

mere effort of ordinary mechanical skill, putting together known powers and combinations to produce the result." [1]

What is meant by "invented" we have tried to show in the Introduction to, and in the first chapter of, this book.[2]

WHITTEMORE *v.* CUTTER, 1 GALL. 478.

D. OF MASS., 1813. STORY, J., AND A JURY.

Patent for a machine to make cotton and woollen cards.

Story, J.: —

". . . The jury then are to decide whether the principles of Mr. Whittemore's machine are altogether new, or whether his machine be an improvement only on those which have been in use before his invention. . . . The principles are the *mode of operation*. If the same effects are produced by two machines by the same mode of operation, the principles of each are the same. If the same effects are produced, but by combinations of machinery operating substantially in a different manner, the principles are different.

[1] Crosby *v.* Lapouraille, Campbell, 374 (1854).

[2] In the English case of Harrison *v.* Anderston (L. R. 1 App. Cas. 574), the Lord Chancellor (Lord Cairns) thus described a patentable combination: —

"This combination . . . is novel; it is, to use the words of the Lord President [of the Scottish Court of Session], a new combination of old parts to produce a known result in a more useful and beneficial way. It is not doubted that a combination of which this may be said is the subject of a patent."

Murray *v.* Clayton, L. R. 7 Ch. 577 (1872). Sir James Bacon, V. C., in the course of his judgment in this case, said: —

"A combination of things not in themselves new, but which combination is perfectly new in the form in which the inventor has cast it, and producing new and more beneficial results, may be the subject of a patent. Huddart *v.* Grimshaw, Web. P. C. 85. But I am aware of no case in which it has been held that the mere arrangement of common elementary mechanical materials, and the construction, by means of such arrangement, of a machine which produces no other result than that which had been previously accomplished by other mechanical arrangements and construction, would support a patent. If it were so, there would be no protection to the public or to earlier patents against the ingenuity of any artisan who might have the skill to arrange the old mechanism in a new shape, and thereby to appropriate to himself the fruits of previous inventors, in the proper sense of that term, so that the privilege and reward which the law only concedes to art and wit and invention might be bestowed upon mere skill in handicraft."

"The great stages (if I may so say) in making the cards by Whittemore's machine, which admit of a separate and distinct operation in the machinery, are: 1. The forming and bending the wire; 2. The pricking the leather; and, 4. The crooking the wire after its insertion. Were either of these effects produced in the machines formerly in use by a combination of machinery or mode of operation, substantially the same as in this machine? If so, then clearly his patent could only be for an improvement, and of course it is void; if not, then his patent is free from any objection on the ground of being broader than his invention. It will not be sufficient to protect the plaiutiff's patent that this specific machine, with all its various combinations and effects, did not exist before; for if the different effects were all produced by the *same application* of machinery, in separate parts, and be merely combined then together, or added a new effect, such combination would not sustain the present patent, any more than the artist who added the second hand or repeater to a watch could have been entitled to a patent of the whole watch."

PENNOCK *v.* DIALOGUE, 4 WASH. 538.

D. OF PENN., 1825. WASHINGTON, J., AND A JURY.

A patent for improvement in leather hose. The improvement consisted in lapping the edges of the leather so as to form a double thickness at the seam, and then connecting them with metallic rivets and bars; the pressure of the fluid upon the inner lap or edge of the leather increasing the tightness of the seam. There was evidence of a harness, the parts of which were fastened by metallic rivets and bars; and of an Indian scabbard made of sole leather, the edges of which did not lap, but were united by lead rivets.

Washington, J., charged the jury that it was for them to say whether these prior contrivances were,

"in form, structure, or principle, the same thing as the hose for which this patent was granted. It is true that in the construction of these articles leather and metallic rivets were employed; but it is clear law, that if old materials and old principles in mechanics, or otherwise, are used in a state of combination, so as to produce a new result, the inventor of the article so produced . . . may obtain a valid patent."

Similar instructions were given in regard to two prior kinds of leather hose. The first had lapping edges fastened by clinched

nails; and the edges of the other were fastened by rivets and bars, but it did not clearly appear whether they lapped or not.

RYAN *v.* GOODWIN,[1] 3 SUMNER, 514.

D. OF MASS., 1839. STORY, J., AND A JURY.

Patent for a new composition for matches, consisting in phosphorus, chlorate of potash, sulphuret of antimony, and gum-arabic or glue. The proportions of the ingredients and the manner of combining them were stated in the patent.

In his charge to the jury, Story, J., said : —

" . . . It is certainly not necessary that every ingredient, or, indeed, that any one ingredient, used by the patentee in his invention should be new or unused before for the purpose of making matches. The true question is, whether the combination of materials by the patentee is substantially new. Each of these ingredients may have been in the most extensive and common use, and some of them may have been used for matches, or combined with other materials for other purposes. But if they have never been combined together in the manner stated in the patent, but the combination is new, then, I take it, the invention of the combination is patentable. . . . The combination is apparently very simple; but the simplicity of an invention, so far from being an objection to it, may constitute its great excellence and value. Indeed, to produce a great result by very simple means, before unknown or unthought of, is not infrequently the peculiar characteristic of the very highest class of minds."

There was also a claim in the patent for a method of putting up the matches in slabs of paper, to avoid the danger of friction. This was objected to as frivolous; but it was not noticed in the opinion.

[1] Sometimes called Byam *v.* Goodwin.

DAVOLL *v.* BROWN, 4 WEST. L. J. 151.[1]

D. OF MASS., 1845. WOODBURY, J., AND A JURY.

The patent was for "speeder, double speeder, and fly-frame, used in roving cotton."

"The facts were that a single row of American flyers, driven by a particular gearing, was known, and that double rows of open flyers were known. The plaintiff borrowed from the latter the idea of two rows, and from the former the arrangement of gearing, and making some new additions to the gearing, to adapt it to the two rows, made a double row of American flyers."

Woodruff, J., charged the jury that the new combination, to be patentable, must be useful; that the combination

"must be substantially new; that to be so, the parts may have been used before; that it was the bringing of them together in a new manner that constituted the invention; that it was not necessary to have any new power or substance, but that it was necessary that it should be a combination operating in a new mode or manner; that this constituted the new principle; that if the new mode was merely changed in equivalents, and there was no new result, it was not enough; but that if there was any new mode of operating, then it was new; that it was better to look at great results than to the opinions of witnesses; that if results were different, it argued substantial change in the mode; that the results could not be different, if the means were the same," &c. Verdict for the plaintiffs.[2]

BUCK *v.* HERMANCE, 1 BLATCH. 398.

N. D. OF N. Y., 1849. NELSON AND CONKLING, JJ.

Patent of D. Buck, dated May 20, 1839.

The report says: —

"The invention of Buck consisted in taking the stove known as the Hathaway stove, — in which the oven was extended under the apron or open hearth of the stove, and which had what are called reverberating flues, that is, two flues starting from the top of the back of the stove, one at each side, running down the back and under the bottom to the

[1] The report in the Law Journal is taken from "The Boston Atlas."

[2] There is a copy of the specification in 1 Wood. & M. p. 54.

front, and there uniting in a centre flue which returned under the bottom and up the back to the stove-pipe, — and adding to it a close flue or fire-chamber in front, between the front plate of the stove and the front plate of the oven. Into this fire-chamber, which had no opening except into the flues under the bottom of the oven, the smoke and gases generated by combustion entered, and in it they circulated before returning through the centre flue. By this means the front part of the oven was more effectually heated, and a more uniform baking in all parts of it was ensured. In the Buck stove, the dividing strips between the side flues and centre flue under the bottom did not extend quite to the front plate of the stove."

Nelson, J.: —

" . . . The construction of the claim on which the court have agreed is this, that the invention of the patentee is a combination of the extension of the oven under the hearth of the stove, and the flues as described by him, with the flue or fire-chamber in front of the stove, formed by the two front plates. . . . The combination of the extended oven and reverberating flues, meaning the side flues and the centre flue, was old; but it is claimed on the part of the patentee that he has brought into connection with this old combination another element, the flue in front. . . . If that element was never before used in combination with the extended oven, and the patentee was the original inventor of it, then, in our view, it is a new combination, and, if useful, patentable. . . . In a patent for a combination where the novelty of the invention consists in the combination, it is altogether immaterial whether the elements forming the combination are new or old. All may be old; but if they are brought together in a combination which was never before known, and practically produces a new and useful result, it is a patentable subject. . . . A formal difference between the combination of Buck and any previous combination is not patentable, and involves no skill, ingenuity, or mind. It is simply a difference in mechanical construction. In order to be patentable, the change must be substantial, as contradistinguished from formal. The new article must be different from the article on which it is claimed to be an improvement, not only in its mechanical contrivance and construction, but in its practical operation and effect in producing the useful result. Then it is not formal. Then it requires mind, ingenuity, labor, time, and expense." Verdict for the plaintiffs.

The same patent was upheld by McLean, J., in the case of Buck *v.* Gill, 4 McLean, 174.

LARABEE *v.* CORTLAN, 3 Fish. 5.

D. of Md., 1851. Taney, C. J., and a Jury.

A patent for an improvement in shower-baths, being a combination of the jet-bath and movable reservoir.

In the jet-bath an upright tube comes from the reservoir overhead, with lateral branches, curved, so that the bather stands within them, and the water falls first upon his body and not upon his head. Both the jet-bath and the movable reservoir were old, and so was the combination of jet-bath and *fixed* reservoir.

The judge, therefore, charged as follows: —

"If . . . the plaintiff's mode of connecting and combining the jet-bath with the movable reservoir, and supplying the jet with water from the reservoir, is substantially the same with that by which the jet-bath and fixed reservoir were united together in the old improvement, or if a mechanic of ordinary skill and acquainted with such business, with the old improvement before him, could have attached the jet-bath to the movable reservoir in a manner that would produce the same result with that adopted by the plaintiff, then the improvement he claims to have invented is not patentable, and his patent is invalid."

WINANS *v.* THE SCHENECTADY & TROY RAILROAD CO., 2 Blatch. 279.

N. D. of N. Y., 1851. Nelson, J.

Winans's patent.

The ordinary railroad-car in use before Winans's invention had four wheels, and the two axles were placed from three and one-half to five feet apart. If the axles were placed near together, the car was badly jarred whenever the wheels passed over elevations or into depressions in the track. On the other hand, if the axles were far apart, one at or near each end of the car, there was a great increase of friction between the flanges of the wheels and the rail, when the car was moving upon a curve; just as it is more difficult to turn a corner with a long wagon than with a short one.

The specification said : —

" When the cars are so constructed that the axles retain their parallelism, and are at a considerable distance apart, there is a necessary tendency in the flanges of the wheels to come into contact with the rails, especially on the curvatures of least radius [sharp curves, in other words], as the axles then vary more from the direction of the radii," *i. e.* lines perpendicular to the curve.

A compromise, therefore, was usually made between the two evils, by placing the axles neither close together nor far apart.

Winans's improvement combined the advantages of both arrangements. He constructed two bearing-carriages of four wheels each. The fore and hind wheels of each carriage were placed as near together as they could run without actual contact; and a strong spring connected the fore and the hind wheel on each side,

" the ends of which springs are bolted, or otherwise secured, to the upper sides of the boxes, which rest on the journals of the axles, the longer leaves of the springs being placed downwards and surmounted by the shorter leaves. . . . Having thus connected two pairs of wheels together, I unite them into a four-wheel bearing-carriage, by means of their axles and a bolster of the proper length extending across, between the two pairs of wheels, from the centre of one spring to that of the other, and securely fastened to the tops of them. This bolster must be of sufficient strength to bear a load upon its centre of four or five tons. Upon this first bolster I place another of equal strength, and connect the two together by a centre pin or bolt, passing down through them, and thus allowing them to swivel or turn upon each other in the manner of the front bolster of a common road-wagon."

The body of the car was twice as long as that of an ordinary car, and able to carry twice as heavy a load. Its whole weight rested upon the upper bolsters of the bearing-carriages.

" I sometimes place these bolsters so far within the ends of the body of the car as to bring all the wheels under it, and in this case less strength is necessary in the car-body than when the bolster is situated at its extreme ends. In some cases, however, I place the bolster so far without the body of the car, at either end, as to allow the latter to hang down between the two sets of wheels or bearing carriages, and to run, if desired, within a foot of the rails. . . . I do not claim as my invention the running of cars or carriages upon eight wheels, this having been previously done; not, however, in the manner and for the pur-

poses herein described, but merely with a view of distributing the weight, carried more evenly upon a rail or other road, and for objects distinct in character from those which I have had in view, as hereinbefore set forth; nor have the wheels, when thus increased in number, been so arranged and connected with each other, either by design or accident, as to accomplish this purpose. What I claim, therefore, as my invention, . . . is the before-described manner of arranging and connecting the eight wheels, which constitute the two bearing-carriages, with a rail-road car, so as to accomplish the end proposed by the means set forth, or by any others which are analogous and dependent upon the same principles."

Winans, by thus suspending, so to say, his car between the two bearing-carriages remote from each other, obtained for it immunity from jarring caused by elevations and depressions in the track, and also

"by the contiguity of the fore and hind wheels of each bearing-carriage [*which thus operated as one wheel*], and the swivelling motion of the trucks or bearing-carriages, the planes of the flanges of the wheels conform more nearly to the line of the rails, and the lateral friction of the flanges on the rails, while entering, passing through, and leaving curves, is thereby diminished. Moreover, the car rode more easily, because it rested only on the centre of the bolsters."

The case was tried before Conkling, J., and a jury. A verdict being given for the plaintiff, the defendant moved for a new trial, which was refused by Nelson, J., who said: —

". . . Most of the exceptions taken at the trial, and relied on in the argument here, are founded on what we regard as an entire misapprehension of the thing . . . for which the patent has been issued. . . . They assume that if any material part of the arrangement and combination in the construction of the cars or carriages described in the patent was before known or in public use, it is invalid; . . . now, the answer to all this class of exceptions is, that the patentee sets up no claim to the discovery of the separate parts which enter into his arrangement in the construction of his cars. These may be old and well known, when taken separately and detached, for aught that concerns his invention. His claim is for the car itself, constructed and arranged as described in his patent. . . . The argument presupposes that the claim is for the discovery of a new combination and arrangement of certain instruments and materials, by means of which a car is constructed of a given utility; and that if any one or more of the supposed

combinations turns out to be old, the patent is invalid. This is the principle upon which much of the defence has been placed; but no such claim is found in the patent. No particular combination or arrangement is pointed out as new, or claimed as such. The novelty of the discovery is placed upon no such ground. On the contrary, the result of the entire arrangement and adjustment of the several parts described, namely, the railroad car complete and fit for use, is the thing pointed out and claimed as new. This is the view taken of the patent by the Chief Justice in the case of the present plaintiff against the Newcastle and Frenchtown Turnpike and Railroad Company, tried before him in the Maryland Circuit, and which was adopted by the judge on the trial of this case."

Other exceptions were to a charge that the relative position of the bearing-carriages was a material part of the invention, to the admission of a certain drawing, &c.

The case affords a capital instance of a conjunction of mechanical elements amounting to a real combination in the patent-law sense of the term; and it is the more noteworthy, because the putting together of mechanical contrivances on a large scale does not often result in anything more than aggregation.

WINANS *v.* EATON, 1 Fish. 181.

N. D. of N. Y., 1854. Nelson, J.

Nelson, J., refused an application for a preliminary injunction. The defendants introduced evidence to prove that Winans's car was not new. They relied chiefly on the "Quincy car." It was built in 1829, and used on a railroad, about four miles long, running from the granite quarries in Quincy, Massachusetts, to a wharf in Milton.[1] This car was constructed by one Bryant.

Nelson, J., said: —

". . . Bryant states . . . that the objects of the construction were to carry a large load on the eight wheels without injury to the road; to turn the curves freely, descend the inclined plane, and run on the road carrying the stone as smoothly and safely as possible. It consisted of two four-wheel trucks, securely held by centre pivots or king-bolts about ten feet apart, which passed through the bolsters of a

[1] This is said to have been the first railroad in the United States.

rigid body or platform framing and the centres of the trucks. The body, with its bolsters thus secured by the vertical king-bolts, had side-bearings on curved plates on the trucks, and the truck swivelled under them to conform to the curves and switches or turnouts of the road, while the body connecting the trucks sustained and carried the load smoothly and safely. That the trucks consisted of rigid, rectangular wheel-frames, with the double-cross bolsters, and held the bearing-points of the wheels on the rail, the same distance apart as the gauge of the track, which was five feet.

"He further observes that this car contained a combination of the two four-wheel trucks, — rigid wheel frames with a permanent body to carry the load by means of vertical king-bolts, allowing the two trucks to swivel to conform to the curve of the road, the same in principle of construction and operation as the eight-wheeled cars now in general use on railroads in the United States."

Also a model of a steam-carriage, used in 1833 in South Carolina (not described in the report), was introduced in evidence by the defendant.

The court said: —

"I do not find that this evidence was before the court and jury in the former trial upon this patent. Although it may not be regarded (looking at the particular construction and purpose of this steam-carriage) as bearing so directly upon the novelty of the Winans car, or, speaking perhaps more accurately, as showing the principles and arrangements of the defendants' cars to have been discovered and applied before the date of the Winans improvement, it is undoubtedly entitled to a good deal of consideration, and, as the case now stands, sufficient, at least, in connection with the 'Quincy car,' to forbid the granting of the injunction."

And he continued: —

"... The defendants have also given in evidence a model of a carriage for railways and roads, described by W. & E. W. Chapman in their patent granted in England in 1812. The specification is published in the 24th volume of the 'Repertory of Arts,' &c., under the date of February, 1814, with drawings. Fig. 8, says the patentee, shows a carriage of six wheels for the engine, which may rest equally, or nearly so, on each of its wheels, and move freely round the curves or past the angles of a railway; 1, 1, the fore-pair of wheels are, as usual on railways, fixed to the body of the carriage; 2, 2, and 3, 3, the other two pair [*sic*], are fixed on axles (parallel to each other) to a separate frame, over which the body of the carriage should be so poised as that two-

thirds of its weight should lie over the central point of the fore-wheels where the [pivot?] 4 is placed; and the remaining third over the axis [axle] 1, 1. The two-thirds weight of the carriage should rest on conical wheels or rollers, bearing upon the curved plates 1, 1, so as to admit the ledges of the wheels, or those of the way, to guide them on its curves or past its angles by forcing the transom or frame to turn on the pivot, and thus arrange the wheels to the course of the way, similar to the carriage of a coal-wagon; and the patentees add: *If the weight of the locomotive engine should require eight wheels, it is only requisite to substitute, in place of the axis* [*axle*] 1, 1, *a transom such as described, laying the weight equally upon both, and then, similarly to two coal-wagons attached together, the whole four pair of wheels will arrange themselves to the curves of the railway.* . . . This description and drawing of the Chapman car . . . were before the court and jury in the former trial [Winans *v.* Schenectady & Troy R. R. Co., *ante*, page 416]; but as the novelty and improvement of the plaintiff's patent were left, as questions of fact, to the jury, the subject was not a matter of particular examination on the motion for a new trial."

WINANS *v.* NEW YORK & HARLEM RAILROAD CO., 4 Fish. 1.

S. D. of N. Y., 1855. Nelson, J., and a Jury.

Nelson, J., in charging the jury, gave the same construction to the patent that he had given to it theretofore, saying: —

"The claim itself explains the improvement set up by the patentee. It is the arrangement and construction and adjustment of the eight-wheeled car, as described in his specification, the *car as a whole.*"

On the score of abandoned or incomplete invention he said: —

"Now, the circumstance that a person has had an idea of an improvement in his head, or has sketched it upon paper, — has drawn it, and then gives it up, rejects it, — does not, in judgment of law, constitute, or have the effect to constitute, him a first and original inventor. It is not the person who has only produced the idea that is entitled to protection as an inventor, but the person who has embodied the idea into a practical machine, and reduced it to practical use. He who has first done that is the inventor who is entitled to protection.

"A kindred principle, also, it may be proper to state here, which is, that where a person engaged in producing some new and useful

instrument or contrivance, and who has embodied it into a machine, and endeavored to reduce it to practice by experiments, — if these trials fail, if he fail in success and abandon it or give it up, the consideration affords no impediment to another person who has taken up the same idea or class of ideas, and who has gone on perseveringly in his studies, trials, and experiments until he has perfected the new idea and brought it into practical and useful operation. He is the person — the meritorious inventor — who is entitled to the protection of the law."

The evidence on these points is not reported.

WINANS *v.* NEW YORK & ERIE RAILROAD CO., 21 How. 88 (1858).

The Winans patent came before the Supreme Court on exceptions to the charge, and refusals to charge, of Judge Hall in the case of Winans *v.* New York & Erie R. R. Co., 1 Fish. 213.

The court, Grier, J., delivering the opinion, sustained the construction put upon the patent by Hall, J., remarking that it was the same as that given by Mr. Chief Justice Taney in 1839, and by Mr. Justice Nelson, as we have already seen; and they quoted from Judge Hall's charge as follows: —

"The . . . improvement consists in *the manner of arranging and connecting* the eight wheels which constitute the two bearing-carriages with a railroad car, the object of which is to make such an adjustment of the wheels, axles, and bearings of the car as shall enable a car with a comparatively long body to pass curves with greater facility and safety and less friction; and as shall at the same time cause the body of the car to pursue a more smooth, even, direct, and safe course over the curvatures and inequalities and over the straight parts of the road. . . .

"The leading principle set forth in the specification, upon which the arrangement and connection act to effect the objects aimed at, is that by the contiguity of the fore and hind wheels of each bearing-carriage and the swivelling motion of the trucks or bearing-carriages, the planes of the flanges of the wheels conform more nearly to the line of the rails, and the lateral friction of the flanges on the rails, while entering, passing through, and leaving curves, is thereby diminished; while, at the same time, in consequence of the two bearing-carriages being arranged and connected with the body of a passenger or burden car by means of the king-bolts or centre-pins and bolsters, placed as remotely

from each other as may be desired or can be conveniently done, and with the weight bearing upon the *central* portion of the bolsters and bearing-carriages, the injurious effects of the shocks and concussions received from slight irregularities and imperfections of the track and other minute disturbing causes are greatly lessened."

FORBUSH *v.* COOK, 2 Fish. 668.

D. of Mass., 1857. Curtis, J., and a Jury.

The patent was for an "improvement in the power-loom for weaving figured fabrics."

"The particular claim" (we quote from the report) "which was alleged to have been infringed by the defendants was for a combination of a pattern cylinder, with double-hooked jacks, and a lifter and depressor, which were described as so constructed and arranged that the pattern cylinder, in the act of revolving and presenting a section of the pattern, pressed by its projections, which corresponded with the section of the pattern, upon such of the jacks as were required to be raised, and pushed these jacks into a position to have one set of their hooks caught by the elevator, the other jacks not thus acted on remaining in a position to have the other set of their hooks caught by the depressor, the elevator and depressor rising and sinking and carrying with them the required jacks thus disposed to receive their action; the shed of the warp being thus opened both ways simultaneously, the threads necessary to form the figure being disposed in the upper part of the shed."

Curtis, J.: —

" . . . It has not been denied that in point of fact he [the patentee] first combined the pattern cylinder of the witch loom with the double-hooked jacks and elevator and depressor of the Jones and Milldun loom; but some witnesses have testified that, in their opinion, it did not require invention to devise this combination. Other witnesses have expressed the opposite opinion. The true inquiries for you to make in this connection are, whether the combination made by the patentee was new and useful. If it was a new and useful combination within the meaning of the patent law, it was the subject-matter of a patent; and it is not important whether it required much or little thought, study, or experiment to make it, or whether it cost much or little time or expense to devise and execute it. If it was a new and useful combination of parts, and he was the first to make the combination, he is an inventor, and may have a valid patent.

"When I say it must be new, I do not refer to the materials out of which the parts are made, nor merely to the form or workmanship of the parts, or the use of one known equivalent for another. These may all be such as never existed before in such a combination; and yet the combination may not be new in the sense of the patent law. To be new in that sense, some new mode of operation must be introduced. And it is decisive evidence, though not the only evidence, that a new mode of operation has been introduced if the practical effect of the new combination is either a new effect or a materially better effect, or as good an effect more economically attained by means of the change made in the combinations of the patentee. A new or improved or more economical effect, attributable to the change made by the patentee in the mode of operation of existing machinery, proves that the change has introduced a new mode of operation which is the subject-matter of a patent; and when this is ascertained, it is not a legitimate subject of inquiry at what cost to the patentee it was made, nor does the validity of the patent depend on an opinion, formed after the event, respecting the ease or difficulty of attaining it."

POTTER *v.* HOLLAND, 4 BLATCH. 238.

D. OF CONN., 1858. INGERSOLL, J.

A. B. Wilson's reissued patents, numbered respectively 346 and 414.

Wilson claimed the combination in a sewing-machine of a table to support the material to be sewed, a sewing mechanism, and an automatic "feed," or device for moving the cloth to be sewed. The last-named only of these was new; and it was contended by the defendants that, other feed-motions having been used before in other combinations for the same purpose, the patentee could not obtain a valid patent for his combination, but only for that part of it which he had himself invented.

The court, however, held that the combination was patentable, inasmuch as the new element was not an improved form of the old devices used for the same purpose, but an essentially new device.

"It was not something in aid of the old mode, and to make the use of any old mode better. It dispensed with and discarded the old modes, and substituted in their place other means to accomplish a useful result."

The other point decided in this case was as to the validity of the fourth claim of Wilson's patent, which was for so attaching one of the feeding-surfaces to some other part of the machine that it might, at the will of the operator, be drawn away from the other surface. The device is not particularly described in the report. The feeding-surfaces are useful, said the court. This device makes them more effective; therefore it is useful, and, if useful (and new, which was admitted), patentable.

LEE *v.* BLANDY, 1 BOND, 361.

S. D. OF OHIO, 1860. LEAVITT, J., AND A JURY.

Leavitt, J.:—

"There are two classes or kinds of combinations recognized by our patent laws which are properly the subject of a patent. The first may be defined to be one in which all the parts were before known, and where the whole merit of the invention consists in such an arrangement of them as to produce a new and useful result, or where, by adopting parts of a machine which may have been known for ages, an inventor has succeeded in making such an arrangement of them as that they produce a result never before obtained, and have, in that point of view, the merit of originality, and are therefore patentable.

"There is another class of combinations, where *some* of the parts or elements of the combination are new, and their invention claimed, but where they are used in combination with parts or elements that were known before."

Also *held*, that a contract which the defendants had formerly made with the plaintiff, for the right to use the plaintiff's invention, might go to the jury as evidence of its utility.

EMIGH *v.* CHICAGO, BURLINGTON, & QUINCY RAILROAD CO., 1 BISS. 400.

N. D. OF ILL., 1863. DRUMMOND, J.

F. A. Stevens's patent of Nov. 25, 1851, for an improvement in railroad car-brakes.

The claim was for

"the combination and arrangement of the levers, link-rods, and shoes or rubbers, substantially as herein described, whereby each wheel of

both trucks of a car is retarded with a uniform force when the brake is put in operation."

"Stevens's improvement," says the report, "consisted of the addition of an intermediate lever, with which the brake-beam of each truck was connected, the two inner levers of each truck being connected by a link-rod, so that a series of levers should be formed, by which the brakes were operated from either end of the car by the brake-wheel, with an equal pressure upon each brake-beam."

Prior patents were set up by the defence, but there is no description of them in the report.

Drummond, J.: —

". . . In the Stevens brake, the levers are of the same order and of similar proportions, so that when operated from either end, without any serious wear or strain on other parts of the machinery, it applies all the brakes of the car with equal force to the wheels, and, consequently, they are all uniformly retarded.

"The parts of the combination — the levers, the link-rods, and rubbers — are all old, but the combination in the manner described by Stevens is new. . . . The claim of Stevens, fairly interpreted, means the particular combination and arrangement of levers, link-rods, and rubbers in a car, as he had described it, so as to produce the result; namely, the retarding, with a uniform force, of each wheel of the car, when the brake is applied."

SWIFT *v.* WHISEN, 2 Bond, 115.

S. D. of Ohio, 1867. Leavitt, J., and a Jury.

A patent originally granted to Frost & Monroe, Feb. 27, 1849, for "improvement in machinery for separating flour from bran."

The patent was thrice reissued, and the last reissue contained five claims, all of which were for combinations, — the parts of the combinations not being new. The parts, or "essential features," as they are called in the patent, were as follows: —

1. The vertical or nearly vertical position of the bolt.
2. The surrounding case, forming a chamber outside of the bolt.
3. The rotating cylinder, armed with beaters, pins, or fans.
4. The distributing head on the top of the rotating cylinder.
5. The closed-up top to the bolt proper.

6. The closed-up bottom to the bolt proper.

7. Rotating wings or bran scrapers, to clear the bottom of the bolt and discharge the bran.

Prior inventions alleged to anticipate this patent were set up by the defence, but they are not described in the report.

Leavitt, J.: —

"The court is asked to say to the jury that, as a matter of law, all the parts or devices of the combination claimed must co-act to produce a given result, in order to form a legitimate combination; and if the jury find that the surrounding case does not co-act with the vertical position of the bolt and closed-up bottom to the bolt proper for the purpose of discharging the bran, as stated in the third claim of the reissued patent upon which this suit is brought, then such claim is void for want of unity and co-operation of its several parts; and the court is requested to charge the same in respect to the combinations of the fourth and fifth claims of the patent [which were, respectively, claims for combinations of the first, second, sixth, and seventh, and first, second, fourth, fifth, sixth, seventh, of the 'essential features' above mentioned]. I suppose the entire meaning of this is, that each separate combination claimed by the patentee in the reissued patent must be what it is described to be; that all the parts must be found there, and that all those parts must co-act in producing the result claimed from the combination." [1]

Of an alleged anticipation, the court said: —

"Then, there is another machine introduced. the Bradfield smut-machine, . . . invented, it appears, in 1839, and patented in 1840. If the jury find that machine to be identical with the one covered by the plaintiff's patent, of course that would be fatal to the novelty of the Frost & Monroe invention. And here I may observe that that machine was intended and invented for an entirely different purpose than that of Frost & Monroe. But if the jury should come to the conclusion that that machine, although a smut-machine, and designed originally to separate smut from wheat, embodies the same principles with the plaintiff's machine, and that, without the exercise of invention, it could be changed so as to produce all the useful results of the Frost & Monroe machine, it would have precedence, undoubtedly, in point of novelty, over the machine invented by Frost & Monroe, provided the Bradfield machine was actually perfected and brought into use. If it

[1] We should say rather that the court was requested to state the doctrine of combination afterward laid down in the case of Reckendorfer *v.* Faber (*vide ante*, page 400).

was merely got up for the purpose of experiment, and not practically tested, it would not be regarded as a perfected invention.

"As has been well said by counsel, that which a person perfects, or invents and applies to a practical use, that is to be regarded as the invention, and the mere knowledge by an individual of a prior mechanical structure, similar to the one patented, which has not been used practically, would not be an answer to the novelty of the later patent."

TUCK *v.* BRAMHILL, 6 BLATCH. 95.

S. D. OF N. Y., 1868. BLATCHFORD, J.

J. H. Tuck's patent of June 25, 1855, for improvements in packing for pistons, valves, &c., thus described by the patentee: —

"I first take canvas, or other suitable material, and saturate it with a solution of india-rubber, or other equivalent composition. I then cut the canvas thus prepared in a diagonal manner into strips of any required width, cement the diagonal ends together, so as to form any length of fillet required, then roll it up into a roll, and allow it to cement in a firm but elastic or flexible roll of any suitable diameter required. *In cases where greater elasticity is required, I roll the canvas round a cone or centre-piece of india-rubber, or other suitable elastic material.*"

The claim was: —

"The forming of packing for pistons or stuffing-boxes of steam-engines, and for like purposes, out of saturated canvas, so cut as that the thread or warp shall run in a diagonal direction from the line or centre of the roll of packing, and rolled into form, either in connection with the india-rubber cone or other elastic material, or without, as herein set forth."

The patentee afterward disclaimed packing *without the cone.* The court held that the original claim was in effect double (being for packing both with and without the cone), and therefore divisible, so that the disclaimer was valid; and in reference to the patentability of the contrivance thus curtailed Judge Blatchford said: —

"The roll with the cone is a distinct thing from the roll without the cone. It has a utility of its own, as is quite apparent from the fact that the defendant sells it. The prior existence of the roll without the

cone is shown, but it is not shown that the roll with the cone was known or used before the invention of it by the plaintiff. If the plaintiff had known of the existence of such roll without the cone, he could have patented the combination of it with a cone, if such combination were invented by him and was new. There is sufficient utility and invention in such combination to support a patent. The result produced by the combination is a new article, and, being useful, it is patentable. Crane *v.* Price, Web. Pat. Cases, 409; McCormick *v.* Seymour, 2 Blatch. C. C. R. 243."

STIMPSON *v.* WOODMAN, 10 WALL. 117 (1869).

Woodman's patent of March 29, 1864, for boarding or "pebbling" leather (*i. e.* impressing designs upon it), by means of a cylinder of steel, engraved in bas-relief, rolling over a table upon which the leather was placed. The machinery by which the roller operated was claimed in the second claim of the patent; but in this case the first claim only was in suit. It ran as follows: —

"Boarding or pebbling skins or leather by means of a single short cylinder rolling over a table with the requisite pressure, substantially as described."

It was proved, first, that *hand*-rollers engraved like those of the plaintiff, and, secondly, that rollers operated by machinery substantially like that of the plaintiff, but unengraved, had been in use before his alleged invention.

The object of the hand-roller was the same as that of the plaintiff's roller; and the object of the smooth rollers was to give to the leather "a closer, natural grain."

On these facts it was held by a majority of the court — Clifford, J., dissenting — that the improvement was not patentable, Nelson, J., delivering the opinion: —

". . . The field of invention was open to any person to construct new devices or machinery by means of which to operate this old instrument in 'pebbling leather' [*i. e.* the hand-roller], . . . 'so as to accomplish the object desired with greater rapidity and cheapness.' And this the plaintiff would have accomplished by his machine if he had not been anticipated. . . . If the plantiff's machine had been anticipated in every part of its construction except the figures or designs on the roller, which roller was old, he was not entitled to recover. . . . There is also

another ground upon which we think this instruction should have been given. Assuming the plaintiff to have been anticipated in the construction of his machine in every part of it, except that the prior machine used a smooth revolving roller and the plaintiff a figured one, but which figured roller had been used for pebbling leather by pressure, and was well known, all of which the jury would have been warranted in finding, the engraving or stamping of the figure upon the surface of the smooth roller, or the substitution of the old figured roller for the purpose, required *no* invention; the change, with the existing knowledge in the art, involved simply mechanical skill, which is not patentable."

The distinction thus drawn by the court between the two grounds on which its decision rests is agreeably metaphysical. In one case the inventor is supposed to start with the figured hand-roller, and then to combine with it a previously used mechanism of motion; and the combination so made is not patentable, because it is a mere aggregation, and not a true "combination," in the sense of the patent law.

In the second case, the inventor is supposed to start with the smooth roller and its mechanism of motion, and then to change the smooth for the figured roller by actual substitution, or by engraving the smooth roller so as to make it like the hand-roller; and this result is not patentable, because the change, like the mere substitution of one material for another, involved no invention.[1]

WOODWARD *v.* DINSMORE, 4 Fish. 163.

D. of Md., 1870. Giles, J.

Woodward's patent of Feb. 24, 1857, reissued July 10, 1866, for an "improvement in solar camera."

"The invention," says the report, "consisted in an apparatus for producing enlarged copies of photographic pictures, and consisted of the adaptation to the camera-obscura of a lens for condensing the sun's rays, and focussing them at or near the achromatic lens."

The claims of the reissued patent were as follows:—

"I. Adapting to the camera-obscura a lens, or lenses, and reflector, in rear of the object-glass, in such manner that it is made to answer

[1] *Vide ante*, page 281, note.

the twofold purpose of a camera-obscura and a camera-lucida, substantially as and for the purposes specified."

"II. The arrangement and combination of the condensing lens II, or lenses D′ and H, negative slide or holder N, and achromatic lens or lenses E, made adjustable with regard to each other for condensing the sun's rays upon and through the negative, and focussing them upon prepared paper, canvas, or other suitable material for photographic purposes, substantially as described."

Some prior inventions were set up in defence, but the evidence to support them was very slight. Upon the question of patentability the court thus remarked: —

"A prominent feature of the defence, that was ably urged, was that the solar microscope was the same, in principle and mode of operation, as the solar camera; and it was insisted that here, as well as in the solar camera, the rays that passed through the condenser were focussed at the enlarging lens. Still, in my judgment, this does not make the solar microscope the equivalent of the solar camera. The microscope, like the magic lantern, produces enlarged images of objects; but neither are competent to print the image on the screen on which the images are thrown without development. In the microscope this is owing in part to the want of that combination of the actinic and visual rays which is due to the photographic lens employed in the solar camera; and in answer to the argument that a person wishing to employ a solar microscope for photographic purposes on an enlarged scale would only have to substitute a photographic lens in place of the microscopic lens, with a suitable arrangement to accommodate it and the negative, and the only lenses used for photographic purposes being achromatic lenses, it is to be said that this changing of one of the elements of a combination that will not produce a desired effect, and substituting another that makes it effective, is to produce a new and patentable combination; and even if the elements are unchanged, yet if with one arrangement they are incompetent to an end for which a different arrangement makes them competent, such new arrangement becomes patentable, unless it is such as would naturally suggest itself to persons skilled in the art to which the subject makes it akin."

WATSON *v.* CUNNINGHAM, 4 Fish. 528.

W. D. of Penn., 1871. McKennan, J.

A patent (granted to D. I. Holcomb, Dec. 14, 1869) for improvements in fruit-jars, described in the opinion of the court by McKennan, J.: —

". . . A fruit-jar of glass or other material is made with a wide, flat surface or shoulder-bed, to receive a flat rubber ring or gasket, which encircles an upright projection forming the mouth of the jar. Upon this projection is made to fit a thin metal cover with a flanged rim, which rests on the rubber gasket. On the opposite sides of the circumference of this cap are ridges or elevations in its surface, with a slight depression in the middle of each of them, on which a wire yoke, to hold the cover down, is designed to rest and to be kept in place. This yoke is bent at its extremities, and is made to fit tightly on the shoulder of the jar, so as to cause a downward pressure on the cap. The function of the ridges is to furnish a bearing for the wire fastener, and at the same time to hold it in its place. While, therefore, the fastener rests only on these elevations, there is no central pressure on the cover by which the springing of the flange might be caused, and the air thus be allowed to pass between it and the rubber. The pressure is concentrated upon the circumference of the cover directly over the flange, and thereby a closer contact with the gasket is produced and maintained, and the air more effectually excluded. This is the distinguishing merit of the invention. . . . The nearest approximation to his [the patentee's] invention appears in those jars constructed with a shoulder, upon which an india-rubber gasket rests, with a thin metal cover pressed down on it by a wire yoke, and with elevations or lugs operating only to prevent the lateral displacement of the yoke. But they lack the distinguishing device used by the patentee, by which the bearing of the fastener is only on the periphery of the cover, and its downward pressure is thus certainly concentrated upon the whole circumference of the flange. Differing in this essential feature, . . . they are distinguishable from the patentee's invention by the omission of one of the most important constituents of the combination therein embodied.

"It is scarcely necessary to support this conclusion by a restatement of the familiar principle that a combination, all the elements of which are old, is patentable if a new or improved result is thereby obtained, or that a combination, all the elements of which except a single one have been before used together, is also the subject of a patent. The

whole combination is to be regarded as a unit; and if all its essential elements have not before been embodied and employed together, it is to be taken as an original invention."

M'MILLIN *v.* BARCLAY, 5 FISH. 189.

W. D. OF PENN., 1871. MCKENNAN, J.

One patent in suit was granted to the plaintiff April 16, 1867 (No. 63,917), for an "improvement in applying steam power to the capstans of steamboats and other crafts," which consisted, according to the claim, in

"rotating a capstan placed on deck of a boat, by means of an auxiliary engine, when said engine and capstan are placed forward of the steam-boilers of said boat, substantially as hereinbefore described, and for the purposes set forth."

It was contended that the invention was not new, and that, at best, it was an unpatentable aggregation of old devices. The court said: —

"It is satisfactorily shown by the proofs that, upon steamboats navigating the western rivers, the operation of the capstan in its usual place by the main engine is impracticable; certainly it has not been done. Before M'Millin's invention, the capstan in these boats was worked by muscular power alone. If a method, then, could be devised by which the power of steam could be applied to the capstan, without changing its location, so that it could be worked more economically, easily, and efficiently, a new and useful result would thereby be produced. This was the problem which engaged the thoughts of M'Millin, and he solved it by taking the capstan in its accustomed place, and the auxiliary or 'nigger' engine at the place usually assigned to it, both forward of the main engine, and connecting them by appropriate but well-known mechanical devices, thereby producing the desired result.

"It is to be observed that the retention of the auxiliary engine and the capstan in the positions where they were before located is an essential element of this method. The main object was to secure the unabridged performance of other valuable functions pertaining to them. Now, by the patents and other publications referred to, no information is furnished as to where the engine and capstan must be located to produce the results effected by M'Millin's invention. On the contrary, assuming that they all describe a capstan, or its fair equivalent, the capstan

must be located so that its usefulness, derived from its position on the forecastle, is lost, or the engine which actuates it, so that it cannot be used for the purposes for which the 'nigger' engine is employed. But it is urged that, as the 'nigger' engine and capstan were before used independently on steamboats, and bevel gearing was before used to connect machinery in mills, any mechanic of ordinary skill could supply the mode of connecting the 'nigger' engine and capstan employed by the patentee, and therefore no inventive skill was exerted by him. This is a narrow view of the patentee's invention. If a new or improved useful result is effected by means before well known, or any useful result is produced by a new mechanical device, or combination of old mechanical devices, in both cases the exercise of invention must necessarily be presumed, because both are the proper subjects of a patent. If the patentee, then, has devised a method of rotating the capstan of a steamboat by an organization of elements not before employed in the concrete, for that or an analogous purpose, or if his method produces an improved result, a sufficiency of invention to support his patent must be presumed. The proofs undeniably show that he did demonstrate the practicability of operating the capstan of a steamboat by power transmitted from the 'nigger engine,' without changing the place of either, so that their separate efficiency for all other purposes was preserved. They show more, — that he was the first to do this, and that it was followed by the almost universal abandonment on Western boats of the old method of working the capstan, and the adoption of M'Millin's. With the suggestive help of all this literature of the art, and the stimulus of a result of such general interest and utility to be achieved, no one put in practice a method of effecting it until M'Millin demonstrated it to the public. These are notable facts, and surely they are persuasive, not only that the result accomplished was novel, but that it was the fruit of inventive skill."

There follows a slight description of several inventions alleged to anticipate M'Millin's combination, none of which, however, is sufficiently like it to require our notice. Also, a drawing shown to M'Millin before he completed his invention was set up; but it was proved that he had substantially devised the mechanical means employed by him before he saw the drawing.

GOULD *v.* REES, 15 WALL. p. 193 (1872).

The remarks we are about to quote were upon a question of infringement, but they are in point here.

Mr. Justice Clifford: —

"Unquestionably, the withdrawal of one ingredient in a patented combination, and the substitution of another, which was well known at the date of the patent as a proper substitute for the one withdrawn, is a mere formal alteration of the combination; and if the ingredient substituted performs substantially the same function as the one withdrawn, it would be correct to instruct the jury that such a substitution of one ingredient for another would not avoid the charge of infringement. Grant all that, and still it is clear that the concession will not support the charge of the court, as it is equally clear that if the combination constituting the invention claimed in the subsequent patent was new, or if the ingredient substituted for the one withdrawn was a newly discovered one, or even an old one performing some new function, and was not known at the date of the plaintiff's patent as a proper substitute for the ingredient withdrawn, it would avoid the infringement, as a new combination, or a newly discovered ingredient substituted for the one omitted, or even an old one performing a new function not known at the date of the plaintiff's patent as a proper substitute for the one withdrawn, would not be an equivalent for the ingredient omitted within the meaning of the patent law; nor could it be successfully claimed as such by the plaintiff in order to support the charge of infringement. Such an alteration is not a mere formal alteration, as the difference between the two improvements is such that the new combination would be the proper subject of a patent, and, consequently, would avoid the charge of infringement in a case like the one supposed by the court," &c.

SARVEN *v.* HALL, 9 BLATCH. 524.

D. OF CONN., 1872. WOODRUFF AND SHIPMAN, JJ.

Sarven's patent, reissued Sept. 6, 1860. The second claim was for

"a carriage-wheel constructed with a mortised wooden hub, with tenoned spokes and with flanges, which embrace the faces of the spokes in the immediate vicinity of the hub, and are connected together so as to form a metallic band, through which the spokes extend into the mortises in the wooden hub, substantially as before set forth."

This was construed by the court to be a claim for the combination of tenoned spokes in a wooden hub, with the metallic flanged collar. The tenoned spokes in a wooden hub are found in the ordinary wheel; "tenoned" spokes being simply spokes pared down (but not pointed), so as to be driven into the mortises, or openings of like shape and size, in the hub. The metallic collar, also, had been used, but not with tenoned spokes. The wheel in which its use was most like that in the plaintiff's had a hub not mortised, but channelled, and the spokes, instead of being tenoned, passed through a mortised metallic collar into the channel of the hub, without diminishing in size.

The defendant set up that this was not a patentable combination, but a mere aggregation. The working of the combination was thus described by the patentee:—

"After the spokes are all fitted, I put the flanged collar on the back part of the hub. The collar fitting closely to the hub serves to strengthen and support the same, while the flange fits closely to the back of the spokes. I in general make three screw-holes in the collar next the hub, into which I insert screws, so that the collar will retain its position, in case the hub should shrink. In the flange that fits against the spokes I in general make five one-fourth inch holes, in which I cut a thread to receive screws. After the back flange collar is secure, I put on the front flange collar on the front of the hub, it fitting closely to the hub, but is not screwed thereto, the flange fitting closely to the front of the spokes. In these flanges there are five holes, opposite those in the back flange. I now bore five one-fourth inch holes through the spokes, and insert screws, drawing both flanges firmly against the spokes, thereby securing all the spokes firmly in their proper place."

The object of this device was to strengthen the hub and the spokes at the hub. The court (Woodruff, J., delivering the opinion) admitted that the case was near the line, but held that the combination was patentable, because

"there is a reciprocal action or operation of the parts upon each other and conjointly upon the entire wheel, each part giving to the other increased support and efficiency, and the two co-operating to make a stronger and more durable wheel than is produced by the use of either without the other; that is to say, the tenoned spokes are strengthened and sustained in position by the flanged collars; and the flanged collars bound to the spokes by the connecting bolts or screws are more firmly

held in position by the tenons of the spokes. Combined, they unite hub and spokes, enabling the wheel better to resist a blow or strain, either laterally or in the direction of its plane. It must be conceded, within the rule on this subject, that a combination of devices would not necessarily be patentable from the mere fact that their union produced a better wheel. If the superiority arose from the fact that the two devices were intrinsically better than others, and the wheel combined both, — each, however, operating independently of the other, — the combination would be but the exercise of judgment in the choice of parts, and not invention in discovering new means to produce useful or better results. A new relation is established between the efficient means of strengthening and supporting the parts of the wheel in question, and a new and greater efficiency is given to each, which is due not to their inherent quality, but due to the combination itself."

TARR *v.* WEBB, 10 BLATCH. 96 (E. D. OF N. Y., 1872. BENEDICT, J.); TARR *v.* FOLSOM, 1 HOLMES, 313 (D. OF MASS., 1874. SHEPLEY, J.); WONSON *v.* PETERSON, 18 O. G. 549 (D. OF MASS., 1878. SHEPLEY, J.).

Tarr & Wonson's reissued patent of Oct. 17, 1871, No. 4598, for a paint to keep ships' bottoms clear of barnacles, sea-weed, &c.

In the first suit, Division A only of the patent was in question, the claim being for "a paint consisting of oxide of copper, with a suitable vehicle or medium, substantially as described." Though the claim of Division A was thus restricted, the patentees described in their specification the mode of making the paint and the ingredients which they used, — namely, Stockholm tar, benzine or naphtha, and pulverized dry oxide of copper; and the specification went on: —

"We prefer to employ the oxide of copper made from the pyritous, friable ores, because, besides being easily reduced to fine powder, these contain mineral and earthy substances, such as various other metallic oxides, sulphur, &c., which serve to divide the particles of oxide of copper, interspersing between them substances which dissolve more slowly than they do, or which do not dissolve at all, it being desirable, for the sake of economy, that the solution should be less rapid than would take place with a pure oxide of copper, and yet sufficient to give the necessary protection to the bottom. . . . All that is desired

is that there should be a proper base, such as these earthy or mineral matters furnish, to retard the solution of oxide of copper, and give durability to the paint. Such a base, however, although desirable, in our judgment, *and as such claimed as an element in the composition of paint which we have patented in another reissue* taken at the same time with this one, is not indispensable, &c. . . . In place of the naphtha or benzine, any known diluent may be employed. The consisteney of the vehicle to be about that of linseed oil."

This claim of Division A the court held invalid, as follows: —

"The . . . patent . . . seeks to secure to the patentees any mixture capable of being applied as a paint, in which oxide of copper is an ingredient. The patent is not for a process, but for a compound which the patentees claim as their own discovery. In this compound, two elements, and no others, are described as essential. There must be oxide of copper in the compound, and there must be a vehicle which will permit it to be applied to surfaces, after the manner of applying paints. It is not pretended that any new property of oxide of copper is developed, or brought into action, by this manner of using it, nor does the compound itself produce any effect not before known. All the benefit derived from the use of the compound arises from the poisonous effect of oxide of copper, — an effect long well known. So understood, the patent is invalid. It discloses no discovery to be rewarded. Oxide of copper and its poisonous effects have long been known. Compounds capable of being applied to surfaces, in order to protect the same, are in universal use; and there was nothing new in the idea that oxide of copper could in this way be applied to surfaces."

In the second case, before Shepley, J., Division B of the reissue referred to in the italicized part of the above-quoted specification was in suit. The claim of Division B was for a paint "compounded" (in the language of the court),

"*first*, of a suitable vehicle or medium; *second*, of the oxide of copper yielding a poisonous solution in water; *third*, together with such earthy and mineral matters as separate the particles of the oxide and retard such solution. . . .

"It is not necessary," the court then said, "to decide whether the views expressed in an opinion given by [Benedict, J.], denying the motion for a preliminary injunction based upon an alleged infringement of Division A, which opinion was based upon the evidence before him on *ex parte* affidavits, would justify similar conclusions upon such a

state of the evidence as is exhibited upon the final hearing in this case. It is apparent that the testimony in this record, aided by the elaborate investigation and learned arguments of the counsel on both sides, has presented this question, so far as it relates to Division A, in many new and different lights from those brought to bear upon it in the presentation of the question before that learned judge. But the infringement, if there were any in this case, was of the composition of matter described in Division B. I shall confine my decision to that branch of the patent."

Shepley, J., then states the claim in language which we have quoted, declaring the invention to be patentable; and he goes on to notice the chief ground of the defence, — a paint invented by one Wetterstedt, which was expressly disclaimed by the plaintiffs in their specification.

"Wetterstedt describes the basis of his invention 'to consist in the combination of regulus of antimony in various proportions with copper, tin, zinc, or lead.'"

But the Wetterstedt paint, when used on iron bottoms, required to be supplemented by an auxiliary paint composed of two pounds of the alloy of antimony and copper, four pounds of oxide of copper, mixed with five pints of the compound of tar and naphtha, and with three pints of pure naphtha.

The omission of the alloy of antimony and copper in the plaintiffs' paint was obviously, the court declared, enough to make it patentable, those ingredients being thought essential before their invention. Moreover, the plaintiffs' paint was simpler, cheaper, and no less effective than Wetterstedt's. Patent sustained.

THE RUSSELL & ERWIN MANUFACTURING CO. *v.* MALLORY, 10 Blatch. 140.

D. of Conn., 1872. Woodruff and Shipman, JJ.

The claim of the patent was as follows: —

"The combination of a lock and latch, when the latch-bolt and its operative mechanism are arranged in a case or frame independent of the main case, and constructed so that the latch-bolt may be reversed, substantially as described, without removing the said independent case from the main case."

The invention in this case was of a latch so constructed that, without taking it out of its case, it could be turned over, and thus made adjustable for a right-hand or a left-hand door; whereas, formerly, latches being bevelled on one side and not on the other, and being incapable of such reversal, were fitted only for right-hand or for left-hand doors, as the case might be, and not for both indiscriminately.

The defence set up that the claim, being for a combination of a latch and a lock which acted independently of each other, and without affecting each other, was not for a true combination, but for a mere aggregation, and was therefore invalid. But the court held that, the latch being new, it was open to the patentee to claim it, as he had done, in combination with a lock, although he might have made his claim simply to the latch, and therefore to its use in any possible combination. He had unnecessarily restricted his claim, but it was none the less valid.

THE LOCOMOTIVE-ENGINE SAFETY-TRUCK CO. *v.* THE ERIE RAILWAY CO., 10 BLATCH. 292.[1]

S. D. OF N. Y., 1872. BLATCHFORD, J.

Patent of Alba F. Smith, dated Feb. 11, 1862, for an "improvement in trucks for locomotives."

The specification said:—

"Several laterally moving trucks have been made and applied to railroad cars. My invention does not relate broadly to such laterally moving trucks, but my said invention consists in the employment, in a locomotive engine, of a truck or pilot wheels provided with pendent links, to allow of a lateral movement, so that the driving-wheels of the locomotive engine continue to move correctly on a curved track, in consequence of the lateral movement allowed by said pendent links, the forward part of the engine travelling at a tangent to the curve, while the axles of the drivers are parallel, or nearly so, to the radial line of curve. In the drawing, I have represented my improved truck itself. The mode of applying the same to any ordinary locomotive engine will be apparent to any competent mechanic, as my truck can be fitted in the place of those already constructed, or the same may be altered to include my improvement."

[1] This case belongs more properly, perhaps, in the chapter on New Use.

The claim was:—

"The employment in a locomotive engine of a truck or pilot wheels, fitted with the pendent links O, O, to allow of lateral motion to the engine, as specified, whereby the drivers of said engine are allowed to remain correctly on the track, in consequence of the lateral motion of the truck, allowed for by said pendent links when running on a curve, as set forth."

Blatchford, J., thus described the improvement:—

"The truck has four wheels, on two axles, and a frame made in the usual manner of the frame of an ordinary locomotive truck. It has a centre cross-bearing plate or platform, made of two thicknesses of iron plate, riveted together and embracing the upper bars of the frame, and a bolster, made of a flanged bar, through a hole in the centre of which the king-bolt passes. The king-bolt also goes through an elongated opening in the bearing-plate, to allow a lateral motion to the truck beneath the bolster. At the same time, the king-bolt is a connection to hold the truck to the engine. The bolster takes the weight of the engine in the middle, and is itself suspended at the ends of bars attached to the moving ends of pendent links, which are attached by bolts at their upper ends to brackets on the frame. The distance between the bars transversely of the truck is slightly more than that between the bolts, so that the pendent links diverge slightly. The specification says: 'When running upon a straight road, the engine preserves great steadiness, because any change of position, transversely of the truck, in consequence of the engine moving over the truck, or the truck beneath the engine, is checked by the weight of the engine hanging upon the links, and, in consequence of their divergence, any side movement causes the links on the side towards which the movement occurs to assume a more inclined position, while the other links come vertical, or nearly so. Hence the weight of the engine acts with a leverage upon the most inclined links to bring them into the same angle as the others, greatly promoting the steadiness of the engine in running in a straight line. As the pilot or truck wheels enter a curve, a sidewise movement is given to the truck, in consequence of the engine and drivers continuing to travel at a tangent to the curve of the track. This movement, and the slight turn of the whole truck on the king-bolt, not only causes the truck wheels to travel correctly on the track, with their axles parallel to the radial line of the curve of track, but also elevates the outer side of the engine, preventing any tendency to run off the track upon the outer side of the curve. Upon entering a straight track, the truck again assumes the central position, and, in case of

irregularity in the track, or any obstruction, the truck moves laterally, without disturbing the movement of the engine. I do not claim laterally moving trucks, nor pendent links separately considered.'"

With this explanation, the reader will be prepared to consider the chief point of the defence, which was that the contrivance described by the plaintiff having been patented before in connection with ordinary eight-wheel cars, it was not open to the plaintiff to patent it in combination with a locomotive engine.

Blatchford, J., said: —

"This [the plaintiff's] precise construction of divergent links is shown in the patent gra :ted to Kipple & Bullock, Dec. 20, 1859, for an 'improvement in car trucks.' Their use has the tendency to elevate the outer side of the car on a curve, and the tendency to steady the body of the car through its weight on the links that are most inclined, and the tendency to limit the lateral movement, without using side springs. But although the mode of operation of a Kipple & Bullock truck *per se*, in a car having a like truck at its other end, is the same, for all the purposes of the truck itself, that it is in a structure which has driving-wheels at the other end, yet the moment the truck swivelling on a king-bolt is taken out of the other end of the structure, and driving-wheels take its place, the mode of operation of the structure as a whole becomes different from the mode of operation of the structure with the two swivelling trucks. This is conceded by the expert for the defendants, and is quite manifest. The mode of operation becomes such as is described in Smith's specification, and no such mode of operation exists in the structure with the two trucks. Moreover, the existence of the Kipple & Bullock patent, and the use of cars each with two of their trucks, does not seem to have suggested, before the invention of Smith, the use of one of such trucks as a pilot truck in a locomotive engine, to obviate the well-known difficulties in using the engine on a curve."

The defence also set up as anticipating the plaintiff's patent that of one Bissell, granted Aug. 4, 1857, for a locomotive truck. Bissell's truck had no swivelling motion around its centre-pin or king-bolt, which served simply as a draft-block or pin. This truck, therefore, being both in operation and in result unlike the plaintiff's, was held not to anticipate it.

A similar decision on this patent was made by Strong, J., in the later case of the same plaintiff *v.* The Pennsylvania R. R. Co., 6 O. G. 927 (E. D of Penn., 1874).

HAILES *v.* VAN WORMER, 20 WALL. 353 (1873).

There were two patents in suit, one reissued to Hailes & Treadwell, Feb. 3, 1863; the other granted to Mead & Hailes, Aug. 11, 1863. Both were for combinations, in a base-burning stove, of certain devices, all of which had been used separately before the patentees' alleged inventions.

The devices which the defendants were alleged to infringe (there were some others in the combination) were as follows:—

"1.[1] A flaring fire-pot, supported by a base, the diameter of the pot being larger at the top than at the bottom.

"2. A magazine or reservoir for supplying coal, located over the fire-pot, and having its lower end contracted.

"3. Revertible passages or flues outside of the pot, for the conduct of the products of combustion downwards to the base of the stove and thence to a main draft-flue leading thereout.

"4. A direct draft for such stoves as are constructed with revertible flues, the direct draft being obtained by a flue passing out above the fire-pot, and provided with a damper to be closed after the fuel has been ignited.

"5. Openings in the case or exterior of the stove, and the insertion of mica therein, for the purpose of illuminating the room in which the stove may be with the light of the burning fuel."

"The objects," said Mr. Justice Strong, "are, . . . first, to prevent the passage of the products of combustion up, around and over the top of the coal-supply reservoir, so as to heat a surrounding jacket thereof; and, secondly, to heat a circulating or ascending body of air by means of radiated heat from the fire-pot, and at the same time to heat the base of the stove by means of direct heat circulating through descending flues which lead into the ash-pit, or around it, and to the smoke and draft flue. A third avowed object is to secure economy by retarding the fall of the coal into the fire-pot from the supply reservoir, and by causing the flame to circulate outside of the contracted discharge of the reservoir, and around the upper edge of the fire-pot, and thence to descend around or under the base of the stove in its passage to the smoke and draft flue. Such are the avowed objects of the combinations claimed to have been devised by the patentees, and their effects they assert to be husbanding the radiated heat, and using it for the purpose of warming the upper part of the stove and the room in which it is

[1] The court, by Strong, J.

situated, as well as for heating air for warming rooms above, if desirable, and at the same time so confining the direct fire-heat, and keeping it in contact with the base portion of the stove, as to insure warming it to a comfortable degree. A second effect claimed is relief of the incandescent coal from the weight of the body of superincumbent coal [by contracting the lower end of the coal reservoir], thus preventing the compression of the burning coal in the fire-pot, and securing for the flame free expansion, thus enabling it to act with greater heating effect upon the lower portion of the stove in its passage to the smoke and draft flue."

Of the first three of these devices the court said: —

"They have no relation to each other. Neither the form of the feeder nor the shape of the fire-pot bears at all upon the direction of the draft-passages. There is no novel result flowing from the joint operation of the three devices. The revertible flues have no more to do with a stove supplied by a feeder than they would have with a stove supplied by hand."

And so of the remaining devices; and upon the whole case the court remarked: —

"Combined results are not necessarily a novel result, nor are they an old result obtained in a new and improved manner. Merely bringing old devices into juxtaposition, and there allowing each to work out its own effect without the production of something novel, is not invention,"[1] &c.

BLAKE *v.* RAWSON, 1 HOLMES, 200.[2]

D. OF MASS., 1873. SHEPLEY, J.

The patent (granted to E. W. Blake, Jan. 9, 1866) was for a stone-breaking machine, all the elements of which were old. The only question important for our purpose raised in the trial was whether the Blake machine was anticipated by the Hamilton machine, — a stone-breaker composed of the same elements as

[1] *Vide ante*, page 306.

[2] This patent was also sustained by Shipman, J. (S. D. of N. Y.), whose decision was affirmed by Judge Nelson in the case of Blake *v.* Stafford, 6 Blatch. 195; and also by Judge Drummond, Blake *v.* Eagle Works Mfg. Co., 3 Biss. 77.

Blake's, but working on a different principle. Blake's machine was thus described by him (*vide* 6 Blatch. 195): —

"My stone-breaker, so far as respects its principle or its essential characteristics, consists of a pair of jaws, one fixed and the other movable, between which the stones are to be broken, having their acting faces nearly in an upright position, and convergent downward, one toward the other, in such manner that while the space at the top is such as to receive the stones that are to be broken, that at the bottom is only sufficient to allow the fragments to pass when broken to the required size, and giving to the movable jaw a short and powerful vibration through a small space, say one-fourth of an inch, more or less. By means of this form and arrangement of the jaws, and this motion of the movable jaw, when a stone is dropped into the space between them, it falls down until its farther descent is arrested between their convergent faces. The movable jaw advancing, crushes it; then receding, liberates the fragments, and they again descend, and if too large, are again crushed; and so on until all the fragments, having been sufficiently reduced, have passed out through the narrow space at the bottom," &c.

In a subsequent reissue there was added the claim

"of a revolving shaft, driven by steam or other power, which is made to impart to one of these jaws a continual vibratory movement," &c.

The Hamilton machine was thus described by Shepley, J.: —

". . . A combination of certain elements which, separately considered, do not materially differ from the elements of the combination described in the Blake patent. All the elements of the combination are old in both machines. The novelty in both consisted in the peculiar mechanical combination of the members of the contrivance and the resultant mode of operation. The movable jaw in the Blake machine advances toward and recedes from the fixed jaw in a direction substantially at right angles with the faces of the jaws; so that when advancing, the stones are nipped and crushed between the jaws, and when receding, the stones are liberated. In the Hamilton quartz-crusher there is a cylindrical roller or pestle, in a basin having its sides eccentric to the circle of the movement of the roller or cylindrical pestle, the inner sides at the bottom of the curved basin gradually approximating to the circle of movement of the cylindrical roller. This cylinder is made to move around its central shaft with a reciprocating, vibratory movement, but being cylindrical, and turning upon a fixed central axis, can only move in the direction of the periphery of the cylinder.

The surfaces of the cylinder operate upon the material by a grinding process, tending to rotate the stones on their own axis, and at the same time to draw them down into a space where, by reason of the eccentricity of the opposite surfaces, they are nearer to each other than at the point where they begin to operate on the stones to be crushed.[1] In the Hamilton machine every point on the acting face of the roller moves in the segment of the circle of the periphery. In the Blake machine it is strictly correct to say that the points in the movable jaw advance toward the fixed jaw in the arc of a circle; but the *whole* movable jaw advances toward and recedes from the fixed jaw, and the space through which it moves is so small compared with the periphery of the circle, which would be described if its rotation were continued, that the operation upon the material is substantially the same as if the movable jaw were advanced toward the fixed jaw in a direction at right angles with the face of the jaw, nipping and crushing the material at the points of impact, without any tendency to a rotating or grinding action upon it. In the Hamilton crusher the surface of the rotating cylinder passes laterally by the surface of the basin, reducing the material both by the grinding operation and by moving it into a space progressively narrower, as if it was passing between rollers. The mode of operation is different in the two machines.

"It is not always enough to prove that two combinations of elements are equivalent, to show that each element of the combination in one may be regarded under some circumstances as the equivalent of the corresponding element in the other, when the elements are separately considered. If the mechanical combination of the members of the two machines be such that the action and mode of operation differ in the two machines, then one is something more than a mere mechanical equivalent for the other."

[1] In his specification he said: "My invention consists in the use of a cylindrical nut or pestle in a similarly formed basin, the pestle having a partial rotary and crushing motion communicated to it by means of a lever attached thereto." The claim was for "the means herein described and shown for crushing and grinding metallic ores, consisting of the cylindrical pestle '*d*,' provided with grooves in its upper part to crack the lumps of ore, and set on a shaft 'C,' on which it has a partial rotary motion, and operating in connection with the basin 'A,' in which said pestle moves to grind the ore into powder by the gradual approach of the sides of said basin to the cylindrical pestle, said pestle being also provided with a scraper or agitator, '5,' in its lower surface, to operate as specified." See 94 U. S. p. 731; Blake *v.* Robertson, *infra*.

Subsequently this patent came before the Supreme Court, on appeal from the Eastern District of New York, in the case of

BLAKE *v.* ROBERTSON, 94 U. S. 728 (1876),

where, besides the Hamilton machine, the defence set up a patent to Hobbs & Brown, of September, 1849, whose machine is thus described by the court (Mr. Justice Swayne): —

"The machine of Hobbs & Brown is for 'improvements in the application of well-known mechanical means for the purpose of crushing ice.' . . . The 'improvements consist in applying a hopper with one diagonal fixed side and two parallel sides, to contain the ice, and compressing the ice by a movable fourth side, the fixed diagonal side and moving side having within them dental projections cut or cast on, to operate downward and prevent the ice from rising in the hopper when compressed, and also to enter and split the ice.'

"The machine is operated 'by the combination with these parts of a lever fitted with an eccentric or cam-formed point.' There is in this description neither of the ingredients nor the compound of the Blake machine. Every element and the combination are wanting. There is no mention of the converging adjustable jaws, of the revolving shaft, nor of the fly-wheel. The differences are as marked in the mode of operation as in the structural elements of the machine.

"The Hobbs & Brown machine does its work by the downward and sweeping movement of the jaw and the grasping and splitting by the teeth. The motive-power is supplied and applied by a hand-lever, which gives a motion irregular, and varying with the varying exigencies of the ice during the process to which it is subjected. The Blake machine performs its functions by the short, regular, and unvarying vibrations of the smooth-faced adjustable jaw, driven without intermission by the revolving shaft. It is obvious that the Hobbs & Brown machine could not be applied with effect to the purpose of breaking stones, without essential changes of principle and details."

Of the Hamilton machine the court said: —

"We have here no reflex or embodiment of either of the ideas that found expression in the Blake machine. The converging jaws, the revolving shaft, and the fly-wheel are all wanting, as in the Hobbs & Brown machine. Instead, there is a cylindrical nut or pestle, having a partial rotary and crushing motion communicated to it by means of a lever attached thereto. The pestle rotates on a central axis within an eccentric concave. The work is done by this pestle. There is nothing of the vibratory motion of a movable jaw alternately advancing and

receding, as in the Blake invention. The difference is not that of mere mechanical equivalents. It is radical, and goes to the essence of the organisms. These considerations are so obvious, that further remarks upon the subject are unnecessary. The proofs show that but two of the Hamilton machines were ever made. Practically the invention was abandoned."

FORSYTH *v.* CLAPP, 1 HOLMES, 278.

D. OF MASS., 1873. SHEPLEY, J.

The invention related to rubber rolls for the shafts of wringing-machines.

The patentee combined a peculiar kind of roll, formed of fibrous cloth and rubber, with the shaft. Both the material and the shaft were old, and so was the manner of connecting the two.

The material, or one substantially like it, had been sold in tubes to consumers, who cut them in sections or rings for stuffing-boxes. But inasmuch as a new result was obtained by the combination, it was held patentable. The new result was that it prevented separation of roll and shaft by the tearing away of the greater part of the roll from such small portions of it as adhered to the shaft. This was a common vice of wringers.

ROSS *v.* WOLFINGER, 5 O. G. 117.

N. D. OF ILL., 1873. BLODGETT, J.

Ross & Marshall's reissued patent of Feb. 26, 1861, afterward extended, for the combination (1) of a cabinet with a sewing-machine, and (2) of a box with the cabinet and sewing-machine.

The patentee simply put the sewing part of the machine on top of an ordinary cabinet, and the foot-pedal inside of it. He supplied a box to cover the top of the machine when it was not in use, and he claimed a patent for the two combinations. His device was not even new. Said the court:—

"The evidence shows that, prior to these patents being granted, the Singer Manufacturing Company, who were then just commencing

the introduction of their sewing-machine into the market, were in the habit of sending out their machines packed in a box, large enough to hold the treadle and the pitman, with a hole cut in the top, or directions for cutting the hole in the top, so that the pitman could be made to connect, and fitting the machine on top of the box, so that the box in which the machine was shipped became the cabinet upon which it was operated, or could be used as such; and I can see no difference between the contrivance thus made and introduced by Singer and this patentee's cabinet, except that this patentee has a door hung on hinges, which can be opened or closed at will [and these were found in the ordinary cabinet], and which only exclude the dust from the treadle and pitman, because the machine itself sits on top of the cabinet, and other appliances must be used to keep the dust from the machine.

"I should have very great doubt whether there is utility enough, practically, in the mere enclosing of the pitman and treadle of a sewing-machine in a box to justify the issuing of a patent for that purpose on the score of usefulness, although the measure of usefulness is not alone the criterion by which the Patent Office is governed in issuing a patent on the ground that it is both novel and *useful*. If it has any use at all, I think the Patent Office assumes that the degree or extent or measure of usefulness is not to be inquired into by them; but certainly there is no proof in this case to show that it is any benefit whatever to the pitman and treadle of a sewing-machine to keep them enclosed from the dust. There are very few wearing parts in it, — no delicate parts, nothing which would apparently require to be kept from the dust. But be that as it may, the complainant's device was simply taking an ordinary cabinet or wash-stand, and putting his pitman and treadle inside of it and the machine on top of it, and making another box to set over the machine to keep the dust from it; . . . and so far as the top box is concerned, . . . any other covering, such as a cloth or curtain hung or turned over the machine, would naturally suggest itself for the purpose of protecting the machine from dust; and I cannot conceive myself that there is any invention in this device of using a box instead of a cloth or curtain.

"It is a mere aggregation of useful parts, neither of those parts performing, in my estimation, any additional or new functions by being brought together. There is no such act of the mind as rises to the dignity of an invention about this device."

INGELS *v.* MAST, 6 Fish. 415.

S. D. of Ohio, 1873. Swayne, Emmons, Swing, JJ.

Patent No. 90,268, dated May 18, 1869, reissued as No. 3976, May 17, 1870, for a seed-drill.

The plaintiff claimed the new combination of the following old devices: (1) A concave seed-cup, wherein the seed-wheel turned, with (2) cheeks which served as end-bearings for the wheels, and also to hold the grain by enlarging the feed-wheel; (3) an elevated delivery;[1] and (4) a seed-wheel with cogs extended beyond the cheeks.

The court held that this combination was not anticipated by the seed-drill of Jessup, which had the concave seed-cup, with the seed-wheel turning therein, the cheeks and the elevated cogs, projecting beyond the cheeks, but which had not the elevated discharge; nor by the device of Moore, which differed in like manner from the plaintiff's; nor by the Strayer drill, which had the elevated discharge orifice, but not the other elements of the plaintiff's machine.

BIRDSELL *v.* McDONALD, 6 O. G. 682.

N. D. of Ohio, 1874. Swayne and Walker, JJ.

Patent for a machine for getting out clover-seed.

The invention is not particularly described in the report. The parts of the machine were old; their combination was new. On this point Swayne, J., said: —

" . . . It is further objected that the reissue is for a mere aggregation of old things, — that the aggregation involved nothing of invention, and was without merit, and therefore not patentable.

"The slightest examination of the specifications, the models, and the evidence, will at once dispose of this illusion.

[1] "The testimony of experts . . . establishes," says the opinion, delivered by Swing, J., "two classes of feed-cups, to wit, gravitating feed and forced feed. In the first, the seed is allowed to drop through the simple force of gravitation; in the second, there must be a wheel so constructed as to carry the grain around and up to the elevated orifice. This testimony shows further, that, if that orifice is on a level, in going over rough ground the grain may be easily thrown out in too large quantities; while if it is elevated this cannot occur."

"The machine, though made up of several elements, is a unit. Its purpose is to get out clover-seed and prepare it for use. All its parts co-operate for that result, and are necessary to that end. Without either, there would be a failure to the extent of the function which it performs, and the work intended to be accomplished would be imperfectly done. It is not necessary that every function should be performed simultaneously. Their connection and operation, as in this case, in immediate succession is sufficient," &c.

THE NATIONAL CAR-SPRING CO. *v.* THE UNION CAR-SPRING MANUFACTURING CO., 12 BLATCH. 80.

S. D. OF N. Y., 1874. BLATCHFORD, J.

Patent reissued, Dec. 13, 1870, to complainants (as assignees of Bussell, the inventor), for an "improvement in combined india-rubber and steel springs."

The specification: —

"This invention consists in surrounding a column of india-rubber, or its equivalent, by a spiral metallic spring, so arranged that each sustains the other, whereby a more perfect and serviceable spring for the purposes specified is produced than by any combination of rubber and metal hitherto known, . . . the two springs being of equal length, so as to have the same bearings at the ends, and the relative diameters of the two being such that the steel or metal spring will fit snugly on the rubber column. The columns of rubber may be fluted, as shown in the drawing, by several concavities running longitudinally."

Said the court: —

"This construction is regarded as a desirable one, as it allows the rubber, when pressure is applied to the spring, to expand laterally into the said concavities, thus preventing it to a degree from being pressed outward between the coils of the metal spring, where it is liable to be chafed and worn. . . . The combination of spiral metallic springs with rubber, or its equivalent, for the purpose here described, is not new. Ray, in the year 1848, obtained a patent for such a combination; but he described . . . a spiral metallic spring placed within a hollow rubber column or tube, and then supported the rubber externally by detached metal rings. . . .

"The arrangement and combination of Bussell is distinct from, and is thought superior to, Ray's, both for the reason that it permits

the use of a solid column of rubber, or its equivalent, which Ray's does not, and because the spring, when placed exterior to the rubber, or its equivalent, performs alone the combined offices of both the spiral spring and the detached rings in Ray's, thus rendering Bussell's arrangement much the more simple and cheaper of the two. Another objection to arranging the spiral within the rubber tube is that either the rubber tube has to be made objectionably large in diameter, or the spiral objectionably small. This difficulty is obviated in Bussell's combination, as is evident." Patent sustained.

BALL *v.* WITHINGTON, 6 O. G. 933.

S. D. OF OHIO, 1874. EMMONS AND SWING, JJ.

A *dictum* in the opinion is thus stated by the head-note: —

"The direct radiation of heat into baking-chambers [for bread], and the use of bread-holders swinging from the arms of rotating wheels, being both well known, it seems that a patent for the combination of the two cannot be sustained."

RECKENDORFER *v.* FABER, 92 U. S. 347 (1875).

Two patents, each for a combination of lead-pencil and rubber-eraser, — namely, H. L. Lipman's patent, granted March 30, 1858, extended March 30, 1872; and J. Reckendorfer's, dated Nov. 4, 1862, reissued March 1, 1872.

According to the first patent, one end of the pencil, being a quarter of its whole length, enclosed a cube of rubber, just as the lead is enclosed in an ordinary pencil. The improvement described in the second patent consisted in making the rubber end of the pencil larger than the rest of it, and tapering, so that the pencil held a bigger piece of rubber, in a bigger handle, without being large and clumsy in the lead part of it, where it is held in writing.

It was decided by the court, Strong, Davis, and Bradley, JJ., dissenting, that these improvements were cases of aggregation without combination, and therefore not patentable.

Mr. Justice Hunt delivered the opinion: —

" . . . Does the article patented by Lipman and improved by Reckendorfer involve an invention? or is it a product of mechanical skill or a construction of convenience only?

" . . . This combination consists only of the application of a piece of rubber to one end of the same piece of wood which makes a lead-pencil. It is as if a patent should be granted for an article, . . . consisting of a stick twelve inches long, on one end of which is an ordinary hammer, and on the other end is a screw-driver or a tack-drawer, or, what you will see in use in every retail shop, a lead-pencil, on one end of which is a steel pen. It is the case of a garden-rake, on the handle-end of which should be placed a hoe, or on the other side of the same end of which should be placed a hoe. In all these cases there might be the advantage of carrying about one instrument instead of two, or of avoiding the liability to loss or misplacing of separate tools. The instruments placed upon the same rod might be more convenient for use than when used separately. Each, however, continues to perform its own duty, and nothing else. No effect is produced, no result follows, from the joint use of the two. A handle in common, a joint handle, does not create a new or combined operation. The handle for the pencil does not create or aid the handle for the eraser. The handle for the eraser does not create or aid the handle for the pencil. Each had, and each requires, a handle the same as it had and required, without reference to what is at the other end of the instrument; and the operation of the handle of and for each is precisely the same, whether the new article is or is not at the other end of it. In this and the cases supposed you have but a rake, a hoe, a hammer, a pencil, or an eraser, when you are done. The law requires more than a change of form, or juxtaposition of parts, or of the external arrangements of things, or of the order in which they are used, to give patentability. Curtis on Pat. § 50; Hailes *v.* Van Wormer, 20 Wall. 353. A double use is not patentable, nor does its cheapness make it so. Curtis, §§ 56, 73. An instrument or manufacture which is the result of mechanical skill merely is not patentable. Mechanical skill is one thing; invention is a different thing. Perfection of workmanship, however much it may increase the convenience, extend the use, or diminish expense, is not patentable. The distinction between mechanical skill, with its conveniences and advantages and inventive genius, is recognized in all the cases.

"The combination, to be patentable, must produce a different force or effect, or result in the combined forces or processes, from that given by their separate parts. There must be a new result produced

by their union; if not so, it is only an aggregation of separate elements. An instance and an illustration are found in the discovery that, by the use of sulphur mixed with india-rubber, the rubber could be vulcanized, and that without this agent the rubber could not be vulcanized. The combination of the two produced a result or an article entirely different from that before in use. Another illustration may be found in the frame in a saw-mill, which advances the log regularly to meet the saw, and the saw which saws the log. The two co-operate and are simultaneous in their joint action of sawing through the whole log; or in the sewing-machine, where one part advances the cloth and another part forms the stitches, the action being simultaneous in carrying on a continuous sewing. A stem-winding watch-key is another instance. The office of the stem is to hold the watch, or hang the chain to the watch; the office of the key is to wind it. When the stem is made the key, the joint duty of holding the chain and winding the watch is performed by the same instrument. A double effect is produced or a double duty performed by the combined result. In these and numerous like cases the parts co-operate in producing the final effect, sometimes simultaneously, sometimes successively. The result comes from the combined effect of the several parts, not simply from the separate action of each, and is, therefore, patentable.

"In the case we are considering, the parts claimed to make a combination are distinct and disconnected. Not only is there no new result, but no joint operation. When the lead is used, it performs the same operation and in the same manner as it would do if there were no rubber at the other end of the pencil; when the rubber is used, it is in the same manner and performs the same duty as if the lead were not in the same pencil. A pencil is laid down and the rubber is taken up, the one to write, the other to erase: a pencil is turned over to erase with, or an eraser is turned over to write with. The principle is the same in both instances. It may be more convenient to have the two instruments on one rod than on two. There may be a security against the absence of the tools of an artist or mechanic from the fact that the greater the number the greater the danger of loss. It may be more convenient to turn over the different ends of the same stick, than to lay down one stick and take up another. This, however, is not invention within the patent law, as the authorities cited fully show. There is no relation between the instruments in the performance of their several functions, and no reciprocal action, no parts used in common." [1]

[1] See the Rubber-Tip Pencil Co. *v.* Howard, *ante*, page 247.

THE STILLWELL & BIERCE MANUFACTURING CO. *v.* THE CINCINNATI GASLIGHT & COKE CO., 7 O. G. 829.

S. D. OF OHIO, 1875. SWING, J.

Stillwell's reissued patent, No. 3618, dated Aug. 24, 1869, for "improvements in feed-water heaters and filters."

The object of the invention was to purify water before it passed into a boiler to be heated. This was accomplished by making it flow over a series of heated metal shelves, whereby matter held in solution was deposited, and then through filtering material (placed between the shelves and the outlet into the boiler), whereby matter held in suspension was deposited.

Both of these devices, the shelves and the filtering material, had been used before for the same purpose. All that the plaintiff did was to put them together; and so putting them together did not add to or change the efficiency which either had when used separately. This would seem to be a clear case of aggregation; but the court held otherwise, as follows (after stating that no new office was performed by either device when thus combined; that, separately, the shelves cleared the water of matter held in solution and partly of that held in suspension, and the filter cleared it only of matter held in suspension): —

"But by combining both in a single machine both of these objects are accomplished, and the water is passed into the boiler, in a condition different from that in which it was in passing from either of the devices after their separate action upon it. If this be so, a new result is produced by the union — a result not previously produced by either of the elements acting separately — which removes it from the doctrine of aggregation, as laid down in the cases of Hailes *v.* Van Wormer, 5 O. G. 91;[1] Birdsell *v.* McDonald, 6 O. G. 612."[2]

It seems to us that this line of reasoning would make almost any aggregation patentable.

The novelty of the improvement was also attacked. The evidence on this head is summed up at length in the opinion, but merely to ascertain whether a certain fact was proved, and not for the purpose of estimating the weight of that fact.

This case is also another authority to the point that the making

[1] *Vide* p. 443.

[2] *Vide* p. 450.

of a model does not of itself constitute invention. "It can only be used," said the court, "as an item of testimony."

BUSSEY *v.* WAGER, 9 O. G. 300.

N. D. OF N. Y., 1876. WALLACE, J.

Improvement in stoves.

The report contains no description of the invention other than that in the opinion of the court, as follows:—

"I. In view of the state of the art prior to Bussey's patent, none of the parts claimed in the patent are new, but Bussey effected a new combination which produced new and useful results, and not merely an aggregation of the results due to the independent action of the several parts. He combined a reservoir in such relation to a top-plate and partial back-plate, that the reservoir performed both the functions of a reservoir and of a partial back-plate of a stove; and this is the new result, and the only one, due to the combination. By the combination the top-plate supported a reservoir in place of the portion of the back-plate omitted, but in this it performed no other function. In a large number of stoves, and from the earliest constructions, one of the functions of a top-plate has been to support water-reservoirs exposed to the heat-passage of the stove. In the Stewart stove, it supported a reservoir in the rear of the body of the stove. Neither did the exit-passage by the combination perform any new function. Numerous instances of its use to heat reservoirs have been adduced. In the Stevens construction its relation to the reservoir was precisely the same as in Bussey's.

"II. The combination involved invention, and produced a beneficial result; that it involves invention follows from what has been above stated. That it produced beneficial results is evidenced by the practical success of the improvement. While, obviously, by changing the form and proportions of a reservoir cooking-stove, thereby making a more attractive article, Bussey made an improvement, in a general sense, these changes were not patentable. But the removal or omission of a portion of the back-plate, and supplying its place with a reservoir, though it now seems to have been a very simple invention, substantially effected a new organization of the stove, which at once commanded the favor of dealers and manufacturers, has since been very generally adopted, and was, I think, the fundamental idea of the defendants' constructions."

RUBBER-COATED HARNESS-TRIMMING CO. *v.* WELLING, 97 U. S. 7 (1877).

W. M. Welling's patent, No. 37,941, dated March 17, 1863.
The claim was: —

"The ring for martingales, &c., manufactured as set forth, with a metal ring enveloped in composition, as and for the purposes specified."

The process for producing this patented article was thus described in the specification: —

"In order to make my improved rings, I take a ring of metal, . . . such as shown at *a*, or said ring may be formed by punching out a washer from a sheet of metal, or in any other suitable way. I take the amount of artificial ivory composition, and by dies or by hand cause the said composition to completely envelop the said ring with as much uniformity as possible, as at *b*; and, to give the exterior finish to the same, press and solidify the mass of composition around the ring by means of dies, and in so doing any plain or more or less ornamental shape may be given to the said ring or the surface thereof. My ring is thus made of the desired ornamental appearance, while great strength is attained at very little cost."

The artificial ivory with which the patentee proposed to cover his rings was not a new substance, having been the subject of a former patent to him.

Mr. Justice Hunt (for the court), after reviewing the evidence as to the state of the art, summed it up as follows: —

"Not only were there well known and in extensive use, before Welling's patent, iron rings, tubes, pipes, toys, and other articles of manufacture enveloped in and surrounded by glass, enamel, rubber, and other like substances, but these coverings had been applied and ornamented by means of moulds or dies."

He next concluded that the patent, as is evident, was for a product, and not for a process.

"A metal ring enveloped in composition would seem to be the plain subject of the monopoly, the other language being merely illustrative of or supplemental to the main idea."

Then, referring to the construction given by the patentee to the patent, namely, that it embraced metallic harness-rings covered with composition of *any kind*, he said: —

"If this is the true construction of the patent, it cannot be sustained under the evidence showing the use of covering of harness-rings by various compositions, and patents [1] providing for such use, prior to his patent."

And he concluded as follows: —

"Another construction claims that the patent covers a ring having an iron core covered with a plastic composition, if and provided the article is finished by dies. . . . Nearly allied to this idea, if not identical with it, is that of the judge who tried this case at the circuit. He says of Welling's patent: 'His instrumentalities were all old, — an iron ring, a plastic composition, and a die; but, so far as appears in the case, they were new in combination; . . . and the combination is a metal ring, surrounded with some plastic composition, like artificial ivory, of such a nature that it is capable of being compressed, solidified, and polished by the action of the dies, and which is in fact subjected to such action, whereby a martingale ring is produced with an exterior surface more durable and more highly polished than had before been obtained by different processes of manufacture, and at greater cost.'

"We think the evidence shows that this combination, — if it is entitled to that rank in mechanics, — as well as the ring and the compound, is old. There is, in truth, no combined action. The iron core is used as a basis, the covering is of a pliable composition, and it is pressed or stamped by dies or moulds. All this is done separately, by no combined action. This is just as much, and nothing more, than is described by the witnesses, and by the patents prior to Welling's. It is simply the application and the action of old and well-known modes and materials in an accustomed manner. It is a case of aggregation, not of combination. Can the appellee recover in this action upon a patent for this product, to wit, a metal ring enveloped in a composition of artificial ivory or a similar material?

"It is evident, from what has been already said, that a patent for the *manufacture of a metal ring enveloped in a composition of ivory or* similar material is void for the want of novelty. Such is the testimony of the expert witnesses on both sides, as well as an inevitable result from

[1] Namely, English patent of 1851 to Newton for covering iron with caoutchouc or gutta-percha; and the English patent of Edward Benton, enrolled in the year 1843, for covering rings, &c., with "an enamel or vitreous composition," formed in moulds; and the English patent to Barnwell and Rollanson, dated 1860, which said: "We make toys, &c., by employing moulds or dies of any suitable material for which our composition has no affinity, or to which it will not adhere."

an examination of the English patents heretofore referred to. Indeed, we do not understand the counsel as contending that the patent can be sustained if this is held to be its construction."

THE KEROSENE LAMP-HEATER CO. *v.* LITTELL, 13 O. G. 1009.

D. OF N. J., 1877. McKENNAN AND NIXON, JJ.

Reissued patent, 7069, dated April 18, 1876. The fourth claim was

"the combination of a kerosene-oil lamp, a metallic shell adapted to support a vessel to be heated, and a window made of transparent material in the walls of the shell, substantially," &c.

Of this the court, Nixon, J., said: —

"I have spent no time on the fourth claim, because, in view of the state of the art at the time of the original patent, there would seem to be no invention in placing a window in the walls of the metallic chamber, whether it was designed to give light in the room, or for the inspection of the flame. The device is old, and it is the merest aggregation to link it with other elements in order to make it the subject of a separate claim."

HERRING *v.* NELSON, 14 BLATCH. 293.

N. D. OF N. Y., 1877. JOHNSON, J.

Patent reissued to John Deuchfield, Jan. 16, 1872, for an "improvement in cooling and drying meal," as it comes hot from the millstones.

One claim of the patent was for a combination of machinery for cooling and drying the meal, with machinery for preventing waste of meal in the process. This was alleged by the defence to be a mere aggregation, and not a combination; but the court, as we shall presently see, held otherwise. Briefly, the arrangement was as follows: The meal was conveyed in spouts from the millstones to a chest, within which was a longitudinal shaft having a spiral flange and a zigzag partition with openings. From this chest, by the operation of the spirally flanged shaft, the meal was conveyed into an elevator, whence it was

discharged into bolts or troughs. Meanwhile, in its passage through the spouts and chest it was cooled and dried by a suction-blast produced by a fan in a box, which box was connected with one end of the chest by a spout. This was the cooling and drying machinery. That for the prevention of waste was as follows: The spout which at its lower end opened into the chest, at its upper end (after passing through the box containing the fan) led into one end of another chest, which also contained a longitudinal shaft having a screw or spiral flange, &c. Some of the finer and lighter particles of meal followed the blast created by the fan (instead of going, with the bulk of the meal, from the main chest into the elevator), and passed up through the spout into this second chest, and settled in the outer end thereof, whence, by an opening opposite to that at which the spout entered, they were conveyed by the flanged shaft to a spout, and so into the elevator, which receives the main body of the meal, coming directly from the main chest.

Upon the claim for this combination the court remarked: —

"It is further claimed on the part of the plaintiffs that the claim under the original specification [in the reissue, the second claim] was not of a true combination, producing a result from the co-action of the elements, but that the results were the consequence of the successive and independent action of the parts, each producing its own result. In a certain sense this would seem to be true; because the cooling of the meal may be conceived of as one independent result, and the saving and restoring to the common mass that part of the meal which, in the cooling process, has been mechanically separated from the rest, may also be conceived of as another independent result. But this, in my opinion, is an over-refinement, not required by the principles of the patent law when regarded as part of a practical improved arrangement of means for converting grain into flour. Both results, the cooling and the saving, contribute to the one common result, — cooling without waste, and thus getting the largest practical amount of merchantable flour. It cannot be doubted that if the whole process of reducing grain to flour were new, the complete machinery employed, even including the combined Deuchfield device, could be included and maintained in a single patent, or in a single combination. This view is, as I understand it, supported by the decision of Mr. Justice Curtis in Forbush *v.* Cook.[1] . . . The case is one not of juxtaposition merely, but of combination, in the sense of the law."

[1] *Vide ante*, page 423.

On another point the court remarked: —

"The rejected application of Mann for a patent is not to be considered as a bar to the patent represented by the plaintiffs. The Corn-Planter Patent, 23 Wall. 181. Assuming its similarity to the Deuchfield device, the rejected application does not make out that the thing described was ever used; nor is such a description a patent or publication within the statute."

In a subsequent suit on this same patent,

BIGNALL *v.* HARVEY, 18 BLATCH. 353,

N. D. OF N. Y., 1880, BLATCHFORD, J.,

two prior foreign patents were set up by the defence. One, a French patent, is not described in the report; the other was the English patent of Joseph Robinson, dated Dec. 8, 1853.

Of this the court said: —

"The Robinson patent cannot be held to be an anticipation. It is clear from the drawings of the plaintiff's patent that the curbs of the mills are open curbs, as distinguished from close curbs; that is, are the open curbs which were in general use in American mills at the time. Open curbs are curbs or covers over the upper millstone, provided with a circular opening over the eye of the upper stone. This enables the air in the plaintiff's arrangement to pass over the top of the upper stone and through the annular space between the outer edges of the stones and the inside of the curb, and thence with the meal through the closed meal-spouts into and through the closed meal-chest. In the Robinson patent the small orifice in the centre of the top of the curb is tightly stopped up by a tube which extends downward into the eye of the upper stone, the outside of the tube fitting the interior of the eye. The object must have been, as the necessary operation was, to prevent the passage of air over the top of the upper stone inside of the curb, and to force it to go down into the eye, and between the grinding faces of the stones. Thus the operation is the reverse of that in the plaintiff's patent. Moreover, Robinson has no current of air traversing the length of the meal-chest, and carrying off the moisture which rises from the meal as the screw-conveyer operates upon it. The elements combined in Robinson's are not there combined in the same way as in the plaintiff's patent, to produce the same results by the same mode of operation."

MAHN *v.* HARWOOD, 14 O. G. 859.

D. OF MASS., 1878. CLIFFORD AND LOWELL, JJ.

James H. Osgood's patent, reissued April 11, 1876, No. 7046. The third claim only of the reissue was in suit:—

"The covering of a base-ball, consisting of an outer and an inner covering, each of which is composed of two pieces of leather, and applied to the ball independently of each other, substantially as and for the purpose specified."

The object of the two covers was to make the ball fit for severe usage. The core of the ball was of cork or india-rubber, with yarn wound about it.

"The patentee," said Lowell, J., "was the first to combine the double-leather cover (which was well known on balls made of 'gimpings,' with yarn wound round them, and on other forms with [of?] ball) to a ball of a harder kind, equally well known, but which before had been used with single-leather cover or with none. But we are of opinion that such a combination is not patentable.

"It is not claimed in the patent, and does not appear to be true, that any new or different effect is sought to be obtained, unless perhaps in degree, by the double cover, as applied to the one ball rather than the other. A changed mode of playing the game required a harder ball, and one of well-known form was adopted; and to it was added the second cover, which was also well known, and often used in the softer balls. This is a change of form which appears, in view of the state of the art, to be within the line of ordinary mechanical adaptation, and nothing more."

JUDSON *v.* BRADFORD, 16 O. G. 171.

D. OF MASS., 1878. CLIFFORD, J.

Catherine Judson's reissued patent, No. 7729, dated June 12, 1877, for an improvement in corset-springs.

Clifford, J.:—

". . . My invention, says the patentee, relates particularly to that portion of a corset known as the clasp or spring, and is intended to strengthen the clasp or busk, and especially at that portion of the same near the natural waist, where breakage is most liable to occur. Strength is imparted to the clasp or busk by means of an additional supporting

steel or spring, fixed immovably upon the wide steel or busk at two points, having its ends free, one above and the other below the waist or centre of the busk. Improvements of the kind, the patentee admits, have been patented, which include additional strengthening-steels, unfastened or fastened at the centre to the main steel; but she alleges to the effect that her improvement, which is fastened at the two points named, is better than those previously patented, because the steels between the points of fastening are kept stiff by the fastenings, and help to support each other, while, if they were merely fastened at the centre, the additional strength would only be that of an unaided steel as weakened by the fastening process. Decided merit is also claimed for the patented improvement, because the studs, in order to strengthen the clasp, are placed near the edge of the busk which is farthest from the fastening-spring, which it is said is the reverse of the usual position, and brings the fastening-spring over the strengthening-steel and over the centre of the busk. Combined as the three steels are under the described arrangement, it is clear that the clasp is much strengthened; and the patentee states that even if the strengthening-steel be omitted, still the arrangement is better than those in prior use, as the fastening-steel, instead of lying upon the side of the busk, will be upon its centre, inasmuch as the studs are upon the left instead of the right side. Minute description is then given of the several devices embodied in the patented improvement; and the function which each performs is clearly delineated by reference to the drawings, from which it is clearly shown that the clasp is strengthened in two ways: first, by the position of the fastening-spring hooking over to the farther side of the busk; and, secondly, by the short steel spring placed near the centre of the clasp-springs at the natural waist, where the springs are most liable to be bent and strained.

"Special reference will only be made to the second claim, for the reason that the charge of infringement, as made in the argument, applies exclusively to that claim which is for 'a busk or spring in a corset-clasp having its studs or fastening devices placed near the edge, farther from that side of the busk or spring over which the fastening-spring is brought to be attached to said busk or spring, thus causing the said fastening-spring to lie upon said busk or spring near its centre or farther edge, for the purpose set forth.' Beyond all question, the invention, as the patentee states, relates to that portion of the corset generally known as the clasp or springs; but the court is of the opinion that the invention in question, when viewed in connection with the descriptive portion of the specification, may be considered as a combination of old elements into an improved busk or clasp, provided with studs placed as described, and combined with the described overlying

spring, the whole apparatus or contrivance constituting an improvement in corsets. . . .

"Two narrow corset-springs were formerly used by manufacturers of the article; the fastening-spring having clasps to hold the corset together when closed around the waist of the wearer, the studs upon the busk being placed near the inner edge thereof toward the fastening-spring, thus bringing the two springs adjacent to each other. Difficulties attended that mode of arranging the springs, as all the witnesses agree. Inconvenience resulted to the wearer, as it became necessary, in order to fasten the corset, to bring the two springs together, which frequently had the effect to pinch the under-garment and to cause the springs to break, rendering the corset valueless before it had been much worn. Efforts of various kinds were made to obviate these difficulties, but the efforts were not attended with much success prior to the patent in controversy. Plans of various sorts were devised; but the plaintiff, it appears, conceived the idea of placing the studs in a wide busk on the farther edge thereof from the clasp or fastening, which brings the clasp when fastened in a central position over the busk, thus giving strength and stability to the corset-springs."

The learned judge also considered two prior patents set up by the defence; namely, the Schneller patent of Sept. 10, 1872, and the Drew & Bayliss patent of Aug. 26, 1873, as follows:—

"Two of the claims of the patent first named are referred to. . . . Of these, the first is a claim for a corset-spring composed of two blades of steel or other flexible and elastic material, one of the blades being made to cover the other, when the two parts of the corset-spring are connected by means of the described hooks, having rounded backs and curved on the inside, as set forth.

"Unlike the first, the other, which is the third claim of the patent, is for a corset-spring composed of three blades of elastic material, one blade forming the clasp and covering the other two blades, when all are brought in position, said blades being so adapted as to be connected together by hooks having rounded backs, as described.

"Prior explanations in respect to each of these claims are given in the specification. In respect to the first, the patentee states that the invention consists in a corset-spring, composed of two blades of steel or other flexible and elastic material, so arranged that when the parts of said spring are connected one of said blades covers the other blade or blades, thereby increasing the strength and elasticity of the device, and preventing the same or any part thereof from turning edgewise, or from leaving an open space between the two ends of the corset; the patentee adding, that the blades are connected together by hooks having rounded

backs, and that, being curved on the inside, they approach each other closely, as lateral strain is exerted.

"Pertinent explanations are also made as to that part of the invention secured in the third claim, which are, that it consists in a clasp for a corset-spring composed of a single blade, in connection with two other blades made like ordinary corset-steels, both of them being provided with hooks to catch in holes in the covering blade; the two described blades being covered by the one first mentioned, by which their strength and elasticity are increased, and they are effectually prevented from turning edgewise, or from leaving an open space between the ends of the corset.

"Argument to show that the first patent introduced by the defendants is substantially different in its devices, combination of parts, and mode of operation from the improvement patented to the plaintiff is quite unnecessary, as the proposition becomes self-evident by a careful comparison of the two specifications. . . .

"Improvements in stay and other like fastenings were patented to Drew and Bayliss prior to the invention of the plaintiff; but their invention related chiefly to the manufacture of stay-fastenings, the object of the inventors being to provide a simple construction of fastening which would admit of the stay being readily removed from the body of the wearer; and to that end they attached the busk of the stay to one edge thereof, and to the other edge they secured a thin strip of steel, caused to overlay the former by providing it with slots to receive studs projecting from the face of the busk.

"Means for disengaging the overlaying strip are also described, which is accomplished by bending the busk forward, the effect of which, as represented, is to bring the studs forward to the enlarged ends of the slots and to disengage the overlaying strip.

"Fastenings, as the patentees represent, may be constructed, in the mode suggested, on the edges of the steel. Strips may be constructed so as to abut against each other, in which event the studs or hooks must project from the side of one steel strip so as to enter into the slots of the other. Particular description is also given of the busk, the language of which it is unnecessary to reproduce, as the claim of the patentee is only for the construction of the fastening, as described and shown in the drawings. Unlike as the improvement described in that specification and the patented improvement of the plaintiff are, the court is of the opinion that no remarks are necessary to show that the former has no tendency to show that the plaintiff is not the original and first inventor of the improvement described in her patent."

The plaintiff's invention was made as early as May 21, 1875. An earlier experiment was thus disposed of by the court: —

"Take what he [a witness] says to be true, and it only shows that he made the corset in March or April, 1875, without showing that it was ever put to practical use, and the witness states that he never made but one of the kind, and that it has remained in his office ever since. . . .

"1. . . . The reasons given by the witness for recollecting the date are unsatisfactory and insufficient.

"2. . . . The testimony, if true, is not sufficient to establish the defence, as it fails to show that the exhibit was ever put in practical use, or that any one except the witness had the required knowledge of its existence."

The following general remarks on the same subject also occur in the opinion: —

"Prior knowledge of the thing patented, and where and by whom it has been used, are required to be stated [in the answer], which shows very clearly that, in order to defeat the patent in suit by such a defence, there must have been some use of the alleged prior invention. Mere discovery of a patentable improvement does not constitute it the proper subject of a patent, unless it be embodied, if a machine, into working machinery and adapted to practical use. Whoever first perfects a machine and makes it capable of useful operation is entitled to a patent. Reed *v.* Cotter, 1 Story, 594. Such were the views of Judge Story; and he held that the person is the first inventor, in the sense of the Patent Act, and entitled to a patent, who has first perfected and adapted the invention to use, and that until the invention is so perfected and adapted to use it is not patentable under the patent laws. Washburn *v.* Gould, 3 Story, 122; Woodcock *v.* Parker, 1 Gall. 438; White *v.* Allen, 2 Cliff. 230; Seymour *v.* Osborne, 11 Wall. 539. Crude and imperfect experiments are not sufficient to confer a right to a patent, but in order to constitute an invention the party must have proceeded so far as to have reduced his conception to practice, and have embodied it in some distinct form. 11 id. 552.

"All these cases show that evidence of mere knowledge without use is not sufficient to defeat a patent valid in form; but since the decision in the case of Coffin *v.* Ogden (18 Wall. 120), it must be considered that the evidence is sufficient to support the defence of prior knowledge and use, if it proves that the invention was complete and capable of working, if it had been put in use, and was known to any considerable number of persons."

ROGERS *v.* ENNIS, 15 BLATCH. 47.

N. D. OF N. Y., 1878. BLATCHFORD, J.

Patent granted to the plaintiff, July 10, 1877, for an "improvement in table beverages;" also another, granted Dec. 25, 1877, for an "improvement in birch beer."

Infringement was admitted, but the patentability of each compound was contested.

The claim of the first patent was: —

"The composition as a table beverage, consisting of water, sugar, oil of wintergreen, alcohol, yeast, and burnt sugar, in the proportions substantially as described."

The claim of the second was: —

"The improved material herein described for producing beer, called birch beer, and consisting of water, sugar, oil of birch, alcohol, home-made yeast, and burnt sugar, in the proportions substantially as specified."

The specification of each patent gave directions for making the compound in the proper proportions.

Said the court: —

"The defendant contends that all the plaintiff did was to put into the beer the oil of wintergreen in the one case, and the oil of birch in the other; that the plaintiff invented no new process of making the beer; and that . . . the mere putting into the compound the oil of wintergreen or the oil of birch, as a flavor, is not a useful improvement within the patent laws. The defendant further contends that the use of the oil of wintergreen or the oil of birch in the compound is not the use of any material or substantial part of the compound, so as to authorize a granting of a patent for the compound, the use of the other materials to form the compound not being new. These patents stand on narrow ground, but yet the defendant has infringed each of them, by using the exact formula laid down by the patentee in each case.

"The compositions of matter are shown to be useful, agreeable to those who use them, profitable to the plaintiff through his manufacture and sale of them, and new. This constitutes patentability. . . . It appears in evidence that the bark of the birch-tree had been previously used as flavoring matter for a beer; that the plaintiff found he could get a stronger and better flavor, at less expense, by using the oil of wintergreen, the flavor of which is like that of black birch; and that he

afterwards substituted the oil of birch for the oil of wintergreen, with some other slight changes of ingredients and treatment."

In another case, Rogers *v.* Beecher, 3 Fed. Rep. 639, N. D. of N. Y., 1880, Wallace, J., the same patents were sustained.

WILLIAMS *v.* THE ROME, WATERTOWN, & OGDENSBURGH RAILROAD CO., 15 BLATCH. 200.

N. D. OF N. Y., 1878. BLATCHFORD, J.

This case is set out at length, *ante*, page 402. It was followed by that of

WILLIAMS *v.* THE BOSTON & ALBANY RAILROAD CO., 17 BLATCH. 21.

N. D. OF N. Y., 1879. WALLACE, J.

Wallace, J.: —

". . . In that case [Williams *v.* The Rome, &c. R. R. Co.] the validity of the issue of the complainant's patent was necessarily determined, as was also the novelty of the several combinations claimed, so far as this was assailed by the patents then introduced as anticipations. Not only did Judge Blatchford sustain as patentable the entire combination which complainant's organized locomotive lamps embraced, but also the sub-combinations covered by the several claims in the patent. In the present case, therefore, it must be held that, although the subordinate combinations will not produce a useful result without the addition of other parts necessary to make a locomotive lamp, they are nevertheless sufficient to sustain the patent, because by their co-operation they contribute to a new result, and may be used in conjunction with such other parts as are ordinarily employed in locomotive head-lights. It then becomes necessary to ascertain whether the novelty of any of these combinations is disproved by the patents and devices now relied on as anticipations, which were not introduced in the former case. . . . Every claim of the patent except the fifth covers a combination of which the hollow wick-tube and cap-deflector are parts. The fifth claim is for the combination of the hollow wick-tube, lateral oil-reservoir, and perforated air-screen for the interior current of air, substantially as set forth. The Quincy & Johnson patent [set up as anticipating Williams's] discloses a device called a 'blower,' interposed between the cap-deflector and hollow wick-tube, which, it

would seem, is a necessary feature in their arrangement as respects each other, and materially affects their mode of operation, and which suffices to distinguish the construction and arrangement of these parts from the complainant's. This patent is, however, in my judgment, an anticipation of the fifth claim of the complainant. The orifices which admit the air for the interior current, together with the interior screen, are equivalents for the complainant's devices, and break up the current of air sufficiently to prevent material flickering of the flame from the pressure of air in the head-light. The differences between the wick-tube and the lateral oil-reservoir of Quincy & Johnson and those of the complainant are not substantial."

IMHAEUSER *v.* BUERK, 101 U. S. 647 (1870).

Buerk's patent of June 6, 1865, No. 48,048, for an improvement in watchman's time-detectors.

This case is too complicated and elaborate for our purpose; and it turned chiefly upon the question of infringement.

The same patent was sued on in Buerk *v.* Valentine, 9 Blatch. 479, N. D. of N. Y., 1872, Woodruff, J., where also an older patent of Buerk's, reissued Aug. 22, 1865 (and again reissued March 8, 1870, for the term of fourteen years from Oct. 29, 1856), was sustained against prior devices set up in defence.

PARKS *v.* BOOTH, 102 U. S. 96 (1880).

Booth's reissued patent of Nov. 29, 1864 (No. 1826), for an improvement in grain-separators.

The patent was for a combination, which the court upheld. Clifford, J., delivered the opinion as follows:—

". . . Speaking directly to the point, the patentee states that his invention consists in the employment or use of zigzag screens and boxes or passages having a proper lateral shake-motion communicated to them, and so arranged that the grain may pass consecutively over and through them, and be subjected to a thorough screening operation. Also using, in connection with the zigzag screen and boxes, a revolving fan and spout, so arranged that the grain will be subjected to a sufficient blast for the separation from it of all light impurities. Reference is then made to the drawings, which show the frame of the machine and

the manner in which the series of devices called inclined screens are secured by elastic pendants, as more fully explained in another part of the specification.

" Explanations follow, which show that the screens may be formed of perforated zinc or other sheet-metal, placed alternately in reversed inclined positions, as is clearly seen in Fig. 2 of the drawings; each screen being placed at the top of what is termed a shallow box, which forms the passage of the grain, the boxes extending the whole length of the screens, in order to receive the grain and discharge the same on to the elevated end of the screen next below, through openings constructed for the purpose, in order that the screening operation may be continued through the whole series of screens."

The report contains no further description of the invention, and none at all of the prior patents set up; but these, the opinion states, were all for single elements of the plaintiff's combination, and therefore they did not affect its patentability.

" If it were allowable," said the court, " to test the validity of the invention in question by comparing the same with the whole, as if embodied in a single exhibit, the evidence might be sufficient to support the views of the respondents in respect to the defence under consideration. Were that allowable, it might well be suggested that the screen is found in one, the box in another, and the means to produce the lateral shake in a third, and so on to the end; but it would still be true that neither the same combination in its entirety nor the same mode of operation is described in any one of the patents or printed publications given in evidence." [1]

HOFFMAN *v.* YOUNG, 2 FED. REP. 74.

E. D. OF PENN., 1880. BUTLER, J.

Combination of a shifting device with a device for horizontal adjustment in a surveyor's tripod, held to be patentable.

The court: —

" It would seem, however, from the decisions that two things are always necessary: first, a novel assemblage of parts exhibiting inven-

[1] The question whether this combination was a true, patentable combination, and not a mere aggregation, does not seem to have been considered by the court, unless such a consideration is implied in the passage just quoted.

tion; second, the co-operation of the parts in producing a new result. By the term 'co-operate,' however, the courts do not mean merely acting together or simultaneously, but unitedly to a common end, — a unitary result. Each and every part must have its subfunction to perform, and each must have a certain relation to and dependence upon the other."

SLAWSON *v.* GRAND STREET, PROSPECT PARK, & FLATBUSH RAILROAD CO., 17 BLATCH. 512.

E. D. OF N. Y., 1880. BENEDICT, J.

Slawson's reissued patent, No. 4240, dated Jan. 24, 1871, and Middleton's patent, No. 121,920, dated Dec. 2, 1871.

The first was for the combination of a window with the well-known fare-box, the window being placed so that the passenger might see his money after putting it into the box. The old fare-box had a window through which the driver could see the money.

The court: —

"The additional window, it is true, permits the transmission of light through a part of the box where before it could not pass. But it accomplishes this result without aid from any other part of the machine, and in so doing it in no way modifies the operation of any of the other parts. There is, in fact, no joint operation, and the case is one of simple aggregation, not combination.

"Furthermore, all that the plaintiff did was to duplicate one of the features of the machine. Some convenience, doubtless, resulted from this duplication, but the effect produced by the additional window was the same in kind as that produced by the existing window, and accomplished in the same way."

The judge also compared this case with that of Hailes *v.* Van Wormer, 20 Wall. 353, and he held that the latter compelled the conclusion at which he had arrived with regard to the former.

The other patent was even more frivolous, being for such a combination of fare-box, headlight of the car, and reflector, that the light should be thrown into the fare-box.

The court: —

"No invention was required to so arrange these parts. It would not fail to be accomplished by any person of ordinary intelligence and experience who should attempt it."

HOE *v.* COTTRELL, 17 Blatch. 546.

D. of Conn., 1880. Shipman, J.

Letters-patent, granted March 16, 1869, to Richard M. Hoe, assignee of Auguste Hippolyte Marinoni, for an improvement in lithographic printing-presses.

The claim ran as follows: —

"The combination of the sheet-flier with an impression-cylinder without tapes, and a receiving-cylinder provided with both gripers and tapes, substantially as described and specified."

The court: —

"The object of the invention was to have the whole surface of a sheet of paper printed with heavy color on the impression-cylinder, and to be delivered automatically, without smutting, face-side uppermost, on the fly-board or table. . . . If there was invention in this combination, and the patentee was the first inventor, the claim is not invalid upon the ground that the sheet-flier and impression-cylinder have no conjoint action and no active connection to produce a joint result. The combination is of the class mentioned in Forbush *v.* Cook (2 Fish. 668), in which case Judge Curtis says: 'To make a valid claim for a combination, it is not necessary that the several elementary parts of the combination should act simultaneously. If these elementary parts are so arranged that the successive action of each contributes to produce some one practical result, which result, when attained, is the product of the simultaneous or successive action of all the elementary parts viewed as an entire whole, a valid claim for thus combining these elementary parts can be made.'"

The result attained in this case was the automatic delivery of a sheet, automatically printed upon its broad side with heavy color, without smutting, face-side uppermost. This result was the product of the successive action of all the elementary parts.

It was admitted that all the elements of the combination were old, and the objection was made that to put them together required no invention.

The court remarked upon this point: —

"Looking at the question from the present standpoint of time, it is very difficult to point out satisfactorily to one's self the changes which required invention. If he [*sic*] looked merely at the simplicity of the

combination, and at the ease with which it now seems that anybody could have accomplished the result, the conclusion would be irresistible that there was no combination."

But, it being proved that some change was necessary to adapt the elements to the combination, the court held that such change must have required invention, inasmuch as the combination, which was of immense utility and value, had never been hit upon before, although about eighteen hundred patents upon printing-presses had been granted in England, France, and the United States.

"When a device has a new mode of operation," the court added, "which accomplishes beneficial results, 'courts look with favor upon it,' and are not exacting as to the degree of inventive skill which was required to produce the new result. There must be some, but a little will suffice. Forbush *v.* Cook, 2 Fish. 668; Middletown Tool Co. *v.* Judd, 3 Fish. 144; Stimpson *v.* Woodman, 10 Wall. 117.

THE DOUBLE-POINTED TACK CO. *v.* THE TWO RIVERS MANUFACTURING CO., 18 O. G. 683.

E. D. of Wis., 1880. Dyer, J.

Patent for the invention of one Miles, issued to complainants Feb. 10, 1874. The improvement was in bail-ears used upon pails.

In the specification the inventor said: —

"Wire staples have been employed to form the fastening-eyes for bails, and these have been driven into the wood with the penetrating points nearly at right angles to the surface, and in use they are liable to pull out by the weight. . . .

"My invention consists in a bail-fastening staple made of wire, with the penetrating ends cut at such an angle that in driving them into the wood they will assume an upward inclination, so that the weight will tend to force such points inwardly rather than to draw them out, and the bending of the ends in clinching will always be upwardly, thus making a much better and more reliable article than heretofore; and I combine with such fastener a convex metallic washer, to keep the bail from contact with the wood or the paint thereon."

There were two claims, one for the fastener, and the other for the combination of fastener and washer (the washer being old). Of this second claim the court said: —

" . . . It is not perceived how the washer can be said to co-operate with the bail-ear in the production of a common result. It may give greater finish to the pail, and prevent the bail from rubbing and disfiguring the wood at the point where the bail is fastened to the ear, but the union of the two devices does not contribute necessarily to one or the same result, and does not involve invention. . . . The addition of the washer, which is an old device, makes a mere aggregation of parts, in which each device performs its separate function without producing anything new in operation or result by the combination."

As to the claim for the fastener, the staple, the court summed up the evidence, and stated its conclusion as follows: —

" All this shows that the idea of a diagonal cut on the penetrating points of staples was not new with Miles, and that all that he can claim as new with him is the diagonal cut on the same sides of the two points, and the angle at which the points run from the body of the staple, as shown in his device. This is what Miles invented, and nothing more; and since we find that the form of the body of his staple and the diagonal cut of the penetrating points were old when he devised his staple, I am of the opinion that the angle at which the prongs run from the body of the staple, and the fact that in his device both points are cut diagonally on the under side, do not give to the device such originality and novelty as are essential to patentability; nor in my judgment can the mere fact that it is so constructed as to be adapted to use upon pails make it patentable.

" The leading feature of complainants' device, though it may give to it utility and value, seems to have been produced rather by mere change of form from that of devices which preceded it than by originality of construction. The adjustment of parts is purely mechanical, and in the previous state of the art required only the exercise of mechanical skill. A staple with one point bevelled on one side, and the other point bevelled on the opposite side, was old.

" It was common knowledge that as the points should be driven into the wood they would be forced in different directions, because each point would be pushed in an opposite direction from the bevel. Now, the construction of a staple so that both points should be bevelled on the same — that is, the under — side, thereby causing both points when driven into the wood to incline or bend in the same direction, — that is, a direction opposite the bevel, — would seem to be, in the language of

the Supreme Court, 'but the carrying forward, or new or more extended application, of a thought original with others,' or well known in mechanics, and not such an invention as will sustain a patent."

LOOM CO. *v.* HIGGINS, 105 U. S. 580 (1881).

William Webster's patent of Aug. 27, 1872, No. 130,961, for "improvements in looms for weaving pile fabrics," &c.

Mr. Justice Bradley delivered the opinion of the court.

After describing the state of the art when the invention patented was made, he said:—

"Turning now to the invention claimed by Webster, and described in the patent under consideration, we find that, although it produced a great improvement in the art of weaving pile fabrics, yet, as actually exhibited in conception and accomplishment, it seems simple. The thing to be done was to combine the advantages of Bigelow's rigid lathe, divested of some of its defects, and his constant command of the wire, with Weild's trough, or wire-bar, for supporting the wire. This Webster, or, if not Webster, some other person, effected by the devices and mechanisms described in the patent. Stated in brief, . . . the problem was solved by substituting for Weild's pusher a latch which rides on the wire-bar or trough, without projecting beyond it, and which receives a reciprocating motion backward and forward on the bar, either by being connected with a driving-slide moving on the breast-beam, or by being directly connected with an upright reciprocating lever. The latch, when the end of the wire-bar next to the loom oscillates or vibrates to the front of the wire-box, drops upon a wire-head into a nick or notch made therein, and withdraws the wire into the trough, and then, when the latter oscillates back to the shed, without releasing its hold of the wire-head, drives the wire into the shed, and is then lifted out of the notch by striking the edge of the wire-box sloped up for that purpose, and releases the wire; and then oscillates forward again to seize another wire; and so on. The lathe, in the mean time, works backward and forward without meeting any obstruction, and without any detachment or separation of its parts. Very little modification had to be made in the cams, and the whole apparatus, or wire movement, as it is called, seems more simple than it was before, either in Bigelow's or Weild's loom. This contrivance, when actually applied to the looms, worked to perfection, and enabled the weaver to drive his loom to its utmost capacity.

" . . . The patent has five claims, only the fifth of which is relied on in this case, which is as follows: —

" 'In combination, the lay and its rigid shuttle-box, the pivoted vibrating wire-trough, the reciprocating driving-slide and the latch moving thereon, the latter being operated by the wire-box, the combination being and operating substantially as described.'

" With the explanation of the invention already given, the meaning of this claim is quite obvious. If any explanation of it is needed, it can be readily derived from the body of the specification. The combination contains five elements: 1. The rigid lay and shuttle-box; 2. The pivoted oscillating or vibrating trough; 3. The reciprocating-slide riding on the trough; 4. The latch for taking and holding the wire; 5. The operation or lifting of the latch by striking the wire-box. . . .

" It is argued . . . that the combination set forth in the fifth claim is a mere aggregation of old devices, already well known; and, therefore, it is not patentable. This argument would be sound if the combination claimed by Webster was an obvious one for attaining the advantages proposed, — one which would occur to any mechanic skilled in the art. But it is plain from the evidence, and from the very fact that it was not sooner adopted and used, that it did not for years occur in this light to even the most skilful persons. It may have been under their very eyes, they may almost be said to have stumbled over it; but they certainly failed to see it, to estimate its value, and to bring it into notice. . . . We are constrained to say that we cannot yield our assent to the argument, that the combination of the different parts or elements for attaining the object in view was so obvious as to merit no title to invention. Now that it has succeeded, it may seem very plain to any one that he could have done it as well. This is often the case with inventions of the greatest merit.

" It may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result, never attained before, it is evidence of invention. It was certainly a new and useful result to make a loom produce fifty yards a day when it never before had produced more than forty; and we think that the combination of elements by which this was effected, even if those elements were separately known before, was invention sufficient to form the basis of a patent."

The defence in this case also alleged that one Davis, and not Webster, was the first inventor of the improvement described in Webster's patent. But it was proved that Webster had shown

a drawing of his invention to Davis and to other persons in the year 1870, at which time Davis only began to reduce his invention to a practical form.

BEATTY *v.* HODGES, 19 Blatch. 381.

S. D. of N. Y., 1881. Wheeler, J.

We quote the opinion in full.

Wheeler, J.: —

"This suit is brought upon letters-patent No. 185,716, dated Dec. 26, 1876, issued to the plaintiff for an alleged improvement in hats, consisting in extending the sweat-lining well out upon the brim, crimping it over the angle formed by the brim and crown, and stitching it to the brim by stitches passing perpendicularly through the brim outside of the crown-band. The principal defence is want of novelty.

"The evidence shows clearly that hats with sweat-linings extending well out upon the brim, and far enough to be stitched through the brim, outside the crown-band, were well known before the orator's invention, and perpendicular stitching was well known long before. If the crimping referred to in the patent means holding in place by the stitches, which, in this connection, is the literal meaning, then sweat-linings so held were also well known. If it means shaping to the parts of the brim and crown adjacent to the angle formed by them, in the sense of crimping, as the word 'crimp' is sometimes used by boot-makers, the sweat-linings extending out upon the brim were, in the former sense, crimped by the stitches holding them, and in the latter sense by the head of the wearer shaping them over the angle of the brim into the crown, if they were not so shaped before.

"The crimping in the latter sense was probably better done by the plaintiff than it had been done before; but that was merely applying better workmanship to the subject, and not inventing anything new in that behalf. Probably sweat-linings so extending out upon the brim had not been stitched to the brim by stitches extending perpendicularly through it outside the crown-band before. But as such sweat-linings were known, and such stitching was known, all the plaintiff really found out that was new was that such stitches would be useful in that place. This was merely putting old stitches to a new use, and not patentable. The stitches of that sort, and that kind of sweat-lining, may never have been put together in that way before; but whether they had or not, they do not work together to accomplish any new result attributable to their new relations to each other. The sweat-lining would be the same

fastened in some other way that it is fastened by these perpendicular stitches. Hailes *v.* Van Wormer, 20 Wall. 353; Reckendorfer *v.* Faber, 92 U. S. 347.

"Let a decree be entered dismissing the bill of complaint with costs."

FITCH *v.* BRAGG, 8 FED. REP. 588.

D. OF CONN., 1881. SHIPMAN, J.

Patent No. 47,764, granted to C. B. Bristol, May 16, 1865, for an improved snap-hook.

Shipman, J.: —

". . . Bristol's invention [quoting from the testimony of Mr. Earle, the plaintiff's expert] 'is an improvement in that class of snap-hooks in which the tongue is pivoted in a recess between two cheeks in the shank. In this recess a coil-spring is arranged around the pivot, so that the two ends of the spring bear, one upon the tongue and the other upon the body of the hook, tending to press the tongue up against the end of the hook, but yet permit the tongue to be depressed to open the hook. In this class of hooks, prior to Bristol, the tongue was cast with a recess upon its under side to form two cheeks corresponding to the cheeks in the shank of the hook. The cheeks or the tongue were drilled corresponding to the hole through the cheeks in the shank, so that a rivet could be inserted through the sides of the shank and both sides of the tongue, to form the pivot on which the tongue would turn. The coil of the spring was arranged around the pivot, the two ends bearing, one upon the shank and one upon the hook, as before described.'

"'The invention of Bristol . . . consisted in constructing the tongue with a recess upon one side, opening outward, through which one arm of the spring must project to bear upon the hook. In this recess the coil of the spring was placed. The advantages of this method of construction were those of economy of material and ease of manufacture. Besides, dirt and foreign substances could not collect in an open recess.

". . . The first claim, and the only one infringed, was for

"'The combination of the tongue, *g*, with the spiral spring (figure 4), when the spring works on the tension principle, and rests in a recess (as 14) in the rear end of the tongue, substantially,' &c. . . . The defendants . . . insist that the claim, if so construed, is invalid, because, if the invention consisted in a combination of a tongue having a

peculiar recess with a spring, the form of the recess does not affect the spring, and consequently the claim is for a mere aggregation of parts.

"There must be a combination of spring and tongue, and the spring must be placed where it can actuate the tongue. The old location was in a channel formed between the two cheeks of the tongue. The location was objectionable, not because the spring did not cause the tongue to snap easily, but because another location would be more economical, and would keep the hook more free from dirt.

"The new combination was of spring and recessed tongue, the recess being so constructed that by means of the new location of the spring a new and beneficial result was attained. It was not material whether the benefit was to the spring or not, but it is material that the benefit should be the result of the new combination. The combination in this case does not fall within the principle of Hailes *v.* Van Wormer, 20 Wall. 353, which condemns a combination creating no new effect as its result."

McKESSON *v.* CARNRICK, 19 BLATCH. 158.

S. D. OF N. Y., 1881. BLATCHFORD, J.

P. Cauhapé's patent of Jan. 3, 1871, for an improvement in pill-machines.

The only claim in suit was the second, which was for

"The *combination* of the moulds, A, with the comb-bar, B, substantially as and for the purpose specified."

The comb-bar B held a row of needles or pins corresponding to the cavities in the mould. The comb-bar being moved over the mould, the pins passed into the pills in the cavities of the mould and took them up, to be dipped in glycerine or other liquid used for coating the pills.

Judge Blatchford thus described the manner in which the combination operated: —

"The pill-holder is to have a number of cavities, so as to secure rapid work. There are to be as many needles as there are cavities. The manner of the combination is to have a groove extending from each cavity when the two parts forming the holder are closed, so that the needle may pass through the groove into the pill, and the pill be retained on and moved with the needle when the two parts of the holder are separated, so that the pills on all the needles may be removed at once, and be dipped on the needles all at once into the coating solu-

tion. That is the purpose specified. The result of this rapid work is a greater number of pills created in a given time, and thus a reduction of cost."

And the learned judge thus sustained the validity of the combination: —

"It is also objected that there is no combination between the comb-bar and needles and the pill-holders, but only an aggregation of parts. This is an erroneous view.

"The pill-holder holds the pill while the needle carried by the comb-bar is being thrust into the pill. The concert of action takes place when the needle enters the pill; and although such concert of action continues only from the time the needle enters the pill until the pill is removed by the needle from the holder, yet the combination made by such concert of action continues as long as it needs to continue; and the concert of action could not exist at all, so as to impale the pill on the needle, if the pill were not carried by the holder and the needle were not carried by the comb-bar. So, when the needle enters the pill, there is a combination or concert of action between the comb-bar and needle and the holder carrying the pill."

Devices alleged to anticipate the patent were set up in defence, but they are not described in the report.

BATE REFRIGERATING CO. *v.* GILLETT. 9 FED. REP. 387.

D. OF N. J., 1881. NIXON, J.

Patent No. 197,314, dated Nov. 20, 1877, for "improvement in processes for preserving meats during transportation and storage."

As the case is reported, the only question that arose concerned the patentability of the combination described by the patent.

The court thus stated the matter: —

"The patent is a combination comprising two elements or constituents: 1, Enveloping the meats in a covering of fibrous or woven material; and, 2, subjecting the same to the action of a continuous current of air of suitably low or regulated temperature. Neither was new. Meats had long before been covered to keep them from dirt or dust in transportation; and refrigerators had been used to subject them to the action of currents of chilled air, and thus hindering decay.

"But the patentee claims that a new and useful result was found to proceed from the combination; to wit, preserving the natural color or complexion of the meat during transportation, and thus having at the end of the trip a more merchantable article.

"The theory on which the patent rests is that fibrous or woven material has the power of absorbing from the atmosphere the germs which provoke incipient decay on the surface of the meat.' It acts as a filter, straining from the air the animalcula [*sic*] or microscopic particles that tend to discolor the meat or cause putrefaction. The air is supposed to be full of these spores, so minute that they have never been seen or detected with the microscope, and yet so numerous that 3,200,000,000 are capable of being generated on a single square inch of the surface of decaying meat.[1]

"Whether these speculations of the scientists be true or not; whether the preservation of the bloom or natural color of the meat arises from the protection against atmospheric germs that is afforded by the fibrous material with which it is covered, or from some other cause, — I think the weight of the evidence is, that such a result in fact follows, and that the combination of the complainants' patent was the first which revealed it to the public."

The court then detailed the results of a successful trial of the process, and concluded: —

"It seems to be conclusive that the new and useful results claimed by the patentee do follow the covering of the meat with burlaps or cotton cloth, under the conditions set forth in the patent."

There is no further discussion of the patentability of the improvement.

It is plain that if fibrous or woven cloth had been used before as a covering of meat to prevent putrefaction, and if currents of cold air had also been used, separately from the cloth, for the same purpose, then a patent for the use of both would claim a mere aggregation, which is not the proper subject of a patent. Inasmuch, however, as the cloth had not been used for this purpose, but only to protect the meat from dirt or dust (for it is thus that we understand the case), its use, in combination with

[1] If these animalculæ are too small to be seen even with the aid of a microscope, it follows that they cannot be detected by the sense of touch. There remains only that of smell. Are we, then, to conclude that the learned judge, or the expert upon whom he relied, arrived at the exact number of animalculæ by means of that sense?

the cold-air currents, to prevent putrefaction in the manner specified, was the result of a new and an inventive idea.

If this be the true view of the case, it is an instance of new use rather than of combination.

WICKE *v.* OSTRUM, 103 U. S. 461.

UNITED STATES SUPREME COURT, 1881.

Machine for nailing boxes, patented to George Wicke.

The court held that the combination was a patentable one, but that the defendant had not infringed it. Whether or not the patentability of the combination was contested does not appear from the report. It consisted in "grooved spring-jaws, for the purpose of holding the nails and guiding them to their places, combined with a corresponding number of rising and falling plungers, for driving each nail singly and at the same time."

Waite, C. J.:—

"... Grooved spring-jaws were, confessedly, very old. So were rods of iron with curvilinear projections, like those called plungers, and cams of almost any shape, and treadles and levers, and adjustable carriage tables and slides. The use of these things separately could not be patented. But the combination of them so as to produce a machine useful for driving nails was new."

COMBINED PATENTS CAN CO. *v.* LLOYD, 11 FED. REP. 153.

E. D. OF PENN., 1882. MCKENNAN, J.

H. Miller's reissued patent, No. 7682, dated May 15, 1877, for an improvement in sheet-metal cans, claiming, as the court held,

"a can or other vessel made of sheet-metal, in which the top or bottom is joined to the sides by a double-recessed clamping lap-joint, soldered by dipping."

McKennan, J.:—

"Is this a new and patentable invention? All its constituents were old and well known at the date of the patent.

"In the English patent to Emile Peltier, dated Aug. 27, 1861, is described a double-recessed clamping lap-joint, of which that described in the patent in question is a counterpart. As cans or boxes embodying this joint were intended to hold gunpowder or other similar articles, the application of solder to it was not contemplated. But the use of solder to add stiffness and strength to metal joints, and to render them impervious to fluids, is immemorial. And in the English patents of Henrietta Brown and Walter Brown, dated in 1850 and 1855, respectively, the application of solder by bathing to metal joints, to render them fluid-tight, is directed and described, and is spoken of as having been before used. The patentee has merely aggregated these elements in his can, without causing them to perform, by their united action, any function which they did not perform separately before. In other words, he has taken the Peltier joint, and rendered it fluid-tight by solder, applied by dipping the joint in a bath.

"In the conception or material embodiment or operation of such a union of well-known elements, we cannot detect any patentable merit, and hence the bill must be dismissed, with costs."

ENGLISH CASES.

LEWIS *v.* DAVIS, 3 Car. & P. 502; 1 Web. P. C. 486.

Lord Tenterden, C. J., and a Jury, 1829.

Lewis & Davis's patent of Jan. 15, 1818, No. 4196, for an improved machine for shearing cloth "by a triangular steel-cutting wire bent round a cylinder in the form of a spiral." The cutter was rotary, and it sheared the cloth from list to list.

Lord Tenterden, C. J., to the jury: —

". . . It appears that a rotary cutter to shear from end to end was known, and that cutting from list to list by means of shears was also known. However, if before the plaintiff's patent the cutting from list to list, and the doing that by means of rotary cutters, were not combined, I am of opinion that this is such an invention by the plaintiffs as will entitle them to maintain the present action."

CORNISH *v.* KEENE, 3 Bing. N. R. 570; 1 Web. P. C. 518.

Common Pleas, 1837.

R. W. Sievier's patent of Jan. 17, 1833, No. 6366, for a new elastic cloth, made by interweaving strands of ordinary india-rubber with cloth of cotton, flax, &c.

"These strands were first covered by winding filaments tightly round them by an ordinary covering machine, and were then arranged as warp threads and stretched to their utmost tension."

After being woven, the cloth was subjected to heat,

"whereby the india-rubber contracted and became elastic, the non-elastic threads forming a limit beyond which extension was impossible, and the relative admixture of materials determining the degree of elastic pressure."

Tindal, C. J., succinctly stated and disposed of the chief objection to the patent as follows: —

"The use of elastic threads or strands of india-rubber, previously covered by filaments wound round them, was known before; the use of yarns of cotton or other non-elastic material was also known before; but the placing them alternately side by side together as a warp, and combining them by the means of a weft, when in extreme tension and deprived of their elasticity, appears to be new; and the result — namely, a cloth in which the non-elastic threads form a limit up to which the elastic threads may be stretched, but beyond which they cannot, and therefore cannot easily be broken — appears a production altogether new. It is a manufacture at once ingenious and simple. It is a web combining the two qualities of great elasticity and a limit thereto."

An unimportant prior device was also set up in this case.

ALLEN *v.* RAWSON, 1 C. B. 551.

Common Pleas, 1845.

Higgins' Dig. p. 18: —

"Where the use of soap and water in the process of felting, instead of acidulated water, was known, and the use of rollers was also known,

it was held that a patent for the application of soap and water in combination with rollers was a good subject-matter for a patent."

A question of anticipation was also raised in this case, and the matter of prior invention was discussed, *vide post*, page 715.

BOVILL *v.* KEYWORTH, 7 E. & B. 724; 3 Jur. n. s. 817.

Queen's Bench, 1857.

G. H. Bovill's patent of June 5, 1849, No. 12,636, with disclaimer, dated May 1, 1855, for "improvements in manufacturing wheat and other grain into flour."

[1] "The patent related to an improvement of great value to millers, which consisted in the combination of a blast of air between the mill-stones used in grinding corn with an exhausting apparatus attached to the chamber in which the stones were enclosed.

"The exhaust-pipe carried away the dust or stive into a separate chamber, where the same was deposited, and the finely ground flour fell into its proper receptacle. The top stone was fixed, and the lower one rotated. The specification stated: 'I introduce a pipe to the mill-stone case from a fan or other exhausting machine, so as to carry off all the warm, dusty air blown through between the stones to a chamber. And this part of my invention relates only to sucking away the *plenum* of dusty air forced through the stones, and not to employing a sufficient exhausting power to induce a current of air between the mill-stones, without the blast, this having been before practised.'

"*Claims* (as amended by disclaimer): —

"1. Fixing the top stone, and causing currents of air, either by exhaustion or pressure, to pass between the grinding surfaces of mill-stones, when the top stone is so fixed, and the introduction of the ventilating pipes in the stones, as herein described.

"2. Exhausting the dusty air, when the same has been blown through the grinding surfaces of the mill-stones, from the cases or chambers receiving the meal, as herein described."

"At the trial it appeared that the alleged infringement consisted in the use of apparatus similar to that specified, except that the *lower stone* was *fixed*, and the upper one rotated. Defendants gave in evidence the specification of a patent of Feb. 11, 1846,

[1] We quote from Goodeve's Abstracts of Patent Cases, p. 51.

No. 11,084, to A. V. Newton, for drawing a current of air between the stones by an exhausting apparatus.

"Verdict for plaintiff.

"Rule *nisi* to enter a verdict for defendants or for a new trial discharged by the Court of Queen's Bench (Lord Campbell, C. J., Coleridge, Wightman, Erle, JJ.)."

Per Lord Campbell, C. J.:—

"The whole of the plaintiff's process, if the combination be new, is certainly the subject of a patent; and so would the part (No. 2) be, if taken separately. . . . The combination of the *exhaust* with the blast, so as to carry off the warm, dusty air blown through between the stones to a chamber above, while the pure flour in a dry condition, without the stive, descended into a chamber below, added to the quantity and improved the quality of the flour produced in grinding; and its effect was highly favorable to . . . the men employed in the operation.

"Still, if the specification does not point out the mode by which this part of the process is to be conducted, so as to accomplish the object in view, it would be the statement of a principle only, and the patent would be invalid.

"But we are of opinion that the specification, on the face of it, cannot (as contended) be pronounced, in point of law, to be bad in this respect, and . . . that the evidence adduced at the trial shows it to be quite sufficient. The specification says: '. . . And this part of my invention relates only to sucking away the *plenum* of dusty air forced through the stones, and not to employing a sufficient exhausting power to induce a current of air between the mill-stones without a blast.' The exhaust . . . is to be proportioned to the *plenum* caused by the blast, taking care not to produce the inconvenient current of air, against which a caution is given. How can a judge take upon himself to say that this may not be enough to enable a workman of competent skill to construct the machinery? According to the evidence, the specification was abundantly sufficient for this purpose. . . ."

MORTON *v.* MIDDLETON, 1 Ct. Sess., 3d Series, 718.

Scotch Court of Session, 1863.

Patent for an improved mode of constructing iron posts and pillars.

The Lord President (one question being whether the patentee

claimed the component parts of the pillar severally, or only the combination of them):—

"There can be no doubt as to the general law that there may be a new arrangement and combination of things that were formerly in use, but which are to be so arranged in a novel way as to produce either a new effect or a better effect than before."

And on the general question:—

"I apprehend none of your Lordships are disposed to hold upon the evidence that there is no benefit to the public resulting from this patent. And although the object of other pillars that have been used may have been the same as the object contemplated by this one, yet if the invention here in a great and material degree attains that object better, then we must hold that there is novelty in it, and that it might be protected by a patent."

FOXWELL *v.* BOSTOCK, 12 W. R. 723; 4 De G., J. & S. 298.

Lord Chancellor, 1864.

Lord Westbury:—

"If a combination of machinery for effecting certain results has previously existed, and is well known, and an improvement is afterwards discovered, consisting, for example, of the introduction of some new parts, or an altered arrangement in some particulars of the existing constituent parts of the machine, an improved arrangement or improved combination may be patented."

RALSTON *v.* SMITH, 11 H. L. Cas. 223.

House of Lords, 1865.

Ralston's patent, granted Nov. 23, 1858, for "calendering" or polishing linen goods, &c., and impressing designs upon them by one and the same operation.

Before this invention such goods were "calendered" by passing them between a roller and a bowl (another sort of roller), revolving with unequal velocities. To imprint them, they were afterward passed between such a roller and an engraved bowl,

revolving with the same velocity; for it was found that if the fabric were passed between the roller and the engraved bowl while they revolved with *unequal* velocities, the fabric was torn by the edges of the cuts upon the bowl.

The patentee discovered that if the engraving upon the bowl were limited to "an infinite series of circular grooves of small diameter," the fabric would be printed upon, and not torn, although the roller and the bowl were revolved with different velocities. Thus, he discovered a way in which the fabric might be calendered and imprinted at once.

At first, in his patent, he claimed the machinery by which this result was accomplished. Afterward, by a disclaimer, he "reduced his patent to a patent 'for improvements in embossing and finishing woven fabrics.'"

It was held in the House of Lords that this was not a new manufacture.

Lord Westbury, L. C., said: —

"I cannot say that my mind is free from doubt upon the subject; but having regard . . . to the operation of the disclaimer, and being of opinion that the specification amended is a description not of a machine, not of a new combination of machinery, but of a new process, I think there is nothing entitled to the character of a new manufacture to be found in that specification."

But he was of opinion that if the patent had been for the new combination of machinery, it would have been good.

Lord Cranworth thought otherwise, on the ground that there was no new machinery. (True; but the combination was new.)

Lord Chelmsford said: —

"The plaintiff does not claim to have invented any new combination of machinery, . . . nor has he introduced to the world any new process [Is it not invention of a new process to combine two old processes, so as to do by one stroke what formerly had required two strokes?]; but the utmost that he can lay claim to is that he has discovered that, by giving a differential motion to different parts of an old machine, a power existing in it might be developed and brought into action. It appears to me that such a discovery is not the subject of a patent."[1]

[1] This question of patentability was not passed upon by the court below.

CANNINGTON *v.* NUTTALL, L. R. 5 H. L. 205.

HOUSE OF LORDS, 1871.

Pocheron's patent of May, 1866 (with a disclaimer of April 4, 1867), for "improvements in the manufacture of glass."[1]

"Before the date of the patent, glass was melted in furnaces of peculiar construction. On each side of the fire, sieges or benches were constructed, upon which were placed a number of earthenware pots. These pots, in which the glass was melted, were large and cumbrous, and their manufacture was costly; moreover, they were very liable to crack, so that their suppression was always regarded as a great desideratum by glass-makers. The patentee, in his amended specification, thus describes his invention: 'My improvements relate to the melting or fusing furnaces or kilns used in glass-making, and have reference to the suppression of the fire-clay pots or crucibles hitherto in use, and to placing the materials to be fused or melted within the furnace itself, the usual inner form of the lower part of which is modified by doing away with the sieges or banks, and the general levelling of the bottom, to which separately I make no claim; but according to my invention, the lateral sides are constructed of a hollow form in such wise that a current of refrigerating or cooling air may be made to circulate around and prevent any excessive heating of the sides which are to retain or enclose the materials in fusion.'"

By prior inventors or experimenters the sieges and the pots had been done away with, and a tank substituted for them. Moreover, the cooling process had been applied to iron, &c., in a similar way (but never apparently to glass in a furnace).[2] But the combination was new, and it was therefore held patentable.

[1] We quote from Higgins' Dig. p. 15.

[2] It does not appear to what extent or with what success the plaintiff had been anticipated in the several elements of his combination. But the decision proceeds upon the assumption that all the elements were old in glass furnaces except the cooling process; in regard to which the Lord Chancellor said: "It is quite apparent, my Lords, that the cooling thing, the current of air, was nothing new: it is as old as the fables of Æsop; it is as old as the man blowing his soup in order to make it cool. But so it is with every invention; the skill and ingenuity of the inventor are shown in the application of well-known principles. Few things come to be known now in the shape of new principles; but the object of an invention generally is the applying of well-known principles to the achievement of a practical result not yet achieved. And I take it, that the test of novelty is this," &c., as in the text.

The Lord Chancellor (Lord Hatherley) thus stated the rule: —

"Is the product which is the result of the apparatus for which an inventor claims letters-patent effectively obtained by means of your new apparatus; whereas it had never before been effectively obtained by any of the separate portions of the apparatus which you have now combined into one valuable whole for the purpose of effecting the object you have in view."

Lord Westbury said: —

". . . Now, the only thing that appears to have been regarded by the patentee, Mr. Pocheron, as a new discovery (*apart from the apparatus*), was the application of the external air to the sides of the tank. It was a discovery, certainly; but it was a thing for which, independently of the other apparatus, probably no patent could have been obtained. I may construct an apparatus, and may, in point of fact, make the merit and the benefit of that apparatus depend upon the application of some natural force or property which is perfectly well known; but my invention consists in the construction of the apparatus in such a manner as to bring the natural agency or power to bear upon and effect the object which I desire to effect, and that I do by means of an apparatus constructed so as to bring into action that natural power. If, for example, I avail myself of the well-known expansive force of steam in order to effect a new object or a more beneficial result, and I introduce that by means of an apparatus constructed for the purpose of bringing this well-known expansive power into utility for my particular purpose, I have no right of invention in the discovery of that expansive power. My invention consists in the arrangement of the apparatus in order to receive that ordinary and well-known dynamic agent, and make it a fit instrument for effecting a new result.

"Here the refrigerating effect of air upon the sides of the tank was not a thing for which, *per se*, a patent could be claimed; but an apparatus so constructed as to bring into operation that particular property of the external atmospheric air, so as to produce a most useful effect, constitutes an invention to which the merit of novelty attaches, and for which a patent may be taken out."

The patent was sustained.

HARRISON *v.* ANDERSTON FOUNDRY CO., L. R. 1 App. Cas. 574.

House of Lords, 1876.

Appeal from the First Division of the Scotch Court of Session. The question involved was merely in regard to the sufficiency of one claim of the patent; but the Lord Chancellor (Lord Cairns) thus described a patentable combination: —

"This combination . . . is novel; it is, to use the words of the Lord President, a new combination of old parts to produce a new result, or to produce a known result in a more useful and beneficial way. It is not doubted that a combination of which this may be said is the subject of a patent."

See also —

Lister *v.* Leather, 8 El. & Bl. 1034.

Saxby *v.* The Gloucester Waggon Co., L. R. 7 Q. B. D. 305.

Less important cases are: —

Wisner *v.* Grant, 7 Fed. Rep. 485, 922.
Stockton *v.* Maddock, 10 Fed. Rep. 132.
Doubleday *v.* Roess, 11 Fed. Rep. 737.

See also, *ante*, —

Seymour *v.* Osborne, page 99.
Bailey Washing & Wringing-Machine Co. *v.* Lincoln, page 108.
Cahill *v.* Beckford, page 112.
Tillotson *v.* Munson, page 138.
Elizabeth *v.* Pavement Co., page 162.
Gardner *v.* Herz, page 179.
Rubber-Tip Pencil Co. *v.* Howard, page 247.
Albright *v.* The Celluloid Harness-Trimming Co., page 254.
Pitts *v.* Whitman, page 313.
Pitts *v.* Wemple, page 313.
Union Paper-Collar Co. *v.* Leland, page 339.
Gallahue *v.* Butterfield, page 340.
Irwin *v.* Dane, page 352.
Munson *v.* The Gilbert & Barker Mfg. Co., page 362.
Crane *v.* Price, page 376.

And see, *post*, —

EARLE *v.* SAWYER, page 502.
PERRY *v.* CO-OPERATIVE FOUNDRY CO., page 521.
PALMERBING *v.* BUCHOLZ, page 522.
HINKS *v.* SAFETY LIGHTING CO., page 525.

CHAPTER VI.

SUBSTITUTION.

141. CASES of substitution are closely connected with those of combination and with those of new use. In fact, it is often hard to say under which head a particular case should be classed.[1] In the main, however, a practical distinction has been made between the three subjects, and we therefore devote a chapter to the topic Substitution, as well as to New Use and to Combination.

142. In the first place, the same remark that was made in regard both to new use and to combination is applicable here. Invention may be shown only in the device or devices by which a particular substitution is effected. Such improvements are very rare. Their patentability depends neither on the novelty, in its new situation, of the thing substituted, nor on a new effect produced by the substitution, but simply on the device or devices by means of which the thing substituted is adapted to its new situation. These cases, therefore, are not properly cases of substitution, and we shall not include them in the remarks which follow.

143. It is true also, of course, that the substitution of a newly discovered substance, or of a substance or article of any sort in which a new property has been discovered, is always patentable.

144. One important branch of this subject — the substitution of equivalents — has already been discussed in the first chapter of this book.[2]

145. There are but few cases which, strictly speaking, are cases of substitution; but among them, it so happens, are three of the most important and most noted decisions made by the Supreme Court in regard to the patent law. These are Hotch-

[1] Some attempt at a basis of classification is made in a foot-note to page 281, *ante*.

[2] *Vide* page 63.

kiss *v.* Greenwood,[1] Hicks *v.* Kelsey,[2] and Smith *v.* The Goodyear Dental Vulcanite Co.[3] We will state them very briefly.[4]

146. In the case of Hotchkiss *v.* Greenwood the patent was for an improvement in door-knobs, which consisted in substituting porcelain for the other materials previously used in connection with a certain kind of shank. It appeared (1) that a porcelain door-knob had been used with other kinds of shanks,[5] (2) that it was no better adapted to this kind of shank than the other knobs, (3) that nothing more than mechanical skill was required to unite it to the shank. But, on the whole, the new knob was better and cheaper than any in use before. The improvement, however, was held not patentable, inasmuch as it was the mere substitution of one material for another. No ingenuity was required to unite the knob and shank, and no new function or effect resulted from their union.

147. In the second case, Hicks *v.* Kelsey, the patent related to a wagon-reach, *i. e.* the pole connecting the fore and hind axles of a wagon. This was curved upward from the hind axle, so as to allow the fore-wheels to pass under it when the wagon was turned around.

The reach was made of wood throughout, strengthened by straps of iron attached to each side of it. The patentee's improvement consisted in leaving out the wood in the curved part, and bolting or welding together the iron straps in that part of the reach. There was evidence that the new reach was less bulky, and stronger than the old one, — stronger, because by the use of iron alone in the curved part the loosening of the bolts there, caused by contraction of the wood in summer, was avoided.

This improvement was held to be not patentable. The court (Bradley, J.) said: —

" . . . The use of one material instead of another in constructing a known machine is in most cases so obviously a matter of mere mechanical judgment and not of invention, that it cannot be called an invention, unless some new and useful result, an increase of efficiency, or a decided saving in the operation, is clearly attained. Some evidence

[1] 11 How. 248.

[2] 18 Wall. 670.

[3] 93 U. S. 486.

[4] Full abstracts of them will be found *post*. See pages 504, 508, 510.

[5] The case is always considered as including this fact. But a careful reading of the reports, more especially of the Circuit Court report (4 McLean, 456), gives some reason to think that the patentee was the first to make a knob of porcelain.

was given to show that the wagon-reach of the plaintiff is a better reach, requiring less repair and having greater solidity than the wooden reach. But it is not sufficient to bring the case out of the category of more or less excellence of construction. The machine is the same."

148. In the third case, Smith *v.* The Goodyear Dental Vulcanite Co., the improvement was in the manufacture of false teeth, and it consisted in substituting a plate made of vulcanizable compound for the cement or other materials previously used. The great *desideratum* in this manufacture was an unbroken connection between the plate and teeth, so that there should be no crevices in which food could lodge. This had not been effected by the other materials, but it was effected by the plate of vulcanizable compound united with the teeth in the manner described. The method of union was construed by the court as an essential part of the invention.

The claim was: —

"The plate of hard rubber or vulcanite, or its equivalent, for holding artificial teeth, or teeth and gums, substantially as described."

149. The court held the invention to be

"a set of artificial teeth, as a new article of manufacture, consisting of a plate of hard rubber with teeth, or teeth and gums, secured thereto in the manner described in the specification, by embedding the teeth and pins in a vulcanizable compound, so that it shall surround them, while it is in a soft state, before it is vulcanized, and so that, when it has been vulcanized, the teeth are firmly and inseparably secured in the vulcanite, and a tight joint is effected between them, the whole constituting but one piece. . . . The invention, then, is a product or manufacture made in a defined manner. It is not a product alone, separated from the process by which it is created."

150. And in a later suit [1] upon the same patent, a case of infringement only, the court said: —

"The process detailed in the description antecedent to the claim, and referred to thereby, is as much a part of the invention as are the materials of which the plate or product is composed. Both are necessary elements of it. Hence to constitute an infringement of the patent, both the material of which the dental plate is made, or its equivalent, and the process of constructing the plate, or a process equivalent thereto, must be employed."

[1] Goodyear Den. Vul. Co. *v.* Davis, 102 U. S. 222.

151. It appears, then, that in this case there was something more than substitution. The improvement amounted to the creation of a new article. Its chief value lay in the manner by which the substitution was effected. It is true that it is impossible, in this case, entirely to separate the thing substituted from the manner of the substitution, because the *plastic* state of the article substituted, at the time of the substitution, is at once a part of the process of substitution and of the thing substituted.

152. It is plain, however, that the case would have been very different had cold india-rubber, in some form, been substituted in the ordinary manner for the materials previously used. In that case, we may suppose, there would have been a decided gain, in lightness and in cheapness, although the new effect of an unbroken connection would not have been obtained. Would this substitution, or would some similar one which the reader may imagine, be patentable?

153. In considering this question, we have first to examine the doctrine laid down in the three decisions of the Supreme Court, which we have stated. It was summed up, in the last of them, by Strong, J., as follows: —

"The case [Hotchkiss *v.* Greenwood] does decide that employing one known material in place of another is not invention, if the result be only greater cheapness and durability of the product. But this is all. It does not decide that no use of one material in lieu of another in the formation of a manufacture can in any case amount to invention, or be the subject of a patent. If such a substitution involves a new mode of construction, or develops new uses and properties of the article formed, it may amount to invention. The substitution may be something more than formal. It may require contrivance, in which case the mode of making it would be patentable; or the result may be the production of an analogous but substantially different manufacture. This was intimated very clearly in the case of Hicks *v.* Kelsey (18 Wall. 670), where it was said: 'The use of one material instead of another in constructing a known machine is in most cases so obviously a matter of mere mechanical judgment, and not of invention, that it cannot be called an invention unless some new and useful result, as increase of efficiency or a decided saving in the operation, be obtained.' But where there is some such new and useful result, where a machine has acquired new functions and useful properties, it may be patentable as an invention, though the only change made in the machine has been supplanting one of its materials by another. This is true of all com-

binations, whether they be of materials or processes. In Crane *v.* Price[1] (1 Web. Pat. Cas. 393), where the whole invention consisted in the substitution of anthracite for bituminous coal in combination with a hot-air blast for smelting iron-ore, a patent for it was sustained. The doctrine asserted was that, if the result of the substitution was a new, a better, or a cheaper article, the introduction of the substituted material into an old process was patentable as an invention. This case has been doubted, but it has not been overruled; and the doubts have arisen from the uncertainty whether any new result was obtained by the use of anthracite. In Kneass *v.* Schuylkill Bank the use of steel plates instead of copper for engraving was held patentable.[2] So has been the flame of gas, instead of the flame of oil, to finish cloth. These cases rest on the fact that a superior product has been the result of the substitution, — a product that has new capabilities and performs new functions. So in the present case the use, in the manner described, of hard rubber in lieu of the materials previously used for a plate, produced a manufacture long sought but never before obtained," &c.

154. The remarks we have quoted begin with the assertion that the case of Hotchkiss *v.* Greenwood decides that "employing one known material in place of another is not invention, if the result be only greater cheapness and durability of the product." If the gain is only in cheapness or in durability, the article substituted, when you have got it, and so long as it lasts, is practically the same as the article displaced. The facts that you got it cheaper and that it will last longer do not make it a different article.

The proposition quoted, therefore, amounts to saying that there is no invention when the article substituted introduces no new qualities, or produces no new function or effect. This rule, therefore, would not *necessarily* exclude from patentability the substitution of india-rubber in the case which we have supposed, where the article substituted would be different from that displaced by being lighter; and so, of course, if it were different in any other beneficial way. In such a case, we conceive, the substitution would be patentable or not, accordingly as the article substituted was or was not analogous to that displaced.

155. We think, however, that we may go further than this, and say, in spite of the *dictum* above cited from the case of Hotchkiss *v.* Greenwood, that even when the substituted article

[1] *Vide* page 376, *ante*.

[2] But *vide ante*, page 235.

is better than the article displaced only by being cheaper or more durable, invention is not necessarily excluded. Cases of substitution might arise in which the gain in cheapness or in durability was so great as to render practical and valuable a contrivance which before had been little more than a curiosity. And, in fact, barring the proposition we have been discussing, the language of the rest of the quotation would include such a contingency. Thus Strong, J., said, as we have seen: "The substitution may be something more than formal; . . . the result may be the production of an analogous but substantially different manufacture." And in speaking with approval of Crane *v.* Price, he said: "The doctrine asserted was that, if the result of the substitution was a new or a better or a cheaper article, the introduction of the substituted material into an old process was patentable as an invention."

156. In fact, one such case as we suppose has actually arisen. We refer to that of Dalton *v.* Nelson,[1] where the patentee had substituted vulcanized rubber in the opposing surfaces of steam-gauge cocks for brass, lead, leather, and cork, — all of which had been used before, separately. The advantage of the rubber was its very superior durability. In sustaining the patent, Shipman, J., said: —

"The result which [the patentee] attained was the invention of a durable gauge cock, which remained tight under various pressures and different degrees of heat, and which did not get out of repair. This result was accomplished by the discovery of the fact that highly vulcanized rubber, in consequence of its elasticity, would not be ground or abraded by water containing dirt or grit, and, in consequence of its durability and non-corrodible properties, would successfully endure and withstand the power of steam. In the year 1853 [date of the invention] the peculiar adaptability of hard rubber to the varied mechanical purposes to which it has since been applied was much less understood than it is at the present time."

157. On the whole, then, we conclude that the language of the Supreme Court, in the cases which we have stated, is rather descriptive than definitive. It is very difficult to lay down a rule which will fit all cases of substitution.

158. We may, however, carry our analysis of these decisions a

[1] 13 Blatch. 357.

little further. In cases of substitution, two things are to be considered, — the thing substituted, and the contrivance in which substitution is made.[1] Invention may be shown with regard to either. One form of substitution consists in substituting something which does not introduce any new function, any new idea, in short, but which is cheaper or more durable, or has some other comparative advantage over the element displaced. This form of substitution is patentable, as we have seen, when, and only when, the patentee has been the first to discover the capability in the thing substituted, which makes it valuable in the new situation; or else has been the first to conceive the idea of transferring the thing substituted from some non-analogous situation. These cases are rare, and they do not present much difficulty. An instance we have already given, namely, the case of Dalton *v.* Nelson, where the substitution was patentable because, as Shipman, J., said, the patentee had discovered the capability which he employed in the article that he substituted. In the door-knob case, on the other hand, it was matter of common knowledge that the porcelain door-knob had the same qualities as the other knobs that had been used; and so in the case of Hicks *v.* Kelsey, the properties of iron which the patentee made use of in his substitution of it were well known.

The other and more common form of substitution occurs when, by means of the substitution, a new function, a new idea, in fact, is introduced into the original contrivance. This was the case in Smith *v.* Goodyear Dent. Vul. Co., where, as we have seen, a new function or effect was developed by the peculiar manner in which the teeth and the substituted plate united. What, then, is a new function or effect?

159. This leads us a little further to a distinction which, though not suggested by the Supreme Court, is, we think, deducible from their decisions as well as from the nature of the subject. It may be stated thus: A new function or effect is produced by the substitution, when a new interaction is brought about between the element substituted and the other elements of the contrivance, or some one thereof. The matter would then stand thus: —

(1.) If the superiority of the thing substituted is unconnected

[1] *Vide* sect. 142, *ante*, page 493.

with any other element in the article, as that it is merely cheaper or more durable, — invention is excluded, — unless, as we have already said, there was discovery or invention exercised by the patentee in finding out that the thing substituted had the capabilities on account of which he substituted it, or in transferring it from some non-analogous situation.

(2.) If the superiority of the thing substituted lies in its greater adaptability to some other element of the contrivance, whereby that other element acts in a different way from what it did before, then there is at least a presumption of invention.

160. The Dental Vulcanite case is an illustration of this last proposition. The substitution of the plate of vulcanizable compound was held patentable because it produced a new interaction between itself and the teeth. It would not have been patentable — at least so much seems to be implied by the opinion of the court — if no such new interaction had been produced.

161. At any rate, if the rubber plate had been superior only in its lightness, cheapness, and freedom from decay, the substitution of it would not have been patentable, unless the patentee had been in some sense the discoverer of those qualities. So in the door-knob case, the substitution of the better knob was held not patentable; but the court intimated that if the knob had grasped, so to say, the shank in a way different from that of other knobs, the substitution would have been patentable.

162. We hesitate to say that there is invention whenever such interaction as we describe is produced; but certainly when it exists, there is a presumption of invention; and the converse of the proposition is true. That is, if such interaction as we describe is not produced by the substitution, invention is excluded, unless, as has been said, the capability of the thing substituted is the discovery or the invention of the patentee. We mean that he must either have discovered the physical existence of such capability, or else have transferred the thing substituted from a situation or use so non-analogous to that in which he puts it, that invention was required to make the transfer.[1]

163. The reason for these rules is apparent. If the conditions

[1] Here we touch upon the subject of new use. *Vide ante*, page 281 *et seq.*

just stated are not fulfilled, then the patentee has imported nothing new into the old contrivance. He has merely put in the place of one article another, commonly known as an equivalent for it.[1]

164. In the case of Hicks *v.* Kelsey, the improvement caused by the substitution seems to have been slight.

Bradley, J., said: —

"Some evidence was given to show that the wagon-reach of the plaintiff is a better reach, requiring less repair and having greater solidity than the wooden reach; but it is not sufficient to bring the case out of the category of more or less excellence of construction. The machine is the same."

165. It is also to be remarked that this case, though treated by the court as one of substitution, scarcely was such. Nothing was substituted, but something was left out, namely, the wood in the curved part of the reach, and nothing was put in its place. As the reader will remember, the improvement consisted in leaving out the wood, which had been bound on each side by straps of iron, and in bolting or welding the iron straps directly together. It is not even intimated that the iron straps were made larger or different in any way to make up for the loss of the wood. The chief advantage was, as we have said, that there was no contraction of the iron reach, and consequent loosening of the bolts, as was the case in the reach made of wood and iron.

166. Whether this advantage arose from a new interaction or not is a nice question. We shall do no more than to state it. On the one hand, it might be said: The difference between the new article and the old was not merely the difference between wood and iron considered in themselves, but there was also the difference arising from their diverse action in conjunction with bolts. This difference was not the primary, but the secondary, result of the use of iron alone, instead of wood and iron. So far as there was substitution only, the new article was lighter and smaller, and therefore better, than the old, but not therefore patentable; because these improvements resulted directly from the change of material; but the chief improvement, the permanent solidity of the wagon-reach, resulted from the interaction of

[1] *Vide ante*, page 83.

the substituted material and bolts, which was different from the interaction of the old material and bolts. In respect of this improvement, wood was as good as iron, had there been no bolts.

167. In reply, it might be urged that the difference was one of degree, not of kind. Really, there was no interaction at all, for the bolts remained the same, whether used with wood or with iron. The difference resided in the wood and iron alone; and it does not alter the case that the defect of the wood was called out by another element in the article itself, and not by some force external to the article.

EARLE *v.* SAWYER, 4 Mas. 1.

D. of Mass., 1825. Story, J.

This was a motion for a new trial.

The patent was for an improvement in a machine for making shingles, and it consisted in substituting a circular for the perpendicular saw.

Small circular saws had previously been used for veneering and sawing picture-frames. There was evidence that an ordinary mechanic could hardly have failed to effect the substitution, had it been suggested to him, in the way that the plaintiff effected it; and there was counter-evidence of the difficulties which the plaintiff, himself an ingenious mechanic, had met with in adapting the circular saw to the machine. There is no description of the apparatus in the report of the case.

The defence was want of ingenuity.

Story, J.:—

" . . . The whole argument is, if I rightly comprehend it, to this effect. It is not sufficient that a thing is new and useful to entitle the author of it to a patent. He must do more. He must find it out by mental labor and intellectual creation. If the result of accident, it must be what would not occur to all persons skilled in the art who wished to produce the same result. There must be some addition to the common stock of knowledge, and not merely the first use of what was known before. The Patent Act gives a reward for the communication of that which might otherwise be withholden. An invention is the

finding out by some effort of the understanding. The mere putting of two things together, although never done before, is no invention.[1]

"It did not appear to me at the trial, and does not appear to me now, that this mode of reasoning upon the metaphysical nature, or the abstract definition of an invention, can justly be applied to cases under the Patent Act. That act proceeds upon the language of common sense and common life, and has nothing mysterious or equivocal in it.

"The thing to be patented is not a mere elementary principle or intellectual discovery, but a principle put in practice, and applied to some art, machine, manufacture, or composition of matter. It must be *new*, and not *known* or *used* before the application; that is, the party must have found out, created, or constructed some art, machine, &c., or improvement on some art, machine, &c., which had not been previously found out, created, or constructed by any other person."

After quoting from the act of 1793, ch. 11, § 1:—

"It is of no consequence whether the thing be simple or complicated; whether it be by accident or long, laborious thought, or by an instantaneous flash of mind, that it is first done.[2] . . . It must also be useful, that is, it must not be noxious or mischievous, but capable of being applied to good purposes; and perhaps it may also be a just interpretation of the law that it meant to exclude things absolutely frivolous and foolish. . . . The first question, then, to be asked in cases of this nature is whether the thing has been done before. In case of a machine, whether it has been substantially constructed before; in case of an improvement of a machine, whether that improvement has ever been applied to such a machine before, or whether it is substantially a new combination. If it is *new*, if it is *useful*, if it has *not been known* or *used* before, it constitutes an invention within the very terms of the act,

[1] This is an exact statement of the law, and each sentence in it might be substantiated by quotations from decided cases.

If Judge Story's construction of the law were the right one, every new article of trade or manufacture would be patentable.

The reader will observe that further in his remarks upon the language of the statute he makes no reference to the words "invented or discovered," and his conclusion is based upon the assumption that all the statute requires is that the thing to be patented shall be new and useful.

The words "invented or discovered" are, however, found in the statute, and "the language of common sense and common life" has given them a meaning. The truth probably is that, in Judge Story's mind, the word "new" really stood for the very quality of invention, which he reprobated. In fact, he so defines it *infra*, where he says that a thing to be *new* must be "*found out*, *created*, or *constructed*," *i. e.* discovered or invented.

[2] *Vide ante*, pages 20–20.

and, in my judgment, within the very sense and intendment of the legislature. I am utterly at a loss to give any other interpretation of the act; and indeed in the very attempt to make that more clear, which is expressed in unambiguous terms in the law itself, there is danger of creating an artificial obscurity.

"With these views, I did not hesitate to tell the jury at the trial that the true question for them to decide was whether the improvement secured by the patent had ever been thought of or applied to the original machine by any other person before the plaintiff conceived and executed the combination."

HOTCHKISS *v.* GREENWOOD, 11 How. 248 (1850).

The patent was for making door and other knobs out of potters'-clay and porcelain, and attaching the knob so made to a metal shank or spindle by

"having the cavity in which the screw or shank is inserted, by which they [the knobs] are fastened, largest at the bottom of its depth, in form of a dovetail, and a screw formed therein, by pouring in metal in a fused state."

The patent claimed: —

"The manufacturing of knobs, as stated in the foregoing specifications, of potters'-clay, or any kind of clay used in pottery, and shaped and finished by moulding, turning, burning, and glazing; and also of porcelain."

Door-knobs of clay or porcelain were old; this device for attaching door-knobs was old in connection with knobs of brass, &c.; and the court held that the new use of the old knob in connection with the old device did not constitute a patentable invention, although the result, the new door-handle, might be better and cheaper than any before made. It did not appear at this trial that the device described was more easily applied to a clay or porcelain knob, or more effective when so applied; but only that the new door-handle was better and cheaper than any in use before it.

At the trial below,[1] the counsel for the plaintiffs asked the

[1] 4 McLean, 456.

court to instruct the jury that although both knob and spindle were old taken separately, yet,

"if such shank and spindle had never before been attached to potters'-clay or porcelain, and if it required skill and thought and invention to attach the said knob of clay to the metal shank and spindle, so that the same would unite firmly and make a solid and substantial article of manufacture, and if the said knob of clay or porcelain so attached were an article better and cheaper than the knob theretofore manufactured of metal or other materials, that the patent was valid."

The court refused to do so; remarking upon the expression "skill, thought, and invention," in the first clause of the instruction prayed for, that it was misleading, because the skill and thought of a mechanic were required to attach a spindle to any kind of knob; and these two requisites being granted, the jury might from them erroneously infer the third, — invention, "the hinge of the case;" and, upon the second clause, that "cheapness" and "quality" of the article produced "afford no ground whatever for a patent."

The instructions actually given were: —

"If knobs of the same form and for the same purposes with that described by the plaintiffs in their specifications, made of metal or other material, had been known and used in the United States prior to the alleged invention and patent of the plaintiffs; and if the spindle and shank in the form used by the plaintiffs had before that time been publicly known and used in the United States, and had been theretofore attached to metallic knobs by means of the dovetail and the infusions of melted metal, as the same is directed in the specifications of the plaintiffs to be attached to the knob of potters'-clay or porcelain, so that if the knob of clay or porcelain is the mere substitution of one material for another, and the spindle and shank be such as were theretofore in common use, and the mode of connecting them to the knob by dovetail be the same that was theretofore in use in the United States, the material being in common use, and no other ingenuity or skill being necessary to construct the knob than that of an ordinary mechanic acquainted with the business, the patent is void, and the plaintiffs are not entitled to recover."

Judgment for the defendants. The case was carried up by writ of error to the Supreme Court, where the judgment was affirmed, Woodbury, J., dissenting.

Nelson, J., delivered the opinion of the court as follows: —

" . . . The instruction assumes, and, as was admitted on the argument, properly assumes, that knobs of metal, wood, &c., connected with a shank and spindle, in the mode and by the means used by the patentees in their manufacture, had been before known, and were in public use at the date of the patent, and hence the only novelty which could be claimed on their part was the adaptation of this old contrivance to knobs of potters'-clay or porcelain; in other words, the novelty consisted in the substitution of the clay knob in the place of one made of metal or wood, as the case might be. And in order to appreciate still more clearly the extent of the novelty claimed, it is proper to add that this knob of potters'-clay is not new, and therefore constitutes no part of the discovery. If it was, a very different question would arise; as it might very well be urged, and successfully urged, that a knob of a new composition of matter, to which this old contrivance had been applied, and which resulted in a new and useful article, was the proper subject of a patent.

" The novelty would consist in the new composition made practically useful for the purposes of life by the means and contrivances mentioned. It would be a new manufacture; and none the less so, within the meaning of the patent law, because the means employed to adapt the new composition to a useful purpose was old or well known.

" But in the case before us the knob is not new, nor the metallic shank and spindle, nor the dovetail form of the cavity in the knob, nor the means by which the metallic shank is securely fastened therein. All these were well known and in common use, and the only thing new is the substitution of a knob of a different material from that heretofore used in connection with this arrangement.

" Now, it may very well be that, by connecting the clay or porcelain knob with the metallic shank in this well-known mode, an article is produced better and cheaper than in the case of the metallic or wood knob; but this does not result from any new mechanical device or contrivance, but from the fact that the material of which the knob is composed happens to be better adapted to the purpose for which it is made. The improvement consists in the superiority of the material, and which is not new, over that previously employed in making the knob.

" But this of itself can never be the subject of a patent. No one will pretend that a machine made, in whole or in part, of materials better adapted to the purpose for which it is used than the materials of which the old one is constructed, and for that reason better and cheaper, can be distinguished from the old one, or, in the sense of the patent law, can entitle the manufacturer to a patent.

"The difference is formal, and destitute of ingenuity or invention. It may afford evidence of judgment and skill in the selection and adaptation of the materials in the manufacture of the instrument for the purposes intended, but nothing more.

"I remember having tried an action in the circuit in the district of Connecticut some years since, brought upon a patent for an improvement in manufacturing buttons.

"The foundation of the button was wood, and the improvement consisted in covering the face with tin, and which was bent over the rim so as to be firmly secured to the wood. . . .

"On the trial the defendant produced a button taken off a coat on which it had been worn before the Revolution, made precisely in the same way, except the foundation was bone. The case was given up on the part of the plaintiff.

"'Now the new article was better and cheaper than the old one; but I did not then suppose, nor do I now, that this could make any difference, unless it was the result of some new contrivance or arrangement in the manufacture. Certainly it could not, for the reason that the materials with which it was made were of a superior quality, or better adapted to the uses to which the article is applied.

"'It seemed to be supposed on the argument that this mode of fastening the shank to the clay knob produced a new and peculiar effect upon the article, beyond that produced when applied to the metallic knob, inasmuch as the fused metal by which the shank was fastened to the knob prevented the shank from acting immediately upon the knob, it being enclosed and firmly held by the metal; that for this reason the clay or porcelain knob was not so liable to crack or be broken, but was made firm, and strong, and more durable. This is doubtless true. But the peculiar effect thus referred to is not distinguishable from that which would exist in the case of the wood knob, or one of bone or ivory, or of other materials that might be mentioned.'

"Now, if the foregoing view of the improvement claimed in this patent be correct, it is quite apparent that there was no error in the submission of the questions presented at the trial to the jury; for, unless more ingenuity and skill in applying the old method of fastening the shank and the knob were required in the application of it to the clay or porcelain knob than were possessed by an ordinary mechanic acquainted with the business, there was an absence of that degree of skill and ingenuity which constitute essential elements of every invention. In other words, the improvement is the work of the skilful mechanic, not that of the inventor."

Woodbury, J., dissenting, said: —

" . . . Now, on the point as to the invention being patentable, the direction virtually was to consider it not so, if an ordinary mechanic could have made or devised it; whereas, in my view, the true test of its being patentable was, if the invention was new, and better and cheaper than what preceded it. This test, adopted by the Circuit Court, is one sometimes used to decide whether the invention for which a patent has been obtained is new enough or distinguished enough from a former invention to prevent it from being an infringement, and to justify a new patent for it, and not, as here, whether it is valuable or material enough *per se* to be protected by any patent.

" Whenever the kind of test adopted below is used otherwise than to see if there has been an infringement or not, it is to ascertain whether the invention is original or not; that is, whether it is a trifling change, and merely colorable, or not. Webster on Sub. Mat. 25; Curtis on Patents, 6, 7; 2 Gallis. C. C. 51; 1 Mason C. C. 182. But it is impossible for an invention to be merely colorable, if, as claimed here, it was better and cheaper; and hence this last criterion should, as requested by the plaintiffs, have been suggested as a guide to the jury. . . . The skill necessary to construct it, on which both the court below and the court here rely, is an immaterial inquiry, or it is entirely subordinate to the question whether the invention was not cheaper and better. Thus, some valuable discoveries are accidental rather than the result of much ingenuity, and some happy ones are made without the exercise of great skill, which are still in themselves both novel and useful. Such are entitled to protection by a patent, because they improve or increase the power, convenience, and wealth of the community." [1]

HICKS *v.* KELSEY, 18 WALL. 670 (1873).

A patent for an improved wagon-reach, *i. e.* the pole connecting the front and hind axles of wagons. A wagon-reach curves upward, in its middle part, so as to allow the front wheels to turn under it. Before the plaintiff's alleged invention it was made of wood throughout, strengthened by straps of iron attached to each side of it. The plaintiff's improvement consisted in leaving out the wood *in the curve*, and bolting or welding the iron straps together in that part of the reach.

[1] We quote these remarks for their historical interest.

There was evidence that the new reach was less bulky and stronger than the old, — stronger, because by the use of iron alone in the curved part the loosening of the bolts there, caused by contraction of the wood in summer, was avoided.

Bradley, J., delivered the opinion of the court as follows: —

"The question is, whether the mere change of material — making the curve of iron instead of wood and iron — was a sufficient change to constitute invention; the purpose being the same, the means of accomplishing it being the same, and the form of the reach and mode of operation being the same.

"It is certainly difficult to bring the case within any recognized rule of novelty by which the patent can be sustained. The use of one material instead of another in constructing a known machine is in most cases so obviously a matter of mere mechanical judgment, and not of invention, that it cannot be called an invention unless some new and useful result — an increase of efficiency or a decided saving in the operation — is clearly attained.

"Some evidence was given to show that the wagon-reach of the plaintiff is a better reach, requiring less repair and having greater solidity than the wooden reach. But it is not sufficient to bring the case out of the category of more or less excellence of construction. The machine is the same. Axe-helves made of hickory may be more durable and more cheap in the end than those made of beech or pine, but the first application of hickory to the purpose would not be therefore patentable.

"Cases have frequently arisen in which substantially the question now presented has been discussed. Perhaps, however, none can be cited more directly in point than that of Hotchkiss *v.* Greenwood (11 How. 248), in which it was held that the substitution of porcelain for metal in making door-knobs of a particular construction was not patentable, though the new material was better adapted to the purpose and made a better and cheaper knob, having been used for door-knobs, however, before. So, in a case at the circuit, referred to by Judge Nelson in the last-named case, the substitution of wood for bone as the basis of a button covered with tin was held not patentable.

"In Crane *v.* Price[1] (Webster's Patent Cases, 409), it is true, the use of anthracite instead of bituminous coal with the hot blast in smelting iron-ore was held to be a good invention, inasmuch as it produced a better article of iron at a less expense. But that was a process of

[1] *Vide ante*, page 376.

manufacture, and in such processes a different article replacing another article in the combination often produces different results. The latter case is more analogous to the cases of compositions of matter than it is to those of machinery; and in compositions of matter a different ingredient changes the identity of the compound, whereas an iron bar in place of a wooden one, and subserving the same purpose, does not change the identity of a machine.[1] Curtis on Patents (3d ed.), 70–73.

"But the plaintiff's counsel alleges that his invention does not consist of the mere substitution of a particular material for another material which had been previously used for the same purpose in the same way, but consists in the production of a certain described article by a certain described mechanical process, which process, viewed as a whole, is new and useful. And then he describes what he supposes to be such new mechanical process.

"This is his argument; but the facts do not bear out such a view of the case. In our judgment, the patent in this case is void for want of novelty in the alleged invention."

SMITH *v.* GOODYEAR DENTAL VULCANITE CO., 93 U. S. 486 (1876).

Reissue No. 1904, dated March 21, 1865, of a patent originally granted to John A. Cummings, June 7, 1864, for an improvement in the manufacture of artificial teeth.

The court quoted from the able opinion of the circuit judge[2] a description of the invention, as follows:—

"The making of a vulcanite dental plate out of a vulcanizable rubber compound into which the teeth were embedded in its plastic condition, and the rubber compound, with the teeth thus embedded in it, afterwards vulcanized by heat, so that the teeth, gums, and plate should be perfectly joined, without any intervening crevices, and the plate should possess the qualities of hard rubber or vulcanite."

The claim was:—

"The plate of hard rubber or vulcanite, or its equivalent, for holding artificial teeth, or teeth and gums, substantially as described."

The chief advantage of the invention was that it obviated, in the manner above described, the crevices which existed in all

[1] *Vide ante*, page 66.

[2] Shepley, J., 1 Holmes, 354.

other arrangements of artificial teeth, forming receptacles for particles of food. The india-rubber plate was also more yielding to the mouth, much lighter, and much less expensive than any in use before it. Possessing these advantages, it entirely superseded all other plates.

The defendants alleged that this valuable improvement was merely the substitution of one material for another, and therefore, under the rule established by the case of Hotchkiss *v.* Greenwood, not patentable.

Strong, J.:—

" . . . We proceed to examine the several defences set up. Among these the one perhaps most earnestly urged is the averment that the device described in the specification was not a patentable invention, but that it was a mere substitution of vulcanite for other materials, which had previously been employed as a base for artificial sets of teeth, — a change of one material for another in the formation of a product. If this is in truth all that the thing described and patented was, if the device was merely the employment of hard rubber for the same use, in substantially the same manner and with the same effect that other substances had been used for in the manufacture of the same articles, it may be conceded that it constituted no invention. So much is decided in Hotchkiss *v.* Greenwood, 11 How. 248. But such is not our understanding of the device described and claimed. In the specification it is declared that the invention 'consists in forming the plate to which the teeth, or teeth and gums, are attached, of hard rubber, or vulcanite, so called, an elastic material, possessing and retaining in use sufficient rigidity for the purpose of mastication, and at the same time being pliable enough to yield a little to the motions of the mouth.' This is immediately followed by a description of the manner of the proposed use; that is, of making the hard rubber plates: and the claim, as stated, is 'the plate of hard rubber, or vulcanite, or its equivalent, for holding artificial teeth, or teeth and gums, substantially as described;' that is, plainly, formed as described. The invention, then, is a product or manufacture made in a defined manner. It is not a product alone separated from the process by which it is created. The claim refers in terms to the antecedent description, without which it cannot be understood. The process detailed is thereby made as much a part of the invention as are the materials of which the product is composed. We shall not quote at large the description of the mode of making the plate. Such a quotation would unnecessarily prolong this opinion. It plainly shows a purpose of the inventor to secure what had not been secured

before, — a combination of a plate with artificial teeth, or with gums and teeth, in such a manner as to be free from the objections and defects or inconveniences attending the method before practised of attaching such teeth to a metallic plate fitted to the roof of the mouth. Some of these objections are stated; such as expense, hurting the mouth, impeding mastication, and obstruction to perfect articulation. In carrying out the purpose proposed, the materials employed were all old. The teeth, the wax, the plaster, the moulds, the soft rubber, and the hard rubber, were none of them new. It is also true that the steps in the process were not all new. Plaster had been used for formation of moulds. The process of forming a plate by the use of such moulds was well known, and so was the process of converting a vulcanizable compound into vulcanite by heating it and allowing it to cool in moulds. But the process of Dr. Cummings extended beyond the use of known materials and the employment of the processes mentioned. It was vulcanizing soft rubber in a mould, and in contact with artificial teeth inserted in place into it while it remained in a soft condition. It was well described by the circuit judge as 'the making of a vulcanite dental plate out of a vulcanizable compound, into which the teeth were embedded in its plastic condition, and the rubber compound, with the teeth thus embedded in it, afterwards vulcanized by heat, so that the teeth, gums, and plate should be perfectly joined without any intervening crevices, and the plate should possess the quality of hard rubber or vulcanite.' The combination thus resulted in a manufacture which was 'one piece.'

"If, then, the claim be read, as it should be, in connection with the preceding part of the specification, and construed in the light of the explanation which that gives, the invention claimed and patented is 'a set of artificial teeth as a new article of manufacture, consisting of a plate of hard rubber, with teeth, or teeth and gums, secured thereto in the manner described in the specification, by embedding the teeth and pins in a vulcanizable compound, so that it shall surround them while it is in a soft state, before it is vulcanized, and so that when it has been vulcanized the teeth are firmly and inseparably secured in the vulcanite, and a tight joint is effected between them, the whole constituting but one piece.' It is evident this is much more than employing hard rubber to perform the functions that had been performed by other materials, such as gold, silver, tin, platinum, or gutta-percha. A new product was the result, differing from all that had preceded it, not merely in degree of usefulness and excellence, but differing in kind, having new uses and properties. It was capable of being perfectly fitted to the roof and alveolar processes of the mouth. It was easy for the wearer, and favorable for perfect articulation. It was light and

elastic, yet sufficiently strong and firm for the purposes of mastication. The teeth, gums, and plate constituting one piece only, there were no crevices between the teeth and their supporters into which food could gather, and where it could become offensive, and there could be no such crevices so long as the articles lasted. They were unaffected by any chemical action of the fluids of the mouth. Besides all this, they were very inexpensive as compared with other arrangements of artificial teeth.

"To us it seems not too much to say that all these peculiarities are sufficient to warrant the conclusion that the device was different in kind or species from all other devices. We cannot resist the conviction that devising and forming such a manufacture by such a process and of such materials was invention. More was needed for it than simple mechanical judgment and good taste. Were it not so, hard rubber would doubtless have been used in the construction of artificial sets of teeth, gums, and plates long before Cummings applied for his patent. To find a material, with a mode of using it, capable of being combined with the teeth in such a manner as to be free from the admitted faults of all other known combinations, had been an object long and earnestly sought. It had been a subject for frequent discussions among dentists and in scientific journals. The properties of vulcanite were well known; but how to make use of them for artificial sets of teeth remained undiscovered, and apparently undiscoverable, until Cummings revealed the mode. But when revealed its value was soon recognized, and no one seems to have doubted that the resulting manufacture was a new and most valuable invention. The eminent dentists and experts examined in this case uniformly speak of it as such. Not one has ventured to testify that it was not an invention. They speak of it as 'a novel and desirable thing;' as 'the greatest improvement in dentistry' made in many years; and as an invention which is 'a great benefaction to mankind, whereby both health and comfort are promoted.' The evidence also shows that it has wrought a revolution in dental practice, and that many thousands of operators are using it in preference to older devices. All this is sufficient, we think, to justify the inference that what Cummings accomplished was more than a substitution of one material for another; more than the exercise of mechanical judgment and taste, — that it was, in truth, invention. Undoubtedly, the results or consequences of a process or manufacture may in some cases be regarded as of importance when the inquiry is, whether the process or manufacture exhibits invention, thought, and ingenuity. Webster, on the subject-matter of patents, page 30, says: 'The utility of the change, as ascertained by its consequences, is the real practical test of the sufficiency of an invention; and since the one cannot exist without the other, the

existence of the one may be presumed on proof of the existence of the other. Where the utility is proved to exist in any degree, a sufficiency of invention to support the patent must be presumed.' We do not say the single fact that a device has gone into general use, and has displaced other devices which had previously been employed for analogous uses, establishes in all cases that the later device involves a patentable invention. It may, however, always be considered; and, when the other facts in the case leave the question in doubt, it is sufficient to turn the scale.

"We have, therefore, considered this branch of the case without particular reference to Hotchkiss *v.* Greenwood, 11 How. 248. The patent in that case was for an improvement in making door and other knobs for doors, locks, and furniture, and the improvement consisted in making them of clay or porcelain, in the same manner in which knobs of iron, brass, wood, or glass had been previously made. Neither the clay knob nor the described method of attaching it to the shank was novel. The improvement, therefore, was nothing more than the substitution of one material for another in constructing an article. The clay or porcelain door-knob had no properties or functions which other door-knobs made of different materials had not. It was cheaper, and perhaps more durable; but it could be applied to no new use, and it remedied no defects which existed in other knobs. Hence it was ruled that the alleged improvement was not a patentable invention. The case does decide that employing one known material in place of another is not invention, if the result be only greater cheapness and durability of the product. But this is all. It does not decide that no use of one material in lieu of another in the formation of a manufacture can, in any case, amount to invention, or be the subject of a patent. If such a substitution involves a new mode of construction, or develops new uses and properties of the article formed, it may amount to invention. The substitution *may* be *something* more than formal. It may require contrivance, in which case the mode of making it would be patentable; or the result may be the production of an analogous but substantially different manufacture. This was intimated very clearly in the case of Hicks *v.* Kelsey, 18 Wall. 670, where it was said, 'The use of one material instead of another in constructing a known machine is, in most cases, so obviously a matter of mere mechanical judgment, and not of invention, that it cannot be called an invention, unless some new and useful result, as increase of efficiency, or a decided saving in the operation, be obtained.' But where there is some such new and useful result, where a machine has acquired new functions and useful properties, it may be patentable as an invention, though the only change made in the machine has been supplanting one of its materials by another. This is

true of all combinations, whether they be of materials or processes. In Crane *v.* Price, 1 Webst. Pat. Cas. 393,[1] where the whole invention consisted in the substitution of anthracite for bituminous coal in combination with a hot-air blast for smelting iron-ore, a patent for it was sustained. The doctrine asserted was, that if the result of the substitution was a new, a better, or a cheaper article, the introduction of the substituted material into an old process was patentable as an invention. This case has been doubted, but it has not been overruled; and the doubts have arisen from the uncertainty whether any new result was obtained by the use of anthracite. In Kneass *v.* Schuylkill Bank,[2] the use of steel plates instead of copper for engraving was held patentable. So has been the flame of gas instead of the flame of oil to finish cloth. These cases rest on the fact that a superior product has been the result of the substitution, — a product that has new capabilities and that performs new functions. So in the present case the use, in the manner described, of hard rubber in lieu of the materials previously used for a plate produced a manufacture long sought but never before obtained, — a set of artificial teeth, light and elastic, easily adapted to the *contour* of the mouth, flexible, yet firm and strong, consisting of one piece, with no crevices between the teeth and the plate, impervious to the fluids of the mouth, unaffected by the chemical action to which artificial teeth and plates are subjected when in place, clean and healthy, — peculiarities which distinguish it from everything that had preceded it. These differences, in our opinion, are too many and too great to be ascribed to mere mechanical skill. They may justly be regarded as the results of inventive effort, and as making the manufacture of which they are attributes a novel thing in kind, and consequently patentable as such.

"A second objection urged by the defendant against the validity of the complainant's patent is alleged want of novelty of the invention; and a strenuous effort has been made to convince us that, although hard rubber had not been used in the manner described for the production of the manufacture, equivalent materials and processes had been, and that a plate substantially the same as that of Dr. Cummings had been made before his improvement. We are not, however, convinced. The patent itself is *prima facie* evidence that the patentee was the first inventor; at least, it casts upon him who denies it the burden of sustaining his denial by proof. We do not find such proof in the case. Though the patent was not granted until June 7, 1864, the invention was completed at least as early as April 12, 1855, when the application for a patent was made. Indeed, as we have noticed, a caveat to protect it was filed on the 14th of May, 1852, which clearly foreshadowed

[1] *Vide ante*, page 376.

[2] *Vide ante*, page 234.

the invention. Yet, taking the spring of 1855 as the time when it was completed, we find nothing in the proofs to justify a conclusion that Dr. Cummings was not the first inventor. It would answer no good purpose to review the voluminous evidence supposed to bear upon this branch of the case. We shall refer only to that which is deemed most important, and which has been most pressed upon us in this argument. Of the English patent of Charles Goodyear it is enough to say that, though the provisional specification was filed March 14, 1855, the completed specification was not until the 11th of September following. It was therefore on the last-mentioned date that the invention was patented.

"The experiments made by George E. Hawes, it must be admitted, closely resembled the process described in the reissued patent to the complainants. He cast in moulds sets of teeth on a tin base, in a manner very like that in which the vulcanite plate is formed by the Cummings process. But the experiments resulted in nothing practical. Hawes cast sets of teeth for the lower jaw only, the weight of the metal making the plate unfit for the upper. In consequence of the shrinkage of the metal in cooling, a tight joint could not be obtained between the teeth and the base. The sets were therefore liable to become offensive in consequence of deposits of food and the secretions of the mouth in the crevices. The shrinkage also prevented a close fitting of the plate to the roof of the mouth, and the tin base was affected by the chemical action of the secretions. In consequence of these and other objections the manufacture was soon abandoned, and it may properly be considered an abandoned experiment. It not only was not the same manufacture as that of Cummings, but it was not suggestive of it; and Dr. Hawes, who cast the tin plates, testifies that the use of vulcanite for dental purposes is the greatest improvement in his profession that he knew of in twenty-five years. He adds, 'that vulcanite may be used by dentists in many ways which could not be accomplished by tin or platinum.' In his opinion, therefore, the cast-tin base was not substantially the same thing as the Cummings manufacture. So also Dr. Royce, who cast plates of tin for artificial teeth in a manner very similar to that of Dr. Hawes, testifies that the solid tin base was found practically unfit for the purpose, except in rare instances. He made but a few sets, — none after 1850, — and adopted the vulcanite, agreeing to pay for a license to use it in manufacturing dental plates.

"We need go no further into a consideration of the various devices and publications offered to show that the manufacture patented was known before Cummings invented it. Suffice it to say, that none of them, in our opinion, suggest or exhibit in substance such a manufacture. The defence of want of novelty is therefore not sustained."

In a subsequent suit upon this patent, Goodyear Dent. Vul. Co. *v.* Davis, 102 U. S. 222, it was held that a plate for false teeth made of celluloid did not infringe it;[1] and the court (by the mouth of Mr. Justice Strong again) made the following remarks: —

"We had occasion, in Smith *v.* Goodyear Dental Vulcanite Company *et al.* (93 U. S. 486), to construe this patent, and determine what the invention claimed and patented really was. We held it to be 'a set of artificial teeth, as a new article of manufacture, consisting of a plate of hard rubber with teeth, or teeth and gums, secured thereto

[1] Upon the question of infringement the court said: "Celluloid is a substance of a comparatively recent discovery. Whether it was known at the time Cummings made his invention, or even at the time when his original patent was granted, we do not care now to inquire. It is sufficient for this case that we consider what it is. It is a compound of vegetable fibre, cellulose, or gun-cotton. Undoubtedly, it can be employed for manufacturing dental plates, and as a base for artificial teeth. Such a plate may have the fineness, lightness, and elasticity of a plate made of hard rubber by the Cummings process; but it is a substance very different from hard rubber, and it is incapable of the same manipulation. It is not vulcanite, and neither it nor its ingredients are capable of being vulcanized. It contains no sulphur or rubber. None of its constituents are vulcanizing agents. Camphor does not perform the function of sulphur. Under the action of heat, its tendency is to soften the compounded mass rather than to harden it, as sulphur does rubber. . . . When employed in manufacturing dental plates, the process is wholly unlike that employed in making hard rubber or vulcanite plates. It is put into a mould, it is true, such as was known and in use before the Cummings invention; but it is put in in a hard state, in its natural condition, and not soft or plastic, and capable of being pressed around the teeth. The mould cannot be closed until heat is applied. When that is applied, the jaws of the mould are gradually screwed together as the celluloid softens; and when the jaws come together the plate is completed. The process requires pressure in addition to heat in order to reduce the plate to shape and compress it around the teeth. There is no heating for hours, as is necessary in the vulcanizing process. The work is done in a few minutes. When allowed to cool, it is the same hard and bony substance it was before its manipulation; and in this respect also it is unlike vulcanite. It is obvious from all this that neither in the nature of the material of which it is made, nor in the process of manufacture, which is an essential part of the Cummings invention, as we have seen, is the celluloid plate substantially the same as one made of hard rubber.

"Nor is celluloid an equivalent for hard rubber, for the reasons already suggested, that it is not capable of vulcanization, and that it cannot be made into a plate by the process prescribed by Cummings. . . . Celluloid is not an equivalent for the material which the patent makes essential to the invention; and in the use of it for a dental plate the process which is inseparable from the invention is not, and cannot be, employed."

in the manner described in the specification, by embedding the teeth and pins in a vulcanizable compound, so that it shall surround them, while it is in a soft state, before it is vulcanized, and so that, when it has been vulcanized, the teeth are firmly and inseparably secured in the vulcanite, and a tight joint is effected between them, the whole constituting but one piece.' We said: 'The invention is a product or manufacture made in a defined manner. It is not a product alone, separated from the process by which it is created.'

"The process detailed in the description antecedent to the claim, and referred to thereby, is as much a part of the invention as are the materials of which the plate or product is composed. Both are necessary elements of it. Hence, to constitute an infringement of the patent, both the material of which the dental plate is made, or its equivalent, and the process of constructing the plate, or a process equivalent thereto, must be employed.

"It is therefore essential to a correct determination of this case to consider what was the material made by the patentee an element of his invention, and what can be considered an equivalent therefor."

These statements confirm and amplify the former construction of the patent, showing that the improvement was held patentable because it introduced a new interaction between the plate and teeth, in addition to being the substitution of a superior for an inferior material. Thus a substantially new article was created.

PUTNAM *v.* YERRINGTON, 9 O. G. 689.

D. of N. J., 1876. Nixon, J.

Reissued patent No. 1606, for improvement in bottle-stopper fastenings.

There were four claims, of which the only one adjudged to be valid was as follows:—

"Forming the fastener, at the part that comes over the cork, of a piece of wire of a U form, with the ends returned and connected to the bottle, in order that the pressure on the cork or stopper may cause the fastener to hold more securely, as specified."

This shape of fastener was not new, a patent for one of the same shape made of tin having lately expired; but the plaintiff's wire-fastener, offering less surface to the upward pressure of the cork, became embedded in it (so that the greater the pressure the

more firmly the cork was held down), instead of being pushed out of place, as sometimes happened with the tin fastener. On this ground, that here was not substitution only, but a new effect, the claim was sustained.[1]

DALTON *v.* NELSON, 13 BLATCH. 357.

S. D. OF N. Y., 1876. SHIPMAN, J.

A patent reissued to Oscar T. Earle, June 14, 1870, for a compression steam gauge-cock, described in the specification, the report says, as consisting,

"first, in making one of the surfaces that meet to close the water-way or steam-passage of a piece of vulcanized rubber, which is protected from spreading or confined in metal in such manner that but little more than its bearing or acting surface is exposed;" and, secondly, in making the other surface, which is of metal, in the form of a ring, "so that the rubber may be compressed by the same power more forcibly than if the metal surface were equal in area to that of the rubber."

The invention in this case was the substitution of vulcanized rubber in the opposing surfaces of steam gauge-cocks, where, before this invention, brass or lead, or leather or cork, had been used. All of these previously used substances had failed of their purpose. The brass or other metal was soon roughened or worn by gritty particles in the water, and the leather and cork were destroyed by the steam, which also corroded the lead. The rubber surfaces, having none of these defects, superseded all that were in use before them.

This was, therefore, mainly a case of substitution, though the objection of double use was also raised, as appears from the opinion.

The court said: —

"The difficulty which was to be overcome by the patentee was to make a steam gauge-cock which would not readily leak, and which would resist the action of steam. The result which he attained was the invention of a durable gauge-cock, which remained tight under various pressures and different degrees of heat, and which did not get out of

[1] This patent was sustained also in Putnam *v.* Wetherbee, 1 Holmes, 497, and in Putnam *v.* Hickey, 3 Biss. 157.

repair. This result was accomplished by the discovery of the fact that highly vulcanized rubber, in consequence of its elasticity, would not be ground and abraded by water containing dirt or grit, and, in consequence of its durability and non-corrodible properties, would successfully endure and withstand the power of steam. In the year 1853, the peculiar adaptability of hard rubber to the varied mechanical purposes to which it has since been applied was much less understood than it is at the present time. The invention consisted in the practical application of the discovery by such mechanical means that an efficient gauge-cock was produced.

"An attempt was made to show that this invention had been anticipated by the application of sheets of vulcanized rubber to the edges of the doors or plates of man-holes of steam-engines, and also upon the delivery-valves of engines; but the analogy between the edge of a gasket upon the plate of a man-hole or upon a delivery-valve, and one of the opposing surfaces of a compression steam gauge-cock, which is necessarily opened and closed at frequently recurring intervals, and which should be so constructed as not to become leaky from the constant use to which it is subjected, is so remote, that a rubber gasket cannot with propriety be considered an anticipation of Bisbee's [the original patentee's] invention. The remark of Coltman, J., in Walton *v.* Potter (4 Scott's N. R. 91) seems to be applicable to this branch of the case: 'It appears to me that it' (the plaintiff's invention) 'is a very useful application and adaptation of a substance, the properties and qualities of which for the purpose had never been known before, and, therefore, that it was properly the subject of a patent.'

"Again, the Bisbee invention comes within the principle which was enunciated in Hicks *v.* Kelsey (18 Wall. 673): 'The use of one material instead of another in constructing a known machine is, in most cases, so obviously a matter of mere mechanical judgment, and not of invention, that it cannot be called an invention, unless some new and useful result, an increase of efficiency, or a decided saving in the operation, is clearly attained.' Here, the substitution does not merely produce the same result in the same way, but produces a new result, differing from the former one so materially that it might almost be said that the difference is one of kind, and not of degree. The improvement was of such marked character that the inference is that the new device must have been the result of inventive thought, experiment, and skill, rather than the result of mere mechanical judgment. . . . Let there be a decree for an injunction and an account."

HOLBROOK *v.* SMALL, 10 O. G. 508.

D. OF MASS., 1876. CLIFFORD AND LOWELL, JJ.

Machine for sowing seed.

A claim for making in iron a frame which had before been made in wood cannot be sustained.

BROWN *v.* DEERE, 6 FED. REP. 484.

E. D. OF MO., 1881. TREAT, J.

The substitution of an intermittent rotary seed-wheel for an oscillatory seed-wheel, with the addition of the devices necessary to effect such rotary motion, constitutes a patentable improvement.

PERRY *v.* CO-OPERATIVE FOUNDRY CO., 12 FED. REP. 149.

N. D. OF N. Y., 1882. BLATCHFORD, J.

Improvement in stoves.

Blatchford, J.: —

"All that the patentee did was to substitute a flat grate for a dished grate in the arrangement. The relation between the grate and the bottom of the fire-pot, so as to leave the space between the two and the space around the edge of the grate as the same in the two arrangements. The only difference is one of degree as to the quantity of refuse which the rotation of the grate or the use of the poker will discharge, or one of convenience as to the character of the poker which will be used, and does not involve invention."

In another suit between the same parties, 12 Fed. Rep. 436, Blatchford, J., held that there was no invention in substituting in a stove

"an old grate made in two parts for another old grate made in one part, preserving the same relation of the grate to the fire-pot and to the ash-pit walls, when no distinctive effect in the combination resulted from the substitution."

And so as to a combination of transparent windows in the walls of the ash-pit with certain parts of a stove: —

"A window in an ash-pit cannot modify or affect the action or operation of the grate or of the anti-clinker space, or the isolation of

the grate, nor is the operation or use of the windows affected or modified by the existence or non-existence of any of those features."

The claim of another patent ran as follows: —

"The adjoining flues D and D', situated at the rear of the stove, and having walls built on the casing of the same, in combination with the illuminating doors or windows in the draft chamber, base section."

Blatchford, J.: —

"It is clear that this is not a patentable combination. The flues operate in the same manner, whether there are illuminating windows in the place designated or not."

And other patents for similar aggregations were disposed of by the court.

PALMERBING *v.* BUCHOLZ, 13 FED. REP. 672.

S. D. OF N. Y., 1882. WALLACE, J.

W. E. Brock's patent, No. 76,394, dated April 7, 1868, for "an improvement in dummies for displaying clothing."

Wallace, J.: —

". . . The specification describes the invention to consist of a shell of paper or *papier maché*, resembling in configuration the body of a human being, with legs and arms, if desired. A head-piece of wood or other suitable material is secured in the neck or upper end of the shell into which is fitted a vertical supporting shaft, which extends centrally through the shell and is furnished at its lower end with an appropriate base. The shaft is provided with radial braces, which serve to retain the shell in proper position upon the shaft. It is designed to be an improvement upon the wire dummy in ordinary use for displaying clothing, and contains the same parts and arrangement of parts, except that the paper or *papier maché* shell is substituted for the skeleton frame of the wire dummy. It is shown by the proofs that paper and *papier maché* had been used in constructing lay figures representing various celebrated personages, and it was well known as a suitable material for that purpose previous to its use by the patentee. These lay figures were hollow, and the paper or *papier maché* was used to form the shell or exterior surface of the figures, but the faces and hands were usually made of wax. They were clothed with costumes appropriate to the personages represented.

"Inasmuch as the wire dummies did not contain the paper or *papier maché* shell, and the lay figures did not contain head-piece, shaft, braces, or base of the patented device, they were not anticipations of it. The proofs show that the patented dummy has commended itself to the public interested in such devices. It is a better model of the human figure, and because of the continuous surface of the shell, clothing can be made to fit more accurately upon it than upon the intersticial frame or shell of the wire dummy. But the patent cannot be sustained, because the device is destitute of patentable novelty. If the substitution of the paper or *papier maché* for the wire of the shell or frame was obviously practicable, the patentee was not an inventor. If mechanics skilled in the particular department of construction could have seen at a glance the feasibility of the change, then, although the device may have been mechanically new, it was not intellectually novel. The paper which was substituted for the wire had been used to make the shell of a figure in imitation of the human body, and the figures in which it was thus used had been employed for displaying clothing. The displaying of clothing was not the primary purpose for which these lay figures were intended; but that use was not only suggested, but was very obviously one of the ends in view. Not only, therefore, had the material that the patentee substituted for the wire been employed as he employed it, to make the shell or frame of a figure resembling the human body, but it had also been applied to perform the same office. The new application of an old material to a cognate use will not generally support a patent, but here it was employed in the same use."

ENGLISH CASES.

SAUNDERS *v.* ASTON, 3 B. & Ad. 881; 1 Web. P. C. 75.

King's Bench, 1832.

B. Saunders's patent of Oct. 13, 1825, No. 5264, for "improvement in making buttons."

It consisted in the combination of flexible shanks with a metallic, cloth-covered button. The patent claimed

"the substitution of a proper soft and flexible material or materials in place of metal shanks, to all such buttons as may be formed in the various methods herein described."

There was also a ring or collet for fastening the button to the shank. The objections to the patent, and their effect, were thus stated by Littledale, J.: —

"Neither the button nor the flexible shank was new; and they did not, by merely being put together, constitute such an invention as could support this patent. It is contended that the operation of the collet, under the present patent, is new; but that is not stated in the specification as the object of the invention, and it is, in fact, only one mode of carrying it into effect; it appears on the plaintiff's case that there were other ways of producing the same result. I think, therefore, the nonsuit was right."

MACKELCAN *v.* RENNIE, 13 C. B. N. S. 52.

COMMON PLEAS, 1862.

The plaintiff's patent was for "improvements in floating-docks."

"It was proved at the trial that the construction of the floating-docks was not new. The plaintiff then said that his invention consisted, not in the construction of floating-docks, but in the application of iron in the place of wood to their manufacture. The court, having determined that this claim was not borne out by the specification, continued: —

"'We think it right to add, that it must not be inferred that the court entertains an opinion that the alleged invention, even if it were appropriately claimed, could properly be the subject of letters-patent. It is unnecessary on this occasion to give any opinion upon that point; but we wish not to be supposed to sanction such a notion.'"[1]

THOMPSON *v.* JAMES, 32 BEAV. 570.

ROMILLY, M. R. 1863.

C. Amet's patent of July 22, 1856, No. 1729, for a flexible petticoat or "crinoline." The alleged invention was simply the substitution of steel springs for cane or whalebone in petticoats. This was held not patentable.

[1] This abstract is taken from Higgins' Digest of Patent Cases, page 43.

HORTON *v.* MABON, 16 C. B. N. S. 141.

EXCHEQUER CHAMBER, 1864.

Cockburn, C. J.: —

"That which the plaintiff claims as part of his invention is the substitution of *double* angle-iron for two pieces of *single* angle-iron in the formation of hydraulic cups or joints to telescopic gas-holders. Now, it was matter of general knowledge that the cups might be formed by riveting two pieces of single angle-iron to a plate; and we agree with the Court of Common Pleas in thinking that the mere substitution of double angle-iron — an article well known in the trade — is not an invention for which a patent can be granted."

HINKS *v.* SAFETY LIGHTING CO., L. R. 4 CH. D. p. 615.

JESSEL, M. R., 1876.

J. & J. Hinks's patent of Oct. 18, 1865.

A combination in a lamp of two wick-cases with a double-slotted cone. A device offered in evidence by the defence was similar to this, except that it employed a flat wick instead of a round one.

Jessel, M. R., said: —

"On the one hand, it was said you can never support a patent by substituting a round wick for a flat wick, as there is no invention in that. On the other hand, it was said, why not? If it is a combination patent, the very essence of a combination patent is that it is a new combination of known parts; and, in fact, very few machines are now invented which contain any new part. As a general rule, every machine invented is made up of parts previously known. A new part of a machine is very uncommon indeed; consequently that is an objection which, *per se*, is not of great weight. But, like every combination which is new, it must have merit; and now, how is a judge to apportion the merit? I do not know. As far as I can ascertain from the authorities, the merit very much depends on the result produced. Where a slight alteration in a combination turns that which was practically useless before into that which is very useful and very important, judges have considered that, though the invention was small, yet the result was so great as fairly to be the subject of a patent; and, as far as a rough test goes, I know of no better."

And on this ground he decided in favor of the plaintiff's combination.

Other cases of substitution are as follows, *ante* : —

BAILEY WASHING & WRINGING MACHINE CO. *v.* LINCOLN, page 108.
RUMFORD CHEMICAL WORKS *v.* LAUER, page 133.
TILLOTTSON *v.* MUNSON, page 138.
TERHUNE *v.* PHILLIPS, page 253.
COLGATE *v.* WESTERN UNION TELEGRAPH CO., page 359
COLGATE *v.* GOLD & STOCK TELEGRAPH CO., page 359.
CRANE *v.* PRICE, page 376.
STIMPSON *v.* WOODMAN, page 429.
WOODWARD *v.* DINSMORE, page 430.
GOULD *v.* REES, page 435.

CHAPTER VII.

PRINCIPLE.

"*Principle*" *defined.*

168. THE term "principle," in the patent law, has two or three different meanings. Applied to a machine, it indicates the idea, or, as Mr. Justice Bradley[1] termed it, the "conception," which is embodied in the machine. Thus, the principle of one machine is often said to be the same as that in another, although the two machines may differ in form. The word is so used in the statute, where it is provided (sect. 4888) that,

"before any inventor or discoverer shall receive a patent for his invention or discovery, he . . . shall file in the Patent Office a written description of the same, . . . and in case of a machine, he shall explain the *principle* thereof, and the best mode in which he has contemplated applying that *principle*, so as to distinguish it from other inventions," &c.

And, in fact, every invention has its principle.

169. Again, principle means a rule according to which the statute is construed and judicial decisions are made; for we speak of the principles of the patent law.

But, chiefly, "principle," as now used, means a law of nature or a property of matter, or some fact as to the relations or the capacity thereof. Perhaps it would be more correct to say that the term "principle" is used to indicate patents for a process, the gist of which is the operation or the application of some law of nature or property of matter. The patentee has discovered a law of nature or property of matter, or some fact unknown before as to the capacity or the relations thereof, and he has turned his discovery to account in a practical art or process; or else the principle concerned being known before, the patentee is the first to invent a practical application of it to some particular end.

[1] In the case of Bischoff *v.* Wethered, 9 Wall. 812.

The famous discovery of Neilson is an instance of the first sort, and the more brilliant invention of Morse is an example of the second.

170. Every invention, indeed, involves a principle. Every patentable improvement is but a new way of applying some law of nature or property of matter, *i. e.* a principle. This is true of inventions as well as of discoveries; of a rat-trap as well as of Neilson's process. But in the case of most inventions, the forces or properties employed are lost sight of. All that the mind of the inventor contemplates is the material wherein and the adjustment whereby they operate. Thus, in a machine, the forces or properties of gravity, motion, inertia, or whatever they may be which operate in and through the mechanism, are not the objects to which the inventor's mind is directed. On the contrary, he does not think of them at all. His efforts are spent, not to use certain forces or properties (principles), but to make a certain mechanism; whereas in cases of principle, strictly, whether the patentee has first discovered and applied, or has only first applied, the principle, the operation of the principle is the gist of the process. In cases of principle, the novelty of the vehicle is unimportant. If the patentee is the first to employ a certain principle for a certain end, the validity of his patent is not affected by the fact that he uses an old apparatus for the purpose.[1]

171. It might be thought simpler to divide all patents into those for discoveries and those for inventions; and for some purposes such a division is requisite.[2] But it does not harmonize with the division indicated by the term "principle," because, as we have said, all processes are not the result of discovery; for sometimes the process consists in the application of a known principle.

172. Again, it might seem best to make the division between patents for a process on the one hand, and all other patents on the other. But all patents for a process do not involve a principle, in the manner that we have described.

Most processes, indeed, do involve a principle, and most discoveries result in a process; but there are processes in which the

[1] Le Roy *v.* Tatham, 22 How. 132; Poillon *v.* Schmidt, 6 Blatch. 209.
[2] *Vide* Introduction, pages 2, 8, 9.

mechanism or apparatus used is the whole invention, the physical force or forces employed being left out of sight, so that these are not cases of principle; and, again, there are discoveries which do not result in a process, as, for instance, when a new property is discovered in an old substance, by reason of which the old substance can usefully be employed in a new situation. It is necessary, therefore, following the classification established in the patent law, to consider, by themselves, the few but important cases involving a principle in the sense which we have indicated.

173. It is hardly necessary to add, that if a patentee has described an otherwise patentable process or contrivance of any sort, it is not essential that he should know the principle upon which it operates.[1] If he describe a contrivance by means of which the principle is utilized, then he has conferred upon the public the practical benefit of the principle in question. The primary cause of that benefit is a fact of science, not an improvement in the arts.

174. It follows, of course, that the mere discovery of the physical fact upon which a contrivance already existing depends confers upon the discoverer no right to a patent.[2] On the other hand, if a patentee has described some new and useful method of employing a principle, it is no objection to his patent that the principle employed has already been in some sort of undiscovered and, so to say, unutilized operation.[3]

A Naked Principle, and the Application of a Principle.

175. With these preliminary remarks we may address ourselves to the subject in hand.

It is generally said that a prineiple cannot be patented, but only the application of a principle, by which application a useful result is produced. So long as the principle is a mere item of knowledge, — and sometimes from its nature it must always remain such, — no patent can be had, however brilliant and useful the discovery may be.

[1] Pearl *v.* The Ocean Mills, 11 O. G. 2; Andrews *v.* Cross, 19 Blatch. 204.

[2] Patterson *v.* Gas Light & Coke Co., L. R. 3 App. Cas. 239.

[3] Andrews *v.* Carman, 13 Blatch. 249; Tilghman *v.* Proctor, 102 U. S. p. 711.

Said a learned judge : —

" Men may be enriched or made happy by physical as well as by moral or political truths, which, nevertheless, go without reward for their authors. He who devised the art of multiplication could not restrain others from using it after him without paying him for a license. The miner who first found out that the deeper veins were richer in metal could not compel his neighbor to continue digging near the surface." [1]

176. But if the principle discovered is harnessed, so to say, into some device or process, then, to that extent, it is transferred from science to the arts, from the world of ideas to that of things, and the application is patentable.

177. Two difficult questions arise : —

(1.) What is the distinction between a naked principle and a principle susceptible of an application which may be patented?

(2.) When a principle is the basis of a patent, does the patent cover every application of the principle to the end set forth by the patentee, or only the particular application described by him?

We venture to say that no branch of the law presents questions of greater nicety than these; and we beg the indulgence of the reader if we do not answer them with precision.

The Different Cases of Principle.

178. Having stated the general rule of patentability when a principle is involved, we proceed to mention the various forms which cases of principle may take, whether patentable or not.

(1.) The discovery of a principle which carries with it no suggestion of practical use, which also is accompanied by no such suggestion on the part of the patentee.

An example is the mere announcement of a law unknown before the announcement; as, for instance, that heavy bodies fall no faster than light ones in a vacuum.

(2.) The discovery of a principle, in consequence of *the knowledge* of which something is done or forborne; which something, nevertheless, is not a process, but merely an act or course of action. The principle mentioned in the quotation above made,

[1] Kane, J., Detmold *v.* Reeves, 1 Fish. 127.

namely, that the deeper veins of metal are the richer veins, is an instance.

(3.) The discovery of a principle, in consequence of the knowledge of which a process is pursued and described.

For example: some years ago the discovery was made that oil lies in small crevices and seams of the rock which contains it; and the discoverer of this fact invented an explosive process by means of which he extracted the oil.[1]

A more difficult case is the following: One Atwood discovered that the mucous membrane in fish, between the skin and the flesh, decomposes more rapidly than any other part of the fish; and he described a process of curing fish wherein removal of this membrane was the salient feature.[2]

(4.) The discovery of a new principle, the application of which is described, which application, however, is either so obvious or so simple that it cannot be dignified with the name of process. The principle is almost identical with its application. An instance is the ether case, where the discovery was that inhalation of ether fumes produces insensibility to pain.[3]

(5.) The obvious application of a known principle; a process or other contrivance founded upon or involving a known principle, but requiring no invention, the principle concerned being of such a character that any one informed of it would be able to apply it. Such an application would not be patentable.

We cannot cite any actual case of this sort; but we shall have an example if we suppose that Neilson's law, instead of being his discovery, had already been stated in some published work. In that case his application of it would not have been patentable; for the evidence was, that any one skilled in the art concerned would have been able to apply the principle had it been announced to him. Such a case as this might also be ranged under another rule of the patent law; namely, the rule that if one derives the substantial part of his improvement from another, so that no invention is required on his part, he may not have a patent.[4]

(6.) The invention of a new way of applying a known principle.

[1] Roberts *v.* Dickey, 4 Fish. 532.

[2] Crowell *v.* Harlow, 1 Fed. Rep. 140.

[3] Morton *v.* New York Eye Infirmary, 5 Blatch. 116.

[4] *Vide post*, page 623.

Such was the invention of Morse. He devised a method of applying electro-magnetism, well known before his discovery, to the transmitting and recording of intelligible signs at a distance from the operator.

(7.) The discovery of a new principle, coupled with the description of a process in which it operates for the service of man. The celebrated case of Neilson *v.* Harford, in England,[1] furnishes an illustration.

Neilson discovered that a hot blast is more effective than a cold blast in a furnace. And he described a means of carrying this principle into effect by interposing a receptacle, with a fire underneath it, wherein the blast was heated on its way to the furnace.

(8.) The discovery of some fact as to the nature of a known principle, which discovery renders possible a new application of that principle.

No question of patentability arises in regard to these last three classes. The difficulty here is as to the scope of the patent. We shall discuss it presently.

The First Two Classes of Principle.

179. In considering these different kinds of discovery, it must be borne in mind that they are patentable, if at all, as *arts*. The statute limits patentable subjects by the words "art," "machine," "manufacture," "composition of matter," or some "improvement thereof." Inventions involving the application of a principle are commonly processes, and a process is an art.[2] It is plain, therefore, that the exclusion of the first two classes from the operation of the statute is required by its terms.

180. As to the first class, a law of nature or a property of matter, in the abstract, is clearly not an art. It is often a meritorious and a brilliant achievement to discover and proclaim some new physical truth, and useful results may follow, for other persons may invent a practical application of the force thus re-

[1] *Vide post*, page 611.

[2] The English statute provides that patents may be granted only for "the sole working or making of any manner of *new manufacture*." "Manufacture," however, was, at an early date, held to include "method" or "process." *Vide* the opinion of Eyre, C. J., in the great case of Boulton *v.* Bull, 2 H. Bl. p. 491.

vealed. But the mere announcement of that force is the statement of a fact, not the description of an art.

181. In cases of the second class, the announcement of the principle amounts to a suggestion of an advantageous course of conduct; but no art or process is described or indicated. Something is done or forborne in consequence of the knowledge of the principle, but the principle is not made to exert itself; neither is any art or process described having the principle as its foundation.

To consider the example we have given, the physical fact that minerals are richest in the deep veins can be taken advantage of, but it cannot be embodied in a process. There is nothing that can be made to act.

It might be said that the discovery amounted to an improvement in the art or process of mining; but no new process was invented, for other persons had dug deep in search of minerals before this discoverer. He merely ascertained that a course — it cannot be called a process — which had sometimes been pursued was always beneficial. If it is not a *process* to search the superficial veins rather than the deep ones (and no one would contend that it is such), then it is no improvement of a process to discover that the deep veins make the better return.

The Third Class.

182. We come now to the third class.

In the oil case, it was immaterial whether the patentee had himself discovered the principle concerned or not; for, given the principle, invention was required to devise the process founded upon it. This fact distinguishes the case from that cited as an illustration of the second class, where no real process could be described.

The fish case is more difficult. If the patentee had *not* been the discoverer of the principle concerned, then, unquestionably, his patent would not have been sustained; for, given the principle, the putrefying capacity of the mucous membrane, no invention is required to devise a process, the gist of which is simply removal of the membrane by cutting it out. This case, therefore, directly raises the question, presently to be discussed, whether the *discoverer* of a principle stands in any better position

than he who has merely applied a known principle. If we answer this question in the affirmative, then the objections to a patent in the fish case can be surmounted.

It might be said, indeed, that the principle, in this case the putrefying capacity of the membrane, is not made to exert itself; it is not applied. On the contrary, it, along with the substance wherein it resides, is got rid of. This is true enough; but the distinction between this and the mineral case is that here a *new process* is described. That process, or art, is based upon the patentee's discovery. The principle discovered does not, it is true, act in and through the process, but it renders that process possible.

And no one can say that the process was not new and useful.[1] It was therefore patentable. If, however, we do not take into account the fact that the patentee was the discoverer of the principle, then it cannot be said that his process was, in the patent law-sense, a new one; for if the putrefying capacity of the membrane were already known, no invention was required to inform the world that fish could best be cured by removing the membrane.

The Fourth Class.

183. The fourth class, illustrated by the ether case, is the most difficult.

On the one hand, the principle is *applied*, because it is made to exert itself; the narcotizing faculty of the ether fumes is caused to operate, by inhalation, on the human system. Here, then, is a direct, physical, literal application of the principle, the principle being this peculiar faculty of the fumes of ether.

But it is said this effect, which the patentee would call the application, is the very thing that was discovered. An *effect* was discovered, and there can be no application of an effect; therefore no patent can be granted for the discovery.

To which it might be replied that, because the principle and

[1] Judge Lowell said: "It would not be invention to salt a fish more or less thoroughly; but a patent might properly be granted for curing fish with a substance which had never before been used for any similar purpose, and which would effect the old result of curing the fish in a better or cheaper way, of which last fact the infringement would be sufficient evidence. I am unable to distinguish between adding and taking away, if the result is to improve the art."

its effect are bound up together, are synonymous, if you will, it does not therefore follow that the principle is not applied. Even supposing that knowledge of the principle is gained only through the effect, and supposing further that the discoverer's knowledge of the principle was limited by his knowledge of the effect, still it must be remembered that *principle* means the physical force or property that is discovered, and if that principle is applied, a patent may be had. It makes no difference how the discoverer attained to knowledge of the principle, or how limited his knowledge of it is, or that the principle, so far as it is known, and the effect of the principle, are one and the same thing.[1] All that the law requires is a principle (property of matter), and its application to a practical use.

184. But, again, it is said, a patent, if granted for the ether discovery, would really be for the principle (an occurrence unknown in the patent law). This for two reasons, first, because knowledge of the principle carries with it knowledge of the application. The application is obvious. Any one,—not merely any one skilled in the art of surgery, but any person of average intelligence,—once informed of the principle, would be able to apply it. The essence of the discovery was, that by inhalation of the fumes of ether insensibility is produced. And the process of inhalation is a familiar one.

Secondly, nothing in the nature of a contrivance, through which the principle might be applied, is necessary. Presence of the ether, and inhalation of its fumes, are the only conditions upon which the benefit of the discovery depends. These statements, certainly, are true; the application of the principle was obvious, and the principle did not operate through any contrivance, mechanical or otherwise: it operated directly.

185. These objections, however, may be met as follows: As to the first one, a patent based upon a *new* principle is never impugned on the ground that its application is obvious to any one skilled in the art to which it belongs. We do not perceive, therefore, why

[1] It is true in the Neilson case also that an *effect* was discovered, namely, the effect of a hot blast in the furnace; and any one skilled in the art of furnace-building, once informed of the value of that effect, would have been able to bring it about. The only difference between the hot-blast and the ether case is, that in the latter no *contrivance* was necessary as a vehicle for the principle. This difference is treated of *infra*.

the fact that its application is obvious to everybody should be an objection to it. Certainly it would be drawing a very fine line between different discoveries if they were held patentable when their application was obvious to some people only, and not patentable when their application was obvious to everybody.

186. The second objection made in the ether case, that no contrivance was necessary or possible for the operation of the principle, is a more serious one. This point—namely, whether a principle must require some contrivance, mechanical or otherwise, for its application, in order to be the basis of a patent—has never, we believe, been decided by the courts, except in the ether case. In that case, the patent did indeed describe a method of administering the ether by means of a sponge; but these directions did not amount to a process. The real art or process discovered was that of producing insensibility by means of ether fumes. Now, if the administration of the ether had required a long process, or any sort of device or apparatus, then a patent for the application of the discovery would have been held valid. Moreover, in such case, the patent would be held to cover not only the particular apparatus or device described by the patentee, but every apparatus or device for the administration of ether to produce insensibility in animals.

Is, then, a patent to be refused in the actual ether case because the art discovered is a simple one? It was none the less an art, namely, the art of producing insensibility in animals.[1]

To make the patentability of a discovery depend upon the complexity of the means through which the force discovered operates, is, we cannot help thinking, to establish a vicious distinction between patentable and non-patentable discoveries. It will be found, in fact, that, as a rule, the more brilliant and useful the discovery, the simpler is its application.

187. We therefore propose with confidence the criterion we have already suggested; namely, the possibility of making the principle discovered operate for the service of man, whether directly or through some contrivance.

[1] The patent claimed it as "an improvement in the art of surgery," which, plainly, it was not, any more than a new surgical instrument would be an improvement in the art of surgery, as Judge Shipman remarked. The patentability of the thing discovered was, however, considered more broadly by the court.

In truth, a law of nature or property of matter acting to produce some useful end is a process or art. Whereas, in cases like that of the minerals, the operation of the law of nature concerned was over ages ago, and as a *result* the minerals are found chiefly deep in the earth. Here no force operates, and no process is described. A fact is made known, and the fact carries with it a suggestion as to the value of a certain course of conduct, which was not even a new course.

Scope of the Patent.

188. We come now to the second of the two questions with which we started; namely, that as to the scope[1] of a patent based upon a principle or upon the application of a principle. This question arises in regard to the last three classes of principle that we have enumerated. It is commonly put thus:—

"Shall the patent cover every application of the principle to the end proposed by the patentee, or only the application which he has described, with, of course, all colorable imitations thereof and substantial equivalents therefor?"

189. It is, indeed, universally declared, as we have seen, that a principle cannot be patented, and therefore, it is said, a patent may not be held to cover every application of the principle to the end proposed by the patentee, because that would be in effect to patent the principle itself. There is no difference, it is said, between a patent for a principle and a patent for every application of a principle to a particular end. And this in most cases is practically true, for commonly there is no other end to which the principle can be applied.

190. One distinguished judge only, so far as we know,—Mr. Justice Nelson,—has laid down the more liberal doctrine, saying in so many words that when the application of a principle, *a fortiori* when the principle itself is discovered, the patent should cover every application of the principle to the end proposed by the patentee that can possibly be made. He thus stated the law in his dissenting opinion in the first suit of

[1] Here we might be thought to depart from the general plan of this book. But in cases of principle we cannot discuss the question of patentability without touching upon that of infringement. In these cases it is necessary to consider the scope of the patent in order to determine precisely what is patentable.

Le Roy *v.* Tatham,[1] presently to be considered, and in the Circuit Court case of Foote *v.* Silsby,[2] wherein he first announced the principles afterward more fully set forth by him in the dissenting opinion referred to.

191. But although Judge Nelson's statement of the law is heterodox, the conclusion to which it led him is the same as that which the courts commonly reach, though by a different route. And in this way. A patent based upon a principle, or upon the application of a principle, is, of course, usually a patent for an art or process; and the efficacy of the process depends upon the principle, — in fact, the process is usually nothing more or less than the operation of the principle. The process is therefore very nearly the same as the principle; and it is commonly construed by the courts so broadly as practically to include every application of the principle to the end proposed by the patentee.

Argument upon this question, therefore, often becomes a mere dispute about words. The point is, what shall the patent cover; and if the process it describes is held to include every application of the principle to the end in question, then the patent is practically as controlling as if it were for the principle; and in such case it is idle to dispute whether or not a principle may be patented.

192. The fact, however, that certain patents involving a principle have practically been construed to include every application of the principle involved, is merely an accidental fact. It so happens that in these cases the process described was essential to every application of the principle which it employed to the end in view; but this fact does not alter the general rule, and a case might well arise where the principle discovered could be applied to the end proposed, and yet applied in such a manner that the process patented would not be infringed.

[1] 14 How. 156. Judge Nelson's dissenting opinion is a very able one. *Vide post*, page 578.

[2] *Vide post*, page 564. The patent was for an application of the well-known principle, that metals are expanded by heat and contracted by cold, to the regulation of a stove-fire by means of a brass rod connected through levers with the damper.

Judge Nelson held that the patent covered every application of this principle; not only that which the patentee had invented, but any which employed this contracting and expanding capacity of metal to the regulation of a stove.

On appeal to the Supreme Court the patent was upheld, but it does not appear on what ground. *Vide post*, page 571.

193. We shall return to this discussion presently; but having indicated the points mooted, we proceed to consider the few important cases on the subject, first, however, begging the reader to remember that in every case the patent is for a process, and that in these cases, as in all others, the scope of the patent is limited only by the gist or essence of the invention. If, therefore, the gist of the process described is inseparable from the principle it embodies, — if, in other words, it is impossible to apply the principle without using the gist of the process patented, — then the patent practically covers every application of the principle; and if that is patenting a principle, then it must be true that a principle may be patented.

The Hot-Blast Case.

194. The leading English case upon the subject is that of Neilson *v.* Harford. The decision made in this case has often been discussed by the courts of this country, and sometimes explained, but its correctness has never been doubted or denied.

Neilson discovered, as we have seen, that a blast of hot air is more effective in smelting-furnaces than the cold blast universally used before his discovery. This truth was exactly contrary to the general conviction, which was founded upon the fact that the furnace fires burned better in winter than in summer. In reality, this was because the air is drier then, not because it is colder. Mr. Neilson, therefore, discovered a scientific fact; namely, that hot air increases the heat of a furnace fire more than cold air.[1] He stated in his patent[2] that the blast should be

[1] Strictly speaking, there was perhaps no law of nature or property of matter discovered by Mr. Neilson.

In fact, he may be said to have discovered the non-existence of the supposed law or property that a cold-air blast is the more conducive to a hot fire. This supposed law was founded, as we have seen, upon the observation that the furnace fires burned best in winter. Mr. Neilson having discovered the non-existence of such a law, — in other words, having discovered that there was not, as had been supposed, some occult reason why cold air was better than hot air for the purpose in question, — the ground being thus cleared, it was plain, perhaps, that the introduction of air already heated to some extent would allow that part, so to say, of the furnace heat which otherwise would have been spent in raising the newly admitted air to the temperature of hot air, to be employed in rais-

[2] The specification is quoted in full at page 611, *post*.

heated in a receptacle interposed between the air blast and the furnace. He said that the receptacle might "conveniently be heated by a fire distinct from the furnace fire;" and he gave general directions as to its size. He added, however, that the form of the receptacle was immaterial to the effect produced.

195. At the trial it was proved that the defendants used a series of tubes or pipes in which to heat the air blast, and it was also proved that these tubes or pipes were much more effective than the rectangular chamber used by the patentee. But the court held that the tubes or pipes were covered by the word "receptacle," and that when the patentee said the form of the receptacle was immaterial to the effect produced, he meant immaterial to the *amount* of effect produced, — a statement which the jury found to be correct.

196. In this case, therefore, the patent practically was held to cover every application of the principle to the end proposed by the patentee.

As was remarked by a learned counsel in a recent case: —

"It is a fact that no man has been able to attain Neilson's results in a blast furnace without blowing in hot air; and it is a matter of physical necessity that this cannot be done unless the air be artificially heated between the general atmosphere whence it is taken, and the furnace where it is to act, so that his patent was practically as controlling as if for a principle."

ing the temperature of all the air in the heat less the amount of heat required to raise air newly introduced to the temperature of that already in the furnace. This is perhaps an isolated case, being one where the discovery, strictly speaking, was not of an unknown principle, or of the application of a principle, but of the fact that a certain principle or certain principles control the operation of a certain agent, instead of a certain other principle erroneously supposed to do so.

These remarks we make, not to disparage but to support the ordinary classification of this case as one of the discovery of a principle.

This classification of it is, as we have seen, both apparently and radically correct, though it appears otherwise when it is first called in question.

the furnace to a point above that of the hot air freshly admitted. By this road, however, we come to about the same conclusion as that reached by the course ordinarily pursued with regard to this case; for, according to the statements we have just made, Mr. Neilson, in discovering the non-existence of a supposed law. also and at the same time discovered, if not a new law, yet under what well-known law the air blast operates, — although the law thus shown to control the operation of the air blast be so simple as this, namely, that the whole is greater than its parts; in other words, that all the heat generated by the fire will be more effective to raise the temperature of the furnace than all

The truth of this statement may be shown as follows: The air blast must be heated in the furnace or out of it; we do not perceive any third possibility. But if it be heated in the furnace, it must be in a receptacle placed there; for the object of the hot blast is that the furnace fire shall not expend any part of its strength in heating the air blast, as it enters the furnace, to the temperature of the air already in the furnace. Even in this case, therefore, as well as when the air blast is heated outside of the furnace, there is a receptacle interposed between the outside air and the furnace air, in which receptacle the air blast is heated. It is, therefore, as the learned counsel said, impossible to apply Neilson's principle without using Neilson's process.

It is true, we presume, that the air to be used might be heated before it was conveyed into the blast; the blast might be interposed between the heated air and the furnace. But a claim in Neilson's patent could easily be framed so as to cover such an arrangement.

The Lead-Pipe Cases.

197. The first American case in which the scope of a patent founded upon a principle was in question is that of Le Roy *v.* Tatham,[1] already referred to.

The patent was for a new process of making pipe out of lead and other soft metals. The mechanism used was old, but the process was new; and it depended upon a discovery

"that lead, when recently become set, and while under heat and extreme pressure in a close vessel, would reunite perfectly after a separation of its parts."

This property of lead was unknown before. The defendants made use of the same property to form lead pipe, but their mechanism was different. The claim was as follows: —

"The combination of the following parts above described; to wit, the cone and bridge, or guide-piece, with the cylinder, the piston, the chamber, and the die when used to form pipes of metal under heat and pressure, in the manner set forth, or in any other manner substantially the same."

198. The majority of the court held that by the claim the patent was limited to the particular mechanism described. The

[1] 14 How. 156.

minority (Nelson, J., delivering the opinion, already quoted from) held that the patent might more liberally be construed to embrace any mechanism by which the property discovered in lead was made use of for the purpose specified by the patentees.

199. Judge Nelson said that, as he understood the opinion of the majority of the court, they denied, not the doctrine that he maintained, but its applicability to the case before them. And this appears to be so from the following passage in their opinion: —

"*A new property discovered in matter, when practically applied in the construction of a useful article of commerce or manufacture, is patentable;* but the process, through which the new property is developed and applied, must be stated with such precision as to enable an ordinary mechanic to construct and apply the necessary process. This is required by the patent laws of England and of the United States, in order that, when the patent shall run out, the public may know how to profit by the invention. . . . The question whether the newly developed property of lead, used in the formation of pipes, might have been patented, if claimed as developed, without the invention of machinery, was not in the case."[1]

They also approved of Neilson *v.* Harford.

200. Subsequently this same patent was again brought before the Supreme Court, this time by a bill in equity. It was sustained, and the defendants, who were the same as in the previous case, were held to infringe it. The opinion, by Mr. Justice McLean, is extremely obscure; but it is to be supposed that the patent received the construction put upon it by Mr. Justice Nelson in his opinion, dissenting from the former judgment.[2]

201. In this case, therefore, as we understand it, a new property of matter, a principle, was discovered, and the patent based upon it was rightly held to cover every process for making lead pipe which depended for its efficacy upon the newly discovered property of lead.

[1] *Vide* page 576 for a long quotation from the opinion.

[2] According to Blatchford, J. (*post*, page 576), "the claim was stated by the court to be a claim to the machinery only when used to form pipes of metal under heat and pressure; and it was sustained by the court against the objection that it only claimed the application of an old machine to a new use, or to produce a new result."

The Morse Case.

202. In the mean time, however, between the two suits of Le Roy *v.* Tatham, the leading case of O'Reilly *v.* Morse was decided.

In this case no principle was discovered, but a method of applying certain known principles was invented.[1] In the hot-blast case and in the lead-pipe case, as we have seen, the principle — the law of nature or property of matter — was itself discovered; whereas the chief principle made use of by Morse was known when Franklin drew the electric current along the string of his kite from the clouds to the key which he held in his hand, and, indeed, it was known long before that celebrated experiment was performed.

203. It was known when Morse made his invention: —

(1.) That electricity could be produced by the action of sulphuric acid upon certain metals; this is galvanism.

(2.) That iron was magnetized by and during the passage of an electric current through a coil of copper wire surrounding it.

(3.) That electricity would pass over a wire until the fluid was exhausted.

204. Morse applied these principles to transmitting and recording at a distance from the operator intelligible signs or letters.

In this invention two principles or physical truths were involved: first, that the electric current is a moving force; second, that the electric current passing around iron magnetizes it. Morse employed them both, — the electric current to carry his message, and the electro-magnet to record it. He described the apparatus which he used.[2] But he claimed his process broadly in the famous eighth claim, which ran as follows: —

"I do not propose to limit myself to the specific machinery or parts of machinery described in the foregoing specification and claims, the

[1] We shall point out presently the bearing of this distinction.

[2] It was as follows: —

The current of electricity passes along the wire to the further end, where the wire is attached to a coil of copper surrounding a piece of iron. The electricity thus passing about the iron magnetizes it. Close to the iron, but retained above it by a spring, is a small piece of metal. When the iron is magnetized by passage of the current around it, it attracts the piece of metal with power enough to overcome the resistance of the spring, and to cause the metal and the magnet to unite. When the current is broken the metal is released, and the spring

essence of my invention being the use of the motive power of the electric or galvanic current, which I call electro-magnetism, however developed, for marking or printing intelligible characters, signs, or letters, at any distances, being a new application of that power of which I claim to be the first inventor or discoverer."

205. This claim a majority of the court held to be invalid, Mr. Chief Justice Taney delivering their opinion. The ground was that the claim was for a mere abstraction, for a naked principle; that, as it made no reference to any apparatus or detailed process, it was to be considered as if Professor Morse had claimed a patent simply for marking intelligible characters at a distance by using the electric current as a motive power, without specifying how it was to be done; and, furthermore, that the claim would cover every improvement in the use of the electric current for this purpose that might thereafter be made; that Professor Morse claimed not only his way of using it, but every other possible way. The Chief Justice said: —

"For aught that we now know, some future inventor, in the onward march of science, may discover a mode of writing or printing at a distance by means of the electric or galvanic current without using any part of the process or combination set forth in the plaintiff's specification. His invention may be less complicated, less liable to get out of order, less expensive in construction and in its operation. But yet, if it is covered by this patent, the inventor could not use it, nor the public have the benefit of it, without the permission of this patentee.

"Nor is this all. While he shuts the door against inventions of other persons, the patentee would be able to avail himself of new discoveries in the properties and powers of electro-magnetism which scientific men might bring to light. For he says he does not confine his claim to the machinery or parts of machinery which he specifies, but claims for himself a monopoly in its use, however developed, for the purpose of printing at a distance.

draws it up again. Morse pointed the end of this piece of metal so that it became a stylus, and by means of clockwork he caused a narrow ribbon of paper to pass over the magnet, and between it and the stylus.

Alternately completing and breaking the current brings down the stylus upon the magnet in a succession of taps, at each of which the intervening paper is punctured by a dot. Each letter of the alphabet is represented by a number of dots; so that the proper number of punctures, made by completing the circuit, separated from the next group of punctures by a space longer than that between the individual punctures, would represent the letters indicated, respectively, by the number of dots in each group.

"New discoveries in physical science may enable him to combine it with new agents and new elements, and by that means attain the object in a manner superior to the present process, and altogether different from it. And if he can secure the exclusive use by his present patent, he may vary it with every new discovery and development of the science, and need place no description of the new manner, process, or machinery upon the records of the Patent Office. And when his patent expires, the public must apply to him to learn what it is. In fine, he claims an exclusive right to use a manner and process which he has not described, and indeed had not invented, and therefore could not describe when he obtained his patent.

"The court is of opinion that the claim is too broad, and not warranted by law."

Wayne, Nelson, and Grier, JJ., dissented, the last named delivering their opinion.

206. The obvious answer to this argument is that subsequent improvements in the use of electro-magnetism for marking intelligible signs at a distance from the operator might be patentable, although they infringed this claim, just as a patentable improvement may be made upon a machine, although such an improvement cannot be used upon the machine without a license; otherwise, the machine patent would be infringed. It is, therefore, an utterly wrong conclusion that a patent to Morse covering every application of electro-magnetism to telegraphy would stop the progress of invention, or deprive subsequent inventors of their rightful reward. And this answer to the argument of the Chief Justice was made in the dissenting opinion, delivered by Mr. Justice Grier.[1]

207. But, possibly, the idea of the majority of the court was that the eighth claim was so worded as to exclude the operation of this familiar principle, that subsequent improvements upon a patented invention are patentable; in other words, they may have thought that Morse in this claim meant to appropriate all such possible improvements to himself, to claim every invention which could not be used without his invention.

If this be so, then, this famous claim was rejected on account of the terms in which it was expressed, and its rejection establishes or overthrows no principle of law, for neither Professor Morse nor anybody else ever meant to assert that a patent for

[1] *Vide post*, page 584.

the application of a principle should cover every improvement that might subsequently be made in the manner of the application.

208. On the other hand, the majority of the court may have meant that Professor Morse, having discovered the application of a known force, — electro-magnetism, to a particular purpose, — the transmission of intelligible signs, was not entitled to have a patent covering every application of electro-magnetism to that purpose, but only a patent covering *his* application of the same, with, of course, all infringements thereof.

It is highly probable that the ground last stated is that on which the majority of the court stood ; and we believe that their interpretation of the claim was correct, whatever may be thought of the validity of the claim so interpreted. Morse, being the first to use a particular agency, electro-magnetism, for a new purpose, the transmission of intelligible signs, asserted, in his eighth claim, the right to be protected in every use of that agency for that purpose; in other words, he claimed every application of the principle applied by him to the end attained by him. But the court said, You cannot have a patent for every application of your principle to your object, whatever the modifications or additions ; you can have a patent only for the application that you have described, — for the method or process by which you cause electro-magnetism to operate for the transmission of intelligible signs.

"*Application*" *and* "*Process.*"

209. The difference between the two rules (*i. e.*, between the rule that the patent shall cover every application of the principle involved, and the rule that it shall cover only the process described) concerns not merely the reason why an infringement would be held to be such, but one rule establishes a limitation as to infringement which does not follow from the other. Thus, if not in the case of the Morse invention, yet in some other it might well happen that the alleged infringer should make use of the same principle which the patentee was the first to apply, for the same purpose, and yet in a manner that, according to the ordinary canons of infringement, would be neither a substantial equivalent nor a colorable imitation. In such a case, therefore, the patent would not cover the alleged infringement except upon the theory

that the patent included every application of the principle involved to the end proposed by the patentee. This truth should be borne in mind.

The Neilson Patent and the Morse Patent compared.

210. We have seen that in the hot-blast case the patent was held to cover, practically, every application of the principle to the end proposed by the patentee, including one which he had not described, which also was more effective than that which he used himself. But there is a difference between this and the Morse case. A claim in the hot-blast case might easily be framed [1] so as to cover every application of the principle involved, and yet to describe a tangible apparatus, — thus escaping the imputation of being a claim to a principle. It would be for "the use of a hot blast by interposing a receptacle for heating the blast between the outside air and the furnace air." Whereas, in the Morse case, the claim, substantially, was for every mode of recording intelligible signs at a distance from the operator by the use of electro-magnetism. Here no tangible device, contrivance, or apparatus is indicated. There is, therefore, some ground for saying that the one claim is for the application of a principle, *in other words, for a process*, and that the other is for a naked principle.

211. In considering this famous eighth claim, and the decision of the court in regard to it, we are therefore, it would seem, brought face to face with the doctrine propounded by Mr. Justice Nelson; namely, that he who discovers the application of a principle, as in the Morse case, *a fortiori*, he who discovers the principle itself, as in the lead-pipe and hot-blast cases, is entitled to a patent covering every application of the principle in question to the end proposed.

212. We must conclude either that the eighth claim of Morse's patent was rejected because by its terms it included all possible improvements of the application described by him, — in other words, because it was wrongly worded, — or else because it included every application of the principle involved to the end sought, whatever the particular process used.

[1] In the actual case there was no "claim," it not being required by the English practice.

The Tilghman Cases.

213. In a recent case, the last important one upon the subject, the Supreme Court have found a way, not out of, but around, this difficulty, by considering patents based upon a principle simply as patents for a process, according to the point of view mentioned in the beginning of this discussion. And they held that a process is an intellectual conception, and therefore that it may be infringed, although a contrivance or apparatus different from that described by the patentee is used by the infringer.

214. They said, also, that the eighth claim of Morse, instead of describing a process, merely stated a principle, and the possibility of applying it to a certain object, and, therefore, they said, it was held invalid. From this reasoning it follows that a patent based upon a principle will cover every application thereof only when the claim and specification describe a *process*, independent of the particular apparatus, which every application of the principle must infringe.

215. Before setting forth this case, and that upon the same patent which preceded it, we quote from the opinion, delivered by Mr. Justice Bradley, the following remarks upon the hot-blast case and upon the Morse case: —

"That Neilson's patent was regarded as for a process is apparent from what is said by the judges who had it under consideration. Thus, Baron Parke at the trial had said: —

"'The specification and patent together make it clear what the discovery was: it was the introduction of hot air, by means of heating it before it was introduced into the furnace, between the blowing apparatus and the furnace.' Web. P. C. 275, 312.

"And when the matter came before the House of Lords, Lord Campbell said: 'After the construction first put upon it [the patent] by the learned judges of the Court of Exchequer, sanctioned by the high authority of my noble and learned friend now upon the woolsack, when presiding in the Court of Chancery, I think the patent must be taken to extend to all machines of whatever construction, whereby the air is heated intermediately between the blowing apparatus and the blast furnace. That being so, the learned judge was perfectly justified in telling the jury that it was unnecessary for them to compare one apparatus with another, because, confessedly, that system of conduit pipes was a mode of heating air by an intermediate vessel between the

blowing apparatus and the blast furnace, and therefore it was an infraction of the patent.' Id. 715.

"This case of the hot blast was commented upon in the great case of O'Reilly *v.* Morse, and is there recognized and approved in the opinion of this court, delivered by Chief Justice Taney. After quoting the remarks of Baron Parke in the Court of Exchequer, cited above, the Chief Justice says: 'We see nothing in this opinion differing in any degree from the familiar principles of law applicable to patent cases. Neilson claimed no particular mode of constructing the receptacle or of heating it. He pointed out the manner in which it *might* be done; but admitted that it might also be done in a variety of ways, and at a higher or lower temperature; and that all of them would produce the effect in a greater or less degree, provided the air was heated by passing through a heated receptacle. Whoever, therefore, used this method of throwing hot air into the furnace used the process he had invented, and thereby infringed his patent, although the form of the receptacle or the mechanical arrangements for heating it might be different from those described by the patentee. For whatever form was adopted for the receptacle, or whatever mechanical arrangements were made for heating it, the effect would be produced in a greater or less degree, if the heated receptacle was placed between the blower and the furnace, and the current of air passed through it. The patent was supported because he [Neilson] had invented a mechanical apparatus by which a current of hot air, instead of cold, could be thrown in. And this new method was protected by the patent.[1] The interposition of a heated receptacle in any form was the novelty he invented.' 15 How. 62, 115, 116.

"We have quoted these remarks of the Chief Justice more fully, because they show most clearly that he put the same construction upon Neilson's patent that was put upon it by Lord Campbell, and that he fully acquiesced in the legality and validity of a patent for a process. Yet it has been supposed that the decision in O'Reilly *v.* Morse was adverse to patents for mere processes. The mistake has undoubtedly arisen from confounding a patent for a process with a patent for a mere principle. We think that a careful examination of the judgment in that case will show that nothing adverse to patents for processes is contained in it.

[1] The statements in this and the preceding sentence are ingeniously incorrect. First, a mechanical apparatus, and then a method, are said to have been the subject of invention. In truth, Neilson invented no mechanical apparatus, — he described one; but if his patent had been restricted to that, it would have been worthless. He described a method, based upon a discovery. His patent was for the method (or process), and it was construed so as to be commensurate with the discovery.

"The eighth claim of Morse's patent was held to be invalid, because it was regarded by the court as being not for a process, but for a mere principle. It amounted to this, namely, a claim of the exclusive right to the use of electro-magnetism as a motive power for making intelligible marks at a distance; that is, a claim to the exclusive use of one of the powers of nature for a particular purpose. It was not a claim of any particular machinery, nor a claim of any particular process for utilizing the power, but a claim of the power itself, — a claim put forward on the ground that the patentee was the first to discover that it could be thus employed. This claim, the court held, could not be sustained.

"That this was the true ground of the decision will be manifest from the following observations of the Chief Justice in the opinion already quoted from. He says: 'He [Morse] claims the exclusive right to every improvement where the motive power is the electric or galvanic current, and the result is the marking or printing intelligible characters, signs, or letters at a distance,' &c. [quoted *supra*, at pp. 544, 545]. 'Whoever discovers that a certain useful result will be produced in any art, machine, manufacture, or composition of matter, by the use of certain means, is entitled to a patent for it, provided he specifies the means he uses in a manner so full and exact that any one skilled in the science to which it appertains can, by using the means he specifies, without any addition to or subtraction from them, produce precisely the result he describes. And if this cannot be done by the means he describes, the patent is void; and if it can be done, then the patent confers on him the exclusive right to use the means he specifies to produce the result or effect he describes, and nothing more. And it makes no difference in this respect whether the effect is produced by chemical agency or combination; or by the application of discoveries or principles in natural philosophy, known or unknown, before his invention; or by machinery acting altogether upon mechanical principles. In either case, he must describe *the manner or process* as above mentioned, and the end it accomplishes. And any one may lawfully accomplish the same end without infringing the patent, if he uses means substantially different from those described.' Id. 119. It seems to us that this clear and exact summary of the law affords the key to almost every case that can arise. 'Whoever discovers that a certain useful result will be produced in any art by the use of certain means is entitled to a patent for it, provided he specifies the means.' But everything turns on the force and meaning of the word 'means.' It is very certain that the means need not be a machine or an apparatus; it may, as the court says, be a *process*. A machine is a thing. A process is an act or a mode of acting. The one is visible to the eye, an object of perpetual observation. The other is a conception of the mind, seen only by its effects

when being executed or performed. Either may be the means of producing a useful result. The mixing of certain substances together, or the heating of a substance to a certain temperature, is a process. If the mode of doing it, or the apparatus in or by which it may be done, is sufficiently obvious to suggest itself to a person skilled in the particular art, it is enough, in the patent, to point out the process to be performed, without giving supererogatory directions as to the apparatus or method to be employed. If the mode of applying the process is not obvious, then a description of a particular mode by which it may be applied is sufficient. There is, then, a description of the process and of one practical mode in which it may be applied. Perhaps the process is susceptible of being applied in many modes and by the use of many forms of apparatus. The inventor is not bound to describe them all in order to secure to himself the exclusive right to the process, if he is really its inventor or discoverer; but he must describe some particular mode or some apparatus, by which the process can be applied with at least some beneficial result, in order to show that it is capable of being exhibited and performed in actual experience."

This long quotation is from the opinion of the court in the case of Tilghman *v.* Proctor (102 U. S. 717); but this suit was preceded by another upon the same patent, being the case of Mitchell *v.* Tilghman (19 Wall. 287).

216. The patent was for a process of separating fatty bodies into their component parts, — fat acids and glycerine, — by subjecting them, in a close vessel, to the action of highly heated water under a pressure that will prevent its conversion into steam. It was known before Tilghman's discovery that the elements of neutral fat require to be united with an atomic equivalent of water in order to separate from each other and to become free. This principle, therefore, was known. But Tilghman discovered that the separation might be accomplished by the action of highly heated water under the conditions above mentioned. This principle or capacity of highly heated water he employed (caused to operate), in order to allow the other principle to come into play. He described fully the apparatus by which this discovery of the property of highly heated water was made use of. Before Tilghman's discovery, the disintegration of fat by union with water was brought about by either of two processes, — one of lime saponification, the other of distillation. They were both more costly and less efficient than Tilghman's process.

217. In this suit, the defendants made use of the principle discovered by Tilghman, namely, the action of highly heated water; but their apparatus differed from his; and the court, as in the first of the lead-pipe cases, construed his patent to be for the precise apparatus described by the patentee, and they held that Tilghman was not the first to discover the principle upon which his patent was based.

218. Recently, however, as we have seen, this patent has been before the Supreme Court again, when the former decision was reversed.[1]

Tilghman's claim was: —

"The manufacturing of fat acids and glycerine from fatty bodies by the action of water at a high temperature and pressure."

This claim, the court held in the second case, should be compared with the specification, and thus construed to be for

"the process of subjectiug to a high degree of heat a mixture, continually kept up, of nearly equal quantities of fat and water, in a convenient vessel strong enough to resist the effort of the mixture to convert itself into steam."

They added: —

"This is most certainly a process."

And they held that any apparatus employed to carry out this process would be an infringement of the patent.

219. We have already quoted the principles of law laid down in the opinion, which continued as follows: —

"Let us apply these principles to the present case. In the first place, the claim of the patent is not for a mere principle. The chemical principle or scientific fact upon which it is founded is that the elements of neutral fat require to be severally united with an atomic equivalent of water in order to separate from each other and become free. This chemical fact was not discovered by Tilghman.[2] He only claims to have invented a particular mode of bringing about the desired chemical union between the fatty elements and water. He does not claim every mode of accomplishing this result. He does not claim the lime-

[1] Tilghman *v.* Proctor, 102 U. S. 717.

[2] This, of course, is true; but it is equally true that there was another principle concerned, — namely, the capacity of water, under certain conditions, to disintegrate fat.

This principle Tilghman did discover, as we have already remarked.

saponification process, nor the sulphuric-acid distillation process; and if, as contended, the result was accomplished by Dubrunfaut, Wilson, and Scharling, by means of steam distillation, he does not claim that process. He only claims the process of subjecting to a high degree of heat a mixture, continually kept up, of nearly equal quantities of fat and water, in a convenient vessel strong enough to resist the effort of the mixture to convert itself into steam. This is most certainly a process. It is clearly pointed out in the specification, and one particular mode of applying it and carrying it into effect is described in detail. But it is not the particular apparatus described which Tilghman desires to secure by his patent. Having pointed out the process and suggested a particular mode of applying it, he claims as his invention 'the manufacturing of fat acids and glycerine from fatty bodies by the action of water at a high temperature and pressure.'

"The true construction of this claim is to be sought by comparing it, as we have already done, with the context of the specification, with the statement of the patentee that his 'invention consists of a process for producing free fat acids and solution of glycerine from those fatty and oily bodies of animal and vegetable origin which contain glycerine as a base;' that 'for this purpose he subjects these fatty and oily bodies to the action of water at a high temperature and pressure, so as to cause the elements of those bodies to combine with water and thereby obtain at the same time free fat acids and solution of glycerine;' that 'he mixes the fatty body to be operated upon with from a third to a half of its bulk of water, and the mixture may be placed in any convenient vessel in which it can be heated to the melting point of lead' [which is afterwards explained to be only desirable for a quick result, not essential]; that 'the vessel must be closed, and of great strength, so that the requisite amount of pressure may be applied to prevent the conversion of the water into steam.' This is the process which the patentee claims to have invented; and this description of it gives the proper construction and qualification to the claim."

The Morse Patent and the Tilghman Patent compared.

220. At first sight, the claims of Morse and Tilghman are similar. Thus, both state a result to be reached and an agent to be employed. In one, the result is telegraphing, and the agent electro-magnetism; in the other, the result is the disintegration of fat, and the agent is water at a high temperature and under pressure. Tilghman's claim, however, was supported, because by reference to the specification it was qualified so as to be a claim

for a process, the gist of which is the action of highly heated water under pressure, in a strong and close vessel, upon fat, in order to disintegrate it; and the patent was held to cover any apparatus by which this process could be carried out.

221. But Morse's claim, even by reference to his specification, cannot thus be limited. He expressly disclaims all the machinery by which the electro-magnetism covered by his patent is to operate, and the patent states no conditions under which, though by the use of different machinery, it might operate. It says simply that electro-magnetism is the means, and telegraphing the end.

222. Tilghman's patent was construed to claim the action upon fat of highly heated water under pressure, in a strong and closed vessel; and this was held to be a process. But Morse claimed the use of electro-magnetism for telegraphing. This was held to be a claim not for a process but for a principle.[1]

The Rule established by the Supreme Court.

223. The rule, therefore, now established by the Supreme Court is, that the scope of a patent based upon a principle, or upon the application thereof, is determined by the process that it describes. In other words, the patent will cover every application of the principle that involves the use of the process described and claimed by the patentee. By process is here meant not the particular apparatus or contrivance described by the patentee, but the mode of operation, the intellectual conception which is carried out by means of the contrivance or apparatus. It is necessary, however, that the patentee should describe one form of contrivance or apparatus (though it need not, and probably will not, be the best possible for the purpose), in order to prove the practicability of the process, and to enable others to employ it.

224. But a claim to every application of a principle — *i. e.* a force of nature or property of matter, to effect a certain object, irrespective of the process or method of application — will not be held valid, even though the patentee has discovered the existence of the principle.

[1] A similar distinction between the patent of Morse and the patent of Neilson has already been pointed out, *ante*, page 547.

225. This last point, that the discoverer of a *new principle* is entitled not necessarily to every application of it, but only to the process that he has based upon it, has not directly been decided, for it has not arisen; but it is included, as we have seen, by the doctrine and by the terms of this last decision. The point, however, as we say, has not arisen in the Supreme Court, unless in the unsatisfactory case of Le Roy *v.* Tatham; for in O'Reilly *v.* Morse, as we have remarked before, not a principle, but only its application, was discovered; and in Tilghman *v.* Proctor a principle, indeed, was discovered, but the process of the defendant in that suit infringed Tilghman's process, — in other words, was an application substantially the same as his, — so that it was not necessary to decide whether a different application of his principle to effect the same purpose would also have been covered by his patent. And even if there could not be an application of Tilghman's principle which did not include the gist of his process, still the contingency is one which may and will arise in other cases. It is provided for by the reasoning and by the *dicta* of the decision in Tilghman *v.* Proctor in a manner adverse to the patentee.

The Problem Theory.

226. The matter may be regarded from a slightly different point of view. The difference between a principle and the application of a principle has been said to be the same as that between the statement of a problem and the solution of it. A man may patent his solution of the problem, but not the problem itself. Thus, in the Morse case, the problem upon which others as well as Morse had been at work was to telegraph by the use of electricity. Morse was entitled to patent his solution of the problem, *i. e.* the method of telegraphing which he devised. He was not entitled to patent the problem itself, *i. e.* telegraphing by electricity, as he attempted to do in his eighth claim.

227. In the hot-blast case it must be considered that the problem was to promote ignition of fuel by means of a hot blast (the fact that Neilson discovered the truth that a hot blast would have this effect being set aside), and Neilson's solution of the problem was to interpose a heated receptacle between the air blast and the furnace. If it so happens that Neilson's solution of the problem was the only possible solution, that result is

merely an accident of the particular case, and does not affect the general rule.

228. The difficulty, however, of applying this rule of the problem and its solution to the hot-blast case will have been apparent to the reader. The fact is that in this case, and in most cases where a new principle is found out, the patentee has discovered the problem itself as well as its solution. There was no problem in regard to iron furnaces until Neilson discovered that a hot blast was better than a cold blast therefor. And when he had made that discovery, he had also solved the problem; for the evidence in the case was that, given the principle, any mechanic would have been able to apply it; given the problem, in other words, its solution was obvious.

229. It might, indeed, be said that in this case the true problem was to improve the action of an iron furnace; and Neilson's solution of it was the method which he described of utilizing the discovery made by him. But this application of the problem theory is too intricate and too strained to require any discussion.

230. That theory would seem to be available only when the principle concerned is known, and the possibility of applying it to a certain end has been conceived of. Then, indeed, there is a problem to be solved; and he who succeeds in applying the principle to the end sought has solved the problem, and he is entitled to a patent for his solution, and to that only. Whether or not his solution be the only possible one is a matter which should not be considered in construing his patent. This was the Morse case.

231. There are two cases in which the problem rule does not apply at all, as follows: —

(1.) Where the patentee has discovered the principle itself. Instance, the hot-blast case and the lead-pipe case.

(2.) Where, the principle being known, he has been the first to *conceive the possibility* of applying it to a certain end, as well as the first to devise a successful means of application. Here, again, the patentee has discovered the problem as well as its solution.

232. There is another case in which the problem rule may be applied, but in which its fairness is not so clear as it is in the case first considered. It is as follows: Given a principle and the problem of applying it to a certain end, suppose the patentee

to have discovered some fact unknown before as to the nature of the principle, which enables him to apply it to the end contemplated. In such a case the patentee has solved an existing problem; but the solution did not become possible until a discovery had been made.

Difference between Discovering a Principle and Inventing the Application of a Known Principle.

233. It seems to us that the true distinction is that between the discovery of some principle, or of a fact in regard to the nature of a principle, and the invention of some means to apply a known principle. It is, however, we are bound to admit, a distinction which has not, in terms, been taken by the courts. Mr. Justice Nelson, indeed, as we have seen, said that he who has discovered the application of a principle, *a fortiori*, he who has discovered the principle itself, is entitled to a patent covering every application that can be made for the same object. But this is the only suggestion of a difference in the two cases. In the hot-blast case, Baron Parke said, as the reader will remember, "We think the case must be considered as if, the principle being well known, the plaintiff had first invented *a mode of applying it*."

234. And yet it would seem, upon the fundamental rule that a patent should be commensurate with the invention or discovery on account of which it is granted, that he who discovers a new principle and applies it to a particular purpose should have a patent covering every application of that principle to that purpose;[1] and so perhaps of him who has made a discovery in regard to the nature of a known principle, by reason of which discovery a new application of the principle becomes possible: whereas he who has invented an application of a known principle is entitled to a patent for such application only, including, of course, substantial equivalents therefor and colorable imitations thereof.

235. A similar rule in regard to machines is established. The

[1] Of course, a better application, subsequently made by another inventor, might be a patentable improvement upon the application described by the patentee. Nevertheless, the use of such patentable improvement would be an infringement of the original patent, for it is based upon the discovery described in the original patent.

courts discriminate between the invention of a new kind of machine, a new *genus*, and the invention of an improvement upon a machine, a new species; and they hold that the patent for a machine generically new has a scope wider than that for a machine new only as a species.

In the case of McCormick *v.* Talcott (20 How. p. 405), Mr. Justice Grier said: —

"If he [the patentee] be the original inventor of the device or machine called the divider, he will have a right to treat as infringers all who make dividers operating on the same principle and performing the same functions by analogous means or equivalent combinations, even though the infringing machine may be an improvement of the original, and patentable as such. But if the invention claimed be itself but an improvement on a known machine by a mere change of form or combination of parts, the patentee cannot treat another as an infringer who has improved the original machine by use of a different form or combination performing the same functions. The inventor of the first improvement cannot invoke the doctrine of equivalents to suppress all other improvements which are not mere colorable invasions of the first."

To the same effect, Mr. Justice Bradley, in Railroad Co. *v.* Sayles, 97 U. S. p. 556.

236. We may adduce, also, the analogous rule, according to which the patent for a new product is held to include any product substantially the same, although produced by a process entirely different.

237. On any theory other than that for which we contend, the more meritorious patentee who has discovered the principle as well as its application gets a patent no broader than that of him who has discovered only the application of a familiar principle. Thus, to take the Morse case, according to the theory which obtains, the inventor, if he had revealed electro-magnetism to the world as well as shown how it might be used for telegraphing, could have had no broader patent than if, as was the case, he had merely applied a force already known to the same purpose.

238. However, we will not presume further to argue the soundness of a distinction which has so little support from authority; though we cannot refrain from pointing out the fact that, if not provided for by the reasoning, it is in entire harmony with the decisions, of the leading cases which we have considered.

This distinction, also, invalidates the famous eighth claim of the Morse patent without recourse to those refinements which, upon the doctrines of Neilson *v.* Harford and Tilghman *v.* Proctor, are, as we have seen, necessary to withdraw it from its analogy to the patents upheld in those cases.

M'CLURG *v.* KINGSLAND, 1 How. 202 (1843).

Harley's patent for an improvement in the mode of casting chilled rollers and other metallic cylinders and cones.

In casting iron rolls it is important that the surface should be free from impurities. Harley discovered that if the tubes or "gates" through which the melted iron entered the mould were so placed that the melted iron should enter substantially at a tangent to the cylinder, the molten iron would thereby receive the rotating motion of a whirlpool, whereby its heavier and better parts would go to the exterior, and the dross and lighter parts be kept at the centre.[1]

"This," said the court, "was the thing patented, consisting solely in changing the direction of the tube which conveyed the metal to the mould from a horizontal or perpendicular position to an angular one. It produced the desired effect, and was highly useful.

"The novelty of the invention was much contested at the trial; but as the case turned on other points, that became an immaterial question; as the case comes before us on exceptions to the charge of the court, which assumed that Harley was the original and true inventor of the improvement, and put the case to the jury on the following facts, which were in full proof, in nowise contradicted and admitted to be true."

These facts raised two questions; namely, first, Were the defendants licensed to use the invention? second, Was the patent void by reason of public use of the invention before the patent was applied for?

The *patentability* of the invention, therefore, seems to have been contested neither here nor at the trial below.

[1] *Vide* page 42, *ante*, for another description of the invention.

PARKER *v.* HULME, 1 Fish. 44.

E. D. of Penn., 1840. Kane, J., and a Jury.

Z. & A. Parker's patent, dated Oct. 19, 1829, for an improvement in water-wheels.

The importance of this invention, and the valuable remarks of the court upon it, compel us to set out the case at some length.

We quote from the report: —

"The patentees, in the year 1827, by observing in a horizonal reaction wheel with a fixed flume the operation of a simple stationary guide, discovered — and by removing and replacing the guide tested — the utility of applying as a motive power the pressure or centrifugal force of water made to revolve within such a wheel, and to pass into and act upon its circumferential buckets with a circular or vortical motion, coinciding with that of their revolution.

"In the following year they experimented with both horizontal and vertical reaction wheels, by various adaptations of fixed guides, so formed and adjusted as to produce, maintain, and regulate the proper circular currents, and give to them the required direction within the buckets. The vertical wheels were arranged in pairs, and the fixtures were so adapted that in several particulars a single stationary piece of machinery served for two wheels. The patentees, in the prefatory part of their specification, declare that their invention consists of 'a new and useful improvement in the application of hydraulic power, by a method of combining percussion[1] with reaction, applied and exemplified in: 1. A compound, vertical, percussion, and reaction water-wheel for saw-mills and other purposes, with the method of applying water on the same; 2. An improved horizontal, reaction water-wheel, with the method of combining percussion with reaction on it; 3. A method of combining percussion with reaction on common reaction wheels, or those already in use.' It is then stated that the *principle* upon which this improvement is founded is that of producing a vortex within reaction wheels, which by its centrifugal force powerfully accelerates the velocity of the wheel, and adds, proportionally, to its momentum."

The only claim in question in this case ran as follows: —

"The compound, vertical, percussion, and reaction wheel for saw-mills and other purposes, with two, four, six, or more wheels, on one

[1] Percussion is thus described in Wintermute *v.* Redington, *post*, page 563: —

"A power over and above reaction, derived from the impingement of the water, with a momentum due to its velocity, upon the buckets placed obliquely in its line of motion."

horizontal shaft. The concentric cylinders enclosing the shaft, and the manner of supporting them. The spouts which conduct the water into the wheels from the penstock, with their spiral termination between the cylinders."

Upon the specification and claim the court remarked as follows: —

"Did they [the patentees] mean to assert, 1, That they were the first to discover and to avail themselves practically, by mechanism, of the effect of vortical motion, imparted to water in a reaction wheel, and operating by its centrifugal force to accelerate the wheel's velocity; or, 2 (not so expanding their supposed discovery), That they were the first to devise and avail themselves, practically, of certain mechanical arrangements, which they have described in their specification, and which exemplify and apply the accelerating effect of this motion; or, 3, That they were the first to do both of these? And then as to the mechanical arrangements which they describe, did they mean to assert, 1, That they were the first to devise and apply the combination of them to the particular object; or, 2, That they were the first to devise and apply them separately, in furtherance of that object; or, 3, That they were the first to devise and apply as well the elements of the combination as the combination itself, for the object proposed? These are questions, some of them at least, of great nicety and great interest, and on which, if the opinion now to be expressed were in its consequences final, I should desire time for further consideration after appropriate argument. [Upon a subsequent motion for a new trial, the jury having found for the plaintiff, the judge intimated that he no longer doubted as to the interpretation of the patent; and the motion was not pressed.] But for the purposes of the occasion I feel at liberty to instruct you that the patentees claim, in their specification, to have been the first to discover, devise, and apply to use, 1, The propulsive effect of vortical motion of water in a reaction wheel operating by its centrifugal force, and so directed by mechanism as to operate in the appropriate direction; and, 2, The mechanical arrangements for making, guiding, and controlling this vortical motion, as set forth in their specification, both as new mechanical devices, considered separately, in their application to these objects, and as new in their combination, to produce and effectuate or perfect the same objects. . . .

"As to the mechanical arrangements and devices, separately or in combination, there is no question that they were patentable. In regard to the arrangement of vertical wheels in pairs, on a horizontal shaft, the mere fact that this was a duplication of the single wheel does not of itself alone invalidate the patent. Duplication producing

a new and useful result, as it was here produced, may be patentable. It is often the material part of a discovery; because it may be that which renders useful what was previously useless. In the case of the paper-machine, before this court, it was held that a number of rollers acting in pairs for a particular purpose might be patented, though a single pair could not have been. As to the greater and more general subject of claim, namely, *the propulsive effect of vortical motion of water in a reaction wheel, operating by its centrifugal force, and so directed by mechanism as to operate in the appropriate direction*, the court instructs you, not without being aware that the question is one of possible difficulty, that this also is a valid subject of claim, and properly to be secured by letters-patent. The views which lead to this instruction are too elaborate and metaphysical, perhaps, to find a place properly in a charge at bar. They may, however, be made intelligible by reference to a few simple positions. All machines may be regarded as merely devices, by the instrumentality of which the laws of nature are made applicable and operative to the production of a particular result. He who first discovers that a law of nature can be so applied, and, having devised machinery to make it operative, introduces it in a practical form to the knowledge of his fellow-men, is a discoverer and inventor of the highest grade, not merely of the mechanism, the combination of iron, brass, and wood, in the form of levers, screws, or pulleys, but the force which operates through the mechanical medium, — the principle, — or, to use the synonym given for this term in the act of 1793, the *character* of the machine; and this title as a discoverer he may lawfully assert and secure to himself by letters-patent, thus establishing his property, not only in the formal device for which mechanical ingenuity can at once, as soon as the principle is known, imagine a thousand substitutes, — some as good, others better, perhaps all dissimilar, yet all illustrative of the same principle, and depending on it, — but in the essential principle which his machine was the first to embody, to exemplify, to illustrate, to make operative, and to announce to mankind.

"This is not, in my view, to patent an abstraction, in the sense which this expression has borne in the arguments on this subject. It is rather to patent the invention as the inventor has given it to the world, in its full dimensions and extent; nothing less, but nothing more. It is to patent the invention in the broad and general terms that properly express it, and to secure to the party who has made it the exclusive right, for a limited time, to precisely that discovery which he has imparted to the public, and which, when that limited time expires, the public will enjoy as the fruit of his mind."

Also, in regard to prior use, the court said : —

"It is not enough for the defendant to show that wheels like the patented one were *made*, but he must also show that they were *used*, before the plaintiff's invention. This is the test of what is required to defeat the title of a patentee of an improved machine. In the present case, moreover, the mere proof of *use* of such wheels would not suffice, unless it was also proved that *water was introduced into the wheel with the proper direction* given to it, as otherwise it could not have involved the principle of the improvement patented. This is illustrated by the accidental circumstance [not reported] which led to Mr. Parker's discovery."

See also Parker *v.* Brant, 1 Fish. 58; Parker *v.* Sears, 1 Fish. 93; Parker *v.* Stiles, 5 McLean, 44.

In Wintermute *v.* Redington, 1 Fish. 243 (1856), N. D. of Ohio, where this patent was again in suit, before a jury, the court, Willson, J., said : —

"In these arrangements of machinery, the patentees claim a combination of pressure, or percussion, reaction, and centrifugal force, that produces a combined power of propulsion. And here lies the secret of the invention of this 'Parker wheel.' *It is the vortical motion of the water on the wheel, which operates as a coefficient to the reactive power of the water on the buckets.* It is what the patentees claim it to be, to wit, 'an improvement in the application of hydraulic power, by a *method* of combining percussion with reaction.' . . .

"It is true that a patent cannot be sustained for a mere principle. For instance, Sir Isaac Newton's discovery of the principle of gravitation could not be the subject of a patent. But it is equally true that a principle may be embodied and applied so as to afford some result of practical utility in the arts and manufactures, and that under such circumstances a principle may be the subject of a patent. It is, however, *the embodiment and the application of the principle which constitute the grant of the patent.* And it has been justly said, 'that the principle so embodied and applied, and the principle of *such* embodiment and application, are essentially distinct: the former being a truth of exact science, or a law of natural science, or a rule of practice; the latter, a practice founded upon such truth, law, or rule.'

"Now, percussion, reaction, and centrifugal force are in the abstract neither new principles nor subjects of a patent. But their embodiment and application to machinery may be both new and useful, and entitle the discoverer to the exclusive use of his invention. The patentees in this case claim the discovery of embodying these principles

in a water-wheel, and their application in a new and improved method of propulsion. And this it is competent for them to do. . . . We have already stated that when a person has invented some *mode* of carrying into effect a law of natural science, or a rule of practice which constitutes the peculiar feature of his invention, such discovery may be secured to him by a patent. Hence it follows that he is entitled to protect himself from all other modes of making the same application. The substantial *identity*, therefore, that is to be looked to respects that which constitutes the essence of the invention; namely, *the application of the principle*. If the mode of carrying the same principle into effect adopted by the defendant still shows that the principle admits of the same application in a variety of forms or by a variety of apparatus, the jury will be authorized to treat such mode as a piracy of the invention. But if the defendant has adopted variations which show that the application of the principle is varied, that some other law or rule of practice or science is made to take the place of that which the patentee claims as the essence of his invention, then there is no infringement. Curtis on Patents, 338.

"If the defendant, in the use of a reaction water-wheel, whether on a vertical or horizontal shaft, whether single or in pairs, has run it or caused it to be run by the aid of the vortical motion of the water upon the wheel in its line of motion, he has violated this patent, provided he has used in so doing any or all of the patentee's mechanical contrivances for producing that vortical motion, or mechanical equivalents for any or all of them to produce it."

FOOTE *v.* SILSBY, 1 BLATCH. 445 (1849); 2 BLATCH. 200 (1851); 20 HOW. 378 (1857).

N. D. OF N. Y.

Foote's patent. The invention was an "improvement in regulating the draft of stoves."

The patent was first construed by Conkling, J. (district judge for the Northern District of New York), before whom and a jury an action of infringement was tried. The claims were: —

"1. The application of the expansive and contracting power of a metallic rod, by different degrees of heat, to open and close a damper which governs the admission of air into a stove or other structure in which it may be used, by which a more perfect control over the heat is obtained than can be by a damper in the flue. 2. The mode above described of setting the heat of a stove at any requisite degree, by

which different degrees of expansion are requisite to open or close the damper. 3. The combination above described by which the regulation of the heat of a stove or other structure in which it may be used is effected. 4. The mode above described of connecting the action of the metallic rods with the damper, so that the same may be disconnected when the damper shall have closed and the heat shall continue to rise,"[1] &c.

As to the first claim, the court charged the jury that it,

"being for the application of a natural property of metals to the purpose therein mentioned, was not the fit subject of a patent."

The jury found a verdict for the plaintiff, and the defendants moved for a new trial. In refusing it, Mr. Justice Nelson remarked as follows (p. 463):—

"The substance of the discovery . . . is the application of the principle of the contraction and expansion of a metallic rod, by the use of certain mechanical contrivances particularly described and set forth, to the cast or sheet iron stove in common use, by which means he produces a self-regulating power over the heat of the same, at any given degree of heat that may be desired within the capacity of the stove. This is the thing invented. It is, in a word, the application of a well-known principle to a new and useful purpose; and the first question is, whether or not the patentee was the first and original inventor, or whether it was before known and in public use. Now, although it is shown (assuming for the present that we may look into books not in evidence) that the principle had before been applied to the regulation of heat, as in the instance of Dr. Ure's 'Thermostat' and Bonnemain's 'Heat Regulator,' and some others, yet, for aught that appears from the testimony or from any book that has been produced, the plaintiff was the first person who applied the principle to the regulation of the heat of stoves; and for this he was entitled to a patent. . . . Phillips on Patents, ch. 7, § 6, p. 101. . . . The charge in respect to the first claim was more favorable to the defendants than in my judgment was warranted. The claim is not for a discovery of a natural property of the metallic rod, which of itself is not a patentable subject, but for

[1] The report contains the specification, which is very long, minute, and nearly or quite impossible to understand without the diagrams to which it refers.

There was a disclaimer of March, 1847, not properly proved at this trial, and therefore ruled out; but it played a part subsequently. In it the patentee disclaimed the use of such a rod as he describes in any other structure than a stove, in which the rod is acted upon directly by the heat of the stove or of the fire in it.

a new application of it by means of mechanical contrivances, which is one of the commonest subjects of a patent," &c.

The mechanical devices used by the defendant having been shown to be substantially like the plaintiff's, the judge remarked: —

"I am not sure that the plaintiff was bound to go to this length in making out a case of infringement. There is some ground for the position that the new application of the principle, by means of mechanical contrivances, constitutes of itself a part of his invention, and that any different or improved mode of application is but an improvement upon his discovery, and not available without his consent."[1]

Next came the trial[2] before Judge Nelson and a jury, of two feigned issues in this case; namely, whether or not the plaintiff was the original and first inventor of the improvements set out in his *first* and *third* claims. Mr. Justice Nelson charged the jury as follows: —

". . . There has been some difference of opinion between the counsel for the respective parties as regards the true construction to be given to the first claim, and it will therefore be necessary for the court to call your attention particularly to this branch of the case. It will be seen that the patentee, after he has set forth in general terms that he has made a new and useful improvement in regulating the heat of stoves, has set forth with great particularity two modes by which he adapts this improvement to use through the arrangement of various machinery; and that then, in this first claim, he claims the application

[1] Mr. Curtis, in the 4th ed. of his treatise, p. 166, thus comments upon this passage: "In this *dictum* we reach for the first time in any American case the suggestion of a doctrine which, in reference to cases of this kind, must either be established in, or rejected from, the patent law. This doctrine treats the application of the principle by some mechanical means as being at least a part of the invention and of the subject-matter of the patent; and as a corollary of this position, it regards a variation of the means, even if an improvement, as still an infringement if used without the consent of the patentee. The opposite doctrine is that which is maintained by those who contend that the application of a principle in this sense is not capable of appropriation under a patent; that its appropriation can extend only to the application of a principle as effected by the particular means used by the patentee, and by such other means as may turn out to be colorable imitations, mechanical equivalents, or fraudulent evasions, to neither of which categories is a real improvement to be referred."

[2] 2 Blatch. 260 (1851). In the report of the preceding case (1 Blatch. 445) there is a long and unintelligible description of Ure's apparatus and of Bonnemain's, referred to by Judge Nelson in the present case.

of the expansive and contracting power of a metallic rod, by different degrees of heat, to open and close a damper which governs the admission of air into a stove in which it may be used, by which a more perfect control over the heat is obtained than can be by a damper in the flue. Now, it is the application of the expansive and contracting power of the metallic rod to regulate the heat of the stove by opening and closing the damper, the whole being self-acting in the admission or exclusion of air, that is specifically claimed in this part of the patent: and according to the construction that I give to it, and have always given to it, it is a claim independent of any particular arrangement or combination of machinery or contrivance for the purpose of applying the principle to the regulation of the heat of stoves. I have always supposed, therefore, that the peculiar arrangement or construction of the machinery used did not enter into this branch of the claim. Where a party has discovered a new application of some property in nature never before known or in use, by which he has produced a new and useful result, the discovery is the subject of a patent, independently of any new or peculiar arrangement of machinery for the purpose of applying the new property in nature; and hence the inventor has a right to use any means, old or new, in the application of the new property to produce the new and useful result, to the exclusion of all other means. Otherwise a patent would afford no protection to an inventor in cases of this description, because, if the means used by him for applying his new idea must necessarily be new, then in all such cases the novelty of the arrangement used for the purpose of effecting the application would be involved in every instance of infringement, and the patentee would be bound to make out, not only the novelty in the new application, but also the novelty in the machinery employed by him in making the application."

He then cites the English case of Neilson *v.* Harford, and sections 80 and 81 of Curtis on Patents, wherein the learned author states the rule laid down by that celebrated decision to be, that in such cases "a principle carried into practice by *some* means constitutes the subject-matter of the patent;" and that the use of such a principle, though by means patentably different from those of the original discoverer, might be an infringement of the original invention.

Mr. Justice Nelson then goes on to say:—

"Now, in this case, as I understand the claim of the patentee, he claims the application of the principle of expansion and contraction in a metallic rod to the purpose of regulating the heat of a stove. That

is the new conception which he claims to have struck out; and although the mere abstract conception would not have constituted the subject-matter of a patent, yet when it is reduced to practice by any means, old or new, resulting usefully, it is the subject of a patent, independently of the machinery by which the application is made. I think, therefore, that in examining the first question presented to you, you may lay altogether out of view the contrivance by which the application of the principle is made, and confine yourselves to the original conception of the idea carried into practice by some means; but whether the means be new or old is immaterial, for although old means be used for giving application to the new conception, yet the patent excludes all persons other than the patentee from the use of those means and of all other means in a similar application."

In regard to the inventions alleged to anticipate the plaintiff's patent, the court said: —

"As respects the various contrivances of Ure, Bonnemain, and Evans, it does not appear that any one of those persons ever applied the principle of the expansion and contraction of the metallic rod to regulate the heat of a stove, by means of the heat produced by the stove itself, thereby producing a self-regulator; and it is therefore quite obvious that no one of them had reached the idea. In all these contrivances, with the exception of Ward's, the metallic rod used to produce the motion by which the damper was opened and closed was not heated by the air of the furnace, but was heated indirectly by the heat of the furnace, by being immersed in hot water. They all, therefore, fell short of the whole idea embraced in the first claim of the patent. Ward's application was applied to the ventilation of a room, and, so far as regards the conception of the idea of regulating the heat of a stove by the use of an expanding and contracting metal, was altogether different from the plaintiff's. It was a use of the principle to regulate a damper; but it was not adapted to regulate the heated air of a stove, which is the application in question here. In this respect, therefore, it was the same as Ure's, Bonnemain's, and Evans's. But in the Saxton stove[1] you have the application of the principle in question directly to the regulation of the heated air of the stove, by the opening and closing of a damper to admit or exclude the air for the supply of combustion, by the use of a metallic rod heated by the heated air of the stove itself. . . . Now, it is insisted by the counsel for the plaintiff that although there is in the Saxton stove an application of the principle of the expansion and contraction of a metallic rod heated by the stove itself, to

[1] This stove is not described elsewhere in the report of any of these cases.

regulate its heat, yet the rod is a compound rod, composed of a slip of brass and a slip of iron, firmly fastened together, and the motion of the damper is produced through a deflection of the rod resulting from its curvature, caused by the unequal dilatation, under a given degree of heat, of the two metals composing it, that of brass being greater than that of iron; that such an application is distinguishable from an application of the principle made by the direct linear expansion of a brass rod used in connection with an iron stove; and that, in that respect, the improvement of the plaintiff is distinguishable from the principle or conception applied in the Saxton stove. I lay entirely out of view the machinery, and speak only of the idea of applying the principle to regulate the heat of stoves. . . . It must be remembered, however, that in the patent the broad claim is made to 'the application of the expansive and contracting power of a metallic rod by different degrees of heat to open and close a damper which governs the admission of air into a stove in which it may be used, by which a more perfect control over the heat is obtained than can be by a damper in the flue.' And one thing must be admitted, that in the Saxton stove the principle of the expansion and contraction of the metallic rod was applied in the regulation of the damper, by causing it to open and close according to the degrees of heat in the stove itself. The means by which Saxton produced this adaptation were indeed different from the means used by the plaintiff; but the principle was the same. This is obvious from the testimony; and so say all the witnesses who have been examined on the question. Saxton's conception of the idea was anterior to that of the plaintiff. He applied the principle by means of a double bar, which produced a curvature. Still, that curvature was produced by the expansion and contraction of the brass rod, which, being greater under the same temperature than the expansion and contraction of the iron rod, resulted in the curvature, giving a motion which was applied to the regulation of the damper.

"The plaintiff is presumed, in judgment of law, — although I suppose the fact was otherwise, — to have had a knowledge of the Saxton stove, and of the application of the metallic rod to regulate its heat, when he applied the rod to the regulation of the stove described in his patent; and he then saw the principle applied by means of the deflection produced by the two compound bars, and of the motion resulting from the curvature.

"The difficulty in this branch of the case, on the part of the plaintiff, lies in his claim to the original conception of the adaptation of the principle to the purpose. Saxton's stove having been anterior in time to the plaintiff's, the principle existed there, and was only applied by the plaintiff in a different mode to the same object. The plaintiff

used the direct action of expansion and contraction to regulate the stove, whereas the combination of the iron rod with the brass rod had been before used. That would seem to be a different mode of applying the principle, rather than an original conception of the idea of adapting the expansion and contraction of the rod to the regulation of a stove. The idea had been before conceived and applied in the Saxton stove." [1]

The jury found a verdict against the plaintiff on both the feigned issues, — namely, the originality of the invention stated in the first claim, and of the combination stated in the third claim; but afterward, says the report, "on a final hearing on pleading and proofs, the court entered an interlocutory decree for the plaintiff, notwithstanding the verdict on the feigned issues. The case went to a master, who took an account. On exceptions, his re-

[1] As to the third claim, that for the combination, the learned judge charged as follows: " . . . This combination consists of, *first*, the brass rod, which is used, as it expands and contracts from the action of the heat of the stove, to give the power to open and close the valve; *second*, the apparatus by which the motion obtained by the expansion of the rod is increased, in order to operate more effectually, which is a combination of levers; *third*, the adjusting screw, which is used to set the brass rod, with the combination of levers and the connecting rod attached to the damper, at a given degree of temperature, by which different degrees of heat are obtained in the operation of the stove, — thus, if when the stove is cold you were to set the brass rod with its connections so that the damper should be but just open, a very slight degree of heat would close it, consequently the stove . . . would be kept at a low temperature; but if the apparatus was set with the damper wide open, it would require an extreme degree of heat to produce a sufficient expansion of the metallic rod to close it; *fourth*, the detaching process, by which the connecting rod is made to act or cease acting on the damper. In the apparatus of the plaintiff, the connecting rod operates directly and positively both to open and close the damper. The damper is not closed by its own gravity, by being released at the extreme of expansion. . . . Now, I am inclined to think — although the question has embarrassed me, and I may possibly, after all, have fallen into an error in regard to it — that the combinations of Dr. Ure in the two instances before alluded to, and the models of which have been produced on the trial, the egg-hatcher of Bonnemain, and the contrivances of Evans and of Ward, do not come up to the idea of the combination . . . claimed by the patentee. . . . I mean, aside from the parts composing the apparatus used by these different persons. As I have before said, when speaking of the first question submitted to you, the contrivances devised by those persons were not constructed to regulate the damper of a stove to be operated on by the heat of the stove. In all the cases mentioned, except that of Ward, the metallic rod was heated, so as to produce the contraction and expansion, by immersion in hot water," &c.

port was modified, and a final decree was entered for the plaintiff. The defendants appealed to the Supreme Court," which brings us to the case of Silsby *v.* Foote, 20 How. 378.

The Supreme Court sustained the decree, two judges dissenting. The decree is reported, but it does not appear from it on which of the claims (if not on both) it was based. The presumption, however, is, that it was founded upon the third, the claim for the combination, inasmuch as Mr. Justice Nelson, in the trial which preceded the making of the decree, charged the jury that the principle of the Saxton stove was the same as that of the plaintiff's stove, the application only being different; and the first claim of the plaintiff's patent was for the application of the principle by the use of the metallic rod, and not for a combination of devices. On the other hand, the report of the Supreme Court case says that only the first claim of the patent was in controversy, and that it alone was argued by the counsel for the appellants, the former defendants. And when we turn to the opinions delivered (that of the majority by Mr. Justice Nelson, and the dissenting opinion of Mr. Justice Grier, with which Mr. Justice Daniel concurred), the fog which has hung about this case from the beginning closes in and almost shuts it out of sight, for it appears that the court differed in their understanding as to which claim was the basis of the decree.

Mr. Justice Nelson, in his opinion, says that the first claim was disproved by the Saxton stove; whence the inference that he, and with him the majority of the court, sustained the decree upon the basis of the third claim. Mr. Justice Grier, on the other hand, argued that the decree was founded upon the first claim, and that that claim, under the rule established by O'Reilly *v.* Morse, was void upon its face.

DETMOLD *v.* REEVES, 1 FISH. 127.

E. D. OF PENN., 1851. KANE, J.

The complainant's patent (reissued to him Jan. 23, 1845) was for

"a new method of economizing fuel, by using the waste, combustible gases of the upper portion of the blast-furnace, by drawing them off

below the upper level of the charge, and conducting them through convenient passages to other fire-places or structures, there to be burned as fuel."

The point for taking off the gases — and on this part of the specification the whole case turned — was thus described: —

"At or near that point of the furnace where the limestone, employed as a flux, is completely calcined, and the reduction or deoxidation has not yet commenced, . . . which point will generally be at about one-third the height of the whole furnace, below the tunnel-head, or two-thirds above the bottom stove."

It was conceded that the defendants did not take off the gases at the point indicated by the patentee. Furthermore, it was proved that such a point was indefinite and changeable, because it varied with the size and shape of the furnace, the chemical constitution of the ore, the flux, the fuel, and with atmospheric changes; and some witnesses testified that it was impossible to fix the point, because reduction always begins (they said) before calcination is perfected. The court, therefore, held that infringement of the patent could be proved only by showing that the defendants took off the gases at the point described, limiting the patent

"to the formal arrangement, without any assertion of right to any dominant principle. The defendants have, perhaps, derived instruction from his descriptions, and may even, to some extent, have modelled their furnace, with its appendages, upon a theory which he suggested. But it does not appear to me that they . . . have infringed his patent."

And on the general subject the court said: —

"There is no doubt that he who has discovered some new element or property of matter may secure to himself the ownership of his discovery, so soon as he has been able to illustrate it practically, and to demonstrate its value. His patent, in such a case, will be commensurate with the principles which it announces to the world, and may be as broad as the mental conception itself. But, then, the mental conception must have been susceptible of embodiment, and must have been, in fact, embodied in some mechanical device or some process of art. The abstract must have been resolved into the concrete. The patent must be for a thing, not for an idea merely. This limitation, it may be said, denies to some of the more important products of mind what it concedes to others of lower grade. But it is not the less true

on that account. Men may be enriched or made happy by physical as well as by moral or political truths, which, nevertheless, go without reward for their authors. He who devised the art of multiplication could not restrain others from using it after him, without paying him for a license. The miner who first found out that the deeper veins were the richer in metal could not compel his neighbor to continue digging near the surface. . . . If we could search the laws of nature, they would be like water and the air, — the common property of mankind; and those theories of the learned, which we dignify with this title, partake, just so far as they are true, of the same universally diffused ownership. It is their application to practical use which brings them within the domain of individuals; and it is the novelty of such an application that constitutes it the proper subject of a patent. But the contract of the public is not with him who has discovered, but with him who also makes his discovery usefully known. If he has discovered much and discloses little, — if there has been revealed to him one of the *arcana* of nature, and he communicates to the world only one or more of its derivative and secondary truths, he patents no more than he has proclaimed. He will not be allowed afterward, when the extent of his right shall be the subject of controversy, either by expanding into a general expression what was limited before in a particular form, or by tracing out for us the line that leads back from consequences to remote causes, to initiate us, inferentially, into the radical mystery of his invention, and then argue that he had described it by implication from the first, and so claimed ownership of it in his patent. If, as it has been contended with great apparent force," the patentee " was really the discoverer of the true theory of the blast-furnace, so as to determine from it the point at which the carbonic oxide, having performed its chemical function, might be withdrawn without sensible injury; if he knew that the gases, when taken from openings near the boshes, were capable of more intense combustion, but that their withdrawal so low down impoverished the action of the furnace, and that when used at the tunnel-head, after they had performed successively the offices of deoxidating the mineral, calcining the flux, and vaporizing the water of the charges, they were less available as fuel in consequence of the increased impurity; and if, knowing this, he had taught the iron-master how to choose the best place for withdrawing the gases, having reference to the dimensions of his furnace, and the different sorts of fuel and mineral and fluid employed in it, and with reference also, perhaps, to the purpose to which the flame of the gases was to be applied after they had been withdrawn, — no one can doubt that he would have conferred a signal benefit upon the arts of the world. And if he had, besides this, devised some form of structure, some material ar-

rangement, by which his discovery might be applied to use, I would be most reluctant to say that his patent, properly drawn out, should be limited to the mere mechanical illustration, and could not cover effectually the whole ground of his discovery. But" the patentee "and his assignee have not done this. They have announced no principle of science, no natural law. They indicate to us the place at which the gases should be taken out, first by reference to a scientific problem, which they leave unsolved, and next by a proximate reference to a mechanical measurement."

He goes on to notice, in remarks which we have condensed above, the difficulty, if not impossibility, of fixing the point required by the patent.

LE ROY *v.* TATHAM, 14 How. 156 (1852); 22 How. 132 (1859).

The invention of John and Charles Hanson, of England, a patent for which was reissued to H. B. and B. Tatham, Aug. 31, 1837.[1]

[1] *Vide ante*, pp. 541, 542. We quote the following lucid description of the invention from Curtis on Patents, § 61: —

"The real invention in this case consisted in the discovery and practical application of a new method of making lead pipe by forcing the metal, when recently set, but still under heat, by great pressure, from a receiver through an aperture and around a core, so as to make the metal reunite where it had been separated. Wrought pipe, as an improvement upon cast pipe, had been previously made from set or solid lead by great pressure; but before the discovery of the plaintiff's method, such wrought pipe could not be made with uniformity of thickness and a true centrality of bore. The former mode of making wrought pipe from set or solid lead was founded upon the supposition that the metal, when once set after being molten, would not unite perfectly if separated; and it was in consequence of the want of knowledge of the property of such metal to unite under heat and extreme pressure that a mode of making the pipe was resorted to by which the contact of the particles of the metal would remain unbroken. This mode consisted in the use of the following apparatus: Lead in a fluid state was introduced into a cylinder in which a piston played from one end to the other. In the solid end of the cylinder opposite to the piston an aperture was fitted with a die which formed the exterior of the wall of the pipe. To form the interior wall of the pipe, a cone or mandrel, consisting of a long cylindrical rod of steel, was attached to the face of the piston, and extended through the cylinder, and through the centre of the die. When the metal in the cylinder had become set, the piston was forced through the cylinder by hydraulic pressure, carrying the metal to the die, and driving it through the annular space between the die and the core, and thus forming a continuous pipe from the whole charge of the cylinder, because the continuity

"The Hansons discovered that lead, when recently set and solid, but still under heat and extreme pressure in a close vessel, would reunite perfectly after a separation of its parts. Availing themselves of this property in lead, the inventors succeeded in making by machinery, at a reduced expense, lead pipe of a better quality than had before been known. The claim of the patent was to the combination of machinery employed 'when used to form pipes of metal under heat and pressure, in the manner set forth, or in any other manner substantially the same.' The machinery used was shown to be, in principle, substantially the same with machinery which had before been used to make macaroni, and with machinery which had before been used to make clay pipe." [1]

In the first case, an action at law, the court held that the plaintiffs, by their specifications and claim, were confined to the particular apparatus which they described, and that being shown to be old, the patent was held invalid.

The court said (after quoting the claim) : —

"The patentees have founded their claim on this specification, and they can neither modify nor abandon it in whole or in part. The combination of the machinery is claimed, through which the new property of lead was developed, as a part of the process in the structure of the pipes. But the jury were instructed 'that the originality of the invention did not consist in the novelty of the machinery, but in bringing a newly discovered principle into practical application.' The patentees claimed the combination of the machinery as their invention in part, and no such claim can be sustained without establishing its novelty, — of the particles composing the wall of the pipe was nowhere broken. But the liability of the long core to be warped out of a true line by the great pressure necessary to form the pipe rendered it impossible to produce uniformity of thickness and an even bore.

"On the other hand, the great feature of the invention which the plaintiffs claimed consisted in the discovery of the fact that lead, when recently set, and still under heat, will reunite perfectly around a core, under extreme pressure, *notwithstanding* the particles have been separated, and will thus form pipe of great solidity and unusual strength. This beautiful discovery was made available by the substitution of a short, immovable core in front of the die, supported by a bridge or cross-bars, and extending into and through the die, so that the true centrality of the core in reference to the die was constantly preserved; and although the particles of the metal, when forced through the apertures in the bridge, were necessarily separated, they reunited perfectly around the core, and formed a pipe superior in quality and cheaper in production than had ever been made before."

[1] We quote from Judge Blatchford's opinion in the case of Poillon *v.* Schmidt, 6 Blatch. p. 304.

not as to the parts of which it is composed, but as to the combination. *The question whether the newly developed property of lead, used in the formation of pipes, might have been patented if claimed as developed, without the invention of machinery, was not in the case.*"

Nelson, J., Wayne, J., and Grier, J., dissented, on the ground that the patent might be construed to claim the application of the newly discovered property in lead to the making of lead pipe, in which view of the patent the novelty of the apparatus was immaterial.

In the second suit, a bill in equity, the patent was sustained. The opinion, by McLean, J., is so extremely obscure that it cannot be quoted as supporting any view of the law upon the subject of principle.

Judge Blatchford, in the opinion from which we just quoted, thus stated the effect of the decision in the second suit of Le Roy *v.* Tatham : —

"The claim was stated by the court to be a claim to the machinery only when used to form pipes of metal under heat and pressure; and it was sustained by the court against the objection that it only claimed the application of an old machine to a new use, or to produce a new result. The claim in the Hanson patent would have been the same, to all intents, if it had claimed the method of causing lead to separate and reunite, at a welding heat, under pressure in a close vessel, by the use of the machinery described, to form lead pipe in the manner set forth."

In the first case, the court differed as to the construction of the particular patent before them, and not, it would seem, as to the law. The dissenting opinion, by Nelson, J., contains an able and exhaustive discussion of the subject. We quote first from the opinion of the majority, by McLean, J. : —

". . . The word 'principle' is used by elementary writers on patent subjects, and sometimes in adjudications of courts, with such a want of precision in its application as to mislead. It is admitted that a principle is not patentable. A principle, in the abstract, is a fundamental truth, an original cause, a motive; these cannot be patented, as no one can claim in either of them an exclusive right. Nor can an exclusive right exist to a new power, should one be discovered in addition to those already known. Through the agency of machinery a new steam power may be said to have been generated. But no one can appropriate this power exclusively to himself, under the patent laws. The

same may be said of electricity, and of any other power in nature, which is alike open to all, and may be applied to useful purposes by the use of machinery.

"In all such cases, the processes used to extract, modify, and concentrate natural agencies constitute the invention. The elements of the power exist; the invention is not in discovering them, but in applying them to useful objects. Whether the machinery used be novel, or consist of a new combination of parts known, the right of the inventor is secured against all who use the same mechanical power, or one that shall be substantially the same.

"A patent is not good for an effect, or the result of a certain process, as that would prohibit all other persons from making the same thing by any means whatsoever. This, by creating monopolies, would discourage arts and manufactures, against the avowed policy of the patent laws.

"A new property discovered in matter, when practically applied, in the construction of a useful article of commerce or manufacture, is patentable; but the process through which the new property is developed and applied must be stated with such precision as to enable an ordinary mechanic to construct and apply the necessary process. This is required by the patent laws of England and of the United States, in order that, when the patent shall run out, the public may know how to profit by the invention. It is said, in the case of The Houshill Company *v.* Neilson, Webster's Pat. Cas. 683: 'A patent will be good, though the subject of the patent consists in the discovery of a great, general, and most comprehensive principle in science or law of nature, if that principle is by the specification applied to any special purpose, so as thereby to effectuate a practical result and benefit not previously attained.' In that case, Mr. Justice Clerk, in his charge to the jury, said: 'The specification does not claim anything as to the form, nature, shape, materials, numbers, or mathematical character of the vessel or vessels in which the air is to be heated, or as to the mode of heating such vessels,' &c. The patent was for 'the improved application of air to produce heat in fires, forges, and furnaces, where bellows or other blowing apparatus are required.'

"In that case, although the machinery was not claimed as a part of the invention, the jury were instructed to inquire 'whether the specification was not such as to enable workmen of ordinary skill to make machinery or apparatus capable of producing the effect set forth in said letters-patent and specification.' And that, in order to ascertain whether the defendants had infringed the patent, the jury should inquire whether they 'did by themselves or others, and in contravention of the privileges conferred by the said letters-patent, use machinery or apparatus substantially the same with the machinery or apparatus

described in the plaintiff's specification, and to the effect set forth in said letters-patent and specification.' So it would seem that where a patent is obtained, without a claim to the invention of the machinery, through which a valuable result is produced, a precise specification is required; and the test of infringement is, whether the defendants have used substantially the same process to produce the same result."

Nelson, J., with whom concurred Wayne and Grier, JJ., dissented, as follows (after considering the proper construction of the specification and claim): —

"I conclude, therefore, that the claim in this case is not simply for the apparatus employed by the patentees, but for the embodiment or employment of the newly discovered property in the metal, and the practical adaptation of it, by these means, to the production of a new result, namely, the manufacture of wrought pipe out of solid lead.

"Then, is this the proper subject-matter of a patent? This question was first largely discussed by counsel and court in the celebrated case of Boulton *v.* Bull, 2 H. Black. 463, involving the validity of Watt's patent, which was for 'a new invented method for lessening the consumption of fuel and steam in fire-engines.' This was effected by enclosing the steam vessel or cylinder with wood or other material, which preserved the heat in the steam vessel; and by condensing the steam in separate vessels. It was admitted on the argument that there was no new mechanical construction invented by Watt, and the validity of the patent was placed on the ground that it was for well-known principles, practically applied, producing a new and useful result. On the other hand, it was conceded that the application of the principles in the manner described was new, and produced the result claimed; but it was denied that this constituted the subject-matter of a patent.

"Heath and Buller, Justices, agreed with the counsel for the defendant.

"But Lord Chief Justice Eyre laid down the true doctrine, and [*sic*] which, I think, will be seen to be the admitted doctrine of the courts of England at this day.

"'Undoubtedly,' he observed, 'there can be no patent for a mere principle; but for a principle so far embodied and connected with corporeal substances as to be in a condition to act, and to produce effects in any art, trade, mystery, or manual occupation, I think there may be a patent. Now this,' he continues, 'is, in my judgment, the thing for which the patent stated in the case was granted; and this is what the specification describes, though it miscalls it a principle. It is not that the patentee conceived an abstract notion that the consumption of steam in fire-engines may be lessened, but he has discovered a

practical manner of doing it; and for that practical manner of doing it he has taken this patent. Surely,' he observes, 'this is a very different thing from taking a patent for a principle. The apparatus, as we have said, was not new. There is no new mechanical construction, said the counsel for the patentee, invented by Watt, capable of being the subject of a distinct specification; but his discovery was of a principle, the method of applying which is clearly set forth.'

"Chief Justice Eyre admitted that the means used were not new, and that if the patent had been taken out for the mechanism used it must fail.

"He observed: 'When the effect produced is some new substance or composition of things, it should seem that the privilege of the sole working or making ought to be for such new substances or composition, without regard to the mechanism or process by which it has been produced, which, though, perhaps also new, will be only useful as producing the new substance.' Again: 'When the effect produced is no new substance, or composition of things, the patent can only be for the mechanism, if new mechanism is used; or for the process, if it be a new method of operating with or without old mechanism, by which the effect is produced.'

"And again he observes: 'If we wanted an illustration of the possible merit of a new method of operating with old machinery, we might look to the identical case before the court,' pp. 493, 495, 496.

"This doctrine in expounding the law of patents was announced in 1795, and the subsequent adoption of it by the English courts shows that Chief Justice Eyre was considerably in advance of his associates upon this branch of the law. He had got rid, at an early day, of the prejudice against patents so feelingly referred to by Baron Parke in Neilson *v.* Harford, and comprehended the great advantages to his country, if properly encouraged.

"He observed, in another part of his opinion, that 'the advantages to the public from improvements of this kind are beyond all calculation important to a commercial country; and the ingenuity of artists who turn their thoughts towards such improvements is in itself deserving of encouragement.'

"This doctrine was recognized by the Court of King's Bench in The King *v.* Wheeler, 2 B. & Ald. 350. . . .

"In Forsyth's patent, which consists of the application and use of detonating powder as priming for the discharge of fire-arms, it was held that, whatever might be the construction of the lock or contrivance by which the powder was to be discharged, the use of the detonating mixture as priming, which article of itself was not new, was an infringement. Webster's Pat. Cas. 94, 97 (n.); Curtis on Pat. 230.

"This case is founded upon a doctrine which has been recognized in several subsequent cases in England; namely, that where a person discovers a principle or property of nature, or where he conceives of a new application of a well-known principle or property of nature, and also of some mode of carrying it out into practice, so as to produce or attain a new and useful effect or result, he is entitled to protection against all other modes of carrying the same principle or property into practice for obtaining the same effect or result.

"The novelty of the conception consists in the discovery and application in the one case, and of the application in the other, by which a new product in the arts or manufactures is the effect; and the question, in case of an infringement, is as to the substantial identity of the principle or property, and of the application of the same, and consequently the means or machinery made use of [are?] material only so far as they affect the identity of the application.

"In the case of Jupe's patent, for 'an improved expanding table,' Baron Alderson observed, speaking of this doctrine: 'You cannot take out a patent for a principle; you may take out a patent for a principle coupled with the mode of carrying the principle into effect. But then you must start with having invented some mode of carrying the principle into effect. If you have done that, then you are entitled to protect yourself from all other modes of carrying the same principle into effect, that being treated by the jury as piracy of your original invention.' Webster's Pat. Cas. 146. The same doctrine was maintained also in the case of Neilson's patent for the hot-air blast, in the K. B. and Exchequer in England. Webster's Pat. Cas. 342, 371; Curtis, 74, 148, 232; Webster's Pat. Cas. 310.

"This patent came also before the Court of Sessions in Scotland; and in submitting the case to the jury the Lord Justice remarked: 'That the main merit, the most important part of the invention, may consist in the conception of the original idea, — in the discovery of the principle in science, or of the law of nature, stated in the patent; and little or no pains may have been taken in working out the best mode of the application of the principle to the purpose set forth in the patent. But still, if the principle is stated to be applicable to any special purpose, so as to produce any result previously unknown, in the way and for the objects described, the patent is good. It is no longer an abstract principle. It becomes to be [*sic*] a principle turned to account, to a practical object, and applied to a special result. It becomes, then, not an abstract principle, which means a principle considered apart from any special purpose or practical operation, but the discovery and statement of a principle for a special purpose; that is, a practical invention, a mode of carrying a principle into effect.

" ' That such is the law,' he observes, ' if a well-known principle is applied for the first time to produce a practical result for a special purpose, has never been disputed; and it would be very strange and unjust to refuse the same legal effect when the inventor has the additional merit of discovering the principle, as well as its application to a practical object.'

" Then he observes again: ' Is it an objection to the patent that in its application of a new principle to a certain specified result it includes every variety of mode of applying the principle according to the general statement of the object and benefit to be obtained? This,' he observes, ' is a question of law; and I must tell you distinctly that this generality of claim — that is, for all modes of applying the principle to the purpose specified, according to or within a general statement of the object to be attained, and of the use to be made of the agent to be so applied — is no objection to the patent. The application or use of the agent for the purpose specified may be carried out in a great variety of ways, and only shows the beauty and simplicity and comprehensiveness of the invention.' . . .

" I shall not pursue a reference to the authorities on this subject any further. The settled doctrine to be deduced from them, I think, is, that a person having discovered the application for the first time of a well-known law of nature or well-known property of matter, by means of which a new result in the arts or in manufactures is produced, and has pointed out a mode by which it is produced, is entitled to a patent; and if he has not tied himself down in the specification to the particular mode described, he is entitled to be protected against all modes by which the same result is produced, by an application of the same law of nature or property of matter.

" And, *a fortiori*, if he has discovered the law of nature or property of matter, and applied it, is he entitled to the patent and aforesaid protection.

" And why should not this be the law? The original conception, the novel idea, in the one case, is the new application of the principle or property of matter, and the new product in the arts or manufactures; in the other, in the discovery of the principle or property, and application, with like result. The mode or means are but incidental, and flowing naturally from the original conception, and hence of inconsiderable merit.

" But, it is said, this is patenting a principle or element of nature. The authorities to which I have referred answer the objection. . . . And what if the principle is incorporated in the invention, and the inventor protected in the enjoyment for the fourteen years? He is protected only in the enjoyment of the application for the special purpose

and object to which it has been newly applied by his genius and skill. For every other purpose and end the principle is free for all mankind to use. And where it has been discovered as well as applied to this one purpose, and open to the world as to every other, the ground of complaint is certainly not very obvious. Undoubtedly, within the range of the purpose and object for which the principle has been for the first time applied, piracies are interfered with during the fourteen years. But anybody may take it up, and give to it any other application to the enlargement of the arts and of manufactures without restriction. He is only debarred from the use of the new application for the limited time, which the genius of others has already invented and put into successful practice. The protection does not go beyond the thing which for the first time has been discovered and brought into practical use, and is no broader than that extended to every other discoverer or inventor of a new art or manufacture.

"I own I am incapable of comprehending the detriment to the improvements in the country that may flow from this sort of protection to inventors.

"To hold, in the case of inventions of this character, that the novelty must consist of the mode or means of the new application producing the new result, would be holding against the facts of the case, as no one can but see that the original conception reaches far beyond these. It would be mistaking the skill of the mechanic for the genius of the inventor.

"Upon this doctrine some of the most brilliant and useful inventions of the day, by men justly regarded as public benefactors, and whose names reflect honor upon their country: the successful application of steam power to the propulsion of vessels and railroad cars; the application of the electric current for the instant communication of intelligence from one extremity of the country to the other; and the more recent but equally brilliant conception, — the propulsion of vessels by the application of the expansibility of heated air, the air supplied from the atmosphere that surrounds them. It would be found, on consulting the system of laws established for their encouragement and protection, that the world had altogether mistaken the merit of their discovery; that, instead of the originality and brilliancy of the conception that had been unwittingly attributed to them, the whole of it consisted of some simple mechanical contrivances which a mechanician of ordinary skill could readily have devised. Even Franklin, if he had turned the lightning to account in order to protect himself from piracies, must have patented the kite and the thread and the key as his great original conception, which gave him a name throughout Europe as well as at home, for bringing down this element from the heavens and subjecting it to

the service of man. And if these simple contrivances, taken together, and disconnected from the control and use of the element by which the new application and new and useful result may have been produced, happen to be old and well known, his patent would be void; or if some follower in the track of genius, with [*sic*] just intellect enough to make a different mechanical device or contrivance, for the same control and application of the element, and produce the same result, he would, under this view of the patent law, entitle himself to the full enjoyment of the fruits of Franklin's discovery.

"If I rightly comprehend the ground upon which a majority of my brethren have placed the decision, they do not intend to controvert so much the doctrine which I have endeavored to maintain, and which, I think, rests upon settled authority, as the application of it to the particular case. They suppose that the patentees have claimed only the combination of the different parts of the machinery described in their specification, and therefore are tied down to the maintenance of that as the novelty of their invention. I have endeavored to show that this is a mistaken interpretation, and that they claim the combination only when used to embody and give a practical application to the newly discovered property in the lead, by means of which a new manufacture is produced; namely, wrought pipe out of a solid mass of lead, which, it is conceded, was never before successfully accomplished."

O'REILLY *v.* MORSE, 15 How. 62 (1853).

Professor Morse's patent, granted in 1840, and reissued in 1848. The apparatus of Morse is described and his famous eighth claim is stated at page 543, *ante*. The opinion of the majority of the court holding the claim invalid is summarized and quoted from, beginning at page 544, *ante*. Also, in a long quotation from the opinion of Mr. Justice Bradley, in the case of Tilghman *v.* Proctor, will be found those passages of the opinion of the court in the Morse case which set forth their views of the law upon the general subject of principle. *Vide* pages 549, 550, *ante*.

It is also to be remarked that the novelty of the Morse invention was contested. The evidence on that head, however, was not very important. It appeared that many men of science in Europe had been engaged, as Morse had been, in an attempt to devise some means of telegraphing by the use of electro-magnet-

ism, and several inventions for the purpose were completed soon after Morse had filed his caveat. There was evidence, indeed, that some of them were completed before that; but it was fully established that Morse had reduced his invention to successful practice before any earlier invention had been "patented or described." Moreover, "it is impossible," said the court, "to examine them, and look at the process and the machinery and results of each, so far as the facts are before us, without perceiving at once the substantial and essential difference between them [and the invention of Morse], and the decided superiority of the one invented by Professor Morse." And they continued:—

"Neither can the inquiries he made, or the information or advice he received from men of science in the course of his researches, impair his right to the character of an inventor. No invention can possibly be made, consisting of a combination of different elements of power, without a thorough knowledge of the properties of each of them and the mode in which they operate on each other. And it can make no difference in this respect whether he derives his information from books or from conversation with men skilled in the science. If it were otherwise, no patent in which a combination of different elements is used could ever be obtained. For no man ever made such an invention without having first obtained this information, unless it was discovered by some fortunate accident."

We have already given the chief objection made by the majority of the court to the validity of the eighth claim, and the answer to that objection contained in the opinion of the minority (*ante*, page 545).

The following quotation contains the substance of Mr. Justice Grier's dissenting opinion:—

"When a new and hitherto unknown product or result, beneficial to mankind, is effected by a new application of any element of nature, and by means of machines and devices, whether new or old, it cannot be denied that such invention or discovery is entitled to the denomination of a 'new and useful art.' . . . A construction of the law which protects such an inventor in nothing but the new-invented machines or parts of machinery used in the exercise of his art, and refuses it to the exercise of the art itself, annuls the patent law. . . .

"The reason given for thus confining the franchise of the inventor . . . is, that it would retard the progress of improvement if those who can devise better machines or devices, differing in mechanical principle

from those of the first inventor of the art, — or, in other words, who can devise an improvement in it, — should not be allowed to pirate it. To say that a patentee, who claims the art of writing at a distance by means of electro-magnetism, necessarily claims all future improvements in the art, is to misconstrue it, or draw a consequence from it not fairly to be inferred from its language. An improvement in a known art is as much the subject of a patent as the art itself; so also is an improvement in a known machine. Yet if the original machine be patented, the patentee of an improvement will not have a right to use the original. This doctrine has not been found to retard the progress of invention in the case of machines; and I can see no reason why a contrary one should be applied to an art."

It may be instructive to add here what was said in regard to the statute provision requiring a description of the invention claimed.

The majority, Taney, C. J., delivering their opinion: —

"If the eighth claim of the patentee can be maintained, there was no necessity for any specification, further than to say that he had discovered that, by using the motive power of electro-magnetism, he could print intelligible characters at any distance. We presume it will be admitted on all hands that no patent could have issued on such a specification; yet this claim can derive no aid from the specification filed. It is outside of it, and the patentee claims beyond it."

Grier, J., with whom concurred Nelson and Wayne, JJ.: —

"Is it not true, as set forth in this eighth claim of the specification, that the patentee was the first inventor or discoverer of the use or application of electro-magnetism to print and record intelligible characters or letters? It is the very ground on which the court agree in confirming his patent. Now, the patent law requires an inventor, as a condition precedent to obtaining a patent, to deliver a written description of his invention or discovery, and to particularly specify what he claims to be his own invention or discovery. If he has truly stated the principle, nature, and extent of his art or invention, how can the court say it is too broad, and impugn the validity of his patent for doing what the law requires as a condition for obtaining it? And if it is only in case of a machine[1] that the law requires the inventor to specify what he claims as his own invention and discovery, and to distinguish what is new from what is old, then this eighth claim is superfluous, and cannot affect the validity of his patent, provided his art is new and

[1] *Vide* the statute quoted at page 527, *ante*.

useful, and the machines and devices claimed separately are of his own invention. If it be in the use of the words 'however developed' that the claim is to be adjudged too broad, then it follows that a person using any other process for the purpose of developing the agent or element of electro-magnetism than the common one now in use, and described in the patent, may pirate the whole art patented.

"But if it be adjudged that the claim is too broad because the inventor claims the application of this element to his new art, then his patent is to be invalidated for claiming his whole invention, and nothing more. If the result of this application be a new and useful art, and if the essence of his invention consists in compelling this hitherto useless element to record letters and words, at any distance and in many places, at the same moment, how can it be said that the claim is for a principle or an abstraction? What is meant by a claim being too broad? The patent law and judicial decisions may be searched in vain for a provision or decision that a patent may be impugned for claiming no more than the patentee invented or discovered. It is only when he claims something before known and used, something as new which is not new, either by mistake or intentionally, that his patent is affected."

WINANS *v.* DENMEAD, 15 How. 330 (1853).[1]

The plaintiff claimed "making the body of a car in the form of a frustum of a cone, substantially as herein described, whereby," &c., and "extending the bottom of the car below the truck frame by passing," &c. For this he alleged and proved two advantages: 1. The circular shape gave him the advantage of the tensile strength of the iron. 2. The tapering shape enabled him to project part of the load between the wheels, and thus to lower the centre of gravity. 3. Easy discharge of the load.

The defendant used a tapering octagon. Held, that he infringed.

Curtis, J.: —

". . . In this, as in most patent cases founded on alleged improvements in machines, in order to determine what is the thing patented, it is necessary to inquire: —

"1. What is the structure or device described by the patentee as embodying his invention?

[1] We insert this case with some hesitation as to its properly belonging in this chapter. It is, however, often referred to in cases of principle.

"2. What mode of operation is introduced and employed by this structure or device?

"3. What result is attained by means of this mode of operation?

"4. Does the specification of [*sic*] claim cover the described mode of operation by which the result is attained? . . .

"By means of this change of form, the patentee has introduced a mode of operation not before employed in burden cars; that is to say, nearly equal pressure in all directions by the entire load, save that small part which rests on the movable bottom; the effects of which are, that the load in a great degree supports itself and the tensile strength of the iron is used, while at the same time . . . the centre of gravity of the load is depressed and its discharge facilitated. . . .

"To change the form of an existing machine, and by means of such change to introduce and employ other mechanical principles or natural powers, or, as it is termed, a new mode of operation, and thus attain a new and useful result, is the subject of a patent. Such is the basis on which the plaintiff's patent rests.

"Its substance is a new mode of operation by means of which a new result is obtained. It is this new mode of operation which gives it the character of an invention, and entitles the inventor to a patent; and this new mode of operation is, in view of the patent law, the thing entitled to protection. The patentee may and should so frame his specification of claim as to cover this new mode of operation which he has invented; and the only question in this case is whether he has done so, or whether he has restricted his claim to one particular geometrical form. . . .

"It is only ingenious diversities of form and proportion, presenting the appearance of something unlike the thing patented, which give rise to questions; and the property of inventors would be valueless if it were enough for the defendant to say, Your improvement consisted in the change of form; you describe and claim but one form; I have not taken that, and so have not infringed. The answer is, My improvement did not consist in a change of form, but in the new employment of principles or powers in a new mode of operation, embodied in a form by means of which a new or better result is produced; it was this which constituted my invention; this you have copied, changing only the form. And that answer is justly applicable to this patent.

"Undoubtedly there may be cases in which the letters-patent do include only the particular form described and claimed. . . . The reason why such a patent covers only one geometrical form is not that the patentee has described and claimed that form only; it is because that form only is capable of embodying his invention, and consequently if the form is not copied the invention is not used. Where form and

substance are inseparable, it is enough to look at the form only. Where they are separable, where the whole substance of the invention may be copied in a different form, it is the duty of courts and juries to look through the form for the substance of the invention, for that which entitled the inventor to his patent, and which the patent was designed to secure. Where that is found there is an infringement, and it is not a defence that it is embodied in a form not described and in terms claimed by the patentee." . . .

Taney, C. J., Catron, Daniel, and Campbell, JJ., dissented.

Campbell, J. (page 345) : —

" . . . There arises in my mind a strong, if not insuperable, objection to the admission of the claim in the patent for 'the conical form,' or the form of the frustum of a cone, as an invention ; or that any machinist or engineer can appropriate by patent a form whose properties are universally understood, and which is in very common use, in consequence of those properties, for purposes strictly analogous. The authority of adjudged cases seems to me strongly opposed to the claim. Hotchkiss *v.* Greenwood, 11 How. 248 ; Losh *v.* Hague, Web. Pat. Cas. 207 ; Winans *v.* Providence R. R. Co., 2 Story, 412 ; 2 ibid. 190 ; 2 Car. & Kir. 10, 22 ; 3 W. H. & Gord. 427."

The learned judge held also that the defendants had not infringed the claim of the patent. Upon this point he said : —

"In theory, the plaintiff's car is superior to all others. His car displays the qualities which his specification distinguishes. The equal pressure of the load in all directions ; the tendency to preserve the form, notwithstanding the pressure of the load ; the absence of the cross strain ; the lowering of the centre of the gravity of the load, — are advantages which it possesses in a superior degree to that of the defendants'. Yet the experts say that there is no appreciable difference in the substantial results afforded by the two.

"The cause for this must be looked for in a source extrinsic to the mere form of the vehicles. Nor is it difficult to detect the cause for this identity in the results in such a source.

" The coarse, heavy, cumbrous operations of coal transportation do not admit of the manufacture of cars upon nice mathematical formulas, nor can the loads be adjusted with much reference to exactness. There is a liability to violent percussions and extraordinary strains, which must be provided for by an excess in the weight and thickness of the material used. Then, unless the difference in the weight of the load is great, there will be no correspondent difference in the receipts of the transportation companies.

"The patentee, not exaggerating the theoretical superiority of the form of his car, overlooked those facts which reduced its practical value to the level of cars of a form widely variant from his own. The object of this suit is to repair that defect of observation. It is that this court shall extend, by construction, the scope and operation of his patent to embrace every form which in practice will yield a result substantially equal or approximate to his own.

MORTON *v.* NEW YORK EYE INFIRMARY, 5 BLATCH. 116.

S. D. OF N. Y., 1862. NELSON AND SHIPMAN, JJ.

The patent of W. T. G. Morton for "an improvement in surgical operations on animals," discovered by himself and C. T. Jackson jointly. This patent was based upon the famous discovery that the inhalation of ether fumes produces insensibility to pain.

"This," said the specification, "is our discovery; and the combining it with, or applying it to, any operation of surgery, for the purpose of alleviating animal suffering, as well as of enabling a surgeon to conduct his operation with little or no struggling or muscular action of the patient, and with more certainty of success, constitutes our invention. . . . Various modes may be adopted for conveying the etheric vapor into the lungs. A very simple one is to saturate a piece of cloth or sponge with sulphuric ether and place it to the nostrils or mouth, so that the person may inhale the vapors. . . .

"We are fully aware that narcotics have been administered to patients undergoing surgical operations, and, as we believe, always by introducing them into the *stomach*. This we consider in no respect to embody our invention, as we operate through the *lungs* and *air passages*, and the effects produced upon the patient are entirely or so far different as to render the one of very little, while the other is of immense, utility. . . . *What we claim as our invention is the hereinbefore described means by which we are enabled to effect the above highly important improvement in surgical operations; namely, by combining therewith the application of ether, or the vapor thereof*, substantially as above specified."

The court decided against the patent, Shipman, J., delivering the opinion, as follows: —

". . . Very little light can be shed on our path by attempting to draw a practical distinction between the legal purport of the words 'discovery' and 'invention.' In its naked, ordinary sense, a discovery

is not patentable. A discovery of a new principle, force, or law operating, or which can be made to operate, on matter will not entitle the discoverer to a patent. It is only where the explorer has gone beyond the mere domain of discovery, and has laid hold of the new principle, force, or law, and connected it with some particular medium or mechanical contrivance by which, or through which, it acts on the material world, that he can secure the exclusive control of it under the Patent Act. He then controls his discovery through the means by which he has brought it into practical action, or their equivalent, and only through them. It is then an invention, although it embraces a discovery. Sever the force or principle discovered from the means or mechanism through which he has brought it into the domain of invention, and it immediately falls out of that domain and eludes his grasp. It is then a naked discovery, and not an invention.

"These remarks are not made for the purpose of laying down sweeping general propositions. We are too well aware of the futility, or, we might say, mischief, of that practice of expounding the law of patents, to embark in it. But these suggestions are submitted for the purpose of showing the relation of the terms 'discovery' and 'invention,' and especially the dependence of the former upon the latter, as used in the statute. Every invention may, in a certain sense, embrace more or less of discovery, for it must always include something that is new; but it by no means follows that every discovery is an invention. It may be the soul of an invention, but it cannot be the subject of the exclusive control of the patentee, or of the patent law, until it inhabits a body, any more than a disembodied spirit can be subjected to the control of human laws. . . . The origin and existence of ethers, those wonderful agents that produce a harmless insensibility to pain, formed no part of the discovery. No one of them was brought to light by these patentees, for they were all well known before. . . . The real discovery that was made . . . [was], that this well-known inhalation of well-known agents (in increased quantities) would produce a state of the animal analogous to complete intoxication, accompanied by total insensibility to pain. It [the specification] appropriately adds: 'This is our discovery.' It is not important to inquire here whether this was the discovery of an increased and more perfect effect, the same in kind with that already well known, or whether it was the discovery of an entirely new effect. The effect discovered was produced by old agents, operating by old means upon old subjects. The effect alone was new, and to that only can the term 'discovery' apply. That this mere discovery, however novel and important, is not patentable, needs neither argument nor authority to prove. This the specification impliedly concedes; for after thus clearly setting forth the discovery, a struggle

is made to grapple it to something in active existence, and thus make the two, in this new special relation, a patentable *invention*. This is done by 'combining it with or applying it to any operation of surgery.' 'This is our invention.' The beneficial effects described as resulting from the application refer merely to the utility of the alleged invention, which is not in question, and may, therefore, be laid out of the case. The object of thus combining the discovery with, or applying it to, surgical operations is apparent. It was to shelter the discovery under those terms of the Patent Act which protect 'any new and useful improvement on any art.' It was clearly not the discovery or invention of an 'art,' or 'machine,' or 'manufacture,' or 'composition of matter.' Nor was it an 'improvement' on any one of the last three. It was therefore called, in substance, an improvement on the art of surgery. But we cannot change a thing by a name. In a certain general sense, it is an improvement on the art of surgery. So would the invention of a new and useful lancet, saw, forceps, or bandage be an improvement on the same art. But the patent securing the exclusive use or sale of such an instrument must rest exclusively upon the novelty of its construction. It could borrow no element of patentability from the art in which it was designed to be used, except merely the element of utility. Of this latter the art would furnish the test. Now this discovery of the effect of ether on the patient, in holding him motionless and insensible during the operation, has the same *legal relation* to the art of surgery that a machine or other mechanical contrivance for holding him would have. It holds him better, stiller, and with less discomfort and danger to himself than any mechanism could; but its office is to hold and protect the patient. It has no other relation to, or connection with, the art of the surgeon. We use the word 'protect' as applied to the patient in the largest sense, and as including not only exemption from pain during the operation, but also from the shock which such operations often give the system. The only legal quality or aid, then, which this alleged invention can draw from the art with which it is connected in the specification is that which relates to its utility. Of this it supplies undoubted evidence. The eminent surgeons who testified on the trial concurred in stating that its usefulness could not be overrated. We must, then, leaving the art of surgery to supply the evidence of its utility, contemplate the discovery as separated from the use to which it is applied. At this point the patent breaks down; for the specification presents nothing new except the *effect* produced by well-known agents, administered in well-known ways on well-known subjects. This new or additional effect is not produced by any new instrument by which the agent is administered, or by any different application of it to the body of the patient. It is simply produced by increasing the quantity of the

vapor inhaled. And even this quantity is to be regulated by the discretion of the operator, and may vary with the susceptibilities of the patient to its influence. It is nothing more, in the eye of the law, than the application of a well-known agent, by well-known means, to a new or more perfect use, which is not sufficient to support a patent.

"But it was insisted on the argument that the claim, at the close of the specification, when properly understood, discloses the true character of the invention, and furnishes ground upon which the patent can stand. This clause declares that 'what we claim as our invention is the hereinbefore described means by which we are enabled to effect the above highly important improvement in surgical operations; namely, by combining therewith the application of ether, or the vapor thereof, substantially as above described.' The plaintiffs' counsel insists that the true reading of the claim, in the light of the preceding part of the specification, is not that which asserts a *combination* of the discovery with *surgical operations*, but rather an application of the discovery to surgical operations by the means described; 'and that the means described, and the only means described, are the process of rendering the system insensible to pain by the inhalation of ether.' But we do not discover that this exposition of the claim relieves the difficulty. What is the *process* which is here set forth? The process of inhalation of the vapor, and nothing else. To couple with it the *effect* produced by calling it a process of rendering the system insensible to pain is merely to connect the results with the means. The *means*, that is, the process of inhalation of vapors, existed among the animals of the geologic ages preceding the creation of our race. That process, in connection with these vapors, is as old as the vapors themselves. We come, therefore, to the same point, only by a different road. We have, after all, only a new or more perfect effect of a well-known chemical agent, operating through one of the ordinary functions of animal life.

"It is curious and instructive to observe the perpetual struggle in the specification to draw from the surgical operation some support to the patent beyond that of its utility. 'We are fully aware,' says the paragraph immediately preceding the claim, 'that narcotics have been administered to patients undergoing surgical operations, and, as we believe, always by introducing them into the *stomach*. This we consider in no respect to embody our invention, as we operate through the *lungs* and *air passages*.' An examination of this single passage in the specification will demonstrate the impossibility of sustaining this patent on any grounds known to the law. Now, suppose these agents had been fluids instead of elastic vapors, and their effect had been known, when taken into the stomach, to be the same as that now long known to have resulted from their inhalation, namely, a state of partial intoxication,

would the discovery that an increased quantity of the fluid produced a more perfect effect, by rendering intoxication complete, accompanied by total insensibility to pain, have rendered the discovery patentable? We think clearly not. In this view of the subject, we here lay out of the case the application of the new effect to surgical operations. We will allude to that again in a moment. Now a precisely parallel case is presented, by the actual facts before us, to the one just supposed. The inhalation of the ethers had long been known. By increasing their quantity it was discovered that a new or more complete effect was produced, by which the subject was rendered wholly insensible. This can be no more patentable than the discovery that the increased quantity of liquor, taken into the stomach, would produce a like result. In both cases there is only a naked discovery of a new effect, resulting from a well-known agent, working by a well-known process. This effect is a temporary suspension of sensibility and motion in the animal body. What is new in the alleged invention begins and ends here. The fact that the surgeon can operate upon the body in the condition to which it is thus reduced forms no part of the invention or discovery. It simply furnishes evidence that it can be applied to at least one useful purpose; a fact quite independent of the other elements necessary to make a discovery patentable.

"Before dismissing this case, it may not be amiss to speak of the character of the discovery upon which the patent is founded. Its value in securing insensibility during the surgical operation, and thus saving the patient from sharp anguish while it is proceeding, and mitigating the shock to his system, which would otherwise be much greater, was proved on the trial by distinguished surgeons of the city of New York. They agreed in ranking it among the great discoveries of modern times; and one of them remarked that its value was too great to be estimated in dollars and cents. Its universal use, too, concurs to the same point. Its discoverer is entitled to be classed among the greatest benefactors of mankind. But the beneficent and imposing character of the discovery cannot change the legal principles upon which the law of patents is founded, nor abrogate the rules by which judicial construction must be governed. These principles and rules are fixed, and uninfluenced by shades and degrees of comparative merit. They secure to the inventor a monopoly in the manufacture, use, and sale of very humble contrivances, of limited usefulness, the fruits of indifferent skill and trifling ingenuity, as well as those grander products of his genius which confer renown on himself, and extensive and lasting benefits on society. But they are inadequate to the protection of every discovery, by securing its exclusive control to the explorer to whose eye it may be first disclosed. A discovery may be

brilliant and useful, and not patentable. No matter through what long, solitary vigils, or by what importunate efforts, the secret may have been wrung from the bosom of nature, or to what useful purpose it may be applied. Something more is necessary. The new force or principle brought to light must be embodied and set to work, and can be patented only in connection or combination with the means by which, or the medium through which, it operates. Neither the natural functions of an animal upon which or through which it may be designed to operate, nor any of the useful purposes to which it may be applied, can form any essential parts of the combination, however they may illustrate and establish its usefulness."

MITCHELL *v.* TILGHMAN, 19 WALL. 287 (1873).

TILGHMAN *v.* PROCTOR, 102 U. S. 707 (1880).

We have stated already the decisions in these two cases, and we have quoted from the exposition of the law made by the court in the second of them.[1] The patent in question was that of Tilghman, dated Oct. 3, 1854, numbered 11,766, afterward extended.

Tilghman discovered that fat might be separated into its component parts, free fat acids and glycerine, by subjecting it in a close vessel to the action of highly heated water under a pressure sufficient to prevent conversion of the water into steam. He claimed: —

"The manufacturing of fat acids and glycerine from fatty bodies by the action of water at a high temperature and pressure."

And he described an apparatus for the purpose.

The chemical operation is as follows: The fat acids — oleate, margarate, and stearate — and the glycerine are in the original fat chemically combined with the oxide of glyceryl as an acidifying base. A high temperature will decompose the fat, but the acids and glycerine cannot be obtained without the presence of water or its equivalent to supply the place of oxide of glyceryl. Water oxidizes the olein, the margarine, and the stearine, and hydrates the glyceryl. It was known before Tilghman's discovery that heat would decompose fat, and that the presence of water was necessary in order that the acids and the glycerine might be

[1] Pages 548–554, *ante*.

obtained; but it was not known that the separation and combination above described could be effected by the action of highly heated water under great pressure.

Before Tilghman's discovery the fat acids and glycerine had been obtained by either of two methods: one a process of lime saponification, the other of distillation. These processes bore no resemblance to the process of Tilghman, and they were less efficient and more costly than it.

In the Mitchell case the court held that Tilghman had not discovered the action of highly heated water, which was the gist of his process, and therefore they restricted his patent to the apparatus described by him. In the case against Proctor they said: —

"On further reflection, we are of opinion that in the case referred to sufficient consideration was not given to the fact that the patent is for a process, and not for any specific mechanism for carrying such process into effect. . . . Tilghman's discovery . . . was in brief this: That the fat acids can be separated from glycerine without injury to the latter by the single and simple process of subjecting the neutral fat, whilst in intimate mixture with water, to a high degree of heat, under sufficient pressure to prevent the water from being converted into steam without the employment of any alkali or sulphuric acid or other saponifying agent; the operation even with the most solid fats being capable of completion in a very few minutes when the heat applied is equal to that of melting lead, or 612° Fah., but requiring several hours when it is as low as 350° or 400° Fah. *The only conditions are a constant and intimate commixture of the fat with the water, a high degree of heat, and a pressure sufficiently powerful to resist the conversion of the water into steam.* The result is a decomposition of the fatty body into its elements of glycerine and fat acids, each element taking up the requisite equivalent of water essential to its separate existence, and the glycerine in solution separating itself from the fat acids by settling to the bottom when the mixed products are allowed to stand and cool. In this process a chemical change takes place in the fat, in consequence of the presence of the water and the active influence of the heat and pressure upon the mixture."

The court held, therefore, in the case against Proctor, that he had infringed the patent, inasmuch as his process fulfilled the conditions stated in the passage italicized in the above quotation, although Proctor's process differed from that of Tilghman in the following particulars: The apparatus used; the manner of mixing

the fat and water; the manner of applying the heat; the degree of heat and pressure employed; the addition to the mixture by Proctor of a small quantity of lime. In regard to this last difference, the court said: —

"Even if the saponifying process partly takes place, they [defendants] use Tilghman's process for effecting the balance of the operation."

CROWELL *v.* HARLOW, 1 Fed. Rep. 140.

D. of Mass., 1880. Lowell, J.

John Atwood's patent, No. 90,334, dated May 25, 1869, for an improved process of curing and putting up fish.

He declared in his specification that the cause of the disagreeable odor of fish cured in the ordinary way was the mucous membrane between the skin and the flesh, which, when dried and afterward moistened, became slimy and offensive. His new method was thus described: —

"When the fish is fresh, I take out the principal bones and fins, the fish remaining whole or split in halves. When partially dried and cured with salt, I remove the skin, and with it the entire mucous membrane, the cause of the offensive odor of salt fish. I then pack in light wood boxes of convenient size. . . ."

He claimed: —

"The method or process for curing and putting up fish substantially as described."

The statements of the patentee as to the existence of the membrane (by others called an inner skin or film), and its effect in causing the offensive odor of cured fish, were proved to be true. It was also shown that the membrane was not removed by the ordinary process of skinning. It was not denied that the patentee was the first to make the discovery upon which his process was based; and the court held that it was patentable.

"... It would not be invention to salt a fish more or less thoroughly. But a patent might properly be granted for curing fish with a substance which had never before been used for any similar purpose, and which would effect the old result of curing the fish in a better or

cheaper way, of which last fact the infringement would be sufficient. I am unable to distinguish between adding and taking away, if the result is to improve the art." [1]

AMERICAN BELL TELEPHONE CO. *v.* SPENCER, 8 FED. REP. 509.

D. OF MASS., 1881. LOWELL, J.

Lowell, J.: —

"The bill alleges an infringement of two patents granted to Alexander Graham Bell. The defendants admit that they have infringed some valid claims of the second patent, but the plaintiffs are not content with this admission; they rely besides upon the fifth claim of the first patent, which is much more comprehensive in its scope.

"Patent No. 174,465, issued to Bell, dated March 7, 1876, is entitled 'improvement in telegraphy,' and is said in the specification to consist in 'the employment of a vibratory or undulatory current of electricity in contradistinction to a merely intermittent or pulsatory current, and of a method of and apparatus for producing electrical undulations upon the line wire.' The patentee mentions several advantages which may be derived by the use of this undulatory current, instead of the intermittent current, which continually makes and breaks contact, in its application to multiple telegraphy, that is, sending several messages, or strains of music, at once over the same wire; and the possibility of conveying sounds other than musical notes. This latter application is not the most prominent in the specification; though, as often happens, it has proved to be of surpassing value. This part of the invention is shown in figure 7 of the drawings, and is thus described in the text: —

"'The armature, *c*, Fig. 7, is fastened loosely by one extremity to the uncovered leg, *d*, of the electro-magnet, *b*, and its other extremity is attached to the centre of a stretched membrane, *a*. A cone, A, is used to convey sound vibrations upon the membrane. When a sound is uttered in the cone, the membrane, *a*, is set in vibration, the armature, *c*, is forced to partake of the motion, and thus electrical undulations are created upon the circuit, *E*, *b*, *c*, *f*, *g*. These undulations are similar in form to the air vibrations caused by the sound; that is, they are represented graphically by similar curves. The undulatory current passing through the electro-magnet, *f*, influences its

[1] *Vide ante*, page 533.

armature, *h*, to copy the motions of the armature, *c*. A similar sound to that uttered in A is then heard to proceed from L.'

"With the figure 7 before us, this description is readily understood. A cone of pasteboard, or other suitable material, has a membrane stretched over its smaller end; at a little distance is a piece of iron magnetized by a coil through which is passing a current of electricity. When sounds are made at the mouth of cone, A, the membrane vibrates like the drum of a human ear; and the armature, which is directly in front of the magnet, vibrates with the membrane, and its movements cause pulsations of electricity, like those of the air which excited the membrane, to pass over the wire; and the wire stretches to another similar magnet and cone with its membrane and armature. The second armature and membrane take up the vibrations and make them audible by repeating them into the condensing cone, L, which translates them into vibrations of the air.

"The defendants insist that the instrument represented in figure 7 will not transmit articulate speech; that this great result has been reached by Mr. Bell entirely through the improvements described in his second patent, such as the substitution of a metal plate for the stretched membrane, and some others.

"The importance of the point is, that if Bell, who is admitted in this case to be the original and first inventor of any mode of transmitting speech, had not completed his method, and put it into a working form when he took his first patent, he may lose the benefit of his invention; because, in his second patent, he makes no broad claim to the method or process, but only to the improvements upon a process assumed to have been sufficiently described in his first patent.

"There is some evidence that Bell's experiments with the instrument, described in figure 7, before he took out his patent, were not entirely successful; but this is now immaterial; for it is proved that the instrument will do the work, whether the inventor knew it or not, and in the mode pointed out by the specification.

"The fifth claim of this patent is for 'the method and apparatus for transmitting vocal or other sounds telegraphically, by causing electrical undulations, similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth.'

"The defendants use a method and apparatus for transmitting vocal sounds, which resemble those of the plaintiffs in producing electrical undulations copied from the vibrations of a diaphragm, and sending them along a wire to a similar receiver at the other end. The specific method of producing the electrical undulations is different. It is made on the principle of the microphone, which has been very much improved since the date of the first Bell patent.

"If the Bell patent were for a mere arrangement or combination of old devices, to produce a somewhat better result in a known art, then, no doubt, a person who substituted a new element not known at the date of the patent might escape the charge of infringement. But Bell discovered a new art, — that of transmitting speech by electricity, — and has a right to hold the broadest claim for it which can be permitted in any case; not to the abstract right of sending sounds by telegraph, without any regard to means, but to all means and processes which he has both invented and claimed.

"The invention is nothing less than the transfer to a wire of electrical vibrations like those which a sound has produced in the air. The claim is not so broad as the invention. It was, undoubtedly, drawn somewhat carefully in view of the decision in O'Reilly *v.* Morse, 15 How. 62, and covers the method and apparatus, that is, any process and any apparatus of substantially similar character to those described. The patent points out distinctly that the undulations may be produced in other modes besides the vibration of an armature in front of a magnet; and the defendants make use of a mode not wholly unknown at that time, though much improved, in creating their undulations.

"It seems to me that the defendants use both the method and the apparatus of Bell. The essential elements of the method are the production of what the patent calls undulatory vibrations of electricity to correspond with those of the air, and transmitting them to a receiving instrument capable of echoing them. Granting that the defendants' instrument for converting the vibrations of the diaphragm into vibrations of electricity is an improvement upon that of the plaintiff's, still it does the same sort of work, and does it in a mode not wholly unknown at the date of the patent; though I do not consider that material.

"An apparatus made by Reis, of Germany, in 1860, and described in several publications before 1876, is relied on to limit the scope of Bell's invention. Reis appears to have been a man of learning and ingenuity. He used a membrane and electrodes for transmitting sounds, and his apparatus was well known to curious inquirers. The regret of all its admirers was, that articulate speech could not be sent and received by it. The deficiency was inherent in the principle of the machine. It can transmit electrical waves along a wire, under very favorable circumstances, not in the mode intended by the inventor, but one suggested by Bell's discovery; but it cannot transmute them into articulate sounds at the other end, because it is constructed on a false theory, and the delicacy of use required to make it perform part of the operation is fatal to its possible performance of the other part. A Bell receiver must be used to gather up the sound before the instrument can

even now be adapted to a limited practical use. It was like those deaf and dumb pupils of Professor Bell, who could be taught to speak, but not to hear. That was all, but it was enough. A century of Reis would never have produced a speaking telephone by more improvement in construction.

"I am of opinion that the fifth claim of patent No. 174,465 is valid, and has been infringed.

"The statute declares that if a patentee has claimed too much in any part of his patent he shall not recover costs, and it has been argued that certain claims of these patents, not relied on by the plaintiffs, are too broad. In this stage of the case the question of costs does not arise; but I may as well say, that there is not sufficient evidence in the record to enable me to find whether these claims are valid or not; and that the statute does not mean that claims not in issue should be contested for the mere purpose of settling the costs. More expense might be incurred in such a mode of trial than depended upon the main issue." Decree for the complainants.

AMERICAN BELL TELEPHONE CO. *v.* DOLBEAR, 15 FED. REP. — :

D. OF MASS., 1383. GRAY AND LOWELL, JJ.

Gray, J.:—

"Few legal rules have been oftener misunderstood and misapplied than the maxim that you cannot patent a principle. But the confusion on this subject has been so effectually cleared up by the recent judgment of the Supreme Court, delivered by Mr. Justice Bradley, in Tilghman *v.* Proctor, 102 U. S. 707, that it will be sufficient for the purposes of this case to state the conclusions there announced.

"There can be no patent for a mere principle. The discoverer of a natural force or a scientific fact cannot have a patent for that. But if he invents for the first time a process by which a certain effect of one of the forces of nature is made useful to mankind, and fully describes and claims that process, and also describes a mode or apparatus by which it may be usefully applied, he is, within the meaning, and the very words, of the patent law, 'a person who has invented or discovered any new and useful art;' and he is entitled to a patent for the process of which he is the first inventor, and is not restricted to the particular form of mechanism or apparatus by which he carries out that process. Another person, who afterwards invents an improved form of apparatus, embodying the same process, may indeed obtain

a patent for his improvement, but he has no right to use the process, in his own or any other form of apparatus, without the consent of the first inventor of the process.

"It was decided by this court in American Bell Telephone Co. *v.* Spencer, 8 Fed. Rep. 509, and is not denied by the present defendant, that Bell is the first inventor of a speaking telephone. The only controversy is of the extent of his patent. . . .

"His fifth and final claim is of 'the method of and apparatus for transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations, similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth.'

"In this claim, as throughout the specification, the word 'method' is evidently used, not as synonymous with 'mode' or 'apparatus,' but as equivalent to 'process;' just as it was used by Chief Justice Taney, delivering the judgment of the majority of the court, in Morse *v.* O'Reilly, 15 How. 62, 117, as well as by Mr. Justice Grier (who dissented in Morse *v.* O'Reilly), in delivering the unanimous judgment in Corning *v.* Burden, 15 How. 252, 267. And the invention claimed is not merely the apparatus described, but also the general process or method, by which the wind, or a musical instrument, or the human voice, produces in a current of electricity a succession of electrical disturbances, not sudden and intermittent or pulsatory, but gradual, oscillatory, vibratory, or undulatory, so as to give out at the farther end of the conducting wire sounds exactly corresponding in loudness, in pitch, and in tone, character, or quality, to the sounds committed to it at the nearer end.

"The opinion in Spencer's case clearly points out that 'Bell discovered a new art, — that of transmitting speech by electricity, — and has a right to hold the broadest claim for it which can be permitted in any case,' and 'the invention is nothing less than the transfer to a wire of electrical vibrations like those which a sound has produced in the air;' and that his patent, while not covering the abstract principle, without regard to means, of transmitting speech by electricity, yet is not limited to a particular form of apparatus, but includes the process or method (using the two words as equivalent), the essential elements of which are 'the production of what the patent calls undulatory vibrations of electricity to correspond with those of the air, and transmitting them to a receiving instrument capable of echoing them.'

"The evidence in this case clearly shows that Bell discovered that articulate sounds could be transmitted by undulatory vibrations of electricity, and invented the art or process of transmitting such sounds by means of such vibrations. If that art or process is (as the witnesses

called by the defendants say it is) the only way by which speech can be transmitted by electricity, that fact does not lessen the merit of his invention, or the protection which the law will give to it.

"The mode or apparatus by which Bell effects his purpose is, by using an electro-magnet in the transmitter, and another electro-magnet in the receiver. But the essence of his invention consists not merely in the form of apparatus which he uses, but in the general process or method of which that apparatus is the embodiment.

"Dolbear likewise uses an electro-magnet in the transmitter; and both his method and his apparatus, as is admitted in his own affidavit, are substantially like Bell's, until he comes to the receiver. For the magneto-receiver, Dolbear substitutes a condenser-receiver, consisting of two thin metal diaphragms or discs, of about the size and thickness of those used in an ordinary Bell telephone, separated by a very thin air space, one or both discs connected with the conducting wire, and the speaking disc, if not so connected, otherwise charged with electricity; so that, as the varying currents flow into and out of this condenser, the two discs attract one another more or less strongly, and thereby vibrations are set up which correspond to the vibrations of the original sound.

"The main difference on which the defendants rely is, that Bell uses what is called dynamic electricity, producing by its motion an electric current; while Dolbear, in his receiver, uses what is called static electricity, producing, while at rest, electrical attraction. And the learned counsel for the defendants illustrate the distinction thus: 'It was known, long before Bell's method, that electricity had two properties, very much as water has two properties, — namely, first, pressure or head, or that property which tends to make it flow, and which can exist by itself only in the case of an insulated and charged body, or a reservoir of water; and, secondly, that dynamic property arising from its motion, and which never can exist by itself, but depends upon the quantity in motion and the rate of motion. This is not an absolutely exact way of expressing it, for the reason that electricity is not a fluid; but, were it a fluid, the statement would be entirely exact.'

"It does not appear to us to be important to determine whether, in scientific exactness, the varying influences of static electricity may properly be called currents; or whether the two properties of electricity differ in kind and in substance, or only in degree, or in the form of manifestation and application; or whether the force of the property which tends to make a fluid, when stationary, change its place and flow, is different in kind from that which it exerts, when changing its place and flowing, — in short, whether the power of the pressure of water in a reservoir is different in kind from water power in a stream or current.

"Whatever name be given to the property, or the manifestation, of the electricity in the defendants' receiver, the facts remain that they avail themselves of Bell's discovery that undulatory vibrations of electricity can intelligibly and accurately transmit articulate speech, as well as of the process which Bell invented, and by which he reduced his discovery to practical use; that they also copy the mode and apparatus by which he creates and transmits the undulatory electrical vibrations, corresponding to those of the air; and that in the plate charged with electricity, which they have substituted for the magnetic coil in the receiver, the charge constantly varies in accordance with the principle which Bell discovered, and by means of the undulatory current caused by the process and in the mode which he invented and patented.

"The defendants have therefore infringed Bell's patent by using his general process or method, and should be restrained by injunction from continuing to do so; and it is unnecessary, for the purposes of this decision, to consider whether the defendants' apparatus is a substantial equivalent of the plaintiff's, or whether it is an improvement for which Dolbear might himself be entitled to a patent." Temporary injunction ordered.

See also —

SMITH *v.* ELY, 5 McLean, p. 91.

ENGLISH CASES.

BOULTON *v.* BULL, 2 H. BL. 463.

COMMON PLEAS, 1795.

J. Watt's patent of Jan. 5, 1769, No. 913, for a "new invented method of lessening the consumption of steam and fuel in fire [steam] engines."

Before this invention the practice had been to admit into the cylinder steam and cold water alternately, and a great waste of fuel was the result.

The idea of Watt's invention was to condense the steam in a separate vessel, and to keep the cylinder as hot as the steam which entered it.

The specification: —

"My method of lessening the consumption of steam, and consequently fuel, in fire-engines, *consists in the following principles: First.*

That vessel in which the powers of steam are to be employed to work the engine, which is called the cylinder in common fire-engines, and which I call the steam vessel, must, during the whole time the engine is at work, be kept as hot as the steam that enters it: (1) By enclosing it in a case of wood or other materials that transmit heat slowly; (2) by surrounding it with steam or other heated bodies; (3) by suffering neither water nor any other substance colder than steam to enter or touch it during that time.

"*Secondly*. In those engines that are to be worked wholly or partially by condensation of steam, the steam is to be condensed in vessels distinct from the cylinders, though occasionally communicating with them. These vessels I call *condensers;* and whilst the engines are working they ought to be kept as cool as the air in the neighborhood by the application of water or other cold bodies.

"*Thirdly*. Whatever air or other elastic vapor is not condensed by the cold of the condenser, and may impede the working of the engine, is to be drawn out of the steam vessels or condensers by means of pumps wrought by the engines themselves, or otherwise."

A jury had found that the specifications were sufficient. The main objection to the patent was that it claimed a principle. The court was divided, and no judgment was given. Eyre, C. J., and Rooke, J., were for the patent. Heath and Buller, JJ., were against it.

Heath and Buller, JJ., held that methods are not patentable; that "vendible substances" only are patentable.

Heath, J., also said: —

"Another objection may be urged against the patent, upon the application of the principle to an old machine, which is, that whatever machinery may be hereafter invented would be an infringement of the patent if it be founded upon the same principle. If this were so, it would reverse the clearest positions of law respecting patents for machinery, by which it has been always holden that the organization of a machine may be the subject of a patent, but principles cannot. If the argument for the patentee were correct, it would follow that where a patent was obtained for the principle, the organization would be of no consequence. Therefore the patent for the application of the principle must be as bad as for the principle itself."

Eyre, C. J., held that *methods* were patentable, though all the means employed might be old; and he instanced Hartley's invention for making buildings fire-proof by a certain disposition

of iron plates forming the walls of them. Such plates were old, he said, and the patent could not be for the "*effect*" produced, because that was "merely negative," — namely, the absence of fire; therefore the patent in that case was for the method. He continued: —

"Undoubtedly, there can be no patent for a mere principle, but for a principle so far embodied and connected with corporeal substances as to be *in a condition to act* and *to produce effects* in any art, trade, mystery, or manual occupation, I think there may be a patent. Now, this is, in my judgment, the thing for which the patent stated in the case was granted, and this is what the specification describes, though it *miscalls it a principle*. It is not that the patentee has conceived an abstract notion that the consumption of steam in fire-engines may be lessened, but he has discovered a *practical manner* of doing it. . . . Surely this is a very different thing from taking a patent for a principle; it is *not for a principle*, but *for a process*. . . . The substance of the invention is a discovery that the condensing the steam out of the cylinder, the protecting the cylinder from the external air, and keeping it hot to the degree of steam heat, will lessen the consumption of steam. This is no abstract principle; it is, in its very statement, clothed with practical application. It points out what is *to be done* in order to lessen the consumption of steam. Now, the specification of such a discovery seems to consist in nothing more than saying to the constructor of a fire-engine: 'For the future, condense your steam out of the body of the cylinder, instead of condensing it within it; put something round the cylinder to protect it from the external air and to preserve the heat within it, and keep your piston air-tight without water.'"

He then goes on to say that the particular manner of doing this hardly needed to be pointed out; but the patentee in his specification had described the manner sufficiently, as the jury found, for the ordinary workman to follow it: —

". . . Some machinery, it is true, must be employed; but the machinery is not of the essence of the invention, but incidental to it. The steam must pass from the cylinder to the condensing vessel; for which purpose there must be a valve to open a pipe to convey, and a vessel to receive the steam. But this cannot be called new invented machinery, whether considered in the parts or in the whole; and therefore there can be no patent for this addition to the fire-engines."

Upon motion, Lord Loughborough, L. C., directed another action at law; which brings us to

HORNBLOWER *v.* BOULTON, 8 Term R. 95.

King's Bench, 1799.

The patent was sustained, no judge dissenting.

Kenyon, C. J.: —

". . . By comparing the patent and the manufacture together, it evidently appears that the patentee claims a monopoly for an engine or machine, composed of material parts, which are to produce the effect described, and that the mode of producing this is so described as to enable mechanics to produce it. Having said thus much, it appears that the subject, as far as we have to treat it, is exhausted. . . . I have no doubt in saying that this is a patent for a manufacture, which I understand to be something made by the hands of man."

MINTER *v.* WELLS, 5 Tyr. 163; 1 Web. P. C. 134.

Court of Exchequer, 1834.

The claim was: —

"My invention is the application of a self-adjusting leverage to the back and seat of a chair, whereby the weight on the seat acts as a counterbalance to the pressure against the back of such chair, as above described."

The following discussion between court and counsel is instructive on the subject of this chapter: —

"Godson . . . moved for a nonsuit, on the ground that the specification is for a principle, the plaintiff having summed up the whole of his patent in his claim to the principle, and not to any particular means. Either the plaintiff claims a principle, or he does not; to the former he is not entitled, and as to the latter, the defendant has not used the mechanical means of the plaintiff. [Lord Lyndhurst, C. B.: He says, 'What I claim as my invention is the application of a self-adjusting leverage to the back and seat of a chair, whereby the weight on the seat acts as a counterbalance to the pressure against the back of such chair, as above described.' This is what he claims, — a self-adjusting leverage acting in that way. Then he points out the particular mode in which that is effected. The question, therefore, is whether you have infringed

that particular method.] [Alderson, B.: All the witnesses proved that there never had been a self-adjusting leverage in a chair before.] That I admit, and contend that this case is nearly the same as K. *v.* Cutler.[1] [Lord Lyndhurst, C. B.: He says, 'I claim the application of a self-adjusting leverage to the back and seat of a chair,' so as to produce such an effect.] Yes, my Lord, that effect being nothing more than the motion of a lever backwards and forwards, producing such an effect. [Lord Lyndhurst, C. B.: It is the application of a self-adjusting leverage to the back and seat of a chair, he having described what that self-adjusting leverage was before. Any application of a self-adjusting leverage to the back and seat of a chair producing this effect, that the one acts as a counterbalance to the pressure against the other, would be an infringement of this patent, but nothing short of that.] [Alderson, B.: The difference between this chair and all others, as it appeared in evidence, was very well described by Mr. Brunton; he says, This chair acts (looking at the one you produced), this chair acts, but not by a self-adjusting leverage. By pressing on the back the seat rises, and, *vice versa*, by pressing on the seat the back rises; that is what he calls a self-adjusting leverage. In the other case, you might sit for ever and the back would never rise.] The plaintiff, by his specification, has appropriated to himself a first principle in mechanics, namely, the lever, and therefore nobody else may use it. [Lord Lyndhurst, C. B.: It is not a leverage only, but the application of a self-adjusting leverage; and it is not a self-adjusting leverage only, but it is a self-adjusting leverage producing a particular effect, by the means of which the weight on the seat counterbalances the pressure against the back.] This is nothing more than one of the first principles of mechanics. [Parke, B.: But that not being in combination before, can that not be patented? It is only for the application of a self-adjusting leverage to a chair, — cannot he patent that? He claims the combination of the two, no matter in what shapes or way you combine them; but if you combine the self-adjusting leverage, which he thus applies to the subject of a chair, that is an infringement of his patent.] What is the combination? [Lord Lyndhurst, C. B.: Why, the application of a self-adjusting leverage producing the effect constitutes the machine, and he claims that machine, and the right to make that machine, by the application of a self-adjusting leverage producing a particular effect. He says, I do not confine myself to the particular shape of this lever.] If your Lordships translate this to mean machine, of course I have no further argument to urge. [Lord Lyndhurst, C. B.: It is every machine consisting of a self-adjusting leverage producing that particular effect in a chair.]

[1] 1 Stark. 354.

That is the extent to which I am putting it. If your Lordships say you can, in favor of the patentee, so read it that it is the machine and the combination only that the plaintiff has claimed, then I should be wasting your Lordships' time if I argued the matter further. [Lord Lyndhurst, C. B.: Substantially that combination.] [Parke, B.: Therefore a chair made upon that principle which you have directed to be constructed here would be an infringement of his patent; that is, the application of a self-adjusting leverage to a chair, such a one as you have produced here to-day.] [Lord Lyndhurst, C. B.: It has the particular effect.]

There was a subsequent case,

MINTER *v.* MOWER, 1 WEB. P. C. 138,

COR. LORD DENMAN, C. J., 1835,

where the defence set up a chair made by one of the defendant's workmen some years before the plaintiff's invention, which the court thus described: —

"A chair is made by Mr. Mower's workman in 1829; that chair has the principle of the reclining back to a certain extent raising the seat in front; it is connected with what is called a rack below, which makes it necessary that a spring should be touched in front to detach it from the catch of the rack; that is the first thing necessary to its going back; and in order to its coming forward, it is necessary the party should extend his hand and take hold of the pad, and should draw himself to a certain degree forward. All the witnesses concur in that to a certain degree. Mr. Newton says, without that pad the self-adjusting leverage would have operated in this chair; but it certainly does not appear that that leverage was so applied to it, or that any chair was ever made without some additional matter which prevented the self-adjusting leverage from having that operation. . . . Now, the questions that I have to leave to you are: Would it have been a chair with a self-adjusting leverage, if those encumbrances had been away? Did those encumbrances prevent its being so, and was this principle of self-adjusting leverage discovered at the time that chair was made, or is it entirely a new discovery made by the plaintiff?"

"The jury found as follows:[1] That the chair made by Brown would have acted so as to produce the equilibrium by a self-adjusting leverage, if the spring and the other things had not been attached to the chair, that is, if it had not been for the encumbering of bad machinery. That

[1] We quote from the report.

Mr. Brown was the inventor, but that Mr. Brown was ignorant of the practical use it might be turned to, and that Mr. Minter was the author of the practical purposes of the thing, although Mr. Brown was the original inventor, but was ignorant of the principle of the machine; in fact, that the other machinery attached to Brown's chair prevented the self-adjusting leverage from producing equilibrium."

"The learned judge directed a verdict for the plaintiff, with liberty for the defendant to move to enter a nonsuit.

"In the ensuing term, Talfourd, Serj., obtained a rule for a nonsuit, on the ground that the finding of the jury showed the plaintiff's invention to be an improvement on the application of the principle of the self-adjusting leverage, whereas the specification claims every application of the self-adjusting leverage."

And the court so held.[1] Lord Denman, C. J., delivering their opinion, remarked: —

". . . The specification thus concludes: 'What I claim as my invention is the application of a self-adjusting leverage to the back and seat of a chair, whereby the weight on the seat acts as a counterbalance to the pressure against the back of such chair, as above described.' Now it was perfectly clear, upon the evidence, that this description applies to Brown's chair, though that was encumbered with some additional machinery. The specification, therefore, claimed more than the plaintiff had invented, and would have actually precluded Brown from continuing to make the same chair that he had made before the patentee's discovery. We are far from thinking that the patentee might not have established his title by showing that a part of Brown's chair could have effected that for which the whole was designed. But his claim is not for an improvement upon Brown's leverage, but for a leverage so described that the description comprehended Brown's. We are therefore of opinion that the patent cannot be sustained, and a nonsuit must be entered."

JUPE *v.* PRATT, 1 Web. P. C. 145.

Court of Exchequer, 1837.

Robert Jupe's patent for "an improved expanding table."

The specification said: —

". . . My invention of an improved expanding table consists in constructing the same so that the sections (*a a*) of which the original

[1] 6 A. & E. 135.

or unexpanded table is composed may diverge from a common centre, and the table be enlarged or expanded by inserting leaves or pieces in the openings or spaces caused by the divergence, as hereinbefore described."

The patentee described tables of various shapes expanded according to his method; and he included in his patent all tables, of whatever shape,

" provided the property of expanding the surface of the original table, by causing the sections to diverge from a common centre, be retained, and the table be enlarged or expanded by inserting leaves or filling pieces in the spaces caused by such divergence, in the manner hereinafter mentioned."

The point that this patent claimed a principle was raised and discussed, but never passed upon; the Court of Exchequer (where the motion for a new trial was argued, the jury having found a verdict for the plaintiffs) holding that this question was not raised by the pleadings.

The learned judges, however, let fall some valuable remarks, not on the whole favorable to the patent.

Alderson, B., said: —

" The difficulty which will press on you, and to which your attention will be called in the present case, is this: You cannot take out a patent for a principle; you may taken out a patent for a principle coupled with the mode of carrying the principle into effect, provided you have not only discovered the principle, but invented some mode of carrying it into effect. But then you must start with having invented some mode of carrying the principle into effect; if you have done that, then you are entitled to protect yourself from all other modes of carrying the same principle into effect, that being treated by the jury as piracy of your original invention.

" But then the difficulty that will press on you here is, that on the evidence there does not appear to have been any mode of carrying the principle into effect at all invented by you."

Neilson's Case.

NEILSON *v.* HARFORD, 8 M. & W. 806; 1 WEB. P. C. 295.

COURT OF EXCHEQUER, 1841.

J. B. Neilson's patent, dated Sept. 11, 1828.[1]

Before the time of Neilson, furnaces for the smelting of iron were worked by a cold-air blast. The cold blast was supposed to be superior to a hot blast, because the fires had been observed to burn better in winter than in summer. In reality, however,

[1] We copy the specification in full (Web. p. 273): —

"I, the said James Beaumont Neilson, do hereby declare that the nature of my said invention for the improved application of air to produce heat in fires, forges, and furnaces, where bellows or other blowing apparatus are required, and the manner in which the same is to be performed, is particularly described and ascertained as follows: that is to say, a blast or current of air must be produced by bellows or other blowing apparatus in the ordinary way, to which mode of producing the blast or current of air this patent is not intended to extend.

"The blast or current of air so produced is to be passed from the bellows or blowing apparatus into an air vessel or receptacle made sufficiently strong to endure the blast, and through or from that vessel or receptacle, by means of a tube-pipe or aperture, into the fire, forge, or furnace. The air vessel or receptacle must be air-tight, or nearly so, except the apertures for the admission and emission of the air; and, at the commencement and during the continuance of the blast, it must be kept artificially heated to a considerable temperature.

"It is better that the temperature be kept to a red heat, or nearly so, but so high a temperature is not absolutely necessary to produce a beneficial effect.

"The air vessel or receptacle may be conveniently made of iron; but as the effect does not depend upon the nature of the material, other metals or convenient materials may be used.

"The size of the air vessel must depend upon the blast and on the heat necessary to be produced. For an ordinary smith's fire or forge, an air vessel or receptacle capable of containing 1,200 cubic inches will be of proper dimensions; and for a cupola of the usual size for cast-iron founders, an air vessel capable of containing 10,000 cubic inches will be of a proper size. For fires, forges, or furnaces upon a greater scale, such as blast-furnaces for smelting iron and large cast-iron founder's cupolas, air vessels of proportionably increased dimensions and numbers are to be employed.

"The form or shape of the vessel or receptacle is immaterial to the effect, and may be adapted to the local circumstances or situation. The air vessel may generally be conveniently heated by a fire distinct from the fire to be affected by the blast or current of air, and generally it will be better that the air vessel and the fire by which it is heated should be enclosed in brickwork or masonry, through which the pipes or tubes connected with the air vessel should pass. The manner of applying the heat to the air vessel is, however, immaterial to the effect, if it be kept at a proper temperature."

the fires burned better in winter because the air is drier then, not because it is colder. Neilson discovered this fact. He discovered that the use of a hot blast in smelting iron greatly improves the quality and diminishes the cost of the article produced. He described an apparatus for the use of the hot blast, which consisted chiefly in the interposition of a heated receptacle between the air blast and the furnace. He gave directions as to the size of the receptacle, the degree of heat, &c.; and he added: —

"The form or shape of the vessel or receptacle is immaterial to the effect, and may be adapted to the local circumstances or situation."

This last statement, if construed to mean immaterial to the *extent* of effect, was untrue and misleading; for it appeared at the trial that the shape of the receptacle was material to the extent of the effect produced. The patentee used a chamber, but the defendants' receptacle was a series of horizontal and vertical pipes or coils; and this receptacle was much more effective than the plaintiff's.

The patent came before Parke, B., and a jury.

Baron Parke's own opinion was that the stricter construction of the patent was the true one. However, he put two questions to the jury. First, Was a person of ordinary skill in the business likely to be misled by the statement quoted? second, Would such a person, from the specification alone, be able to construct an apparatus productive of some benefit?

The jury answered the first question in the negative; the second, in the affirmative.

The case then came before the Court of Exchequer, the verdict to be entered according to the construction the court should give to the patent.

The court held, with some hesitation, that Baron Parke's construction of the patent was incorrect; that the word "effect," in the passage of the specification which we have quoted, meant beneficial effect (this, they said, being the obvious meaning of the word in other parts of the specification).

Baron Parke concurred in this reversal of his construction, and he delivered the opinion of the court. On the main question, the patentability of the improvement, which had been

argued with great skill and thoroughness, he said (Web. p. 370, *ad fin.*) : —

"Then taking the construction of this specification upon ourselves, as we are bound to do, it becomes necessary to examine what the nature of the invention is which the plaintiff has disclosed by this instrument. It is very difficult to distinguish it from the specification of a patent for a principle, and this at first created in the minds of some of the court much difficulty; but after full consideration, we think that the plaintiff does not merely claim a principle, but a machine embodying a principle, and a very valuable one.

"We think the case must be considered as if, the principle being well known, the plaintiff had first invented a mode of applying it by a mechanical apparatus to furnaces; and his invention then consists in this, — by interposing a receptacle for heated air between the blowing apparatus and the furnace. In this receptacle he directs the air to be heated by the application of heat externally to the receptacle, and thus he accomplishes the object of applying the blast, which was before of cold air, in a heated state to the furnace."

Afterward Lord Chancellor Lyndhurst revived an injunction (which had been dissolved pending the trial at law), holding that the construction given to the patent by the Court of Exchequer was a reasonable one, but saying nothing further.

Later, the patent came before the House of Lords on appeal from the Scotch Court of Session, —

THE HOUSEHILL CO. *v.* NEILSON, 9 Cl. & F. 788; 1 Web. P. C. 673 (1843).

Here the case turned on a misdirection given by Lord Justice Clerk Hope to the jury in the Court of Session in regard to prior use, and a new trial was granted on that account. But his direction that the patent was valid was sustained.

Lord Campbell said (Web. p. 715) : —

"Now, in one stage of these proceedings, I certainly did entertain some doubt on that subject.[1] But after the construction put upon it by the learned judges of the Court of Exchequer, sanctioned by the high authority of my noble and learned friend now upon the woolsack, when presiding in the Court of Chancery, I think the patent must be taken to extend to all machines, of whatever construction, whereby the air

[1] His Lordship had been leading counsel for the defence at the trial before Baron Parke.

is heated intermediately between the blowing apparatus and the blast-furnace. That being so, the learned judge was perfectly justified in telling the jury that it was unnecessary for them to compare one apparatus with another, because, confessedly, that system of conduit pipes was a mode of heating air by an intermediate vessel between the blowing apparatus and the blast-furnace, and therefore it was an infraction of the patent."

The charge of which Lord Campbell thus speaks was, on the point in question, as follows (Web. p. 683) : —

"It is quite true that a patent cannot be taken out solely for an abstract philosophical principle — for instance, for any law of nature, or any property of matter, apart from any mode of turning it to account in the practical operations of manufacture, or the business and arts and utilities of life. The mere discovery of such a principle is not an invention, in the patent-law sense of the term. Stating such a principle in a patent may be a promulgation of the principle, but it is no application of the principle to any practical purpose. And without that application of the principle to a practical object and end, and without the application of it to human industry or to the purposes of human enjoyment, a person cannot in the abstract appropriate a principle to himself. But a patent will be good, though the subject of the patent consists in the discovery of a great, general, and most comprehensive principle in science or law of nature, if that principle is by the specification applied to any special purpose, so as thereby to effectuate a practical result and benefit not previously attained.

"The main merit, the most important part of the invention, may consist in the conception of the original idea, — in the discovery of the principle in science, or of the law of nature, stated in the patent; and little or no pains may have been taken in working out the best manner and mode of the application of the principle to the purpose set forth in the patent. But still, if the principle is stated to be applicable to any special purpose, so as to produce any result previously unknown, in the way and for the objects described, the patent is good. It is no longer an abstract principle. It comes to be a principle turned to account, to a practical object, and applied to a special result. It becomes, then, not an abstract principle, which means a principle considered apart from any special purpose or practical operation, but the discovery and statement of a principle for a special purpose; that is, a practical invention, a mode of carrying a principle into effect. That such is the law, if a well-known principle is applied for the first time to produce a practical result for a special purpose, has never been disputed. It would be

very strange and unjust to refuse the same legal effect, when the inventor has the additional merit of discovering the principle as well as its application to a practical object. The instant that the principle, although discovered for the first time, is stated in actual application to, and as the agent of, producing a certain specified effect, it is no longer an abstract principle, it is then clothed with the language of practical application, and receives the impress of tangible direction to the actual business of human life.

"Is it any objection, then, in the next place, to such a patent that terms descriptive of the application to a certain specified result include every mode of applying the principle or agent so as to produce that specified result, although one mode may not be described more than another, — although one mode may be infinitely better than another, — although much greater benefit would result from the application of the principle by one method than by another, — although one method may be much less expensive than another? Is it, I next inquire, an objection to the patent, that, in its application of a new principle to a certain specified result, it includes every variety of mode of applying the principle according to the general statement of the object and benefit to be attained? You will observe that the greater part of the defenders' case is truly directed to this objection. This is a question of law, and I must tell you distinctly that this generality of claim — that is, for all modes of applying the principle to the purpose specified, according to or within a general statement of the object to be attained, and of the use to be made of the agent to be so applied — is no objection whatever to the patent.

"That the application or use of the agent for the purpose specified may be carried out in a great variety of ways, only shows the beauty and simplicity and comprehensiveness of the invention. But the scientific and general utility of the proposed application of the principle, if directed to a specified purpose, is not an objection to its becoming the subject of a patent. That the proposed application may be very generally adopted in a great variety of ways, is the merit of the invention, not a legal objection to the patent.

"The defenders say, You announce a principle, that hot air will produce heat in the furnace; you direct us to take the blast without interrupting or rather without stopping it, to take the current in blast, to heat it after it leaves the blast, and to throw it hot into the furnace. But you tell us no more, — you do not tell us how we are to heat it. You say, You may heat in any way, in any sort of form of vessel. You say, I leave you to do it how you best can. But my application of the discovered principle is, that if you heat the air, and heat it after it leaves the blowing engine (for it is plain you cannot do it before),

you attain the result I state; that is the purpose to which I apply the principle.

"The benefit will be greater or less. I only say, benefit you will get. I have disclosed the principle. . . . You . . . are not under the necessity of describing and confining yourself to one form of apparatus. If that were necessary, you see, what would be the result? Why, that a patent could hardly ever be obtained for any mode of carrying a newly discovered principle into practical results, though the most valuable of all discoveries. For the best form and shape or modification of apparatus cannot, in matters of such vast range, and requiring observation on such a great scale, be attained at once; and so the thing would become known, and so the right lost, long before all the various kinds of apparatus could be tried. Hence you may generally claim the mode of carrying the principle into effect by mechanical contrivance, so that any sort of apparatus applied in the way stated will, more or less, produce the benefit; and you are not tied down to any form," &c.

Cases of discovery, but not of *principle*, in its restricted sense, are illustrated by —

MUNTZ *v.* FOSTER, *ante*, page 379.
NEWTON *v.* VAUCHER, *ante*, page 381.
GOODYEAR *v.* DAY, *post*, page 655.

Idea, Effect, Function.

In addition to the cases stated *ante*, pp. 73, 74, 75, we give the following: —

BELL *v.* DANIELS, 1 FISH. 373.

S. D. OF OHIO, 1858. LEAVITT, J., AND A JURY.

Patent for "an improvement in the mode of applying the waste heat of blast-furnaces to steam-boilers."

Quoting from the report: —

". . . The boilers stood on the stack by the side of the tunnel-head, with which they were connected by a short flue. The heat and gas passed by this flue to the end of the boiler nearest the tunnel-head, thence to the end of the boiler, thence back under the other boiler (the boilers being separated by a brick partition-wall dividing the fire-bed longitudinally), and so out through a chimney."

The claim was:—

"The arrangement of flues and their necessary appendages, by which the flame and gas escaping from the tunnel-head are applied to the boilers for the creation of steam."

The defence alleging that this was a claim for a principle, Leavitt, J., (after quoting the claim and specification) said:—

"The court has had occasion to construe this specification and claim in a former trial. In the case referred to, a motion for a new trial was fully argued, Judge McLean being present. Both judges held that the words 'arrangement of flues and their necessary appendages,' as used by the patentee, were equivalent to a combination of mechanical structures producing the result stated. It is true that a patent cannot be valid for a principle merely, but must be for the application of a principle to some practical and useful purpose; but in this case it is not claimed as a discovery that heated air applied to a boiler will make steam, but that the mode of applying the heated air of a furnace in a way to save fuel and labor has been discovered, the invention patented consisting in the contrivances by which the hot air is applied. These contrivances as described in the specification are called flues and their appendages, and consist of: 1. The mode by which the heated air passes from the top of the stack into the flues; 2. The mode of bringing the heated air in contact with the boilers, which is by means of a flue passing under one boiler and then under the other, and escaping through an outlet at the end of the boilers at which it entered; and, 3. The position or arrangement of the boilers. Neither the flues nor any of the appendages are new, but the claim is that the combination of the whole is new and useful. And there would seem to be no doubt that this is a patentable combination, including the application of principles, not separately claimed to be new, to the production of a new and useful result."

And on another point, that of double use:—

"It is insisted by the defendants that the invention is not new and original, because heated air has been before applied to other purposes.

"The test of novelty as applied to a combination seems to be whether the application of heated air, by such means and appliances as the plaintiff claims to have invented, has been before known as an agent for raising steam in boilers; for, as already stated, this is a principle of the plaintiff's invention, and the fact that heated air had been before used in a different way, and for a different purpose, would not be within this principle, and would not defeat the patent for want of novelty."

No evidence to support this last defence is reported.

The charge proceeds: —

"In this connection I remark that it is no evidence of such a prior knowledge of the invention as will defeat the patent, that other persons have made suggestions to the patentee as to the possibility of making the improvement subsequently patented. Others may have thought upon the subject, and made experiments with reference to it; but unless they accomplished the object, unless their experiments resulted in discovery, such approaches to it would be no bar to the granting of a patent to one who was successful in making the discovery and perfecting it."

The evidence which called forth this instruction is not reported. The opinion also states the familiar truth that, to be patentable, the invention need be but slightly useful, and not the most useful of its kind.

DOWNTON *v.* YAEGER MILLING CO., 1 FED. REP. 199.

E. D. OF MO., 1880. TREAT, J.

Treat, J. (orally): —

". . . To summarize, the claim of the patent[1] is specific: 'The herein-described process of manufacturing middlings flour by passing the middlings, after their discharge from a purifier, through or between rolls, and subsequently bolting and grinding the same, for the purposes set forth.' . . . Rolls at other stages of the milling process had been previously used, and even rolls by Mowbray at that particular stage. . . . No one in the then existing state of the art could by the use of any rolls known, or by any modes of operating the same, have effected the designed end. Consequently, to uphold this patent for a process which would have been ineffective without some inventions thereafter had, would be to block the path to all future progress in the art of milling. . . . I dismiss the bill, the patent being void for want of novelty and uncertainty."

[1] The name of the patentee, and the date and number of the patent are not stated.

ENGLISH CASES.

BOOTH *v.* KENNARD, 1 H. & N. 527.

EXCHEQUER CHAMBER, 1856.

Gas had been made from seeds containing oil by first pressing the oil out of the seeds, and then projecting it upon incandescent retorts.

The patentee discovered that the first process was unnecessary, and his patent for extracting gas directly from seeds, in substantially the same manner that it had been extracted from oil, was held to be valid.

After describing the process and the apparatus, the patent concluded thus: —

"I claim for making gas direct from seeds and matters herein named, for practical illuminations, or other useful purposes, instead of making it from the oils, resins, or gums previously extracted from such substances."

At a subsequent trial (Exchequer of Pleas), 2 H. & N. 84, the novelty of the patent was disproved by evidence of prior inventions.

And on the point, also taken by the defence, that the patent claimed a principle or abstract idea, the court (Pollock, C. B., delivering the opinion) said: —

"We are also of opinion that the claim is too large, and that such claim cannot be supported. It is a claim to make gas direct from seeds, — not in any mode pointed out in the specification, but generally. After the publication of Heard's specification [which described substantially the same process as the plaintiff's], no patent could be taken out for the process generally, though a patent might be taken out for a particular method of doing it. We think the plaintiff's . . . patent was not for any particular method of doing it, but for the doing of it by any method; and we think even if it had been new (which it turns out not to be), such a mode of specifying and claiming the invention cannot be sustained as a good specification."

SEED *v.* HIGGINS, 8 El. & Bl. 754.

Queen's Bench, 1858.

A claim to "the principle, or to the universal application of the principle, of centrifugal force to the flyers employed in machinery, for the purpose of producing the required elasticity or pressure on the bobbin," would not be valid; but a claim to the particular method of such application described in the patent was supported.

There was an appeal to the Court of Exchequer Chamber,

HIGGINS *v.* SEED, 8 El. & Bl. 769,

when a new trial was granted, on the ground that infringement had not been proved; but Williams, J., stated that the majority of the court were of opinion that the decision made by the Court of Queen's Bench on the point of law was correct.

Other English cases are:—

Electric Telegraph Co. *v.* Brett, 10 C. B. 838.
Crossley *v.* Potter, Macr. P. C. 240.
Ormson *v.* Clarke, 14 C. B. n. s. 475.

See also—

Sangster *v.* Miller, *ante*, page 92.
Seymour *v.* Osborne, *ante*, page 99.
Smith *v.* Frazer, *ante*, page 121.
Renwick *v.* Pond, *ante*, page 128.
Paper-Collar Co. *v.* White, *ante*, page 352.
White *v.* Allen, *post*, page 705.

And—

Blanchard *v.* Sprague, 2 Story, 164.
Burr *v.* Duryee, 1 Wall. p. 579.
Sickels *v.* Borden, 3 Blatch. 535.
Sickels *v.* The Falls Co., 4 Blatch. 508.
Hitchcock *v.* Tremaine, 8 Blatch. 440.
Union Mfg. Co. *v.* Lounsbury, 2 Fish. 389.
Smith *v.* Fay, 6 Fish. 446.
Evarts *v.* Ford, 6 Fish. 587.
Wheeler *v.* Simpson, 6 O. G. 435.
Matthews *v.* Shoneberger, 18 Blatch. 357.

CHAPTER VIII.

PRIOR KNOWLEDGE OR USE.

The Subject defined.

239. THE present chapter has to do with the limitation in section 4886, Rev. Stat., expressed by the words, "not known or used by others [1] in this country . . . before his [the inventor's] invention or discovery thereof;" [2] and the addition to or confirmation thereof contained in the fourth clause of section 4920, where it is provided that the defendant in a suit for infringement may prevail, by proving that the patentee "was not the original and first inventor or discoverer of any material and substantial part of the thing patented." Slight reference should also be made to that part of section 4886, providing that "any person who has invented or discovered any *new* and useful art," &c.[3]

According to the statute, then, first, knowledge or use of an invention must be shown to have existed prior to the time of a particular inventor's *invention* or *discovery*, in order to invalidate his patent, — it is not sufficient that it should have existed prior to the date of his patent, or of his application for a patent;[4] and, secondly, the prior knowledge or use of an invention in a foreign country, without its being "patented or described in any printed

[1] In the act of 1793 this clause was "not known or used before the application," — language which excludes knowledge and use by the very inventor, or by one who had stolen the invention. The Supreme Court, however, construed it to mean, not known or used by *the public* before the application. Pennock *v.* Dialogue, 2 Peters, 1. The words "by others" were introduced by the act of 1836; when, also, the time of the *invention* or *discovery*, instead of the time of the application, was fixed as that before which such knowledge and use must exist, in order to anticipate.

[2] The words "in this country" were not added until the year 1870.

[3] For a possible case in which the clause, "not in public use or on sale for more than two years prior to his application," would apply to use or sale by persons other than the patentee, and defeat the patent, see *post*, page 630, section 303.

[4] Klein *v.* Russell, 19 Wall. 433.

publication,"[1] is no bar to the patent of a domestic inventor *ignorant* of the foreign use.

"Proof of such foreign manufacture and use," said Mr. Justice Clifford, "if known to the applicant for a patent, may be evidence tending to show that he is not the inventor of the alleged new improvement; but it is not sufficient to supersede the patent if he did not borrow his supposed invention from that source, unless the foreign inventor obtained a patent for his improvement, or the same was described in some printed publication."[2]

240. The reader will bear in mind that prior knowledge or use is not the same as prior invention. In the case of prior knowledge or use, the question is whether a patent has been anticipated; and anticipation can be made out only by showing the prior existence of a completed and practical invention, or by proving that the patentee substantially derived his invention from some other person, or from some patent or publication. Whereas, in the other case, that of prior invention, or race of diligence as it is called, the question is, Who shall have the patent? And in this case much slighter evidence will carry back the date of an invention than will suffice to prove the existence of a prior invention. Thus, in a contest between rival inventors, the making of a drawing will be a sufficient proof of the date of conception, and the invention will relate back to the time when the drawing was made.[3] But the existence of a drawing is not such a reduction to practice as will defeat a subsequent invention on the ground of prior knowledge or use.[4]

Woodbury, J., in the case of Colt *v.* Mass. Arms Co., 1 Fish. p. 116, said:—

"Here the reliance is not on prior use; therefore it is of no consequence whether it is abandoned or not, but whether it was the prior invention. When I say "it," I mean a machine involving the same or a similar principle."

[1] Sect. 4923, Rev. Stat., provides as follows:—

"Whenever it appears that a patentee, at the time of making his application for the patent, believed himself to be the original and first inventor or discoverer of the thing patented, the same shall not be held to be void on account of the invention or discovery, or any part thereof, having been known or used in a foreign country before his invention or discovery thereof, if it had not been patented or described in a printed publication."

The clause, "patented or described in a printed publication," is considered in Chapter IX. of this book.

[2] Roemer *v.* Simon, 95 U. S. p. 218.

[3] *Vide post*, page 604.

[4] Draper *v.* Potomska Mills, 13 O. G. 276.

241. The distinction between prior knowledge or use and prior invention was not, in terms, recognized in the early cases. This appears, for instance, from the opinion in the case of Bedford *v.* Hunt,[1] decided by Judge Story. But practically the distinction was acted upon in the cases as they came up. Thus, in Reed *v.* Cutter,[2] an instance of prior invention, the rule governing cases of that sort is distinctly stated; whereas, again, in Washburn *v.* Gould,[3] a case of prior use, the doctrine properly applicable there was laid down; but in each of these cases the law of the decision was stated as if it applied to all cases of novelty, including both prior knowledge or use and prior invention. Both cases were decided by Judge Story.

242. Cases of prior knowledge or use fall into one of three classes, accordingly as it is contended that the alleged anticipation was

(1.) A mere idea or hint never embodied; or,

(2.) An experiment of no practical value; or,

(3.) Something which, though of practical value, was never communicated to the public, and has been laid aside and abandoned.

The principle which governs all questions of patentability, namely, that a benefit to the public is the consideration upon which the granting of a patent depends, is especially applicable to cases of prior knowledge or use; and it should be kept in mind as a criterion of resort when difficulties arise in considering them. We proceed to discuss them in the order indicated.

Unembodied Anticipations.

243. Of the first class, an early case,[4] decided by Judge Story, is a perfect instance, and the rule there laid down by the learned judge covers the whole ground.

One Draper had suggested to one Pierce that scythes might be fastened by applying the nut and screw to the rib or thole. Pierce laughed at the idea, but afterward carried it out; and he obtained a patent, the validity of which was contested on the ground that he had derived the idea of his invention from Draper.

[1] 1 Mason, 302.
[2] 1 Story, 590.
[3] 3 Story, 122.
[4] Alden *v.* Dewey, 1 Story, 336.

On this state of facts Judge Story instructed the jury as follows: —

"Did Draper communicate to Pierce substantially the improvement for which he took out his patent, so that, *without more inventive power*,[1] Pierce could have applied it? It was not enough that Draper gave a hint; nor, on the other hand, was it necessary that he should communicate every minute thing about the invention; but he must have communicated the substance." [2]

244. The words which we have italicized state the true test in such cases. Anything short of a complete invention has no value in the eye of the patent law. Inventive ideas, however valuable or suggestive, are not regarded, patents being granted not for ideas, but for ideas embodied; in other words, for an art, a machine, a manufacture, a composition of matter, or for some improvement of one of these. He, therefore, who has given some such tangible thing to the public is entitled to a patent, provided he has exercised inventive thought in doing so.

245. In the cases now under consideration, two persons may have exercised inventive thought, — both he who made the original suggestion and he who devised a means of carrying it out. In one sense they are both inventors; but the law rewards him only whose inventive thought has issued in a practical and useful contrivance.

[1] So, also, Jones, J., in Matthews *v.* Skates (1 Fish. 602), *post*, page 663.

[2] Judge Nelson expressed the same idea, though somewhat loosely, in Pitts *v.* Hall, 2 Blatch. p. 234, charging a jury as follows: "Now, there is no doubt that a person, to be entitled to the character of an inventor, within the meaning of the act of Congress, must himself have conceived the idea embodied in his improvement. It must be the product of his own mind and genius, and not of another's. . . . At the same time, it is equally true that, in order to invalidate a patent on the ground that the patentee did not conceive the idea embodied in the improvement, it must appear that the suggestions, if any, made to him by others, would furnish *all* the information necessary to enable him to construct the improvement. In other words, the suggestions must have been sufficient to enable [the patentee] to construct a complete and perfect machine. If they simply aided him in arriving at the useful result, but fell short of suggesting an arrangement that would constitute a complete machine, *and if, after all the suggestions, there was something left for him to devise and work out by his own skill or ingenuity, in order to complete the arrangement*, then he is, in contemplation of law, to be regarded as the first and original discoverer," &c. So, also, Leavitt, J., in Bell *v.* Daniels (1 Fish. 372), *ante*, page 616. See also Collar Co. *v.* Van Deusen (23 Wall. p. 562), *ante*, page 337.

The mere conception that a thing may be done, although it requires invention to conceive that it may be done, does not necessarily anticipate the thing done.[1]

246. If, however, the patentee has so derived his invention from another that no inventive thought on his part has been necessary to complete it, but only such knowledge and skill as are possessed by the workman, distinguished from the inventor, then the patentee is neither the first nor an original inventor, and he is therefore entitled to no patent.

247. Sometimes the suggestions by others, relied upon to defeat the patent, are made in the course of the patentee's experiments. Instead of pointing out that a certain thing can be done, the alleged inventor gives a hint as to the manner in which it may be done. In this case, we need not say, the same rule applies. And if the suggestions alleged to invalidate the patent have come from one employed by the patentee to assist him in reducing his ideas to tangible form, the courts are loath to attribute to the assistant the merit of the perfected invention.

248. Furthermore, if one so employed has, in the course of his employment, made a minor invention in aid of his employer's invention, but not essential thereto, it becomes the property of the employer, and may be included by him in his patent.[2]

The law was stated by Mr. Justice Clifford as follows:[3]—

"Where a person has discovered an improved principle in a machine, manufacture, or composition of matter, and employs other persons to assist him in carrying out that principle, and they, in the course of experiments arising from that employment, make valuable discoveries ancillary to the plan and preconceived design of the employer, such suggested improvements are in general to be regarded as the property of the party who discovered the original improved principle, and may be embodied in his patent as a part of his invention.

"Suggestions from another, made during the progress of such experiments, in order that they may be sufficient to defeat a patent

[1] Collar Co. *v.* Van Deusen, *ante*, page 337. See also page 650.

[2] Allen *v.* Rawson, 1 C. B. p. 567. This matter, although proper to be stated here, belongs rather to the subject of prior invention. *Vide* Chapter IX., page 687.

[3] Agawam Co. *v.* Jordan, 7 Wall. p. 602. In this case an assistant of the inventor had made certain suggestions which the inventor at first found impracticable, but afterward, with certain valuable modifications of his own, he adopted them. *Vide post*, pages 700, 713, 735.

subsequently issued, must have embraced the plan of the improvement, and must have furnished such information to the person to whom the communication was made, that it would have enabled an ordinary mechanic, without the exercise of any ingenuity and special skill on his part, to construct and put the improvement in successful operation.

"Persons employed, as much as employers, are entitled to their own independent inventions; but where the employer has conceived the plan of an invention, and is engaged in experiments to perfect it, no suggestions from an employee, not amounting to a new method or arrangement which in itself is a complete invention, is sufficient to deprive the employer of the exclusive property in the perfected improvement. But where the suggestions go to make up a complete and perfect machine, embracing the substance of all that is embodied in the patent subsequently issued to the party to whom the suggestions were made, the patent is invalid, because the real invention or discovery belonged to another."[1]

249. So far we have been considering cases where it is alleged that the inventive idea has been communicated to the patentee. An inventive idea, not so communicated, which has remained locked up in the breast of the conceiver, or has been communicated to persons other than the patentee, but has never been reduced to practice, is, of course, no bar to the patent of a subsequent original inventor. By the terms of the proposition, the patentee in this case is an original inventor. He is also the "first" inventor; in other words, the inventor of something "not known or used by others before his invention," inasmuch as no tangible thing has existed and no process has been employed prior to his invention, and embodying it.

Furthermore, so long as a thing or a process exists in idea only, it scarcely can be affirmed with certainty to be capable of a reduction to practice which will be successful. It is often little, if anything, more than the statement of a problem. Such a result may be accomplished by such and such means. But when those means are set in actual operation, difficulties may arise which require inventive power to surmount them.

250. What is such a reduction to practice as will anticipate a subsequent invention?

The law is very strict upon this point. It is well established

[1] In a recent case, Nat. Feather Duster Co. *v.* Hibbard, 9 Fed. Rep. 558, the principle here stated is, we think, violated. *Vide post*, page 713.

that an application withdrawn or rejected,[1] a drawing,[2] or even a model,[3] will not of itself be such a reduction to practice.

"Nor will an application, accompanied by a full written description, with drawings, and deposited in the Patent Office, be considered such a reduction to practice as will of itself anticipate a subsequent inventor."[4]

What is required is a practical working machine.

Thus Clifford, J.,[5] said:—

"The settled rule is, that it is not enough to defeat a patent to show that another conceived the possibility of effecting what the patentee has accomplished, unless it also appears that he reduced what he conceived to practice in the form of an operative machine.[6] To constitute a prior invention, he who is alleged to have produced it must have proceeded so far as to have reduced his idea to practice."[7]

Unsuccessful Anticipations.

251. We pass now to the second class of cases, where the contention is that the alleged anticipation is in the nature of an experiment, and not a completed practical contrivance.

The rule and the reason for it are clearly stated by Judge Sprague, in the case of Howe *v.* Underwood.[8] He said:—

"The patent law goes undoubtedly upon the ground that when a man by his knowledge and skill has made and perfected a machine, the public are then put in possession of the invention, and have the benefit in some form of that knowledge and skill; and that the man who comes afterward cannot deprive the public of that benefit, though he may be an original inventor of the machine. He has not given the consideration for an exclusive privilege, because the public had it before; and although he may have the merit of invention, he cannot

[1] Corn-Planter Patent, 23 Wall. 181; Howes *v.* McNeal, 15 O. G. 608.

[2] Ellithorpe *v.* Robertson, 2 Fish. 83; Draper *v.* Potomska Mills, 13 O. G. 276; Winans *v.* N. Y. & Harlem R. R. Co., 4 Fish. 1. *Vide* page 694, *post*.

[3] Cahoon *v.* Ring, 1 Fish. 397; Johnson *v.* McCullough, 4 Fish. p. 175.

[4] The Lyman, &c. Co. *v.* Lalor, 12 Blatch. 303, *ante*, page 141. This proposition belongs also under the head of prior publication. *Vide* Chapter X., p. 717.

[5] Union Sugar Refinery *v.* Matthieson, 2 Fish. p. 626.

[6] The Union Mfg. Co. *v.* Lounsbury, 2 Fish. 389; White *v.* Allen, 2 Fish. p. 445; Wayne *v.* Holmes, 2 Fish. p. 28; Winans *v.* N. Y. & Harlem R. R. Co., 4 Fish. 1.

[7] *Vide post*, page 695.

[8] 1 Fish. p. 166.

have the right to take from the community that which they possess by the invention of another. A machine, therefore, in order to anticipate any subsequent discovery, must be perfected; that is, made so as to be of practical utility, and not to be merely experimental and end in experiment. The terms, 'being an experiment' and 'ending in experiment,' are used in contradistinction from the term 'being of practical utility.' Until of practical utility, the public attention is not called to the invention; it does not give to the public that which the public lays hold of as beneficial.

"If it is an experiment only, and ends in experiment, and is laid aside as unsuccessful; however far it may have been advanced, however many ideas may have been combined in it, which, subsequently taken up, might, when perfected, make a good machine, still, not being perfected, it has not come before the public as a useful thing, and is therefore entirely inoperative as affecting the rights of those coming afterward. This is important to be understood, because the idea has been carried all along, that if a prior inventor has gone to a certain extent, although he fall short of making a complete machine, practically useful, those who come after him have no right to secure to themselves the advantage of their invention. That is not the law. If Mr. Hunt did not go to the extent of having perfected a machine, although he made many ingenious devices, it was, in the eye of the patent law, a nullity: it gave nothing to the public; it was only an idea never carried out in a machine that could anticipate one subsequently invented."

252. Judge McLean stated the point at which an anticipating inventor must have arrived, as follows:—

"To constitute a prior invention, the party alleged to have made it must have proceeded so far as to have entitled himself to a patent in case he had made an application."[1]

253. It appears, therefore, and later cases are to the same effect, that a contrivance, however ingenious, which is not so complete as to have practical utility, is no bar to a subsequent invention in which the same idea is successfully carried out.[2]

It is not necessary that the first invention should be perfect in its details, or the best possible of its kind,[3] or that it should be

[1] Allen *v.* Hunter, 6 McLean, 303 (1855).

[2] United Nickel Co. *v.* Anthes, 5 Fish. p. 522; Waterman *v.* Thompson, 2 Fish. 461; Putnam *v.* Hollender, 19 O. G. 1423.

[3] Howe *v.* Underwood, 1 Fish. 160; Aiken *v.* Dolan, 3 Fish. 197. Of course, the second thing may contain a patentable improvement, though it be also an infringement of the first.

of great value; if it has practical utility and value, though it be clumsy, cumbersome, expensive, and defective, still it will anticipate a subsequent and improved machine which is only a better embodiment of the same idea.[1]

In the case of Johnson *v.* Root (1 Fish. p. 366), Judge Sprague said: —

" . . . By being *perfected* in the eye of the law, it is not meant that it should be carried to a point where there could not be any subsequent improvement; that it should have been made then as good as it could possibly be made, as a practicable machine, but that the invention should be completed so as to be of some practical utility. It need not be of any high degree; if it is of *any* practical utility, — although of a very low degree, — and has been completed so as to be of practical utility, and considered as completed, then it may be said to be perfected in the eye of the law. . . . It may often happen that a person in pursuit of an invention goes a certain distance, makes certain parts of an invention, but fails of arriving at any practically useful result, and the whole falls to the ground. Somebody else comes afterward and takes up the invention, and may incorporate into his invention something found by somebody before; but if that somebody has never perfected that part in the eye of the law, as I have explained to you, the second is not to be prevented from having the benefit of that which has been left without practical fruit."

254. It appears, also, and is undoubtedly the law both here and in England, that a subsequent inventor may avail himself of the unsuccessful experiments made by his predecessors.[2] Indeed, it often happens that many persons have expended years of thought and labor in advancing some contrivance to the point where a step, and often but a short one, separates them from success; but they can get no further. Another inventor, however, more

[1] Whittlesey *v.* Ames, 18 O. G. 357. In the English case of Daw *v.* Eley, 3 L. R. Ex. 496, Vice-Chancellor Page "held that the antecedent existence of an invention not shown to have been brought to any successful result, and which was so far similar, that, if subsequent in date to the patent, it would have been held a colorable and clumsy imitation for the purpose of effecting the same result, did not invalidate the patent by anticipation." (*Head-note.*)

[2] Even to this extent, according to Leavitt, J., "experiments made by the patentee with the abandoned and unsuccessful machine constructed by another, are *no evidence* of the want of novelty in an invention subsequently reduced to practice." Latta *v.* Shawk, 1 Bond, 250. It is doubtful, however, if this is not too strong a statement.

fortunate or more skilful, takes up the contrivance where it was left by his predecessors, supplies the one missing link, and obtains a valid patent for the completed invention.[1]

255. In such cases there is usually a contest as to the relative value of the subsequent and the antecedent contrivance, usually a machine ; and often the inferiority of the earlier one is proved chiefly by its failure to go into general use,[2] or by the failure of its alleged inventor to follow it up,[3] or to patent it,[4] or to prosecute an application for a patent.[5]

These facts, if proved, are strong evidence that the alleged prior invention was but an unsuccessful and abandoned experiment. So, also, is a failure to preserve the thing itself, unless it was transitory in its nature, as if it were an article of passing fashion.[6] So, again, failure to remember it on the part of persons to whom it was shown.

256. We may add that the tendency of recent decisions is to uphold a patent for a successful invention against alleged prior inventions unpatented and unused, and to view with suspicion the remains of former unsuccessful contrivances.

We quote some valuable remarks on this point made by Sprague, J., in the case of Howe *v.* Underwood.[7]

[1] Pike *v.* Prov. & Worcester R. R., 1 Holmes, 445.

[2] Hoffman *v.* Stiefel, 7 Blatch. 59. Woodbury, J., in Colt *v.* Mass. Arms Co. (1 Fish. p. 122), speaking of guns alleged to anticipate Colt's, said: "If they were the same in principle, another question occurs in connection with that fact, and which you will consider, and to which you will give its due weight, and no more, — whether you have heard on the stand, in the progress of this case, or anywhere else, of the power and effectiveness of Smith's rifles in the world; have they crossed the Atlantic, or penetrated the wilds of America?

"Coolidge's guns — . . . do you hear or read of them as circulated through both hemispheres? The Ohio gun, the Colburn gun, — have they succeeded? Are they known? Do the experts, the men of science here, speak of them as displaying something new, beautiful, and successful? All this is to be considered.

"On the other hand, it is true, things may fail for a time, and not eventually, — not entirely; the parties may not choose to patent them, even if they gain something valuable. But what is the presumption? If these great improvements were made before Colt made them, what became of them? Why did they disappear any more than his, if they were the same in principle and in substance?"

[3] Hayden *v.* Suffolk Mfg. Co., 4 Fish. p. 102.

[4] Howe *v.* Underwood, 1 Fish. p. 178; Galloway *v.* Bleaden, Webster, 521.

[5] Parham *v.* Amer., &c. Sewing-Machine Co., 4 Fish. 468.

[6] Hayden *v.* Suffolk Mfg. Co., 4 Fish. p. 102.

[7] 1 Fish. p. 175.

Upon the, so to say, resurrected parts of an old machine the learned judge remarked as follows: —

"We come, then, to another part of the evidence, — *these old remains*. These are very important, undoubtedly; for, when a new invention is sought to be intercepted by a former one, the production of a former machine is — I will not say essential — but of very great importance; showing that it does not rest merely in the recollection of witnesses that there was such a thing. These are the remains of a machine . . . found . . . in 1851 [sixteen years after the machine was laid aside, and six years after the plaintiff's patent issued], in the rubbish of his [one of the inventors'] workshop. They exhibit some of the instrumentalities, but certainly to the eyes of those who are not experts, but few of the means of forming a sewing-machine; and to the eyes of the experts they present the same deficiency. One, at least, of the defendants' experts, when he was called upon on a former occasion, looked at them, and then testified that there was nothing there from which a sewing-machiue could be constructed. He says now that he has changed his mind, upon a more careful examination.

"At first view, then, they would present no satisfactory evidence of having been a sewing-machine. The experts differ materially as to that old machine. Those for the defendants say that they saw there sufficient to enable them to construct a sewing-machine by the aid — I think all of them put in that — of the reproduction made by Walter Hunt from his memory. I do not think any of them go so far as to say that, from that old machine alone, they could undertake, without other aid, to make a sewing-machine that would operate. They thought that from these old remains there might have been constructed the machine that is described by Walter Hunt; they thought there was room enough to make such a machine. Then a part of that restored machine rests solely upon the recollection of Mr. Walter Hunt. Now, can any man say, from that old machine, that Eleazer Johnson's testimony is not true when he says it did not operate? How can any man say that there was not a defect which prevented the shuttle from going through the race? — a defect of which the persons, and they experts, having the machine entire before them, could not ascertain the cause.

"Can these experts ascertain the cause from the mere dry bones of this old machine, divested of its muscles and nerves? They say it must have operated. Their reasoning is evidently the reasoning from analogy, which is very likely to mislead men. The reasoning of Cuvier, by which, from seeing a few bones, he could reconstruct the whole animal, proceeded upon the assumption that the animal was a perfect work, made by a Creator perfect in his operations; and if the animal was a

perfect work, then he could tell from its remains what must have been necessary to make that perfect work. But that would be assuming the point in controversy here. If that old machine was not a perfect work in the hands of Mr. Hunt, how can these experts say, from those remains, how that machine was made; how the other bones, the other operative parts, were placed? Thus they assume the very question which is here to be tried, — whether the old machine was perfect or not."

Mr. Justice Swayne, in the case of Wood *v.* Cleveland Rolling Mill Co. (4 Fish. p. 559), said: —

"In the fossils of geology, belonging to certain classes of animals, regular gradations from a low form of organism to a much higher one are found to exist. The contrast between the highest and the lowest is very striking. The same thing takes place in the progress of inventions. Models and machines in the same series, upon inspection, not unfrequently exhibit curious points of analogy to such fossils. Sometimes one will be found to reach almost the highest point afterward attained, but to fail short of it. The difference is that between success and failure.

"When a great success is achieved in the field of mechanical invention, and the higher organism is protected by a patent, it is almost as certain that invasions will follow, as that there exists the relation of cause and effect. Such is the voice of universal experience. When the infringer is called to account, one of two defences is usually set up, and frequently both. First, that the invention in one of the lower grades is substantially the same with that of the patentee. The confidence of the attacking witnesses is often in proportion to the distance in time that one is removed from the other. Their imagination is wrought upon by the influences to which their minds are subjected, and beguiles their memory" (the other defence being that of non-infringement).

257. A single success which the inventor is unable to repeat is no bar to a subsequent patent which describes the means whereby such success may be obtained.[1]

258. If parts of a machine are perfected, though they do not operate in the combination for which they are intended, so that there is as yet no practical or valuable use of them, those parts cannot be claimed separately by a subsequent inventor, though, of course, he may claim them in combination with other devices.

[1] Pelton *v.* Waters, 1 Bann. & Ard. 599.

This rather unusual point was decided by the Supreme Court in the case of Corn-Planter Patent,[1] as follows: —

"It is urged by the appellees that all those parts of Kirkman's machine which were completed in 1850, and not subsequently altered, should be considered as perfected, although the machine as a whole was not perfect, and did not subserve the expectation of the inventor until the alterations were made in the seeding apparatus in 1852. It is undoubtedly true that a subsequent inventor could not claim as his original and first invention the several parts of which Kirkman's machine consisted; but it would not prevent him from claiming such new combination of those parts with the devices of his own, as would result in a useful and satisfactory machine adapted to the purposes of its construction." [2]

259. This point also came up in the case of Union Paper-Bag Machine Co. *v.* The Pultz & Walkley Co. (*post*, page 678), where it was held that a knife in an automatic paper-cutting machine, claimed by itself, but used in a combination, was not anticipated by a similar knife which formed part of a prior abandoned and unsuccessful machine known to the patentee. The court, Shipman, J., said: —

"Inspection would show that such a knife [*i. e.* the prior knife] would cut out pieces of paper in the form of a blank. Inspection would not show that it would operate in the place where it necessarily must be used. The fact that such a knife would do the work was not a part of the fund of knowledge which the patentee had when he commenced to plan his invention."

This decision is not, it would seem, in accordance with the doctrine just quoted from the Supreme Court; and it does not appear why a claim for the knife separately was valid, though, of course, a claim for its use in the combination invented might have been so.

260. The English statute [3] is substantially the same as ours on the subject of prior knowledge or use, and its interpretation by the courts is the same. A leading case is that of Jones *v.* Pearce.[4]

The patent sued on was for a new kind of wheel made on the principle of suspension. The defence offered evidence that, many

[1] 23 Wall. p. 220 (1874). Mr. Justice Bradley delivered the opinion.
[2] See also Pitts *v.* Wemple, 1 Biss. 87.
[3] *Vide* Appendix.
[4] 1 Web. P. C. 122.

years before, one Strutt had caused wheels of the same kind to be made for his own use, and had used them on a cart until they were worn out. The evidence conflicted as to whether they worked on the same principle as the plaintiff's wheel.

Mr. Justice Patterson instructed the jury as follows: —

"If on the whole of this evidence, either on the one side or the other, it appeared this wheel, constructed by Mr. Strutt's order, in 1814, was a wheel on the same principles and in substance the same wheel as the other, for which the plaintiff has taken out his patent, and that it was used openly in public, so that everybody might see it, and had [*sic*] continued to use the same thing up to the time of taking out the patent,[1] undoubtedly, then, that would be a ground to say that the plaintiff's invention is not new, and if it is not new, of course his patent is bad . . . ; but if, on the other hand, you are of opinion that Mr. Strutt's was an experiment, and that he found it did not answer, and ceased to use it altogether, and abandoned it as useless, and nobody else followed it up, and that the plaintiff's invention, which came afterwards, was his own invention, and remedied the defects, if I may so say; although he knew nothing of Mr. Strutt's wheel, he remedied the defects of Mr. Strutt's wheel [*sic*], then there is no reason for saying the plaintiff's patent is not good."

Abandoned Anticipations.

261. We come now to the third class of cases, which we have termed that of a lost art.

The question is, whether a thing or a process which has once been known and used in this country, by persons other than a subsequent original inventor of it, can be the subject of a patent.

It is plain that it cannot be, according to the literal meaning of the statute, which requires that the patentee shall be the *first* as well as the original inventor. Now, if an invention has formerly been known and used, though by one person only, and though he has kept such knowledge and use to himself, and though he has forgotten the invention and cannot reproduce it, still it is clear that he is the first inventor; and the subsequent inventor cannot be so considered, as it is obviously impossible that there should be two first inventors.

[1] This clause is impertinent here, and inaccurate anywhere. *Vide post*, page 644..

The other words of limitation in regard to prior knowledge and use can be gotten over a little more easily; thus, a person may be held to have invented something "new," if he invent something new to the public of his time, although it was formerly known. So, also, the words, "not known or used by *others* in this country . . . before his [the inventor's] invention or discovery thereof," might possibly be construed to imply knowledge or use by a considerable number of persons,—at least by more than one person.

262. The statute, however, has not been construed strictly in this regard. The principle, of which we reminded the reader at the beginning of this chapter, that a benefit conferred upon the public is the consideration for a patent, has been brought into play; and the Supreme Court have held that the intention of Congress was to confer a patent upon him who first not only invents or discovers, but also reveals to the public, a patentable improvement. The meaning of the act, they said, must be gathered from a consideration of the whole thereof; and when the act is so treated it appears that the section (the fifteenth) which in one case, namely, that of a previous knowledge or use in a foreign country, provides for the granting of a patent to one who is not the first inventor,[1] qualifies the whole act, and shows that its intendment was that the patentee should be not literally the first inventor, but the first to make an invention known to the public.

263. The question next arises, under what circumstances and conditions is the rediscovery patentable. In other words, how extensively must the prior invention have been known and used, what recollection of it must remain, in order to defeat a subsequent patent granted to an original inventor for the same thing.

The following conditions are possible: —

(1.) Knowledge of the prior invention may have been confined to the inventor or possessed by other persons.

(2.) So of its use; and if used by the inventor alone, it may have been in secret, or publicly, as in his factory.

(3.) It may have been tested or not.

(4.) The extent of its value may be known or not.

(5.) It may have perished, or it may still exist in a complete or in a mutilated state.

[1] *Vide ante*, page 622, foot-note.

(6.) Remembrance of it may be proved to exist in the mind of one person or in the minds of two or more persons; or it may completely be forgotten; or — and upon this point the case of Gayler *v.* Wilder turned — it may be *potentially* in the memory of the inventor, so that he had forgotten it, until the production of the second invention caused him to recollect it.

264. We proceed to show how, and how far, these points have been settled by the courts.

The decision in Gayler *v.* Wilder,[1] the first and the most important case on the subject in the Supreme Court, is not entirely satisfactory. Three judges dissented from it; it has been doubted in a later case; and it puts the matter upon a very narrow, if not illogical, footing. We state here the facts, which are very simple, and the grounds upon which the decision proceeded.

The patentee was one Fitzgerald; the patent, for a safe, was granted in the year 1843.

One Conner, between the years 1829 and 1832, had made a similar safe, to protect his papers against fire; and he used it in his counting-room till 1838, when it passed out of his hands. He was a stereotyper, and the safe was known to persons engaged in his foundry. What became of it after 1838 does not appear, according to the bill of exceptions.

The judge below instructed the jury, —

"That if Conner had not made his discovery public, but had used it simply for his own private purpose, and it had been finally forgotten or abandoned, such a discovery and use would be no obstacle to the taking out of a patent by Fitzgerald or those claiming under him, if he be an original, though not the first, inventor or discoverer."

Interpreting the statute in the manner which we have described, the majority of the court held that this instruction was correct. Taney, C. J., delivered their opinion, which concluded as follows: —

"We do not understand the Circuit Court to have said that the omission of Conner to try the value of his safe by proper tests would deprive it of its priority; nor his omission to bring it into public use. He might have omitted both, and also abandoned its use, and been ignorant of the extent of its value; yet, if it was the same with Fitz-

[1] 10 How. 477.

gerald's, the latter would not upon such grounds be entitled to a patent, provided Conner's safe and its mode of construction were still in the memory of Conner before they were recalled by Fitzgerald's patent.

"The circumstances above mentioned, referred to in the opinion of the Circuit Court, appear to have been introduced as evidence tending to prove that the Conner safe might have been finally forgotten, and upon which this hypothetical instruction was given. Whether this evidence was sufficient for that purpose or not was a question for the jury, and the court left it to them. And if the jury found the fact to be so, and that Fitzgerald again discovered it, we regard him as standing upon the same ground with the discoverer of a lost art or an unpatented and unpublished foreign invention, and, like him, entitled to a patent. For there was no existing and living knowledge of this improvement or of its former use at the time he made the discovery. And whatever benefit any individual may derive from it in the safety of his papers, he owes entirely to the genius and exertions of Fitzgerald."

265. The learned Chief Justice therefore made the patentability of Fitzgerald's safe depend finally upon the fact that Conner's safe was so far forgotten by him that he could not have recollected it had it not been for Fitzgerald's invention. If Conner's safe was still fresh in his mind, although the safe itself had perished, had never been tested or brought into public use, and although its great value had never been ascertained, still it would be a bar to Fitzgerald's patent. But Conner having no remembrance of it until the production of Fitzgerald's safe caused him to recollect it, it was not such a bar.

266. The ground upon which this memory test may be supported is not elaborated in the opinion. In order to hold Fitzgerald's invention patentable, it was necessary to show that, at the time of his making it, the prior invention of Conner had practically ceased to exist, either in its tangible physical form or in the memory of Conner. This explains the necessity which the court felt of diving into the mind of Conner; for if Conner still remembered his invention, then to that extent the invention continued to exist, and there was a possibility of its being communicated to the public. But if Conner did not remember it until after Fitzgerald had reproduced it, then practically it had no existence at all, even in Conner's mind, at the time of Fitzgerald's invention.

It being proved in this way that the invention of Conner had no existence at the time that Fitzgerald's invention was made, the next step in the argument of the Chief Justice was to show that the former existence of an invention since lost and forgotten is not of itself a bar to the patent of a subsequent original inventor; and for this purpose he likened the safe case to the rediscovery of a lost art.

But it may be said that in the case of a lost art the result is known, and it is the process only that is lost; whereas the safe, were it in existence, would carry with it information of the way to make it. Moreover, if an inventor should discover a method of producing the fruit of some lost art, it would be impossible to prove that the new art or process was the same as the old; for the only evidence would be this, — that the result was the same.

267. Whether the analogy between the safe case and the rediscovery of a lost art is a true or false one, there is a practical objection to the rule of Chief Justice Taney.

It is impossible for the law successfully to penetrate the depths of a prior inventor's mind in order to ascertain whether or not he has forgotten as well as abandoned his invention. If this were understood to be the final test of the patentability of a subsequent invention of the same thing, then it would be easy enough and natural enough for the prior inventor to swear that he had not forgotten his invention; and it would be impossible to prove that he had forgotten it, — unless, indeed, it should be held in every case that total abandonment of it on his part was sufficient proof that he had forgotten it. But this, of course, would be the same as abolishing the memory test altogether.

268. It may also be said that, according to the rule of the learned Chief Justice, the words of the statute, "not known or used before his discovery," &c., are construed to mean, not only what they literally intend, — namely, knowledge or use at some time prior to the discovery, — but also that such knowledge or use must continue up to the time of the discovery or invention. This is more than the language actually calls for. It has been decided that the prior use need not so continue. *Vide* the cases cited below. And prior knowledge stands on the same footing.

269. We need not, however, pursue this subject any further. The memory test of Gayler *v.* Wilder is somewhat discredited

by the succeeding case in the Supreme Court upon this subject, namely, Coffin *v.* Ogden.[1] The patent in that case was for a lock. The prior lock set up had been made and used, only two years before, on one or more doors in a counting-room attached to the lock factory where the inventor worked. He had applied for a patent, but, for some reason unstated, he had failed to obtain it.

The court said:—

"The prior knowledge and use by a single person is sufficient. The number is immaterial. Until his work *is done*, the inventor has given nothing to the public. In Gayler *v.* Wilder the views of this court upon the subject were thus expressed: 'We do not understand the Circuit Court to have said that the omission of Conner to try his safe by the proper tests would deprive it of its priority, nor his omission to bring it into public use. He might have omitted both, and also abandoned its use, and been ignorant of the extent of its value; yet, if it was the same with Fitzgerald's, the latter would not, upon such grounds, be entitled to a patent, provided Conner's safe and its mode of construction were still in the memory of Conner before they were recalled by Fitzgerald's patent.'

"Whether the proposition expressed by the proviso in the last sentence is a sound one, it is not necessary in this case to consider. Here it is abundantly proved that the lock originally made by Erbe was complete and capable of working. The priority of Erbe's invention is clearly shown. It was known at the time to at least five persons, . . . and probably to many others in the shop where Erbe worked; and the lock was put in use, being applied to a door. . . . It was thus tested and shown to be successful. These facts bring the case made by the appellee within the severest legal tests which can be applied to them."

270. In this case, then, although the memory test is doubted, the other points decided by Gayler *v.* Wilder are upheld, and, undoubtedly, they are sound.[2] They are, that Conner's safe would still be an anticipation of Fitzgerald's; although

(1.) Conner had not ascertained the value of his safe by proper tests;

(2.) Had not brought it into public use;

(3.) Had abandoned it;

[1] 18 Wall. 120, *post*, page 669.

[2] See also Pickering *v.* McCullough, 13 O. G. 818.

(4.) Had been ignorant of the extent of its value.

Coffin *v.* Ogden, as we have seen, adds this: "The prior knowledge and use by a single person is sufficient."[1]

271. These two cases, then, decide that an invention to anticipate need not be brought into public use, by which we understand that it need not be sold to the public, or used in a public place; but in each case the use was in public, that is, it was in a place accessible to the public or to some portion of the public; and this degree of publicity we understand to be required by the law, although the point has not been decided by the Supreme Court.[2] Open use in a house would, in this sense, be a use in public.

[1] In Judson *v.* Bradford (16 O. G. 171), Judge Clifford said: "Since the decision in the case of Coffin *v.* Ogden (18 Wall. 120), it must be considered that the evidence is sufficient to support the defence of prior knowledge and use, if it proves that the invention was complete and capable of working, if it had been put in use, and was known to any considerable number of persons."

By this he means put in use by the inventor. In an earlier part of his opinion he had given his own view of the statute requirement, different from that contained in Coffin *v.* Ogden, as follows: "Prior knowledge of the thing patented, and where and by whom it has been used, are required to be stated in [the answer], which shows very clearly that, in order to defeat the patent in suit by such a defence, there must have been some use of the alleged prior invention." But the statute says not known *or* used; and the requirement as to the answer states how want of use shall be pleaded, not that it must be pleaded in order to prove want of novelty in the patent sued on.

The clause to which the learned judge referred is as follows: —

"And in notices as to proof of previous invention, knowledge, or use of the thing patented, the defendant shall state the names of patentees, and the dates of their patents, and when granted, and the names and residences of the persons alleged to have invented, or to have had the prior knowledge of, the thing patented, and where and by whom it had been used; and if any one or more of the special matters alleged shall be found for the defendant, judgment shall be rendered for him with costs."

[2] We do not understand that the public use indicated by the statute in the clause, "not in public use or on sale for more than two years prior to his [the inventor's] application," is the same as the public use here considered. An exhibition of a prior invention, though not for profit, and though made but to one person, is such a knowledge or use as will be covered by the clause "not known or used by others in this country," and will defeat a subsequent invention of the same thing; whereas such an exhibition made by the inventor himself, though in the presence of many persons, "more than two years prior to his application," would not, we conceive, necessarily be included by the clause "in public use or on sale," so as to deprive him of a patent. On the subject of the statute, "public use," see Egbert *v.* Lippman, 104 U. S. 333; City of Elizabeth *v.* Pavement Co., 97 U. S. 126; Consolidated Fruit-Jar Co. *v.* Wright, 94 U. S. 92; American Hide, &c. Co. *v.* American Tool Co., 1 Holmes, 503; Winans *v.* N. Y. & Harlem R. R., 4 Fish. 10.

272. Such is the law in England, where, however, a patent is granted on condition that the invention claimed is "a new invention as to the *public* use and exercise thereof" in the realm.[1] In the case of Carpenter *v.* Smith (9 M. & W. 300), Alderson, B., said: —

"'Public use' means a use *in public*, so as to come to the knowledge of others than the inventor, as contradistinguished from the use of it by himself in his chamber."

In the same case, Lord Abinger, C. B., referring to two earlier cases, which might seem to hold that a use *in public* was not sufficient, said: —

"I was counsel in the cases of Lewis *v.* Marling and Jones *v.* Pearce, and I recollect that those cases proceeded on the ground of the former machines being in truth mere experiments, which altogether failed. The 'public use' and exercise of an invention means a use and exercise *in public*, not *by the public*."

And at the *nisi prius* trial of this case, Lord Abinger, C. B., had also said, according to the report, —

"that the word 'public' was not equivalent to *general*, but was distinguished from *secret* use."[2]

273. In the case of the Househill Co. *v.* Neilson,[3] Lord Chancellor Lyndhurst said that if the prior machine was in "public use, that is, if use or if trials had been made of it in the eye and in the presence of the public," &c.

274. If, however, the invention is made known to the public, or the public obtain knowledge of it in any other way, then use in public would not be necessary to anticipate.

[1] *Vide* Appendix.

[2] In Tennant's case, however (1 Web. P. C. 125, A. D. 1802), Ellenborough, C. J., appears to have held that a *secret* use of an invention was sufficient to invalidate a subsequent patent for the same thing.

In Dolland's case the patent was for a new method of making the object-glasses of refracting telescopes. Before the date of the patent one Dr. Hall had made and used object-glasses of a precisely similar construction in his own observatory, but he had not made any publication of their mode of construction or use. *Held*, that this was not such a prior use as to invalidate the patent. 1 Web. P. C. 43, A. D. 1766.

On the other hand, in the case of Manton *v.* Manton (Dav. P. C. p. 353, 1815), Giles, C. J., charged the jury as follows: "If any one man made those locks, and was in possession of the secret of making them upon the same principle as Joseph Manton's [the patentee's] locks, there would be an end of the patent."

[3] Web. P. C. p. 70.

275. The point that a mere secret guarded use, unaccompanied by knowledge on the part of the public, does not anticipate, has been decided by Woodbury, J.,[1] who said: —

"If a man has an invention and uses it privately, and nobody knows of it, then the use of it cannot debar another person from inventing or patenting it. What is the evidence of a public use as opposed to a private use? It need not be a general use by the community; but it must be an open use, however, so that the structure and *modus operandi* are apparent."

And by Sprague, J.,[2] as follows: —

"The article must be completed for public use and the result must be known, although it is not necessary that it should be actually used by the public."

And by Clifford, J.,[3] in a charge to the jury: —

"You are also instructed that, as a single specimen only of such a machine was made, whether capable of use, and whether actually used or not by the party making it, for the purpose of testing its operation, if you find from the evidence that the same was kept in his own possession from the knowledge of the public, and was subsequently broken up and its materials used for other purposes" [adding the memory test of Gayler *v.* Wilder], "then there will have been no proper anticipation of the subsequent invention."

So, also, Sherman, J.,[4] and Blatchford, J.[5]

276. Lowell, J., however, held that a machine

"which was not patented, and was somewhat guarded from view, perhaps for the very purpose that its mode of operation might not be generally known, was yet, by the law, such an anticipation of the plaintiffs' combination that they were not the first, though they were original, inventors thereof."[6]

277. It would seem to follow from this, and to be good law, that if the prior invention can be proved to have been practically like the subsequent one, no use, but only public knowledge of it, need be shown. The statute does not say "known *and* used," but "known *or* used." Such was the decision of Judge Nelson

[1] Adams *v.* Edwards, 1 Fish. 1 (1848).

[2] Many *v.* Sizer, 1 Fish. 17.

[3] Cahoon *v.* Ring, 1 Cliff. 592.

[4] Haselden *v.* Ogden, 3 Fish. 378.

[5] Hall *v.* Bird, 6 Blatch. 438.

[6] Spring *v.* Packard, 1 Bann. & Ard. 531 (1874).

(in the early case of Parker *v.* Ferguson [1]), who held that the following evidence was sufficient:—

A witness testified that, ten years before, he helped to build a water-wheel like the patented one; that it was for a man living twelve miles away, who carried it to his mill, when it was finished, and the witness never saw it afterward.[2] So also McLean, J.[3]

But in the same year, in another suit by Parker in a different circuit, Judge Kane held that the making of a prior invention is not sufficient,—its use must be proved.[4]

278. In this connection the reader is reminded that an invention is anticipated if it has clearly been described in some prior patent or publication, although it never has been put in practice; and that the validity of a patent is not affected by the fact that the invention it describes has never been made or used.[5] Wheeler *v.* The Clipper Mower, &c. Co., 10 Blatch. 181;[6] Broadnax *v.* The Central Stock-Yard, &c. Co., 4 Fed. Rep. 214;[7] Household Co. *v.* Neilson, Web. P. C. 718, n.; Newall *v.* Elliott, 10 Jur. N. S. 959;[8] Patterson *v.* Gas Light & Coke Co., 3 App. Cas. 239.[9]

279. A curious point in regard to knowledge without use has arisen, but it has not been decided.

In the case of Illingworth *v.* Spaulding [10] the defendants moved that they might be allowed to amend their answer by inserting an allegation that the invention patented was "known to the following-named persons in this country; namely, John Hogan, who resides in the city of Brooklyn, State of New York, *by whom it had been used in the city of Sheffield, England*, and who knew of its use by J. & Riley Carr & Co. at said city of Sheffield, England." This raised the question whether a knowledge by persons in this country of a foreign use is meant to be included by the words of the statute, "*not known or used by others in this country*." The court allowed the amendment, in order that the

[1] 1 Blatch. 407 (1849).

[2] Uncorroborated evidence of one witness that in a large city, twenty-two years before, he saw a machine like the patented one at work, is not sufficient. Blake *v.* Eagle Works Mfg. Co., 3 Biss. 77.

[3] Pitts *v.* Wemple, 6 McLean, 558 (1855).

[4] Parker *v.* Hulme, 1 Fish. 45, *ante*, page 563.

[5] *Vide*, *post*, page 692.

[6] *Ante*, page 242.

[7] *Post*, page 680.

[8] *Post*, page 684.

[9] *Post*, page 735.

[10] 9 Fed. Rep. 611, before Nixon, J.

matter might remain upon the record, and be decided at the final hearing, or upon appeal.

The learned judge, remarking that prior foreign use does not of itself invalidate a patent, continued: —

"But the offer goes further, and includes proof of a knowledge of such use by persons residing in this country. This suggests a defence different from that of a foreign patent or of a description in a printed publication, and one, I believe, that has never been adjudicated. The nearest approach to it is the case of Judson *v.* Cope (1 Fish. 623).

"A careful examination of the questions raised on the trial leads to the conclusion that the learned judge who presided was inclined to regard as tenable the defence here proposed. A witness named French was on the stand, and the defendants' counsel asked: 'Have you any knowledge of such valve being known and used prior to 1850 by James Watt, at the manufactory in Birmingham called Soho?'

"The question was objected to for want of sufficient notice under the statute, inasmuch as the notice had not stated 'who had knowledge' of the use of the valve by James Watt, but stated simply that it had been used by him at the place named in the interrogatory. The judge said that the question was new; and although he had serious doubts whether any proof was competent to render void an American patent, except that it had been patented abroad, or had been described in a printed publication, yet, in speaking of the defective notice, he said: —

"'If the averment had been that the witness French, residing at a certain place described, had knowledge of the fact that James Watt had known and used this invention in England, perhaps the proof would be competent. If the notice had averred that this witness had knowledge of the use of this invention at Birmingham at the time stated, the question perhaps might be admissible.'"

280. The prior use need not be continuous to the time of the later invention. The prior use need not be repeated. One use is sufficient, provided it be the successful use of a completed invention.[1] *Vide* page 348, *ante*. Shipman, J., in Waterman *v.*

[1] Story, J., in Reed *v.* Cutter, 1 Story, 590: "If the invention is perfected and put into actual use by the first and original inventor, it is of no consequence whether the invention is extensively known or used, or whether the knowledge or use thereof is limited to a few persons, or even to the first inventor himself."

Shepley, J., in Boston Elastic Fabric Co. *v.* East Hampton Rubber Thread Co., 9 O. G. 745: "A patent may be defeated by showing that the thing secured by the patent had been invented and put into actual public use prior to the discovery by the patentee, however limited such use (other than experimental) or knowledge of the prior discovery may have been."

Thompson, 2 Fish. 461; Drummond, J., in Sayles *v.* Chic. & N. W. Railroad Co., 2 Fish. p. 529; McKennan, J., in Shoup *v.* Henrici, 9 O. G. 1163; Clifford, J., Kelleher *v.* Darling, 14 O. G. p. 676.

281. The law in England is the same. In the case of the Household Co. *v.* Neilson[1] (Web. 673), in the House of Lords, Lord Chancellor Lyndhurst said: —

"... If it is proved distinctly that a machine of the same kind was in existence and was in public use, — that is, if use or if trials had been made of it in the eye and in the presence of the public, — it is not necessary that it should come down to the time when this patent was granted. If it was discontinued, still that is sufficient evidence in support of the prior use so as to invalidate the letters-patent. ... If it has been discontinued, provided it has been once in public use and the recollection of it has not been altogether lost, if it has been once publicly used, it will be sufficient to invalidate the letters-patent, although the use may be discontinued at the time when the letters-patent were granted."

The Lord Chancellor, and Lord Campbell, also in this case, explained the bearing of certain expressions used by the judges in the cases of Jones *v.* Pearce and Cornish *v.* Keene (at *nisi prius*), which had been thought to mean that a prior use, continuing to the time of the subsequent letters-patents, was necessary in order to invalidate them.

Lord Campbell said: —

"... What Mr. Justice Patteson may have said in that case,[2] and what Lord Chief Justice Tindal may have said in the other case,[3] taken in conjunction with the whole of their direction, amounts to this, that the abandonment may be material for the assistance of the jury to consider whether it be a perfect invention or not; but assuming it to be a perfect invention, the abandonment becomes wholly immaterial."

282 Present existence of an abandoned, forgotten, and never publicly used invention is no bar to a subsequent patent to an original inventor of the same thing. Hall *v.* Bird, 6 Blatch. 438 (Blatchford, J.).

283. It has been held that anticipation is not proved when

[1] 9 C. & F. 788. The case came up on exceptions to the charge of Lord Justice Clerk Hope in the Scotch Court of Session.

[2] Jones *v.* Pearce, 1 Web. P. C. 122.

[3] Cornish *v.* Keene, 1 Web. P. C. 501; 3 Bing. N. C. 570.

it is shown that the thing patented has existed before merely as a curiosity. In the case of Gibson *v.* Brand,[1] Sir N. C. Tindal instructed the jury as follows: —

"It would not be sufficient to destroy the patent to show that learned persons in their studies had foreseen or had found out this discovery that is afterwards made public, or that a man in his private warehouse had by various experiments endeavored to discover it, and failed, and given it up."

It is doubtful if the first of the statements here quoted should not slightly be qualified. If the prior thing were capable of practical use, though not put to it, it would, we conceive, unless secretly kept, anticipate a subsequent patent for the same thing.

284. If, however, the prior thing were too expensive for practical purposes, or otherwise unfitted for them, it would not anticipate a subsequent invention in the production of which this disadvantage was avoided.

In the case of Young *v.* Fernie,[2] Vice-Chancellor Stuart said: —

"What the law looks to is the inventor and discoverer who finds out and introduces a manufacture which supplies the market, for useful and economical purposes, with an article which was previously little more than the ornament of a museum."

In the case of the Wood-Paper Patent,[3] Mr. Justice Clifford said of Young *v.* Fernie: —

"In that case Vice-Chancellor Stuart remarked upon a distinction between the discoveries of a merely scientific chemist, and of a practical manufacturer who invents the means of producing in abundance, suitable for economical and commercial purposes, that which previously existed as a beautiful item in the cabinets of men of science."

285. An accidental and unrepeated anticipation is no bar to the patent of a subsequent original inventor. Thus, in Hartshorn *v.* Tripp,[4] where the patent was for a carriage curtain-roller, it was proved that the roller acted in the same way that a worn-out roller on an old carriage had been observed to act thirty-five years before by a workman who repaired it. This quality of

[1] 1 Web. P. C. page 628.
[2] 10 L. T. R. 861.
[3] 23 Wall. 566; *vide ante*, page 146.
[4] 7 Blatch. 120; *vide ante*, page 44.

the worn-out roller was not apparent on inspection, and it led to nothing; and it was forgotten, for aught that appeared, until recalled to the memory of the workman who noticed it by the subsequent invention.

Recapitulation.

286. We may now, in conclusion of this chapter, recapitulate the points which we have found to constitute the law of prior knowledge or use, bearing in mind, first, that the statute intends that the patentee shall be he who reveals as well as invents; and, secondly, that in the eye of the law an invention is made public when the community, or some portion thereof, have access to it, or may inform themselves of it.

287. (1.) A suggestion made to the patentee, before his invention, as to the improvement afterward patented by him, renders his patent invalid, if it has enabled him to construct the thing patented *without the exercise of inventive thought on his part;* a suggestion which falls short of having this character is no bar to the patent. *Ante*, pages 623–625.

288. (2.) And so of a suggestion made in the course of the patentee's experiments and in aid thereof. *Ante*, page 625.

289. (3.) A prior inventive idea conceived by some one other than the patentee, not communicated to him, and not reduced to practice, though it be such as, if communicated to the patentee, would have enabled him to construct the thing patented, does not affect the validity of his patent. *Ante*, page 626.

290. (4.) Where it is alleged that substantially the invention patented has had an actual prior existence, there must be shown, in order to defeat the patent, the prior existence of a complete working machine, or of a practically successful article or device; a drawing or a model is not sufficient, nor is an application to the Patent Office, rejected or withdrawn. *Ante*, pages 626, 627.

291. (5.) So, also, of an imperfect prior contrivance, though it contain inventive ideas, and though it needs but a finishing touch to complete it; yet if that finishing touch requires invention, and is necessary to make the improvement practically successful, such prior imperfect contrivance is no bar to the patent of him who has completed it, even though he has taken it as the basis of his experiments. *Ante*, pages 627–632.

292. (6.) *a.* Failure of the alleged anticipation to go into general use;

b. Failure of persons to whom it was shown to remember it;

c. Failure on the part of its maker or owner to patent or preserve it.

These points, especially the first, are, if established, strong evidence that the alleged anticipation was an abandoned experiment. *Ante*, pages 630–632.

293. (7.) Completed, but unused, parts of an incomplete combination anticipate their separate use, though not necessarily their use in a new combination. *Ante*, pages 632, 633.

294. (8.) A single success which the inventor is unable to repeat is no bar to the patent of a subsequent, original inventor, who describes the means whereby such success may be attained. *Ante*, page 632.

295. (9.) An invention, being a complete and practical thing, which has once been used in public, though used but once (whether its value has fully been ascertained or not), or which, though not used, was capable of use and known to the public, but was afterward laid aside and abandoned, is yet a sufficient anticipation of a subsequent original invention of the same thing; provided it is still in the memory of the first inventor, and is not recalled thereto solely by the subsequent production of the same thing. *Ante*, pages 634–644.

296. (10.) The proviso just stated, though laid down by the case of Gayler *v.* Wilder, is somewhat discredited by later cases, and is doubtful law. *Ante*, pages 637–639.

297. (11.) The use in public above referred to need not be a use by the public, or by sale to the public, or in a public place. It may be any but a secret or guarded use. Thus a use in a man's counting-room is for this purpose a use in public. *Ante*, pages 640–642.

298. (12.) It has been said that the present existence of an abandoned and "substantially" forgotten invention, never publicly used, is not a bar to the patent of a later, original inventor of the same thing. *Ante*, page 645; *post*, page 667.

299. (13.) A patent, it has been said, is not invalidated by proof that the invention which it claims has already existed, not as a practical thing, but as a curiosity in the hands of private persons; as, for instance, if it were found in the laboratory of a chemist. *Ante*, pages 645, 646.

ALDEN *v.* DEWEY, 1 STORY, 336.

D. OF MASS., 1840. STORY, J., AND A JURY.

Dexter Peirce's patent of March 11, 1837, for improvement in scythes.

The claim was for—

"Constructing the nib or thole irons and woods, so as, by the extension of the iron beyond the wood [*sic*] with a screw and nut, to regulate and fasten the nibs or tholes in any situation desirable on the snead."

Before the patent of Peirce the nibs of scythes had clumsily been fastened to the snathe by means of an iron ring tightened by wedges. These wedges quickly became loose when the scythe was used.

One Draper testified that he had remarked to the patentee, early in 1835,

"that he found great difficulty in suiting his customers in respect to the nibs of scythe snathes, and that he thought they might be improved by the application of the nut and screw to the nib or thole. He did not suggest any mode of doing this. He never reduced his idea to practice. The witness said that Peirce treated the idea as impracticable, and laughed at it."

Draper knew that Peirce had taken out his patent and afterward sold it; but though he was in the habit of seeing Peirce, he never made any claim to the invention.

Story, J., on these facts, submitted to the jury this question:—

"Did Draper communicate to Peirce substantially the improvement for which he took out his patent, so that without more inventive power Peirce could have applied it? It was not enough that Draper gave a hint; nor, on the other hand, was it necessary that he should communicate every minute thing about the invention; but he must have communicated the substance."

Verdict for the plaintiff.

MANY *v.* JAGGER, 1 BLATCH. p. 385.

N. D. OF N. Y., 1848. NELSON AND CONKLING, JJ., AND A JURY.

Patent, dated March 17, 1838, for a cast-iron railroad wheel. One question being whether the patentee's invention was anticipated by a wheel made by one James, Nelson, J., charged the jury as follows: —

"The James wheel was in general use on the Harlem Railroad in 1834, and to some extent on the New Jersey Railroad. Baldwin, in Philadelphia, in 1835, and Tiers, in the same city, in 1836, one of them a year after, and the other a year and a half after the James wheel was in common use on these two roads, made trials to cast the double-plate wheel [that afterward invented by the patentee]; and we think, on the evidence [just stated] in the case, it is fair to infer that they made their experiments with full knowledge of the James wheel. . . . If this inference be a fair one, — and it is for the jury to say whether it is or not, — then, with the James wheel before them, Baldwin and Tiers both failed to make a double-plate wheel. *They had the idea of such a wheel in their minds, but were unable to perfect it.* The conclusion would seem to follow, that the James wheel and the double-plate wheel were not necessarily identical, or that the former would naturally lead to the making of the latter without any ingenuity other than ordinary mechanical skill."

ADAMS *v.* EDWARDS, 1 FISH. 1.

D. OF MASS., 1848. WOODBURY, J., AND A JURY.

Fitzgerald's patent of June 1, 1843, for making a fire-proof safe by filling a three-inch space between an inner and an outer iron chest with plaster of Paris, either raw or baked, as directed, and alone or with mica. The defence contending that this was not a patentable invention, the court said: —

"It could hardly be justifiable, I think, for the court to say that it is not patentable for want either of importance, apparent novelty, or usefulness."

The defence also alleged that substantially the same thing had been invented before, and they set up several prior devices. It became necessary, therefore, to fix the time of Fitzgerald's

invention; and on that point the court instructed the jury as follows: —

"The law means by invention, not maturity. It must be the idea struck out, the brilliant thought obtained, the great improvement in embryo. He must have that; but if he has that, he may be years improving it, maturing it. It may require half a life. But in that time he must have devoted himself to it as much as circumstances would allow. But the period when he strikes out the plan which he afterward patents, — that is the time of the invention, that is the time when the discovery occurs."

Substantially the same instructions were given to the jury by Grier, J., in a subsequent suit on this patent, Rich *v.* Lippincott (W. D. of Penn., 1853), 2 Fish. 1. But between these two cases occurred the case of

GAYLER *v.* WILDER, 10 How. 477 (1850).

The facts in the case, the charge of the circuit judge, and the chief parts of the opinion of the court, delivered by Taney, C. J., may be found *ante*, at pages 636, 637.

After referring to the fact that, under the statute, the practice of an invention in a foreign country, without its being patented, or described in a publication, is no bar to the patent of an original inventor of the same thing,[1] the Chief Justice continued: —

"So, too, as to the lost arts. It is well known that centuries ago discoveries were made in certain arts, the fruits of which have come down to us, but the means by which the work was accomplished are at this day unknown. The knowledge has been lost for ages. Yet it would hardly be doubted, if any one now discovered an art thus lost, and it was a useful improvement, that upon a fair construction of the act of Congress he would be entitled to a patent. Yet he would not literally be the first and original inventor; but he would be the first to confer on the public the benefit of the invention. He would discover what is unknown, and communicate knowledge which the public had not the means of obtaining without his invention.

"Upon the same principle, and upon the same rule of construction, we think that Fitzgerald must be regarded as the first and original inventor of the safe in question. The case as to this point admits that

[1] *Vide ante*, page 622, foot-note.

although Conner's safe had been kept and used for years, yet no test had been applied to it, and its capacity for resisting heat was not known. There was no evidence to show that any particular value was attached to it after it passed from his possession, or that it was ever afterwards used as a place of security for papers; and it appeared that he himself did not attempt to make another like the one he is supposed to have invented, but used a different one. And upon this state of the evidence the court put it to the jury to say, whether this safe had been finally forgotten or abandoned before Fitzgerald's invention, and whether he was the original inventor of the safe for which he obtained the patent; directing them, if they found these two facts, that their verdict must be for the plaintiff. We think there is no error in this instruction; for if the Conner safe had passed away from the memory of Conner himself and of those who had seen it, and the safe itself had disappeared, the knowledge of the improvement was as completely lost as if it had never been discovered. The public could derive no benefit from it until it was discovered by another inventor. And if Fitzgerald made his discovery by his own efforts, without any knowledge of Conner's, he invented an improvement that was then new, and at that time unknown; and it was not the less new and unknown because Conner's safe was recalled to his memory by the success of Fitzgerald's.

"We do not understand the Circuit Court to have said that the omission of Conner to try the value of his safe by proper tests would deprive it of its priority, nor his omission to bring it into public use. He might have omitted both, and also abandoned its use, and been ignorant of the extent of its value; yet, if it was the same with Fitzgerald's, the latter would not upon such grounds be entitled to a patent, *provided Conner's safe and its mode of construction were still in the memory of Conner* before they were recalled by Fitzgerald's patent.

"The circumstances above mentioned, referred to in the opinion of the Circuit Court, appear to have been introduced as evidence tending to prove that the Conner safe might have been finally forgotten, and upon which this hypothetical instruction was given. Whether this evidence was sufficient for that purpose or not was a question for the jury, and the court left it to them. And if the jury found the fact to be so, and that Fitzgerald again discovered it, we regard him as standing upon the same ground with the discoverer of a lost art, or an unpatented and unpublished foreign invention, and, like him, entitled to a patent. For there was no existing and living knowledge of this improvement or of its former use at the time he made the discovery; and whatever benefit any individual may derive from it in the safety of his papers, he owes entirely to the genius and exertions of Fitzgerald."

McLean, Daniel, and Grier, JJ., dissented, the latter giving no opinion, so that it is impossible to say on what ground he dissented, for there were other questions in the case beside the question of patentability.

McLean, J., held that the law did not inquire whether Conner had tested his safe, or used it for private purposes only, or had forgotten it. All these inquiries, he held, were beside the real question, which was simply this, Was Fitzgerald's safe substantially the same as Conner's?

He held, also, that there was no evidence that the invention of Conner had been "forgotten" or "abandoned," and that, supposing it to be abandoned, it was abandoned to the public and not to Fitzgerald. As to its having been forgotten he said: —

"In 1838 it passed into other hands; but into whose hands it does not appear. In 1843 Fitzgerald obtained his patent. How long before that he made experiments to test the invention is not proved. At most, the time must have been less than five years. This is a short period on which to found a presumption of forgetfulness. The law authorizes no such presumption. It can never become the law. It is not founded on probability or reason. The question is, Was Conner's invention prior to that of Fitzgerald?"

Daniel, J., said: —

". . . This charge, it must be recollected, admits that Conner was, or might have been, the first inventor; and, notwithstanding, asserts that Fitzgerald, though posterior in time, might, upon the conditions and considerations assumed by the judge, become the owner of the right. Are these conditions warranted either by the rules of public policy, or by the terms and language of legislative provisions on such subjects? It is said that patent privileges are allowed as incitements to inventions and improvements by which the public may be benefited. This position, that may be conceded in general, should not be made a means of preventing the great and public purposes its legitimate enforcement is calculated to secure. The admission of this principle leaves entirely open the inquiries, whether he is more the benefactor of the public who makes a useful improvement which he generously shares with his fellow-citizens, or he who studies some device which he denies to all, and limits by every means in his power to a lucrative monopoly; and still more, whether the latter shall be permitted to seize upon that which had already (as is here admitted) been given to the public, thereby to levy contributions, not only on the community at large, but upon

him even who had been its generous benefactor. It was doubtless to prevent consequences like those here presented that the priority and originality of inventions are so uniformly and explicitly insisted upon in all the legislation of Congress, as will presently be shown."

He held, also, that the judge below had left unsettled the degree of publicity necessary to make Conner's invention an anticipation of Fitzgerald's; on this point, as well as on that of Conner's forgetfulness of his safe, he agreed substantially with Judge McLean.

And upon the subject of lost arts he said: —

"An attempt has been made to compare the doctrine propounded by the court to what it might be thought is the law as applicable to the discovery, or rather recovery, of the processes employed in what have been called the lost arts. This illustration is in itself somewhat equivocal, and by no means satisfactory; for if that process could certainly be shown to be the same with one claimed by the modern inventor, his discovery could scarcely have the merit of originality, or be the foundation of exclusive right. But, in truth, the illustration attempted to be drawn from a revival of a lost art is not apposite to the present case. The term 'lost art' is applicable peculiarly to certain monuments of antiquity still remaining in the world, the process of whose accomplishment has been lost for centuries, has been irretrievably swept from the earth. . . . And if a means of producing the effect we see and have amongst us be discovered, and none can either by history or tradition refer to a similar or to the identical process, the inventor of that means may so far claim the merit of originality, though the work itself may have been produced possibly by the same means. But not one principle drawn from such a state of things can be applied to a recent proceeding, which counts from its origin scarcely a period of fifteen years."

PARKHURST *v.* KINSMAN, 1 BLATCH. p. 494.

S. D. OF N. Y., 1849. NELSON, J.

The facts are not reported. The court said: —

"The imperfect and unsatisfactory nature of the experiments made by Sargent, and his subsequent conduct in throwing aside his temporary model and wholly neglecting for years to follow up his experiments, so as to produce a perfect machine, afford strong and decisive evidence of an abandonment of the thing as a failure. It is not enough to defeat a

patent already issued that another conceived the possibility of effecting what the patentee accomplished. To constitute a prior invention, the party alleged to have produced it must have proceeded so far as to have reduced his idea to practice, and embodied it in some distinct form. It must have been carried into practical operation; for he is entitled to a patent who, being an original inventor, has first perfected the invention and adapted it to practical use. Crude and imperfect experiments, equivocal in their results, and then given up for years, cannot be permitted to prevail against an original inventor, who has perfected his improvement and obtained his patent. Gibson *v.* Brand, Webst. P. C. 628; The Household Co. *v.* Neilson, id. 708, 713; Jones *v.* Pearce, id. 124; Galloway *v.* Bleaden, id. 525, 526; Cornish *v.* Keene, id. 508; Hindm. on Pat. 448, 449; Bedford *v.* Hunt, 1 Mason, 302; Reed *v.* Cutter, 1 Story, 590; Curtis on Pat. §§ 40 to 49."

GOODYEAR *v.* DAY, 2 WALL. JR. 283.

D. OF N. J., 1852. GRIER, J.

Goodyear's famous patent for vulcanizing caoutchouc.

Before Goodyear's invention, sulphur and heat had been applied to caoutchouc, but the result had never been successful. The discovery of Goodyear is well described by the reporter as follows: —

"The great peculiarity of the vulcanizing process may be thus stated: If you take a compound of sulphur and rubber in a dry state, and grind and mix them together, and apply heat, the consequence is, that the substance softens and softens as the heat increases, until it reaches a certain height in the thermometer, say 212° Fahrenheit. All the experimenters but Goodyear, while they knew the effect of heat to a certain extent, and knew that it was valuable in producing the compound of the gum with sulphur, yet having found that a considerable degree of heat softened and rendered it more and more plastic, were of opinion, naturally enough, that if heat were carried still higher the whole substance would melt. They reasoned *a priori*, and founded their conclusions upon a general knowledge of the effect of heat. But Goodyear, as the result of untiring experiment, found out that although the application of heat produced a melting effect upon this compound, rendering it more and more plastic and soft, as the degree of heat augmented, *yet when that heat, going on, had got up to a certain much higher*

degree, its effect was the reverse of what it had been, and then the rubber composition commenced to vulcanize and harden, in fact, to make metallic the vegetable substance. And in *adding* to the compound of sulphur and gum used by Hayward *a carbonate or other salt, or oxide of lead*, and subjecting the whole to this *high* degree of heat, was the distinguishing merit of Goodyear's process."

The defence contended that the prior use of sulphur and heat in treating caoutchouc invalidated Goodyear's patent.

Grier, J.: —

" . . . The testimony shows that many persons had made experiments — that they had used sulphur, lead, and heat — before Goodyear's patents, and probably before his discovery. But to what purpose? Their experiments ended in discovering nothing, except, perhaps, that they had ruined themselves. The great difference between them and Goodyear is, that he persisted in his experiments, and finally succeeded in perfecting a valuable discovery; and they failed. It is usually the case when any valuable discovery is made, or any machine of great utility has been invented, that the attention of the public has been turned to that subject previously, and that many persons have been making researches and experiments. Philosophers and mechanicians may have, in some measure, anticipated, in their speculation, the possibility or probability of such discovery or invention; many experiments may have been unsuccessfully tried, coming very near, yet falling short of, the desired result. They have produced nothing beneficial. The invention, when perfected, may truly be said to be the culminating point of many experiments, not only by the inventor, but by many others. He may have profited indirectly by the unsuccessful experiments and failures of others; but it gives them no right to claim a share of the honor or the profit of the successful inventor. It is when speculation has been reduced to practice, when experiment has resulted in discovery, and when that discovery has been perfected by patient and continued experiments, — when some new compound, art, manufacture, or machine has been thus produced, which is useful to the public, — that the party making it becomes a public benefactor, and entitled to a patent.

" And yet, when genius and patient perseverance have at length succeeded, in spite of sneers and scoffs, in perfecting some valuable invention or discovery, how seldom is it followed by reward! Envy robs him of the honor, while speculators, swindlers, and pirates rob him of the profits. Every unsuccessful experimenter who did or did not come very near making the discovery now claims it. Every one who

can invent an improvement, or vary its form, claims a right to pirate the original discovery. We need not summon Morse or Blanchard or Woodworth to prove that this is the usual history of every great discovery or invention."

McCORMICK *v.* SEYMOUR, 3 BLATCH. 209.

N. D. OF N. Y., 1854. NELSON, J., AND A JURY.

Patent for a reaping-machine.

In regard to certain prior machines set up by the defence, Nelson, J., said: —

"There are one or two general observations on this part of the subject which we think it proper to submit to you. With the exception of the patent and machine of Hussey, for aught that appears before us on this trial, not one of the machines referred to ever went into general or successful operation. Why they failed we do not know. What was the secret of their failure we are not informed. What were the defects in their arrangement or construction we are not told. All we know is that, from the evidence in the case, every one of them turned out, in the end, to be an unsuccessful experiment in the way of the construction of a mechanical reaper. It has been supposed that Bell's machine was an exception. But, upon looking into the evidence bearing upon this machine, we scarcely think it an exception to the other machines that turned out to be failures. Bell, it seems, constructed his machine as early as 1828 or 1829. The last account given of it in Loudon's work was in 1829. From that work it appears that, at that time, it succeeded in cutting some one or two acres or more of grain. But from 1829 down to 1853, at which latter date the witness Hussey testifies to its operation, we have no account whatever of this machine. We have no evidence here showing that during that interval the machine was in operation at all; and, in the absence of such proof, it seems to us that no other inference can be drawn than that there must have been some defects in the arrangement and construction of that machine. It is true, as testified to by Hussey, that in 1853, on a trial which took place in Scotland or the North of England, between Bell's and Hussey's and McCormick's machines, Bell's proved the most successful in cutting and laying the grain; and, from that testimony, it would seem to have become a practical machine. But this was in the harvest of 1853, two years after the exhibition in the Crystal Palace, where Hussey's and McCormick's machines were exhibited. During the harvest of 1851

those two machines were repeatedly tried in the neighborhood of the Crystal Palace, and they were again tried in the harvest of 1852.

"Bell's machine was not on exhibition in the Crystal Palace, for aught that appears. We hear nothing of it there, and it was not a competitor with either Hussey's or McCormick's machine during the harvest of 1851. Nor do we hear of it in 1852, in any trial with the other machines; and it is not till the harvest of 1853 that we hear of the Bell machine coming into competition with the two American machines, as a successful reaping-machine. In point of fact, therefore, it would seem, for aught that appears from the testimony in this case, that notwithstanding there have been seven attempts, and six of those American, to construct a successful reaping-machine, but two out of the seven have ultimately become beneficial and useful instruments for the purposes for which they were constructed; that is, the machine of Hussey and the machine of McCormick. It appears from the evidence in the case that Hussey and McCormick turned their attention to the construction of a reaping-machine very nearly at the same period, — McCormick two or three years the earlier. They have persevered from that time down to the present, and they have, each of them, it is conceded, brought out a successful reaping-machine. All the others failed; failed early, gave up the pursuit, and abandoned their machines."

LIVINGSTON *v.* JONES, 1 Fish. 521.

W. D. of Penn., 1859. Grier, J.

The first claim of the patent (issued to one Sherwood, Dec. 14, 1842, afterward extended) was admitted to be infringed, but its originality was contested. It was for

"making cases of door locks and latches double-faced, or so finished that either side may be used for the outside, in order that the same lock or cased fastening may answer for a right or left hand door, substantially as described."

An interior device to effect this alternative use of the lock was the subject of other claims of the patent, but not being used by the defendants it was not in issue in this case. At the trial in the Circuit Court several locks offered in evidence by the defendants were thus disposed of by Mr. Justice Grier: —

"Not one of these locks was ever intended to be a right and left hand, or *Janus*-faced lock. The custom-house lock is from an open

out-door gate. Its inside is necessarily covered tight to preserve the works of the lock from weather and from rust, — a device necessary in all out-door gate-locks. It is not suited, and never was intended, for a *Janus*-faced lock. It is evidently finished on one side only. It is a left-hand lock, and is not a door-lock at all.

"The lock taken from the City Hospital gate is a dead-lock, a right-hand lock. By putting it wrong side out and making some alterations, it might be converted into a left-hand dead-lock. The same may be said of the gate-lock of St. Mark's Church, and all the others. The mechanic who made the custom-house lock in 1840 swears that it was intended and finished only as a left-hand lock. That he never thought of a *Janus*-faced lock, and never manufactured one — but had different patents for right and left hand locks.

"It is abundantly clear from the inspection of these locks that the makers of them were not in search of a plan for *Janus*-faced locks, or aware of the value of such an invention. They may have stumbled over it, but, not seeking it, did not think it worth picking up or examining. As in many other cases, they were near the invention, and might have made it if *they had only thought of it.* Those who are wise *after* the event, and who have been examined as experts, have given testimony, which, when analyzed, amounts to this and nothing more: that these gate-locks, being covered on the inside, might, by a little change, have been made into *Janus*-faced locks, though not so intended by the maker. This fact is *now* apparent to a mechanic who has seen the patented invention before him.

"Experience has caused me to have little confidence in the opinions of experts and professors, who often have more knowledge than judgment. Courts and juries may be much benefited in their researches by the one, while they would be led into great error by confiding too much to the other. The art of printing was stumbled over for five thousand years, and if a patent for it were now presented to our expert, he would show you at once that the whole art consisted in multiplying impressions from a combination of movable types. He would point you to the tracks of animals as original impressions from movable types, and show the invention of printing-letters to be as old as Adam.

"Few patents could stand the test of such ingenuity as this. Incredible as it may appear, yet it is nevertheless true, that, on the trial of the originality of Morse's telegraph, it was gravely argued that two thieves in the penitentiary, who had corresponded by means of scratches and dots on the prison wall, had preceded Morse in the invention of this most astonishing and useful art."

This decision was reversed by the Supreme Court in the case of Jones *v.* Morehead,[1] 1 Wall. 155 (1863). Mr. Justice Miller delivered the opinion as follows: —

"It is the first claim as set forth which the defendants charge to be invalid for want of novelty, and in this we think they are sustained by the testimony. Indeed, it may be doubted if the making of the case which encloses the internal works of the lock with two faces just alike, and so well finished off in point of style that either side may be presented outwards, is a matter which could be patented, if no locks with such cases had ever been made before. But we are not called on to decide this point, and therefore pass it without further comment.

"Several locks were produced on the trial below, and were shown to us here, — being made exhibits by the record, — which we are satisfied are the same in principle as the double faces of the Sherwood lock. Two of these locks are from the gates of the New York City Hall. They are cased both sides alike, enclosing the internal works completely, and are so finished that one side may be presented outward as well as the other, and the locks can be applied to a door swinging from right to left, or from left to right. Locks from the City Hospitals, having the double-faced case, both sides alike, have also been produced, and one from the entrance gate of St. Mark's Church. A lock from the custom-house is shown, which has the double-faced case, both sides alike, and which, by being turned laterally, can be used for a door opening either to the right or left, without even turning the key-hole upside down. These locks are all proven to have been in use several years before Sherwood set up any claim to his invention. They are taken from the most public places in the great commercial city of the Union. These facts are incompatible with the claim of novelty on the part of Sherwood for this part of his patent."[2]

ADAMS *v.* JONES, 1 Fish. 527.

W. D. of Penn., 1859. Grier and McCandless, JJ.

Adams's patent of Feb. 24, 1857, for an "improved keeper for right and left hand door-locks."

The claim was: —

"The use of a bevelled keeper such as described, when employed in connection with a double-faced lock, having a blunt bolt, so that the

[1] Morehead was one of the plaintiffs in the case of Livingston *v.* Jones.

[2] *Vide ante*, page 309.

lock may be used on a right or left hand door without changing any of its parts, as set forth."

Of this invention, Grier, J., said: —

"It purports to be an improvement in the manufacture of an article now known under the appellation of 'Janus-faced door-locks.' That species of lock was invented and patented by Sherwood. But in order to accommodate it to either a right or left hand door, it was necessary to open it so as to change the bevelled side of the bolt. When this was done by a careless or inexperienced workman, the internal works of the lock were liable to become displaced. The object of complainant's invention is to obviate this difficulty. It is accomplished by making the bolt blunt, with rounded edges, and making a keeper, whose lip is an inclined plane the whole length of the keeper, so that the lock is available for either a right or left hand door, without opening it to change the bolt, as the keeper may be turned with either side up and catch the bolt. This is undoubtedly a valuable improvement in the manufacture of 'Janus-faced door-locks,' as it simplifies and cheapens the article. Drop-catch keepers had before used a slightly inclined plane on the lip of the keeper, but it could be used only for such a door as they were specially made for. . . . The spring-bolt brought from Birmingham clearly shows that the device invented by Adams to improve Janus-faced locks had never entered into the conception of the maker of it. As the bolt was only partially bevelled, he had somewhat inclined the lip of the catch to make it slide with more ease.

"Everything which we have said[1] with regard to the New York gate-locks, got up to defeat the Sherwood patent, applies with double force to the rusty sample brought to our notice from Birmingham.

"In both cases the defence amounts to no more than this, that the persons who made these supposed originals came so near the patented device or machine that they might have discovered it if they had only thought of it, or could have anticipated that at some future day it could be converted to some useful practical purpose for simplifying, cheapening, and improving an important article of our manufacture. It is only when some person, by labor and perseverance, has been successful in perfecting some valuable manufacture by ingenious improvements and labor-saving devices that their patents are sought to be annulled by digging up some useless, rusty, forgotten contrivances of unsuccessful experimenters."

[1] *Vide* page 659, *ante*.

CAHOON *v.* RING, 1 CLIFF. 592.

D. OF ME., 1859. CLIFFORD, J., AND A JURY.

See this case at page 88, *ante*.

In regard to alleged prior inventions, the court said:—

"In respect to these machines, you are instructed to inquire whether either of those persons made an operating machine, or whether they only made models or drawings from which machines might be constructed. If the latter only were made, and although such models might be capable of operation for the purpose of experiments, yet, unless it is proved to your satisfaction that a machine or machines, capable of being used for actual agricultural purposes, was or were made prior to Cahoon's invention, then, as a matter of law, I instruct you that such alleged inventions never were completed, and cannot affect the validity of Cahoon's patent."

In regard to the machine of one Luce, set up by the defence:—

"You are also instructed that, as a single specimen only of such a machine was made, whether capable of use, and whether actually used or not by the party making it for the purpose of testing its operation, if you find from the evidence that the same was kept in his own possession from the knowledge of the public, and was subsequently broken up and its materials used for other purposes; that the substantial parts of it were finally lost prior to May 14, 1857 [date of Cahoon's original application]; and that its construction was only recalled to the memory of the maker by the present controversy, and, when so recalled, that the essential parts of the machine did not exist, so that the public could not derive the knowledge of it from the machine itself, but only from the memory of the alleged inventor, — the existence of such prior machine will not invalidate the patent under consideration, even if the invention of Cahoon was subsequent in date, and although such machine may have embodied all the improvements subsequently invented by Cahoon, if he was an original inventor of his improvements without knowledge of such machine, and did not derive any of them from Luce."

MATTHEWS *v.* SKATES, 1 FISH. 602.

S. D. OF ALA., 1860. JONES, J. AND A JURY.

The court charged as follows:—

"In order to constitute a man an inventor, it is generally necessary that he must have exercised some inventive faculty of his own. I say generally necessary, because there might, no doubt, be cases in which an invention might be the result of pure accident. But the fact that he has received some ideas, hints, or suggestions on the subject from others would not prevent him from being considered an inventor, and entitled to a patent as such. To have that effect it must appear that the invention was substantially communicated to him by some other person, so that, without the exercise of any inventive power of his own, he could have applied it in practice. Though others may have previously had similar ideas, and may have experimented upon them, the person who first perfected the idea, and made it capable of practical use, is the inventor, and entitled to a patent. . . .

"If the composition described in Cox's patent was known and used, either for packing or other purposes, before his invention of it, in a form or manner substantially the same as that described by him, it would not be a new invention. A mere new use or application of a material or composition previously known is not a new invention.

"The point of time to which you are to look in deciding this question is *the time of the invention.* It is neither the date of the patent, nor is it the time when the idea was first conceived by the inventor. It is the time when the idea is not only distinct and complete in the mind of the inventor, but that idea is reduced to practice and embodied in some distinct form. Curtis, 43. This must necessarily be some time, more or less, before the date of the patent, and some time, more or less, after the first conception by the inventor.

"When the idea first entered into the mind of the inventor, it is almost necessarily in a crude and imperfect state. His mind will naturally dwell and reflect upon it. It is not until his reflections, investigations, and experiments have reached such a point of maturity that he not only has a clear and definite idea of the principle, and of the mode and manner in which it is to be practically applied to useful purposes, but has reduced his idea to practice, and embraced it in some distinct form, that it can be said he has achieved a new and useful invention. That is the real time of his invention, though it may be months or years before he obtains a patent for it. Indeed, he would be none the less an inventor though he never obtained a patent for it."

HAYDEN *v.* SUFFOLK MANUFACTURING CO., 4 FISH. p. 102.

D. OF MASS., 1862. SPRAGUE, J.

On the question of abandoned experiment, Sprague, J., instructed the jury as follows: —

"... If there were experiments made, gentlemen, and they tend to a certain point, and there is no certainty to what extent they went, then the subsequent conduct of the parties who made experiments and were interested in it may aid you in forming an opinion of what they accomplished. If they preserved it as a thing valuable, it has a weight in one direction as showing that they had accomplished something. If they did not preserve it, but abandoned it, — the evidence is to be weighed whether it was abandoned or not, whether a success had been obtained in anything that was worthy of preservation, or could accomplish a practical and useful purpose; and the weight of this, you will probably know, is in proportion to the importance of the thing. There may be an invention, gentlemen, of so unimportant a character that, although it be really an invention, something of practical use, it may be in relation to a subject-matter of so little importance or of transient interest that the occasion may pass by, and it may be laid aside and never used afterward, because there is no occasion for it, as there are many patents for articles of dress of the day, which are patented for the day, while the fashion lasts, and pass away when the fashion passes away. On the other hand, if the invention be of something which can be of great practical importance, an enduring importance, then you will consider how much stronger will be the incentive to success in perfecting that which would have been of importance; and the greater the importance of the invention, the less probable that, if achieved, it would have been laid aside and not extended itself to others interested in its use."

WATERMAN *v.* THOMPSON, 2 FISH. 461.

S. D. OF N. Y., 1863. SHIPMAN, J., AND A JURY.

Waterman's patent of Aug. 24, 1858, for a process of tempering iron and steel.

The claim was for —

"The process of hardening steel wire or thin steel in long sections, being kept under a longitudinal strain by means of the wheels D D,

while passing through the fire in the furnace to the guide H, to conduct the wire directly from the fire into the hardening bath, in combination with such hardening bath as specified."

A prior invention of one Ely was set up in defence, but it is not described in the report.

In regard to it Judge Shipman charged as follows:—

"Now, if the jury are satisfied that Ely did work this process substantially as he has described on this trial, at the time he states, then the defendants are entitled to a verdict.

"By working this process I mean successfully working it, by performing substantially the same thing as the plaintiff performs with his machine in substantially the same manner. It is not necessary that Ely's wire should have been flat; the process applies to round as well as flat wire. It is not necessary that he should have used his wire for skirts, or that any one should have done so; nor is it necessary that he should have worked the process with the same degree of skill and success as the plaintiff has attained. It is sufficient if he performed the operation of hardening his wire substantially upon the method which the plaintiff claims, and that he did it with that degree of success which demonstrated its usefulness. If he merely made an experiment and failed, abandoning his contrivance because it would not work, then it is of no account. But the mere fact that he ceased to use it because he had no further occasion to do so is of itself of no importance."

WOODMAN *v.* STIMPSON,[1] 3 Fish. p. 105.

D. of Mass., 1866. Lowell, J.

Lowell, J.:—

"Now, the defendant says that there were machines which were substantially like the plaintiff's invention before the date of his discovery. On that point there is this to be observed in the outset: They must have been working machines, not mere experiments. They must have done work, or been capable of doing work, and not been mere experiments afterward abandoned. Whether they were in fact operated for a greater or less time is of no importance, except so far as that may tend to make you believe that they were or were not mere experiments; in that view, the fact is of some consequence. But if you are satisfied that they were machines capable of doing work sub-

[1] *Vide ante*, page 429.

stantially by the same arrangement as the plaintiff's actual working machines, then the fact that they were operated but a short time, and then abandoned for other reasons than because they had failed as machines, is of no consequence."

WHITELY *v.* KIRBY, 11 WALL. 678 (1868).

Kirby & Osborn's reissued patent of Jan. 28, 1862, for harvesting and mowing machines.

The court, by Mr. Justice Nelson, said: —

". . . The defendants set up in their answer, and gave in evidence, two patents for harvesters, which, they claimed, antedated this invention of Dinsmore. The first, Nelson Platt's, . . . June 12, 1849; the second, Alfred Churchill's, . . . March 3, 1841. There is no proof in the record in respect to these patents. Whether any machine was ever constructed under either of them, or went into practical use if constructed, or whether each were but an imperfect or abandoned experiment, are matters apparently regarded by the counsel who introduced them as of no great importance. Nothing appears to be known in respect to them except that they were found among the records of the Patent Office, and have relation to the subject of grain harvesters. Whatever may have been their merit, however, as harvesters, they can have no material bearing that we can perceive upon this invention of the complainants; for, as it respects the peculiar device for which the present patent was granted, it is not to be found in either of them, neither in the specification or claims."

HASELDEN *v.* OGDEN, 3 FISH. 378.

S. D. OF OHIO, 1868. SHERMAN, J., AND A JURY.

"The prior use of an alleged invention must be a public use, and not a private use. If an invention is made and used in a private way, and then thrown aside and not given to the public, a patent granted to a subsequent inventor would be a valid patent. But if, in the use of the invention by the first inventor, the second inventor had access to it and could have had knowledge of it, then the patent subsequently issued would be void and invalid."

HALL *v.* BIRD, 6 BLATCH. 439.

S. D. OF N. Y., 1869. BLATCHFORD, J.

A patent granted in August, 1864, for an improved machine for stretching chains.

Chain links all stretch when first used, but unequally; and the plaintiff's invention was designed to obviate such inequality by stretching each link until it attained a certain length, determined by the gauge which formed a part of the machine. It is necessary that the links of chains which are to be used over pulleys should be equal in length, in order that each link may "engage with the teeth on the pulleys, or fit . . . snugly in recesses made therein."

The defendant asserted that a machine, substantially identical with that of the plaintiff, had been made and used by his father many years before the plaintiff's invention.

Blatchford, J.: —

"It is in evidence that the defendant's father, in 1852, procured to be constructed in New York a machine for stretching chains. . . . This machine he placed in a cellar, where he used it, keeping it concealed, however, from persons in general. The door of the cellar was kept locked, and, so far as appears, the existence of the machine was known only to the machinist who put it up, to the defendant's father, to the defendant's brother, and to the defendant himself. The defendant states, in his testimony, that the machine was locked up to keep people from seeing it; that his father always locked the door of the basement or cellar where it was when he came out; that the machine was kept secret; that it was not used very often, perhaps not once in a month, or six months, or a year; that finally he took from off the machine a pair of boxes which he wished to use for another purpose; and that the machine thereafter remained in the cellar unused, until it was removed from there by him, his father having died in 1862. It also appears that the machine was removed from this cellar into the defendant's shop in July, 1865; that when taken out it was in a rusty condition; that prior to its being so taken out, the defendant, in making chains which required the links to be of equal length, stretched the links by hand, by means of the hammer and the anvil, and not by any machine; that during 1864 the plaintiff's machine was described to the defendant by a workman who was at the time in his employ, and who had previously been in the plaintiff's employ and used his machine; and that thereafter the rusty machine was exhumed from the cellar and

cleaned and fitted up in the defendant's shop, and used to stretch the links of chains. It does not satisfactorily appear that during the time that the machine in the cellar was used by the defendant's father he made any chains which required the links to be stretched to uniform lengths, or that he used the machine to stretch the links of chains to a uniform length.

"On the foregoing facts, I think that this case fairly falls within the case of Gayler *v.* Wilder, 10 How. 477, even assuming that the old machine, in the condition in which it was while in the cellar, was substantially identical in construction with the machine as used by the defendant after July, 1865, and with the plaintiff's machine."

Judge Blatchford then rehearsed the facts in Gayler *v.* Wilder, and he continued: —

"Now, although the old machine in the present case was constructed in 1852, and had been kept in the cellar of the defendant's father under the circumstances stated, and had been occasionally used there, and although it had not bodily disappeared from view, yet its existence and use were not made public, the knowledge and use of it did not exist in a manner accessible to the public, it had been substantially abandoned, and it had substantially passed away from the memory of those who had used it, as is shown by the fact that when they were called on to stretch the links of chains to a uniform length — a purpose to which it is not shown that the defendant's father ever applied the machine — it did not occur to them to use the machine for the purpose, until after they had learned of the existence and use of the plaintiff's machine. The knowledge of the machine was therefore as effectually lost as if it had never been constructed, and the public could derive no benefit from the invention embodied in it until such invention should be discovered by another inventor. As it clearly appears that the plaintiff made his invention by his own efforts, without any knowledge of the machine in the cellar of the defendant's father, he invented an improvement which was then new and was at the time unknown; because the old machine was recalled to the memory of the defendant, and of his brother, and of the machinist who put it up, by the success of the plaintiff's machine."

He then goes on to show that an important element of the plaintiff's machine did not exist in the machine of the defendant's father, but did exist in the machine used by the defendant after July, 1865, so that on this ground the identity of the plaintiff's machine with that alleged to anticipate it failed to be established.

COFFIN *v.* OGDEN, 7 BLATCH. 61.

S. D. OF N. Y., 1869. BLATCHFORD, J.

Infringement of a patent for improvement in locks and latches, reissued Jan. 27, 1863, to Charles A. Miller, assignee of the inventor Kirkman, to whom the original patent was granted.

The objection being taken that the reissued patent claimed an "effect or function, irrespective of any particular mechanism," the court held that it was founded upon a wrong construction of the patent.

The chief defence, however, was that the invention of one Erbe anticipated that of Kirkman. The identity of the two inventions was obvious, and the court so held; but the plaintiff contended that Erbe's was an abandoned or incomplete invention, and this point only was considered by the Supreme Court, on appeal, in the case of

COFFIN *v.* OGDEN, 18 WALL. 120 (1873).

The facts were as follows: Kirkman made his invention in March, 1861; Erbe made his not later than Jan. 1, 1861.

Erbe said in his deposition that he first made his lock in the latter part of the year 1860. The first lock he gave to Jones, Wallingford, & Co., his employers; the second he sent to Washington in 1864, when he applied for a patent (which he did not obtain); the third he made for a friend of Jones. He thought the first lock was applied to a door, but he was not certain.

One Brossi testified that in 1860 he was engaged in lock-making; that in that year the plaintiff showed him the lock which he had made (exactly like the one produced in court), and that in the same year he saw the lock, or one like it, on the office-door of Jones, Wallingford, & Co.

One Masta, also an employee of Jones, Wallingford, & Co., was shown the lock by Erbe, in 1860.

One Patterson, superintendent in 1860 of Jones, Wallingford, & Co.'s factory, testified that Erbe showed him the lock about the 1st of January, 1861. Patterson also said: "It was our uniform custom to put our new locks on the doors about the office to test them, and I believe that one was put on; but at this distance of time I cannot say positively that it was."

"There is no proof," said the court, "that Erbe made any locks according to his invention here in question but those mentioned in his testimony. He applied for a patent in 1864, and failed to get it. Why, is not disclosed in the record."

The testimony for the plaintiff was not contradicted.

Mr. Justice Swayne, for the court, said: —

"The case arose while the Patent Act of 1836 was in force, and must be decided under its provisions. The sixth section of that act requires that, to entitle the applicant to a patent, his invention or discovery must be one 'not known or used by others before his invention or discovery thereof.' The fifteenth section allowed a party sued for infringement to prove, among other defences, that the patentee 'was not the original and first inventor of the thing patented, or of a substantial and material part thereof claimed to be new.' The whole act is to be taken together and construed in the light of the context. The meaning of these sections must be sought in the import of their language and in the object and policy of the legislature in enacting them.[1] The invention or discovery relied upon as a defence must have been complete, and capable of producing the result sought to be accomplished; and this must be shown by the defendant. The burden of proof rests upon him, and every reasonable doubt should be resolved against him. If the thing were embryotic or inchoate; if it rested in speculation or experiment; if the process pursued for its development had failed to reach the point of consummation, — it cannot avail to defeat a patent founded upon a discovery or invention which was completed, while in the other case there was only progress, however near that progress may have approximated to the end in view. The law requires not conjecture, but certainty. If the question relate to a machine, the conception must have been clothed in substantial forms which demonstrate at once its practical efficacy and utility.[2] The prior knowledge and use by a single person is sufficient. The number is immaterial.[3] Until his work *is done*, the inventor has given nothing to the public. In Gayler *v.* Wilder, the views of this court upon the subject were thus expressed: 'We do not understand the Circuit Court to have said that the omission of Conner to try his safe by the proper tests would deprive it of its priority, nor his omission to bring it into public use. He might have omitted both, and also abandoned its use, and been ignorant of the extent of its value; yet if it was the same with Fitzgerald's, the latter would not, upon such grounds, be entitled to a patent; provided Conner's

[1] Gayler *v.* Wilder, 10 How. 496.
[2] Reed *v.* Cutter, 1 Story, 590.
[3] Bedford *v.* Hunt, 1 Mason, 302.

safe and its mode of construction were still in the memory of Conner before they were recalled by Fitzgerald's patent. Whether the proposition expressed by the proviso in the last sentence is a sound one, it is not necessary in this case to consider.

"Here it is abundantly proved that the lock originally made by Erbe was 'complete and capable of working.' The priority of Erbe's invention is clearly shown. It was known at the time to at least five persons, including Jones; and probably to many others in the shop where Erbe worked; and the lock was put in use, being applied to a door, as proved by Brossi. It was thus tested and shown to be successful. These facts bring the case made by the appellees within the severest legal tests which can be applied to them. The defence relied upon is fully made out."

PARHAM *v.* AMERICAN BUTTON-HOLE, OVERSEAMING, AND SEWING MACHINE CO., 4 Fish. 468.

E. D. of Penn., 1871. Strong and McKennan, JJ.

The plaintiff's sewing-machine was completed in 1852. Three prior machines were adduced. The court held that they did not anticipate the plaintiff's invention, and that they were abandoned and unsuccessful experiments. The evidence on the latter point was as follows. Of the first two the court said: —

"Their history is somewhat extraordinary. The first one was made by Fisher, and he never saw it in practical operation. It was made for E. D. Leavitt, and the only use he knew or 'thought' was made of it is stated in his answer to the 38th cross-interrogatory propounded to him: 'I think samples were sewed by it, enough to show the working of the principle; but very little.' It was delivered to Wickersham, as a model for a duplicate, and remained in his shop at the Mechanic Mills, at Lowell, until 1857, when it was disentombed from the attic of that establishment and carried to Boston, to Martin and Rufus Leavitt, by whom it had been purchased. To them it belonged when the proofs were taken. At no time during all this period was it employed in any operative use, except as stated by E. D. Leavitt.

"The Fisher-Wickersham machine was delivered to E. D. Leavitt in October, 1850, and he sewed with it a pair of pants and a jacket for a small boy, and a pair of pants for a larger boy. It was kept most of the time until April, 1857, in a small room upstairs in his house, when it also was sold to Martin and Rufus Leavitt for $200; but no use was made of it during this time, not even by Leavitt's wife in making cloth-

ing for their children. When the Leavitts got it, it was boxed up, and only taken out to be used in a lawsuit in Baltimore, after which it was returned to the box, and remained there until it was reproduced in this case."

After remarking that at the time these machines were made the value of the sewing-machine was known, &c., and commenting on the fact that no patent was applied for, and no further effort to test them made, the court said : —

"While, therefore, there has been no satisfactory trial of the efficiency of these machines, and the persons interested in them have thus indicated so decided a judgment against their practical utility, we but enforce a logical sequence in assigning them to the category of unsuccessful and abandoned experiments."

UNITED NICKEL CO. *v.* ANTHES, 1 HOLMES, 155.

D. OF MASS., 1872. SHEPLEY, J.

Adams's patents of Aug. 3, 1869, for the electro-deposition of metal.

The learned judge, in his opinion, showed that the electro-deposition of nickel was first practically accomplished by the patentee, and he thus referred to an alleged prior discoverer : —

"The evidence of Remington shows an experiment with a cast-nickel anode, and we may, perhaps, reasonably conclude from the conditions under which that experiment was made, that the product of the casting was a carbide of nickel. But if such was the result, it was one apparently not designed, appreciated, or discovered. The experiments of Remington with a cast-nickel anode appear to have been suggested by the discoveries of the patentee, and to have been unsuccessful and abandoned experiments. However suggestive the experiments of others may have been in electro-deposition of nickel from different solutions, or in the mere casting of nickel, they cannot be made available to defeat a patent granted to one who, after all the experimenters had failed to secure a practical and successful result beneficial to the community, and a valuable contribution to the useful arts, first succeeded so as to be able to disclose to the public a practically useful and successful process, by him first brought to perfection and first made capable of useful application."

This patent was also sustained in the cases of the same plaintiff *v.* Keith, 1 Holmes, 328; *v.* Harris, 15 Blatch. 319; *v.* The Manhattan Brass Co., 16 Blatch. 68.

SHOUP *v.* HENRICI, 9 O. G. 1162.

W. D. of Penn., 1872. McKennan, J.

Patent for a pump.

"Years before" the patentee conceived of his invention, — a pump, — a similar device was used *once*. It effected the same object that the patentee's pump did; but inasmuch as the volume of water was restricted by its use (a consequence which, for all that appears, appertained to the patentee's pump also), its use was discontinued. The court held that this was not an "abandoned experiment," and that it anticipated the patentee's device.

AULTMAN *v.* HOLLEY, 11 Blatch. p. 333.

S. D. of N. Y., 1873. Woodruff, J.

Woodruff, J.: —

"The suggestion, that where . . . experiments are made without resulting in a useful machine, and the product thereof is abandoned on that ground, whatever devices it contained become public property, and can be dug up in after years and produced to defeat the patent of an independent and successful inventor, is not, I think, sound or warranted by the law."

THE CORN-PLANTER PATENT,[1] 23 Wall. p. 210 (1874).

Of an abandoned experiment for which a patent had unsuccessfully been sought the court said: —

"Can the fact that such an application was made and afterwards voluntarily withdrawn, and never renewed, make any difference? We think not. . . . It can only have a bearing on the question of prior invention or discovery. If upon the whole of the evidence it appears

[1] *Vide* also page 146 and page 633, *ante*.

that the alleged prior invention or discovery was only an experiment, and was never perfected or brought into actual use, but was abandoned and never revived by the alleged inventor, the mere fact of having unsuccessfully applied for a patent therefor cannot take the case out of the category of unsuccessful experiments."

PELTON *v.* WATERS, 1 BANNING & ARDEN, 599.

S. D. OF OHIO, 1874. EMMONS AND SWING, JJ.

Patent for an improvement in lubricators.

The court:—

"He [Waters, the defendant] says, most explicitly, that though he did succeed accidentally in making one close joint upon the neck of that single globe, he tried in vain for five months thereafter to make another. He says he broke many bottles in the attempt; that he did not even partially succeed, but in a single instance, during the five months, and that one leaked so badly it was unfit for use. . . . He not only had not invented a close joint, but he had so little hope of success, that he prepared extensively for the making of a different and inferior lubricator. In these circumstances, a single fortuitous success is by no means invention, within the protection of the patent law. He not only did not, and could not, give it to the public, but he did not possess it himself. It might as well be claimed that if he should be carrying three bottles in a basket, which being accidentally broken, their contents mixing in unknown quantities upon the earth, makes some useful compound, and he should enter upon a series of experiments for the purpose of ascertaining, if possible, its relative proportions, but does not succeed in doing so until after another has successfully completed the discovery, he could antedate him by proof of the casualty, by which he saw the same thing produced."

RAILWAY CO. *v.* SAYLES, 97 U. S. 554 (1878).

Patent, dated July 6, 1852, granted to Henry Tanner, assignee of Thompson & Bachelder, for a double-acting car-brake.

The claim ran as follows:—

"What is claimed by us is so to combine the brakes of the two trucks with the operative windlasses or their equivalents at both ends of the cars, by means of the vibrating lever A, or its equivalent or

mechanism, essentially as specified, as to enable the brakeman, by operating either of the windlasses, to simultaneously apply the brakes of both trucks, or bring or force them against their respective wheels, and whether he be at the forward or rear end of the car."

The only question raised in this case was that of infringement; but in order to determine the scope of the plaintiff's patent, the court considered certain prior inventions. It appeared that "double brakes" — that is, brakes so connected that those on both trucks of a car may be moved simultaneously and by one operation — were not original with Thompson & Bachelder. The patent for their invention was therefore restricted by the court to that form of double brake which they described.

Mr. Justice Bradley, delivering the opinion of the court, said: —

"Like almost all other inventions, that of double brakes came when, in the progress of mechanical improvement, it was needed; and being sought by many minds, it is not wonderful that it was developed in different and independent forms, all original, and yet all bearing a somewhat general resemblance to each other. In such cases, if one inventor precedes all the rest, and strikes out something which includes and underlies all that they produce, he acquires a monopoly, and subjects them to tribute.

"But if the advance towards the thing desired is gradual, and proceeds step by step, so that no one can claim the complete whole, then each is entitled only to the specific form of device which he produces, and every other inventor is entitled to his own specific form so long as it differs from those of his competitors and does not include theirs. These general principles are so obvious that they need no argument or illustration to support them."

Two kinds of double brake, the court found, had been in use prior to Tanner's invention. These were called respectively the Springfield brake and the Millholland brake.

The Springfield brake, made in 1842 or 1843, was used for a year or two on a freight car belonging to the Western Railroad of Massachusetts, until the car was broken up. Afterward, in 1856 and 1857, this brake, slightly modified, was used on the passenger cars of the same railroad for more than a year.

"It was undoubtedly," said the court, "attended with some inconveniences in its operation, especially in going around sharp curves.

But this did not prevent it from being used; and on a straight track, or on a track having only slight curves, it operated very satisfactorily."

The Millholland brake, the court said, approached much nearer, in its mode of operation, to the Tanner brake than did the Springfield. They continued as follows: —

"According to the testimony, it was placed on a passenger car of the Baltimore and Susquehanna Railroad, in or about the year 1843, and was continued in use for a considerable period, — one witness says a year or eighteen months. It was taken off because the brakemen were opposed to it, inasmuch as it had to be worked by hand by means of a windlass, whilst they were used to brakes that were operated by the foot. Whilst used, however, it worked with entire success. It is thus described by the inventor, James Millholland, in his testimony. He says: 'It broke upon all of the eight wheels from either end of the car. The brakes were operated by means of a drum placed under the car, about the centre. There were connections running from this drum to the levers on each truck, and also from the drum to the windlasses of the car.' . . . The drum performed almost precisely the same office which is performed by the vibrating lever in the Tanner brake, operating by means of the connecting rods upon the brakes in nearly the same manner.

"In 1846 Millholland applied a double brake somewhat like the last named to car-tenders, using a rock shaft with an arm on it instead of the drum, as a means of connecting the brakes to the two trucks. This brake was continued in use for many years.

"The subsequent invention of double brakes of improved and better forms superseded these early brakes, it is true; so that, excepting the modified forms in which they were applied to tenders, and excepting the temporary resuscitation of the Springfield brake in 1856, and again in 1871, they went entirely out of use. But their construction and use, though with limited success, are sufficient to show that Thompson & Bachelder . . . were not the originators of the double brake, nor of the use of rods, chains, and similar appliances for connecting the brake systems of two trucks under a car. They invented a particular apparatus for doing the desired work; and they can only claim their particular apparatus, or that which is substantially the same."

At the trial of this case in the court below,[1] Judge Drummond said: —

"It is asked, How often shall a brake be used to antedate the invention of Bachelder & Thompson? The answer is, Until that

[1] Sayles *v.* Chicago & Northwestern R. R. Co., 3 Biss. 52.

which is claimed as new in the patent is complete, although the thing may have been imperfect as an instrument or a machine. If it were manifest that the thing claimed in the patent was accomplished, one use would be sufficient. If the construction of the thing of itself demonstrated that it was within the principle here stated, then perhaps no use need be established. It might then be said to prove itself. But in most cases sufficient use must be shown to prove it will accomplish what is claimed; and while this is generally true of a patent, it is equally true of that by which a patent is sought to be defeated. Otherwise, it rests in the region of mere experiment."

PICKERING *v.* McCULLOUGH,[1] 13 O. G. 818.

W. D. of Penn., 1878. McKennan, J.

Nimmo's patent for a machine for manufacturing plumbago crucibles. Proof of a prior machine was offered, as an anticipation of Nimmo's. The court: —

"The argument against this hypothesis is, that it was an abandoned experiment. But the proof is that it was a complete machine; that it operated for nearly a year; that crucibles were made upon it without any imperfection in form. . . . True it is that it was not produced in evidence, and that it was not shown what had become of it. But these considerations tend rather to discredit the testimony touching the existence, construction, and operation of the machine than to impress upon it the character of a mere experiment. If that testimony is believed, there can be no doubt that the machine was neither incomplete in construction nor ineffective in adaptation to the work for which it was intended. And it is now too well settled to admit of controversy that an abandonment of the use of a mechanical structure which has been brought to such a degree of maturity, and whose operative merit has been demonstrated by trial, will inure to the benefit of the public, and not to that of even an original but subsequent inventor. Bedford *v.* Hunt, 1 Mas. 305; Reed *v.* Cutter, 1 Story, 600; Gayler *v.* Wilder, 10 How. 498; Coffin *v.* Ogden, 18 Wall. 124."

[1] *Vide* this case in the Supreme Court, *ante*, page 400, *post*, page 725.

DRAPER *v.* POTOMSKA MILLS, 13 O. G. 276.

D. OF MASS., 1878. SHEPLEY, J.

"An imperfect and incomplete invention, resting in mere theory, or in intellectual notion, or in uncertain experiments, and not actually reduced to practice and embodied in some distinct machinery, apparatus, manufacture, or composition of matter, is not, and indeed cannot be, patentable under our patent acts, since it is impossible, under such circumstances, to comply with the fundamental requisites of these acts. Reed *v.* Cutter, 1 Story, 590. Illustrated drawings of conceived ideas do not constitute an invention; and unless they are followed up by a seasonable observance of the requirements of the patent laws, they can have no effect upon a subsequently granted patent to another. But a patentee whose patent is assailed upon the ground of want of novelty may show by sketches and drawings the date of his inceptive invention; and if he has exercised reasonable diligence in perfecting and adapting it, and in applying for his patent, its protection will be carried back to such date. Reeves *v.* The Keystone Bridge Co., 1 O. G. 466.

THE UNION PAPER-BAG MACHINE CO. *v.* THE PULTZ & WALKLEY CO., 15 BLATCH. 160; 16 BLATCH. 76.

D. OF CONN., 1878, 1879. SHIPMAN, J.

William Goodale's patent of July 12, 1859 (extended), for improvements in machinery for making bags.

The invention was thus stated by the court in Machine Co. *v.* Murphy (97 U. S. 120), where infringement only was in question: —

"An operative machine to make paper bags from a roll of paper in the flat sheet, by a transverse cut across the same with a knife having five planes, so that the blanks, so called, when cut and folded, will present a paper bag of the form . . . given in the specifications and drawings of the patent."

The chief question in the first case, and the only one in the second, was whether a previous, abandoned device should limit the patentee's invention or not. This previous machine was made by the patentee's brother, E. W. Goodale, in 1856. He applied for a patent, and made a small model; but his application was rejected, and the inventor never made a working machine or

used the invention in any way, but he abandoned it and purchased his brother's invention, and used that. His brother, W. Goodale, the patentee, worked for E. W. Goodale, and was familiar with the abandoned machine. That machine is not described in either report, but it appears that the knife in it would substantially have done the work of the knife in the patentee's machine, though it was admitted that the latter knife had a patentable improvement upon it. The question, then, was whether William Goodale's invention should be limited to that patentable improvement, or should include the knife itself, although the knife in the abandoned machine was substantially identical with it.

Said the court, in the second case, page 78: —

"It is said, and said truly, that the subject of the first claim is a knife not in combination with any other part of the machine, and therefore, for the purposes of this case, the knife *per se* was the thing which the patentee invented; and it is strenuously insisted that the court must look at the two knives, disconnected from any other mechanism, and that it is obvious that the patentee knew, or must have known, that his brother's knife would cut the desired blank, and that there could have been no ignorance in regard to the feasibility of the device, for simple inspection would impart knowledge, and no experiment was necessary. But the knife was not to be a hand-tool. It was to be a part of an automatic bag-machine, and, therefore, a knife was to be invented which could be used in connection with other parts of the machine, although in the claim it is properly separately claimed. Inspection would show that such a knife would cut out pieces of paper in the form of a blank. Inspection would not show that it would operate in the place where it necessarily must be used. The fact that such a knife would do the work was not a part of the fund of knowledge which the patentee had when he commenced to plan his invention.

"If, then, as I think was the case, all that William Goodale knew was that the three-cutter system had been represented in a model, with which model he was familiar, and that the model had been laid aside, but did not, therefore, know that it was adequate to do the work, he started as an independent inventor into an unoccupied field of invention, and his invention is as broad as the territory which he actually reduced to possession."[1]

[1] We quote the following from the opinion in the first case: "The patentee has the right to take up the improvement at the point where it was left by his predecessor, and if by the exercise of his own inventive skill he is successful in first perfecting and reducing to practice the invention which his predecessor undertook to make, he is entitled to the merit of such improvement as an original inventor. Whitely *v.* Swayne, 7 Wall. 685."

In the first case, there was a feeble defence of non-patentability, in regard to which the court said: —

"The history of the art of paper-bag manufacture, and of the various patents which have been granted for paper-bag machines [none of them is reported], shows that this is a theoretical defence. As a matter of fact, there was invention. The inventor was required to make a knife which should cut from a roll of paper in the flat sheet, by one cut, a blank which could be folded into a bag without further cutting out. That had not been done before, although paper-bag machines are old and have been constructed by many persons and in various forms for more than twenty years, and with more or less utility. Machine Co. *v.* Murphy, cited *supra*." [1]

BROADNAX *v.* THE CENTRAL STOCK-YARD & TRANSIT CO., 4 FED. REP. 214.

D. OF N. J., 1880. NIXON, J.

Invention of apparatus for rendering lard and tallow, &c.

The court: —

"The proof was that the complainant had never put his alleged invention into practical use, and it was insisted from this fact that the inventor could not maintain a suit for its infringement. But this is not the law when the patentee is a citizen of the United States. In Wheeler *v.* The Clipper Mower Co., *supra*,[2] Judge Woodruff, in considering this objection to the validity of a patent, says: 'If the invention be such that when the thing invented shall be constructed according to the model and specification filed, it will operate successfully as a practical and useful thing, the inventor has satisfied the law, and his patent is valid. He is not bound by law to construct it in order to preserve his patent.'"

PUTNAM *v.* HOLLENDER, 19 BLATCH. 48.

S. D. OF N. Y., 1881. BLATCHFORD, J.

The patent was for a compound, lever bottle-stopper, which could easily be moved in and out of position.

The defence set up an old bottle-stopper, which had been made

[1] *Vide ante*, page 633.

[2] *Vide ante*, page 242.

in 1874 by one Otto, and was used by him for two years in the beer saloon which he kept. He then laid it by, and finally stowed it away in a trunk full of old bottles, where it remained till 1879, when it was raked out to be produced in this suit. While he was using the stopper in his saloon, he was also selling bottles of beer to be carried away; but although he was a locksmith, and might himself have made many such stoppers for the bottles sold by him, he did not do so. Judge Blatchford held that the evidence was defective as to the efficiency of this stopper, and he concluded as follows: —

"If it had the use which Otto says it had, it never was subjected to the strain necessary to close the bottle securely and tightly sufficient for handling and transportation, and it amounted only to an experiment which was abandoned.

"The whole evidence shows that it must fall into the rank of abandoned experiments. To no one of those who saw it, nor to Otto himself, did it suggest the idea of being a stopper which was fit to use on bottles which were to be sent out with beer. . . . The defendants have not shown that the invention was complete and capable of producing the result sought to be accomplished, — the result accomplished by the De Quillfeldt device. The thing was inchoate, and rested in experiment. The process pursued for its development failed to reach the point of consummation. However nearly Otto approximated to the end in view, he only made progress. The world derived no benefit from what he did. The recollection of it was stimulated by the success of De Quillfeldt's invention. But for that, Otto's structure would have still been reposing in the old trunk beneath the stairs, forgotten and worthless. The substantial form in which Otto clothed his conception, so far as it [is] preserved, and so far as its original arrangement and operation can be understood, does not demonstrate that it had the practical efficacy and utility which characterize the De Quillfeldt stopper. Otto's work was not complete, and he gave nothing to the public."

ENGLISH CASES.

CARPENTER *v.* SMITH, 9 M. & W. 300.

EXCHEQUER OF PLEAS, 1842.

The report says: —

"At the trial before Lord Abinger, C. B., . . . the main question . . . was whether the plaintiffs' invention, the principle of which was a combination of the bolt and latch of the lock within one hasp, was or was not a novelty.

"A witness called by the defendant proved that in the year 1816 he received from a house in the United States a pattern of a lock similar in principle to the plaintiffs', and that he procured several dozens to be made at Birmingham according to the pattern, and sent them to America.

"The defendant also produced a lock similar to that of the plaintiffs', which he proved to have been used for sixteen years on a gate adjoining a public road belonging to a clergyman of the name of Davies, residing near Birmingham. For the plaintiffs it was contended, that inasmuch as there was no proof that the locks in question had been brought into public general use in this country, the plaintiffs' might nevertheless be considered a new invention. The Lord Chief Baron, in summing up, stated that an invention could not be considered new which had been in *public use* before; that the word 'public' was not equivalent to *general*, but was distinguished from *secret*, use; and he expressed his opinion that the circumstance of a lock, similar in principle to the plaintiffs', being on Mr. Davies's gate for so long a period, and the manufacture of several dozens by an English artist for money, without secrecy, amounted to a public use of those locks."

The jury having found for the defendant, there was a motion for a new trial on the ground of misdirection.

In moving for a new trial, Kelly said: —

". . . The statute intended to prevent loss to the inventor of a useful instrument, who brings it into public use and exercise, by reason of the making of a former similar invention *not* brought into practice, or the use whereof may be said to have ceased. [Lord Abinger, C. B.: By how many of the public would you allow it to be known, and what are the public? How vague a rule you would establish for each case! Would you say that the use by a particular club would be a use by the public? or suppose the inventor of a machine gives away a hundred

among his friends and they use it.] (Kelly, *loq.*) . . . In Jones *v.* Pearce, . . . Patterson, J., in summing up to the jury, said, that if it appeared that the wheel 'was openly used in public, so that everybody might see it, and the plaintiffs had continued to use the same thing up to the time of taking out the patent, undoubtedly that would be a ground to say that the plaintiffs' invention was not new.' [Alderson, B.: That is the very same principle of law as was laid down by my Lord in the present case; the only restriction I should put upon it would be that it need not appear that the machine was used up to the time of taking out the patent.]"

A new trial was refused.

Alderson, B.:—

". . . 'Public use' means a use *in public*, so as to come to the knowledge of others than the inventor, as contradistinguished from the use of it by himself in his chamber. . . . If the plaintiffs' doctrine is correct, it would follow that if Mr. Davies were to change his lock to another gate he would be liable to an action for an infringement of the plaintiffs' patent. The case of Lewis *v.* Marling [1] went to the very extreme point of the law."

Gurney, B., concurred.

Lord Abinger, C. B.:—

"I agree in thinking that there is no ground for disturbing the verdict. I was counsel in the cases of Lewis *v.* Marling and Jones *v.* Pearce, and I recollect that these cases proceeded on the ground of the former machines being in truth mere experiments, which altogether failed.

"The 'public use and exercise of an invention means a use and exercise *in public*, not *by the public*.'

"There are some expressions in former cases which were referred to on the trial which rather leant towards Mr. Kelly's arguments, and I therefore thought it fit to lay down the rule of law in the broad terms I did. I have always entertained the same opinion on the subject." Rule refused.

YOUNG *v.* FERNIE, 4 GIFF. 577.

VICE-CHANCELLOR STUART, 1864.

James Young's patent of Oct. 17, 1850, for "improvements in the treatment of certain bituminous mineral substances and mat-

[1] 10 B. & C. 20. *Vide ante*, page 641.

ters, or products, therefrom." It was a method of extracting paraffine oil from certain bituminous coals, — namely, parrot coal, cannel coal, and gas coal, — by heating the coals in a retort so that they should keep a temperature of "a low, red heat," and no higher one. Full directions were given.

Others had extracted the oil from such coals, but in very small quantities and of poor quality. The plaintiff's process was the first practically successful one, chiefly on account of the temperature which he used; other experimenters having used a higher temperature, which converted a large portion of the oil into gas and tar. The patent was upheld.

The Vice-Chancellor said: —

"What the law looks to is the inventor and discoverer who finds out and introduces a manufacture which supplies the market for useful and economical purposes with an article which was previously little more than the ornament of a museum." [1]

NEWALL *v.* ELLIOTT, 10 JUR. N. S. 954.

EXCHEQUER OF PLEAS, 1864.

R. S. Newall's patent of May 14, 1855, for "improvements in apparatus employed in laying down submarine electric telegraph wires."

The claims were: —

"1. Coiling the wire or cable around a cone.

"2. The supports placed cylindrically outside the coil round the cone.

"3. The use of rings in combination with the cone as described."

Pollock, C. B.: —

". . . Then it was said that the specification discloses a matter which is not the subject of a patent; and Mr. Cleasby, with a great deal of ability and ingenuity, put a variety of cases which I agree could not be; but this does not come in that shape. This professes to be a discovery of an apparatus, and for anything that I can see, looking at it judicially, there is nothing to prevent a man from making an apparatus of this sort, and having it ready for sale. It is very true that it

[1] *Vide* also *ante*, pages 645, 646.

never has been done, and it is not professed to be done; and the reason is because every vessel which generally contains spars and spare timber quite sufficient to make either a cone or cylinder, contains materials for the purpose of making the apparatus which the plaintiff has invented."

Martin, B.: —

". . . It is an apparatus for carrying out a most important object, namely, laying down submarine electric telegraphs. Although it does not appear that the plaintiff is a manufacturer of it, that is quite an immaterial circumstance. The patent is for this apparatus, which, if it be new and useful, in my judgment it is within the statute of James; and according to all the evidence it is both novel, taken in combination, and useful."

See also —

LEWIS *v.* MARLING, 10 B. & C. 22.
CORNISH *v.* KEENE, 1 Web. P. C. 501.
GALLOWAY *v.* BLEADEN, 1 Web. P. C. 521.
MULLINS *v.* HART, 3 C. & K. 297.
HEATH *v.* UNWIN, 2 Web. P. C. p. 276.
MURRAY *v.* CLAYTON, L. R. 7 Ch. App. 570.

See also, besides the cases stated in the remarks at the beginning of this chapter, *ante*, —

HARTSHORN *v.* TRIPP, page 44.
STAINTHORP *v.* ELKINTON, page 86.
HUSSEY *v.* BRADLEY, page 89.
MASURY *v.* ANDERSON, page 114.
REEVES *v.* KEYSTONE BRIDGE CO., page 119 (foot-note).
MURPHY *v.* EASTMAN, page 130.
THE LYMAN, &c. CO. *v.* LALOR, page 141.
THE WOOD-PAPER PATENT, page 143.
JOHNSON *v.* RAILROAD CO., page 185.
UNION PAPER-COLLAR CO. *v.* LELAND, page 339.
COLGATE *v.* THE W. U. TEL. CO., page 359.
WINANS *v.* NEW YORK & HARLEM R. R. CO., page 421.
JUDSON *v.* BRADFORD, page 466.
SMITH *v.* GOODYEAR DENT. VUL. CO., page 516.
O'REILLY *v.* MORSE, page 583.
AMERICAN BELL TEL. CO. *v.* SPENCER, page 598.

And —

WAYNE *v.* HOLMES, 1 Bond, 27.
POPPENHUSEN *v.* N. Y. GUTTA-PERCHA COMB Co., 2 Fish. 62.

JOHNSON *v.* MCCULLOUGH, 4 Fish. p. 175. (To the point that a model is not a sufficient anticipation.)

MILLER *v.* ANDROSCOGGIN PULP Co., 1 Holmes, 142.
ROOTS *v.* HYNDMAN, 6 Fish. 439.
RICHARDSON *v.* NOYES, 10 O. G. 507.

HOWES *v.* MCNEAL, 17 Blatch. 396. (Rejected application for a patent does not prove prior knowledge or use.)

SINCLAIR *v.* BACKUS, 17 O. G. 1503.
WHITTLESEY *v.* AMES, 13 Fed. Rep. 893.
THE YALE LOCK MFG. Co. *v.* THE SCOVILL MFG. Co., 18 Blatch. 248.

DETROIT LUBRICATOR MFG. Co. *v.* RENCHARD, 9 Fed. Rep. 293. (A drawing not sufficient, even though "it seems to exhibit a perfect machine in all its parts.")

STEPHENSON *v.* BROOKLYN CROSSTOWN R. R. Co., 19 Blatch. 473.

CHAPTER IX.

PRIOR INVENTION.

NOTE. — For the distinction between prior knowledge or use and prior invention, and the difference in the law governing the two classes of cases, the reader is referred to Chapter VIII. page 621, *ante*.

300. By section 4920 of the Revised Statutes it is provided that, in a suit for infringement, it shall be a sufficient defence to prove that the patentee

"had surreptitiously or unjustly obtained the patent for that which was in fact invented by another, who was using reasonable diligence in adapting and perfecting the same;"

or that the patentee

"was not the original and first inventor or discoverer of any material and substantial part of the thing patented;"

or

"that it [the invention] had been in public use or on sale in this country for more than two years before his [the inventor's] application for a patent."[1]

301. Cases to which these provisions apply are designated as occurring in the "race of diligence;" a phrase, however, which is somewhat misleading. If two persons conceive of the idea of an invention simultaneously but independently, then indeed there is a race of diligence; and he who first completes his invention, reduces it to successful practice, is the first inventor in the eye of the law. But if one conceives before the other, then the second to conceive cannot become the first inventor by being the first to reduce his invention to practice; unless, indeed, he

[1] The words, "with his consent or allowance," followed here prior to the Patent Act of 1870.

who was first to conceive fails to use due or reasonable diligence in perfecting his invention. In such case, therefore, the second to conceive is so handicapped that he cannot win by excess of diligence on his own part, but only by want of diligence on the part of his rival.

We state the rule again: He who first conceives the idea of an invention, and uses reasonable diligence in reducing it to practice, is the prior inventor as against one whose conception of the idea was later, though he was the first to make a complete invention. If, however, the first conceiver has not used reasonable diligence in perfecting his invention, then he who was later to conceive, but first to complete, his invention is the meritorious inventor.

302. It is important to add, that the obtaining of a patent does not place the inventor in any better position than he would have otherwise. Thus (1), if the second to conceive, but the first to reduce to practice, has also first obtained a patent, his patent is voidable, provided the first inventor has used reasonable diligence to perfect his invention.

Again (2), if the first conceiver has lost his right to a patent by want of diligence in reducing his invention to practice, and a second conceiver has anticipated his reduction to practice, — in such case the first conceiver cannot regain his right to a patent by obtaining it before his rival. We apprehend that no delay in applying for a patent which does not amount to abandonment will defeat the right of a first inventor, provided his invention has not been "in public use or on sale for more than two years prior to his application." See Ryan *v.* Goodwin, 3 Sumner, 519; Bentley *v.* Fleming, 1 Car. & Kirw. 587. In the case of Kendall *v.* Winsor, 21 How. p. 330, there are *dicta* by Mr. Justice Daniel which seem to imply that such delay, for the purpose of concealing a perfected invention, would defeat the right to a patent. The reader is also referred to the remarks of Mr. Justice Clifford in the case of White *v.* Allen, *post*, page 698.

The cases stated in these two propositions, so far as we know, have not been adjudicated. We can, therefore, bring no authority to support the positions advanced.[1]

[1] In the case of Reed *v.* Cutter, 1 Story, p. 600, Story, J., said: "If . . . the text of Mr. Phillips [Phillips on Pats. p. 395] means to affirm (what

303. One qualification should be added to the foregoing remarks. The clause, "not in public use or on sale for more than two years prior to his [the inventor's] application,"[1] might shut out a patent on the ground of prior knowledge or use, when other parts of the statute would not. Thus, it is a possible case that an invention should be "not known or used by others before his [the inventor's] invention or discovery thereof," and yet that the inventor should be so long either in reducing his invention to practice, or afterward, in applying for a patent, that the same invention (subsequently invented by another) should have been "in public use or on sale for more than two years prior to his application."[2] Of course, this last clause commonly applies to use or sale by the inventor himself;[3] and of such use or sale we do not treat.[4]

304. The general rule was stated by Judge Story, in an early case,[5] as follows: —

"In a race of diligence between two independent inventors, he who first reduces his invention to a fixed, positive, and practical form would seem to be entitled to a priority of right to a patent therefor. The clause of the fifteenth section [act of 1836] now under consideration seems to qualify that right by providing that in such cases he who invents first shall have the prior right, if he is using reasonable diligence in adapting and perfecting the same, although the second inventor has in fact first perfected the same, and reduced the same to practice in a positive form."

I think it does not) that he who is the original and first inventor of an invention so perfected and reduced to practice will be deprived of his right to a patent, in favor of a second and subsequent inventor, simply because the first invention was not then known or used by other persons than the inventor, or not known or used to such an extent as to give the public full knowledge of its existence, I cannot agree to the doctrine; for, in my judgment, our patent acts justify no such construction; *and, a fortiori, he will not so be deprived if he does not apply for a patent.*"

[1] *Vide* foot-note 3 to page 621.

[2] *Vide ante*, page 621.

[3] Prior to the act of 1870, the clause under consideration was followed by the words, "*with his consent or allowance.*" Prior to that time, therefore, this clause did not apply to public use or sale of a precisely similar invention, invented by another. Since the act of 1870, it does so apply. This has been held by the Supreme Court, *vide* page 712, *post*, and by Judge Lowell, Burton *v.* Greenville, 18 O. G. 411.

[4] *Vide* Kendall *v.* Winsor, 21 How. 322, and foot-note 2 to page 640, *ante*.

[5] Reed *v.* Cutter, 1 Story, 120.

So also Judge Woodbury, in the case of Allen *v.* Blunt;[1] and in a later case,[2] where the conflict was between two patents for one invention, he instructed the jury as follows: —

"The date of the invention is the date of the discovery of the principle involved, and the attempt to embody that in some machine, — not the date of the perfecting of the instrument. It was on that account that I did not consider it pertinent to go into the testimony as to the progress of the perfecting of the machine. If the invention was made, — if it was set forth in a machine which would and did discharge a fire, — that is all which is necessary to constitute the invention. But the party cannot get a patent until he perfects it in some sense of the word, — that is, until he goes on and makes improvements to render it practical and useful, — for it is one element of a machine necessary to sustain a patent, that it is useful."

And he went on to state the distinction between prior use and prior invention as follows: —

"It is a very different thing to sustain a patent when it is attacked by another patent, from what it is to show the invention compared with a prior invention; for invention is the discovery of the main principles of the machine, and embodying it in wood or iron, or of whatever it is to be composed, and making it act."

And earlier in the charge he said, speaking of the alleged prior invention: —

"And it is of no consequence, if it existed, that the party did not choose to patent it. In some aspects of the patent law it might be important to show that it had been abandoned; that is, when the party undertakes to rely on priority of use to defeat the plaintiff. But here the reliance is not on prior use; therefore it is of no consequence whether it is abandoned or not, but whether it was the prior invention. When I say 'it,' I mean a machine involving the same or a similar principle."

305. The rule as to conception and diligence in reducing to practice is also stated to the same effect by Hall, J., in Ransom *v.* Mayor of New York, 1 Fish. p. 272; by Sprague, J., in Johnson *v.* Root, 1 Fish. p. 369; by Drummond, J., in Cox *v.* Griggs, 2 Fish. p. 176; by Mr. Justice Clifford, in White *v.* Allen, 2 Fish. p. 446; by McKennan, J., in Reeves *v.* Keystone Bridge

[1] 2 Wood. & M. 121.

[2] Colt *v.* Mass. Arms Co., 1 Fish. p. 120.

Co., 1 O. G. 466 (*ante*, page 119); by Ingersoll, J., in Ellithorpe *v.* Robertson, 2 Fish. 83. The last named was an interference case, appealed to the Circuit Court. The plaintiff did not allege that he had exercised due diligence in reducing his invention to practice, but only that he conceived it before the defendant's patent issued. This fact explains the decision, which was couched in the following language:—

"To defeat a patent which has been issued, it is not enough that some one, before the patentee, conceived the idea of effecting what the patentee accomplished. To constitute such a prior invention as will avoid a patent that has been granted, it must be made to appear that some one, before the patentee, not only conceived the idea of doing what the patentee has done, but also that he reduced his idea to practice, and embodied it in some practical and useful form. The idea must have been carried into practical operation. The making of drawings of conceived ideas is not such an embodiment of such conceived ideas into practical and useful form as will defeat a patent which has been granted."[1]

306. In Taylor *v.* Archer (8 Blatch. p. 320), a case decided by Judge Blatchford, it is held that one who "started later in his experiments" than the alleged prior inventor, but made a completed invention first, was entitled to the patent.

If this means that he began to search, as it were, for the desired invention later, but conceived the idea of it earlier, than his rival, the law of the decision is good. And it is an instance of a point which should be borne in mind; namely, that the conception of an invention — in other words, the striking out a way of accomplishing the desired result — is a very different thing from, and is often subsequent to, the beginning of experiments or of thought, with the view of reaching the desired end. This latter is often a mere groping in the dark, which may or may not lead to a useful result; whereas the conception of the inventive idea is a hitting upon the very kernel and gist of the subsequently completed invention. An invention cannot be carried back to the beginning of the search for it, inasmuch as at that time there was not anything of value accomplished, and no certainty that it ever would be; whereas it may be carried back to the conception of the inventive idea, because the inventive idea is that on account

[1] *Vide post*, page 702.

of which, though not for which, the patent is granted. Moreover, once given the inventive idea, its reduction to practice — in other words, the complete invention — is certain to follow.

307. In a recent case, Electric Railroad-Signal Co. *v.* Hall Railroad-Signal Co. (6 Fed. Rep. 603), it was held by Shipman, D. J., that one Pope, who first conceived the inventive idea, and about six months afterward received a patent for his invention, never having used the apparatus invented, or even made a model of it, but yet having so described it in his patent that it could be employed successfully therefrom, — this inventor the judge held, was anticipated by one Hall, who conceived the inventive idea a month or more later than Pope, tested his invention between the time at which Pope conceived his invention and the time at which Pope obtained a patent, and found a practical difficulty, which he solved nine months after the issue of Pope's patent. Hall's invention then went into use, whereas Pope's never went into use; but it was not denied that his patent described a practical and valuable invention.

Here, then, was a clear case for Pope within the rule on this subject, unless it be that his failure to reduce his invention to tangible form should deprive him of a patent. Such reduction is required when a prior device is set up to defeat a patent. This is because the existence of a practical and valuable anticipation cannot be proved with sufficient strictness in any other way. If the device was never used, remained only an idea or a drawing, then its efficiency — and that is in question — was never tested.

But here the practical value of Pope's invention was admitted. It is, therefore, of no consequence that he never used it himself. The invention was a complete one; it was conceived before Hall's, and there was no want of diligence between the conception and the application for a patent. Pope's patent was therefore good, if any patent for a thing or a process, never given a tangible form, is good; and that such omission to use or test the invention does not invalidate a patent from the perusal of which one skilled in the art can construct a useful thing, or employ a valuable process, is undoubtedly the law. *Vide* the cases cited *ante*, page 643.[1]

[1] In the case of Cammeyer *v.* Newton (94 U. S. 225), the patent was for an elaborate dam arrangement designed to facilitate the blasting of

The learned judge said: —

"The just . . . principle of the law which gives a patent to the inventor who first conceives of the invention, provided he is diligently engaged in perfecting it and adapting it to use, and overcoming the practical difficulties, . . . although he was slower in the race than the one who was second to conceive, does not apply to Pope. Who faintly conceived the idea is not known. [*This refers, apparently, to the starting in search of the invention.*] Pope first attained a mental result [and this to the conception of the inventive idea]. After that, he was actively occupied in the same branch of study; but he did not develop this system in wood and metal. Hall did develop it, made it useful and practicable, and achieved success. In my opinion it would be a great wrong to decide that the defendant is liable as an infringer."

308. We have seen that the right to a patent as between rival inventors depends upon three things: —

(1.) Conception of the invention.

(2.) Reduction to practice.

(3.) Reasonable diligence.

We have, therefore, to consider what, according to the court, is conception of an invention, what is reduction to practice, and what is reasonable diligence. The cases on these points are very few.

I. What is conception of an invention?

309. We have already partly answered this question in our remarks upon the case of Taylor *v.* Archer, *ante*, page 691. The reader is also referred to pages 27–29 of the Introduction to, and page 71 of the first chapter of, this book.

In the case of Adams *v.* Edwards,[1] Judge Woodbury thus defined it: —

"It must be the idea struck out, the brilliant thought obtained, the great improvement in embryo. He must have that; but if he has that, he may be years improving it, maturing it. . . . But the period when he strikes out the plan which he afterward patents, that is the time of the invention; that is the time when the discovery occurs."

rocks in river-beds. The case was one of infringement, and infringement was not proved. The court, however (Mr. Justice Clifford delivering the opinion), stated that the process had never been tested; but they did not intimate that this circumstance affected the validity of the patent therefor.

[1] 1 Fish. p. 8.

In the case of Colt *v.* Mass. Arms Co.,[1] the same judge said:—

"The date of the invention is the date of the discovery of the principle involved, and the attempt to embody that in some machine."

Judge Lowell's admirable statement of the law upon this point is as follows:[2]—

"Another point which I have not before seen in the precise way in which I am about to put it, is the principle of law which is to govern you in determining the time when this invention was made. For the purposes of this case, I shall rule that the principle of law is, that he is the original and first inventor of a machine or combination, or whatever it is, if it was not known or used by others before his discovery or invention; the man who has made an invention that was not known before he made it. That does not mean that he got his machine into the complete state in which you find it in the patent. Neither does it mean the first moment at which he conceived the idea that it would be a good thing to do that. *It means not only when he conceived that such a thing would be a desirable thing to do, but when he had conceived the idea of how to do it substantially as he has done it.*"

The words which we have italicized cover the whole ground.

There is no limit of time within which an inventor can carry back the date of his invention. At least, it is determined only by his failure to use reasonable diligence in completing his invention. This point we shall consider presently.

310. As to how the date of conception of an inventive idea may be proved, the only point we find decided by the courts is that the making of drawings and sketches is sufficient evidence of it. Kneeland *v.* Sheriff, 2 Fed. Rep. 901; Reeves *v.* The Keystone Bridge Co., 1 O. G. 466; Draper *v.* Potomska Mills, 13 O. G. 276; Loom Co. *v.* Higgins, 105 U. S. p. 594. But it would seem that a "rude" sketch is not. Knox *v.* Loweree, 6 O. G. 802.

311. If, however, the invention were, as some inventions are, of a character so simple that, once conceived, its reduction to tangible form requires neither thought nor experiment, then it would seem, on principle, that evidence of written or oral communication of the idea by the inventor to some other person should be sufficient to fix the date of conception. In the case we suppose such evidence would be as instructive and trustworthy

[1] 1 Fish. p. 120.

[2] Woodman *v.* Stimpson, 3 Fish. p. 105.

as drawings are in the case of a complicated and difficult invention. This point, however, has not, we believe, been settled by any of the Federal courts, unless in the case of Sayles *v.* Hapgood (2 Biss. 189), where Judge Drummond said:—

"When a man conceived a certain machine, no one knows except the man himself; when he described it, no one knows except himself and the person to whom he describes it. We have to rely upon their testimony in order to determine."

312. II. Reasonable or due diligence in reducing to practice, and

III. What is reduction to practice? Drawings are not. (We take up the last-named topic first.)

In Ellithorpe *v.* Robertson, *ante*, it is said:—

"The making of drawings of conceived ideas is not such an embodiment of such conceived ideas into practical and useful form as will defeat a patent which has been granted."

So also Shepley, J., in the case of Draper *v.* Potomska Mills, *ante*:—

"An imperfect and incomplete invention, resting in mere theory, or in intellectual notion, or in uncertain experiments, and not actually reduced to practice, and embodied in some distinct machinery, apparatus, manufacture, or composition of matter, is not, and indeed cannot be, patentable under our patent acts, since it is impossible, under such circumstances, to comply with the fundamental requisites of those acts. Reed *v.* Cutter, 1 Story, 590.

"Illustrated drawings of conceived ideas do not constitute an invention; and unless they are followed up by a seasonable observance of the requirements of the patent laws, they can have no effect upon a subsequently granted patent to another."

And he continued:—

"But a patentee whose patent is assailed upon the ground of want of novelty may show, by sketches and drawings, the date of his inceptive invention," &c.

313. In the case of Ransom *v.* Mayor of New York, 1 Fish. p. 268, Judge Hall instructed the jury as follows:—

"In order to avoid the plaintiff's patent on the ground of want of originality, . . . it will become necessary . . . that you should determine the precise date of the plaintiff's invention. In order to determine that, the jury must determine at what time the plaintiffs (not one of

them, for the patent is an invention by the plaintiffs jointly) first perfected the intellectual production, or the idea or conception of the thing patented, so that, without more inventive power or further trial or experiment, they could have successfully applied it in practice, and could at once have complied with that provision of the statute which requires that an inventor, before he shall receive a patent for the invention or discovery, shall deliver to the Patent Office a written description of his invention, and explain the principles and the several modes in which he has contemplated the application of that principle or character by which it may be distinguished from other inventions; and that, in order to determine whether any other person has invented 'the same thing patented' by the plaintiffs prior to the plaintiffs' invention thereof, they must apply the same rules in determining the date of such alleged prior invention."

314. The filing of a *caveat* does not of itself prove that the invention claimed by it was not reduced to practice when the *caveat* was filed. In the case of Johnson *v.* Root, 1 Fish. p. 367, Sprague, J., instructed the jury as follows: —

"It is contended, on the part of the defendants, that the *caveat* itself is conclusive evidence that that invention was not perfected.

"You will observe that the application which is in the *caveat* before you, made to the Patent Office by Mr. Johnson for leave to file a *caveat*, sets forth that he has made a certain new and useful improvement in the sewing-machine, and that he is then making experiments to perfect it, and asks leave to file a *caveat* to secure it. The defendant insists that that application is of itself conclusive evidence that he has not perfected it. We will look at it, gentlemen, and see. I do not instruct you that it is conclusive evidence; but it is evidence for you to take into view in connection with the other evidence, and in connection with the other parts of the same instrument, in which he begins by saying that he has made a new and useful invention in the sewing-machine. Now, gentlemen, although a *caveat* is understood to be, and in this instance is, filed in order to allow the party to perfect his machine, yet if, in point of fact, the invention had been perfected in the eye of the law, as I have explained to you, then, if you are satisfied of that from the evidence, you may deem it, for the purpose of this trial, as perfected. Or it may happen that a person may choose to file a *caveat* while he is going on and making improvements upon an invention which he has already completed, so as to be of practical utility. Therefore, gentlemen, I would say to you, that you will take into consideration the declaration of the plaintiff himself in the appli-

cation, that he had made a new and useful improvement in sewing-machines, and the further declaration that he is making experiments in order to perfect his invention, and the subsequent declaration that he *has made* a new and useful improvement in sewing-machines, and the other evidence in relation to the case, — that is what was described in the *caveat* and the model which was made in 1848, — and see if that exhibits to you a perfected machine; and then such further evidence as you have of the actual operation of the machine that will be before you."

315. It appears, then, that the reduction to practice contemplated by the law, as a step in the race of diligence, must be the making of a complete practical machine or apparatus, or the actual employment of a process. This, as we have seen, is the law in the analogous case of prior use, where nothing short of a complete invention is held to anticipate a patent subsequently granted for the same thing. *Vide ante*, page 626 *et seq.*

316. We now turn back to

II. Reasonable or due diligence in reducing to practice. What this is depends in every case on two things: first, the nature of the invention; and, secondly, the personal circumstances of the inventor. Strictly speaking, indeed, the same diligence must be exercised, whatever the invention; but the length of time which may elapse without proving want of diligence depends on the character of the invention.

Thus, if it be a complicated machine, or a long and difficult process, or if it has to do with little-known materials, then many experiments may be required to complete the invention, and much time may necessarily be consumed in doing so. If, on the other hand, the invention may easily be reduced to practice, delay in completing it would show want of diligence.

317. As to the personal circumstances of the inventor, poverty or ill health will excuse want of diligence. If, however, the inventor lay aside his incomplete invention without some such excuse, or if he neglect it in order to labor upon other inventions, want of diligence is established. Johnson *v.* Root, 2 Cliff. 108; White *v.* Allen, 2 Cliff. 224.

318. In the case of White *v.* Allen, Judge Clifford held that want of diligence in applying for a patent,[1] during five years, was excused by the fact that the patentee was deterred from making

[1] The reader is referred to page 688, § 302, *ante*.

his application by a reasonable fear that his employer would discharge him if he did so.

The learned judge said: —

" . . . The patentee made the invention . . . and reduced it to practice as an operative fire-arm, within the meaning of the patent law, as early as the fall of 1849, or the fore part of the year 1850, when his fourth experiment was completed. [His patent was granted April 3, 1855.] . . . It is insisted by the respondents that the supposed inventor afterward deserted and abandoned his invention, and, consequently, that he cannot be regarded in this controversy as the original and first inventor of the improvement. But if that proposition cannot be sustained, then they contend that the proofs show that he took the pistol he constructed apart, and laid the materials aside for years, as something incomplete and requiring more thought and experiment, before he attempted to restore the invention, and without any definite intention of resuming the undertaking; and they insist that the rule of law upon that state of the case is, that if another, in the mean time, invents the same thing, without any knowledge of that which is so suspended, and reduces the same to practice, applies for and takes out his patent, and introduces the patented invention into public use, he is entitled to the benefits of his skill and diligence, and must, in judgment of law, be regarded as the original and first inventor of the improvement, although it may appear that the final experiment of the other party was so far completed that the machine or other invention was, in fact, the proper subject of a patent, and that the materials were laid aside to preserve the parts, to be used or not, in the future, as circumstances should arise, or as he should thereafter determine, yet without any positive, unconditional intention of relinquishing what he had accomplished, or of abandoning the invention. Nothing need be remarked in respect to the first of these propositions, except to say that the evidence in the case is not sufficient to support it, and it is accordingly overruled. Unlike the first, the second deserves to be more carefully considered. Cases undoubtedly occur, such as are supposed in the proposition, where an individual employed in inventing, or in making experiments in that behalf, feeling dissatisfied with the result of his efforts, becomes discouraged in prosecuting the investigation, and finally loses all confidence in the prospect of his ultimate success; and under the influence of such discouragements, or from a desire to engage in more profitable business, or to pursue a more pressing or favorite undertaking, decides to break up what he has accomplished, and lays the parts aside, not positively intending to abandon the subject, yet wholly uncertain whether he will ever resume it or make any further use of the

parts so laid aside. Such cases are doubtless of frequent occurrence; and while they do not show an unconditional abandonment of the undertaking, they do show an indefinite suspension of the same, and an entire uncertainty during such suspension whether the interested party will ever furnish the invention to the public. Where an invention is thus voluntarily broken up and laid aside, without any controlling impediment in the way of an application for a patent, and under all the other conditions specified in the preceding proposition, and another, in the mean time, invents the same thing, without any knowledge of that which is so suspended, and reduces the same to practice, applies for and takes out his patent, and introduces the patented invention into public use, I am of the opinion that he must be regarded as the original and first inventor of the improvement. . . .

"Some of the parts used in the several experiments, to which reference has been made, were preserved, as, for example, the revolving breech, constructed with the nipples in it, as used in the sixth experiment, and it is an exhibit in the case; and the cylinder used in the same experiment, and several others of the identical parts used in those experiments, were also preserved and put into one or the other of his Patent Office models.

"Most or all of the other parts were put into a box, and were kept for a time in the attic of the house where he lived; and he states that when he moved from there, in shipping his goods he lost the box, together with the materials, and it is upon the loss of these materials, and the delay that ensued in applying for a patent, that the respondents chiefly rely to support the theory of fact involved in the proposition. On the other hand, it undeniably appears that the invention held by the complainants is only an improvement upon the patented invention of Samuel Colt, who, for a long series of years, was an extensive and successful manufacturer of revolving pistols. Full proof also is exhibited that the patentee of the invention, under whom the complainants hold, was in the employment of that same manufacturer from the time he made his first experiment until he commenced to make his preparations with a view to apply for his patent, and that throughout that entire period the well-known patent of his employer was in full operation. Direct inquiry was made of the patentee in this case why it was that his application for a patent was so long delayed; and his answer was, that it was because his employer had a patent for the mode of revolving the pistol embraced in his improvement, and which he desired to use, and also because his employer had discharged certain men who had been experimenting on revolving pistols. Two or more of his brothers were employed in the same establishment, and on one or more occasions, when the witness exhibited his pistol to his brothers, he pro-

posed to show the same to his and their employer; but they objected, and remonstrated against the suggestion, upon the ground that if it were done they would all lose their places. Meeting with these discouragements, he delayed his application for a patent; but there is no ground whatever to conclude that he ever, for a moment, intended to postpone his application for a patent any longer than it became necessary that he should do so in order to overcome those difficulties, and, consequently, the theory of fact involved in the proposition cannot be sustained."

319. It is scarcely necessary to add that evidence sufficient to prove abandonment of an invention (and an invention may be abandoned at any stage) will also prove lack of reasonable diligence; but lack of reasonable diligence may be shown without proving a degree of negligence that would amount to abandonment.

320. For the rule of law governing those cases in which an invention is claimed by each of two persons, one of whom, commonly, has been employed as an assistant by the other, the reader is referred to pages 625, 626, *ante*. Important cases on this point are the case quoted from at page 625, namely, the Agawam Co. *v.* Jordan, the facts in which, as reported, are meagre and uninstructive, so that we do not rehearse them; Sparkman *v.* Higgins, *post*, page 701; Blandy *v.* Griffith, *post*, page 705; and Allen *v.* Rawson, an English case, *post*, page 715. See also Minter *v.* Mower, *ante*, page 608.

321. The following unusual but simple point was decided by Judge Shepley in the case of Kendrick *v.* Emmons (9 O. G. 201):—

"An English patent taken out surreptitiously by any person who, without the knowledge of the American inventor, and without authority from him, endeavored to appropriate the benefits of his invention, would not thereby deprive the real inventor of any of his rights."[1]

[1] We add the head-note of a somewhat analogous case in the Supreme Court (that of Shaw *v.* Cooper, 7 Peters, 202), which runs as follows:—

"An alien patentee made an invention in England, and came to this country in 1817; his invention was fraudulently disclosed in England, and went into public use there, and also in France, in 1820; the patentee knew of this use, but neglected to apply for a patent until 1822; the court below instructed the jury that the patentee had slept too long on his rights to be entitled to the benefit of a patent under the act of April 17, 1800 (2 Stats. at Large, 37). *Held*, that this instruction was correct."

SPARKMAN *v.* HIGGINS, 1 BLATCH. 208.

S. D. OF N. Y., 1846. BETTS, J.

The patent was for a design for an oil-cloth. It was granted to Sparkman and Kelsey.

The defendants contended that the invention was made by a workman of the plaintiffs', one Berry.

The court: —

"The defendants lay before the court the declarations of Berry in connection with his working without any draft, design, or model before him, which, the defendant insists, proves him to be the inventor.

"But, on the other hand, Mr. Kelsey details very minutely the suggestion he made, his superintendence, his suggesting alterations in a design got up, his disapproving that, and the adoption of his views in the design now patented. And Mr. Berry gives his own account of the matter, and explains the declarations attributed to him, as referring to his working without a copy before him, and to the design being an original and not a copy. He does not intimate that he did not receive suggestions, alterations, and directions from Mr. Kelsey which were carried out in this design.

"To constitute an inventor, it is not necessary he should have the manual skill and dexterity to make the drafts. If the ideas are furnished by him for producing the result aimed at, he is entitled to avail himself of the mechanical skill of others to carry out practically his contrivance. Here the devising of the pattern in this sense appears to have been by the plaintiffs."

PHELPS *v.* BROWN, 1 FISH. 479.

D. OF CONN., 1859. NELSON AND INGERSOLL, JJ.

Head-note: "A. filed a *caveat* in the Patent Office, April 17, 1854. B. made application for a patent for the same invention, November, 1854. No notice was given to A. of this application, but a patent was granted to B., Jan. 9, 1855. A patent was subsequently granted to A. In a suit by the assignee of B. against the assignees of A., — *Held*, that the omission to give notice to A. might be set up as one of the defences under section 15 of the act of July 4, 1836, as proof that B. had surreptitiously or unjustly obtained the patent for that which was in fact discovered by another,' &c.

"A patentee is not to be prejudiced by the error or oversight of the Patent Office."

ELLITHORPE *v.* ROBERTSON, 2 Fish. 83.

S. D. of N. Y., 1850. Ingersoll, J.

The bill charged that Ellithorpe invented certain improvements in sewing-machines in July, 1847, and made drawings of them in that month preparatory to applying for a patent; that he was delayed in doing so till April 10, 1858, for want of money; that his house, in which he supposed the drawings to be, was burned in August, 1848; that he did not find the drawings till within less than six months of April 10, 1858, when he applied for a patent, which was refused on the ground that he was anticipated by Robertson, whose patent issued Nov. 28, 1854.

The court said (in addition to what is quoted at page 691, *ante*): —

"Experiments equivocal in their results, and given up for years, will not be permitted to prevail against an original inventor who has reduced his invention to practice, and has without fraud obtained a patent.

"An invention is not patentable until it is perfected and adapted to use. In a race of diligence between two independent inventors, he who first reduces his invention to a fixed, positive, and practical form has a priority of right to a patent. Many *v.* Jagger, 1 Blatch. 372; Parkhurst *v.* Kinsman, 1 Blatch. 488; Reed *v.* Cutter, 1 Story, 590. . . . The making of the drawings is all he claims to show what his idea was. The bill does not show there was any reducing of the invention to any practical and useful form, or that it had been adapted to use. The allegations of the bill, therefore, are not sufficient to defeat the patent to Robertson.

"If there had been any fraud in obtaining the patent of Robertson, or if it had been unjustly issued, then the case would have been presented in another aspect; for it is provided by section 1 of the act of 1836 that a patent issued may be avoided if the patentee has surreptitiously or unjustly obtained his patent for that which was in fact invented or discovered by another, who was using reasonable diligence in adapting and perfecting the same. But there are no allegations of this kind in the bill."

COX *v.* GRIGGS, 1 Biss. 362.

N. D. of Ill., 1861. Drummond, J., and a Jury.

The plaintiff's patent was granted Aug. 16, 1859.

In 1855 and 1856 he was making drawings and a model; he explained his invention (a plough) to his son in 1857; in December, 1858, he made a model and casting; he was experimenting continually, and put his improvement into use in 1859.

The defendant's patent issued in November, 1859.

Witnesses testified to having seen various models made by the defendant, "*something like*" the plaintiff's invention, in 1853 or 1854.

Some experiments were made by the defendants in 1857 with their plough, built of wood.

The delay from 1857 to 1859 they did not account for.

The court: —

"It is the right and privilege of a party, when an idea enters his mind in the essential form of invention, — inasmuch as most inventions are the result of experiment, trial, and effort, and few of them are worked out by mere will, — to perfect, by experiment and reasonable diligence, his original idea, so as not to be deprived of the fruit of his skill and labor by a prior patent, if he is the first inventor. But there must be what we would consider reasonable diligence, looking at all the facts of the case. The defendants do not explain their delay from 1853 to 1857, when nothing was done, and the models were not reduced to practice. It is necessary, in order to prevent a man from having the benefit of his patent, that another person should first have discovered the thing and reduced it to actual practice. It is not pretended by the defendants that they reduced to actual practice the crude model of 1853. [He then rehearses the plaintiff's evidence, already stated, and concludes:] The preponderance of proof should be in favor of the plaintiff; but if they were jointly experimenting and equally meritorious, a doubt should be solved in favor of him who first obtains a patent."

JOHNSON *v.* ROOT, 2 CLIFF. 108.

D. OF MASS., 1862. CLIFFORD, J.

Motion for a new trial, the jury having found a verdict for the plaintiff.

The plaintiff applied for his patent March 31, 1853, and received it March 7, 1854.

The defendant's machine was made under patents issued in 1852, or earlier. But the plaintiff attempted to carry back his invention to 1848. On November 7 of that year he went to Washington, taking with him a model. The main device of his patented invention was omitted from this model, having been introduced into the invention, but not successfully, before he left home. This model was not deposited in the Patent Office; the plaintiff brought it home, and afterward used parts of it in the construction of other machines. While in Washington he filed a *caveat*, which he allowed to expire; and he did nothing further in the matter till the last of December, 1852, or the first of January, 1853, when he set about completing the invention. He testified that poverty and ill health caused the delay; but the evidence was conflicting on this point, and, according to his own testimony, he had in the mean time worked upon other inventions.

The court: —

"Considering all the circumstances, and giving them all due weight, still the inference was a clear one, that the plaintiff on his return from Washington had laid aside the materials as something incomplete, and which required more thought and experiment, before he attempted to restore the invention. Regarding the inference to that effect as a clear one, and wholly unopposed by other evidence of any importance, I am of opinion that the verdict in this view of the case was clearly against the evidence. Walker *et al. v.* Greely, 1 Curt. 63." [1]

[1] *Vide ante*, pages 629, 696, for other parts of the opinion.

WHITE *v.* ALLEN, 2 CLIFF. 224.

D. OF MASS., 1863. CLIFFORD, J.

Patent for a revolving pistol.

The patent was granted April 3, 1855. A foreign patent, dated June, 1853, was set up in defence. The plaintiff, however, succeeded in showing that he had substantially completed his invention in 1849 or 1850. His delay in applying for a patent was excused under the circumstances of the case. *Vide* page 698, *ante*. The plaintiff offered evidence to show that he had conceived the idea of his invention in the year 1839.

On this head the court remarked as follows: —

"Useful as the fire-arm suggested might have been, if the plan had been carried into effect, and the invention had been completed, still it is obvious that a mere conception of the improvement by the witness, however perfect the idea may have been, and although he actually described the plan to one person, cannot benefit the complainant in this case, because his own testimony shows that he never completed the invention, and reduced it to practice, in the form of an operative fire-arm. . . . Mere discovery of an improvement does not constitute it the subject-matter of a patent, although the ideas which it involves may be new; but the new set of ideas, in order to become patentable, must be embodied into working machinery, and adapted to practical use. Sickels *v.* Borden, 3 Blatch. 535. . . .

"He who invents first shall have the prior right, if, as is prescribed in section 15 of the Patent Act, he is using reasonable diligence in adapting and perfecting the same within the meaning of that provision. Reed *v.* Cutter, 1 Story, 600; Marshall *v.* Ure, Law's Dig. 426, per Dunlop, J.; Bartholomew *v.* Sawyer, Law's Dig. 427 (vol. i. p. 516)."

BLANDY *v.* GRIFFITH, 3 FISH. p. 615.

S. D. OF OHIO, 1869. SWAYNE, J.

The invention was an improvement in steam-engines. For a description of it the reader is referred to page 97, *ante*, where this case is set out, so far as the defence of anticipation is concerned.

The defendants also contended that the invention in question

was really made by one Wedge. On this head the court remarked as follows, rehearsing the evidence: —

"It appears by the testimony that Wedge was the draftsman in the complainant's foundry. He devised the Hicks engine, as it is called. He says it was a copy from one he had seen in England. . . . . There was difficulty in removing the castings from the moulds, and the parts did not fit well together. Frederick Blandy said that another like it should not be made. He suggested the plan of an engine substantially the same with that described in the patent, and marked a diagram to illustrate his ideas in the sand upon the floor. Wedge objected to it strenuously as of no value. Blandy replied that it could not turn out worse than the Hicks engine of Wedge, and directed him to prepare the drawings, and ordered the engine to be made."

These facts were not denied on the part of Wedge. He testified, however, that the invention was his; and there was evidence that Blandy had admitted it to be his. Wedge stood by and made no claim to the invention while licensees were negotiating with Blandy for its use.

The court said: —

"The conflict is not irreconcilable. The error of Wedge arose probably from a misapprehension of the law. Having made all the drawings for the first engine, and superintended exclusively its construction, he finally came to the conclusion that he, and not Blandy, was the inventor. The declarations of Blandy, if made as proved, it may fairly be presumed, had reference to this agency of Wedge, and nothing more. It is also to be observed, that all the facts tending to prove Wedge to be the inventor are posterior in date to the time when Blandy described the design to Wedge and directed him to carry it into execution.

"Invention is the work of the brain, and not of the hands. If the conception be practically complete, the artisan who gives it reflex and embodiment in a machine is no more the inventor than the tools with which he wrought. Both are instruments in the hands of him who sets them in motion and prescribes the work to be done. Mere mechanical skill can never rise to the sphere of invention. The latter involves higher thought, and brings into activity a different faculty. Their domains are distinct. The line which separates them is sometimes difficult to trace; nevertheless, in the eye of the law it always subsists. The mechanic may greatly aid the inventor, but he cannot usurp his place. As long as the root of the original conception remains in its complete-

ness, the outgrowth, whatever shape it may take, belongs to him with whom the conception originated.

"In the case before us there does not seem to be any pretence for saying that Wedge invented anything. He simply executed the design drawn by Blandy in the sand. All the engines since made have been substantially like the first one."

SAYLES *v.* HAPGOOD, 2 Biss. 189.

N. D. of Ill., 1869. Drummond, J.

One Dundas conceived the idea of a new cultivator in June or July, 1850. He built it in the winter of 1850–51, completing it about June 1, 1851; he used it in June or July, 1851; and he applied for a patent, Aug. 1, 1851.

One Marsh conceived the same idea prior to 1850; had his machine built in January, 1851; tried it in the presence of numerous witnesses early in March of that year, and used it throughout the month. In the same year he left his home in Mississippi, and came to Illinois, whither the machine was shipped; but it never reached there, and it is not known what became of it. Marsh had all along intended to apply for a patent, and early in July he did so; but his application was rejected, July 30, 1851, and he did not apply again.

Summing up this evidence, the court said: —

"If it were clear, in view of the fact that the invention was followed up by the issuing of the patent to Dundas, that he was prior in point of conception, then, perhaps, he would be entitled to the monopoly which is claimed by the plaintiff in this case. . . . On the whole, I think the weight of the evidence in this case is that the conception and construction of the Marsh machine was prior in point of time to that of the Dundas machine, and therefore that Dundas was not the first and original inventor of the improvement in a cultivator which was patented to him."

RAILROAD CO. *v.* DUBOIS, 12 Wall. 47 (1870).

The following facts constitute no fraud upon the Patent Office, or bar to an action for infringement: —

(*Head-note:*) "That before making his application to the Patent Office, the patentee had explained his invention orally to several persons, with-

out making a drawing, model, or written specification thereof; and that subsequently, though prior to his application for a patent, the defendant had devised and perfected the same thing, and described it in the presence of the patentee without his making claim to it."

WEBB *v.* QUINTARD, 9 BLATCH. 352.

S. D. OF N. Y., 1872. BLATCHFORD, J.

Patent granted to Heaton, 14th April, 1863, for an "improved defensive armor for ships and other batteries."

The question in this case was whether or not Heaton invented the armor before it was described in a printed publication at London in 1861, entitled "Transactions of the Institution of Naval Architects, Vol. II." The invention consisted in placing over the iron armor that encased a wooden hull an outer layer of timber, and over the timber a thin sheathing of metal. The gist of the invention was the use of the timber covering for the iron armor, the effect of which was to lessen the momentum of a ball, so that, when it reached the iron, its force was too slight to fracture the iron or start the bolts which fastened it. The object of the thin outside sheathing of metal was to prevent a raking shot from tearing the timber, and also, by exclusion of air, to retard combustion of the wood when set on fire by a shot. But the claim of the patent was only for

"the employment of wood, or its equivalent, when used in the manner and after the purpose substantially as described."

The patentee testified that in 1856, while in England, he conceived the idea of his invention, and suggested it, but without effect, to the British Admiralty; that in September or October, 1858, while in the United States (we quote from the opinion of the court), —

"he fired a revolver at the wooden head of a nail-keg, fastened by a wire to the sheet-iron top of the perpendicular lever of a railroad switch, and hit the wood obliquely, and concluded that an oblique shot would damage the side of a ship more than a shot striking it squarely would; that a few days afterwards he fastened a piece of plank between a thin piece of sheet-iron and a thick piece of sheet-iron, and laid the article

down on a railroad tie, with the thin iron piece uppermost, and fired at it with a revolver straight down and also obliquely, and found that the thick iron under the plank was not affected by the shots, and that the thin iron prevented the oblique shots from damaging the plank; that he made no experiments from the fore part of 1859 till the latter part of 1861; that at the latter date he began to make a model of a war vessel to illustrate his new system of armor; that early in 1862, about the time the model was done, he wrote to the Secretary of War asking to have the model examined; that the first trial he made with real armor on his plan, by firing at it with cannon, was made in New York in March, 1863; and that a like trial was made by him at Washington City about the same time. On these facts it is contended for the plaintiff that Heaton completed in 1856 the invention of putting wood outside of iron for armor; and that he completed in the fall of 1858 the invention of the wood outside of the iron, and the thin iron outside of the wood. . . . The occurring of the idea to him in England in 1856, and his letter to the British Admiralty, certainly cannot be regarded as a making of the invention; nor can his pistol practice in 1858 be so regarded. The first attempt he made to embody his ideas in a practical form by constructing a model was in the latter part of 1861, the model having been finished early in 1862. This was all of it . . . after the publication had been made in England from which the 'Onondaga' [the ship on which the defendant used the armor in question] was armored as she was. . . . Heaton may have used reasonable diligence in developing his ideas towards making an invention. But that is not the point. To give him a precedence over the English publication, he must have first made the invention, and then have been using reasonable diligence in adapting and perfecting the invention so made. When did he make the invention? Not until he made the model. . . . Looking at the English publication as a patent issued, which is the proper view in respect to this case, it cannot be defeated by showing that Heaton previously conceived the possibility of accomplishing what the publication makes known so satisfactorily that it has been followed in armoring the 'Onondaga.' To constitute Heaton a prior inventor, he must have proceeded so far as to have reduced his idea to practice, and embodied it in some distinct form. Parkhurst *v.* Kinsman, 1 Blatch. 488, 494; . . . Cox *v.* Griggs, 2 Fish. 174, 177."

KNOX *v.* LOWEREE, 6 O. G. 802.

D. OF N. J., 1875. NIXON, J.

"Reduction to practice" defined.

The patentee conceived the idea of his invention (a fluting-machine) in 1852, and he made a "rude" sketch of it in that year. In June, 1862, he delivered this sketch to some one to have a drawing made, from which the machine could be built. His invention was embodied in a complete working machine as early as the spring of 1863;

"and it is to that date," said the court, "to [*sic*] which we must refer, in considering the claim of prior knowledge and public use of the alleged invention."

He kept the invention secret till 1866, when it was patented; and the court held that the disturbed state of the country from 1862 to 1866 (the patentee lived in Alabama) excused the delay.

ELECTRIC RAILROAD-SIGNAL CO. *v.* HALL RAILROAD-SIGNAL CO., 6 FED. REP. 603.

D. OF CONN., 1881. SHIPMAN, J.

The question in this case was, who was the first inventor, under the patent law, of the system in which signals are operated automatically by passing trains, through the use of *but a single battery*.

One Pope, assignor to the complainant, first conceived the idea; Hall, assignor to the defendant, first reduced it to practice. The particular facts are as follows:—

"During the week prior to Nov. 6, 1872," Pope described to his partner, Hendrickson, a plan for effecting the result mentioned. Hendrickson "thereupon drew a very rude and scanty pencil sketch, which Pope said represented his idea." On Dec. 3, 1872, Hendrickson showed Pope a rough drawing of an improved signal machine which he thought would work well with a single battery. Pope agreeing with him, a model was made and successfully operated. (Apparently this model did not include the one-battery part of the device.) Dec. 26, 1872, Pope applied

for a patent for the signal machine; but inasmuch as the machine could be used as well without the one-battery system, he did not mention that system, intending, as he testified, to take out a separate patent for it, after he had tested it, and not wishing to disclose it before doing so.

He intended to test it, but did not do so; and, in fact, never embodied the idea at all. He applied for a patent, however, May 15, 1873, and it was granted.

"The system was not afterwards placed by Pope upon any road, and there is no evidence that anybody else, professing to act under this patent, has ever reduced it to practice, except that Pope constructed a working model of the whole apparatus in 1875 or 1876, which was set up in his shop in the city of New York."

In February, 1873, he told a railroad officer of his plan, and that he was ready to put it in operation; but this was never done.

It was not denied that his patent described a practical and valuable invention.

Hall's conduct in the matter of his invention (substantially the same as Pope's) was as follows: —

During the summer of 1872, he was cogitating the one-battery plan. About Dec. 21, 1872, he concluded that it was feasible, and "forthwith" he sent for his son, who was at Boston, to join him at Meriden, where a working model of Hall's invention was then made. In January, 1873, he described his invention to the manager of the Eastern Railroad Company, and obtained permission to apply it to that road. In April, 1873, he tested it on one-eighth of a mile of railroad track near Meriden, and found it successful. In December, 1873, he began to put it in operation on the Eastern Railroad. A practical difficulty was encountered in adapting it to this greater length of track, which was solved by a change made Feb. 14, 1874. After that the system was sold by the defendant corporation to other railroads. It does not appear that it was ever patented.

The court said (p. 611): —

". . . The just . . . principle of the law which gives a patent to the inventor who first conceives of the invention, provided he is diligently engaged in perfecting it and adapting it to use, and overcoming the practical difficulties, . . . although he was slower in the

race than the one who was second *to* conceive,[1] does not apply to Pope. Who faintly conceived the idea is not known. Pope first attained a mental result. After that, he was actively occupied in the same branch of study; but he did not develop this system in wood and metal. Hall did develop it, made it useful and practicable, and achieved success. In my opinion, it would be a great wrong to decide that the defendant is liable as an infringer." [2]

LOOM CO. *v.* HIGGINS,[3] 105 U. S. p. 593 (1881).

Bradley, J.: —

" . . . It is contended by the defendants that Davis had conceived the idea of using a rigid lathe with his wire-bar in the early part of 1868, and that, in the model which he prepared at that time for obtaining his patent, he exhibited the same latch devised by Webster, and operated in the same way by contact with the wire-box; and that he showed to the witness Crossley, by pinning his sliding shuttle-box fast to the lay, how it could be used with a rigid lay and shuttle-box. Then, why did he not claim the whole device when Webster exhibited it to him? Why did he advise the defendants that Webster's arrangement was no improvement on Weild's? But if it were true that he did show these things in his model, and had he shown a trough instead of parallel bars; and if it were true that he regarded the idea as anything more than a possibility; and that he did, in fact, contemplate it as a perfected and practicable arrangement, so as to amount to invention, — the question would still remain, whether he or Webster was the first inventor? Both may have been original inventors, but only one of them could be the first. If Davis had put the invention into practical form and operation more than two years before Webster applied for his patent, then the patent would be void by reason of prior use. But the evidence is conclusive that he never undertook to put it into practical form until he made the Sterling loom, which was only commenced in 1870. Webster's application for his patent was made in June, 1870. Though this was proved without objection, and substantially conceded, the defendants say that it does not appear what the application was, nor how much it was altered before the patent was

[1] In an earlier part of the opinion he said: "It is also true that the determination of the fact of diligence is not to be reached by comparison of the diligence of the two inventors. If Pope was reasonably diligent in perfecting his idea, it does not matter that Hall was exceedingly diligent, and made more rapid advances."

[2] *Vide ante*, page 602.

[3] *Vide* page 475, *ante*, for a description of the invention.

issued. This argument cannot avail, for the application is a public record, the contents of which the defendants and all others are presumed to know; and since they had it in their power to produce it, and did not, it must be presumed that it would not have served their purpose, but corresponded with the patent. The defence of prior use for two years, therefore, is not sustained; and the question comes back to simple priority of invention. Conceding that Davis was an original inventor, the earliest point of time that he can be regarded as such was in the spring of 1868. But Webster had invented it before that time, and had made a drawing of it, which, in March, 1868, he exhibited and explained to Davis. An invention relating to machinery may be exhibited either in a drawing or in a model, so as to lay the foundation of a claim to priority, if it be sufficiently plain to enable those skilled in the art to understand it. There is no doubt that Davis understood Webster's drawing; and he did not then claim that the invention belonged to himself. . . . Another circumstance seems to us as having much weight in this connection. It was found that the loom No. 50, and the Sterling loom, when completed in 1871, worked with wonderful success, sometimes as many as sixty yards being woven on one loom in ten hours. If Davis was the inventor of the wire motion applied to these looms, why did he never apply for a patent for it? He was already a patentee of a different and inferior apparatus. He knew all about the method of going about to get a patent. He belonged to a profession which is generally alive to the advantages of a patent-right. On the hypothesis of his being the real inventor, his conduct is inexplicable."

NATIONAL FEATHER-DUSTER CO. *v.* HIBBARD, 9 FED. REP. 558.

N. D. OF ILL., 1881. BLODGETT, J.

Patent for improvement in feather dusters, namely; a feather duster "having the stems of the feathers split longitudinally, and a part thereof severed from the remaining part."

Before this invention, dusters were made from ostrich feathers only. The patentee conceived the idea of making them of turkey feathers. The difficulty was to make the turkey feathers pliable.

We quote now from the opinion of the court: —

"He experimented some time in this direction with chemicals, for the purpose of softening the stem or rib of th[illegible]e feathers, and, not succeeding to his satisfaction in any of these experiments, was discussing

the subject on one occasion with his wife, when she suggested to try cutting or shaving down the stem of the feathers, so as to make them pliable and limber. The suggestion was at once acted upon, and a duster made which proved satisfactory. . . . The proof on the part of Mrs. Hibbard fails to show — indeed it falls far short of showing — that she ever made a feather duster, or thought of making one, from turkey feathers made pliable by splitting them, until after her husband had been for some time at work in that direction. The most the proof does show is that she suggested the mode of making feathers limber and pliable, which were used for the purpose of making the feather dusters described in this patent. . . . While he [the patentee] was experimenting — I may say, perhaps, groping — for some method of rendering his feathers pliable, Mrs. Hibbard suggested the experiment of splitting the feathers. He acted upon that suggestion, and, finding that the feathers were thereby made pliable, combined them with the other material, and made the feather duster which before that time had only had existence in his mind. Although Mrs. Hibbard may have made a valuable suggestion in the progress of the experiment, yet that does not make her the inventor. Agawam Co. *v.* Jordan, 7 Wall. 612; Pitts *v.* Hall, 2 Blatch. 229."

The case was decided mainly upon the ground that Mrs. Hibbard, by allowing her husband to take out and to sell a patent for the invention, was estopped to claim it as her own. The conclusion, however, arrived at in the quotation we have made is open to doubt. Mrs. Hibbard's suggestion was not only a valuable one, — it contained the inventive idea which made the improvement practicable. Mr. Hibbard had conceived the possibility of using turkeys' feathers; but Mrs. Hibbard suggested the manner in which it could be done. They were perhaps joint inventors; if not, Mrs. Hibbard was, we think, the true inventor.

HOE *v.* KAHLER, 12 FED. REP. p. 118.

S. D. OF N. Y., 1882. BLATCHFORD, J.

The court: —

"It is clear that Hoe and Tucker made the invention before Campbell did, and clearly described it in the *caveat* and drawings filed in 1854. No press containing the invention of claim 3 was made before 1871, because a printing-press of the kind and capacity shown

in the *caveat* is a structure of large cost, not to be made with the chance of a sale, but only to be made on an order of a particular size for a particular newspaper."[1]

ENGLISH CASE.

ALLEN *v.* RAWSON,[2] 1 C. B. p. 567.

COMMON PLEAS, 1845.

Erle, J., instructed the jury as follows: —

"I take the law to be that if a person has discovered an improved principle, and employs engineers or agents, or other persons, to assist him in carrying out that principle, and they, in the course of the experiments arising from that employment, make valuable discoveries accessory to the main principle, and tending to carry that out in a better manner, such improvements are the property of the inventor of the original improved principle, and may be embodied in his patent; and if so embodied, the patent is not avoided by evidence that the agent or servant made the suggestions of that subordinate improvement of the primary and improved principle. The improvement claimed by Shaw is that, after the bat has been formed upon a revolving apron by successive folds or layers of sliver, three or more revolving aprons should be placed one above another, and connected with each other. That is but a more convenient mode of carrying out the principle of the patentee."

And as to the improvement suggested by one Milner, — the introduction of the longitudinal guides for the purpose of keeping the travelling apron evenly extended, — the judge told the jury that it was one of those subordinate improvements helping to carry out the general principle, which the patentee had a right to adopt.

On a motion for a new trial, Tindal, C. J., said: —

". . . The real question is, whether or not the improvements suggested by Shaw and by Milner were of such a serious and important character as to preclude their adoption by Williams as part of his invention. . . . The main object and design of the patentee were the obtaining a long, even, and uniform bat, suitable to be made into commercial ends or pieces of cloth.

[1] *Vide ante*, pages 643, 684.

[2] *Vide ante*, page 484.

"The patentee, in his specification, after describing the double or compound revolving apron, thus refers to that which is called Shaw's suggestion: 'As in many manufacturing premises these two long extended aprons could not be so conveniently used for want of room, I sometimes extend them backwards and forwards, and even with several aprons, as shown (in the drawings) at figures 6, 7, and 8, or perpendicularly up and down, where only two are required, as shown at figures 9 and 10.'

"This is obviously a mere matter of convenience, suggested to and adopted by the inventor. It would be difficult to define how far the suggestions of a workman employed in the construction of a machine are to be considered as distinct inventions by him, so as to avoid a patent incorporating them, taken out by his employer. Each case must depend upon its own merits. But when we see that the principle and object of the invention are complete without it, I think it is too much that a suggestion of a workman employed in the course of the experiments, of something calculated more easily to carry into effect the conceptions of the inventor, should render the whole patent void. It seems to me that this was a matter much too trivial, and too far removed from interference with the principle of the invention, to produce the effect which has been contended for. If that be so with respect to the suggestion made by Shaw, much more is it so as to that made by Milner, which does not appear to have been altogether adopted."

Other cases are:—

WHITELY *v.* SWAYNE, 7 Wall. 685.
GARRATT *v.* SEIBERT, 98 U. S. 75.
DAMON *v.* EASTWICK, 14 Fed. Rep. 40.
HAPGOOD *v.* HEWIT, 11 Fed. Rep. 422.
WORDEN *v.* FISHER, 11 Fed. Rep. 505.
WASHBURN *v.* GOULD, 3 Story, p. 133.
JOHNSON *v.* ROOT, 2 Cliff. 108.
ALLEN *v.* HUNTER, 6 McLean, 303.
SMITH *v.* O'CONNER, 2 Sawyer, 461.
SMITH *v.* DAVIDSON, 19 C. S. 691.

See also, *ante*, page 338.

An important case as between employer and employee is that of Patterson *v.* Gas-Light & Coke Co., *post*, page 735.

CHAPTER X.

PRIOR PATENT OR PUBLICATION.

The Statute Provisions.

322. THE statute provisions on this subject are as follows: — Section 4886 (Revised Statutes) declares, —

"That any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof, not known or used by others in this country, *and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof*, . . . may . . . obtain a patent therefor."[1]

Section 4920 provides that it shall be a sufficient defence to an action for infringement of a patent if it be proved that the invention therein described

"had been patented or described in some printed publication prior to his [the patentee's] supposed invention or discovery thereof."

And, lastly, though what we are about to quote adds nothing on this point, section 4923 runs as follows: —

"Whenever it appears that a patentee, at the time of making his application for the patent, believed himself to be the original and first inventor or discoverer of the thing patented, the same shall not be held to be void on account of the invention or discovery, or any part thereof, having been known or used in a foreign country before his invention or discovery thereof, *if it had not been patented, or described in a printed publication.*"

323. It clearly appears, then, that the prior publication relied upon to defeat a patent must have been anterior not only to the

[1] This clause in the act of 1793 read "described" (the word "patented" not occurring therein) "in some public work anterior to the supposed discovery of the patentee."

The present form of this provision was adopted in 1870. See foot-note 1 to page 721, *post*.

date of the later patent or of the application therefor, but to the date of the invention or discovery of the improvement therein described.[1]

This is expressly stated in the statute, and decisions of the courts to the same effect might be cited, if they were necessary. City of Elizabeth *v.* Pavement Co., 97 U. S. 126.

324. As to what stage of the patentable improvement is meant by the time of the *invention* or *discovery* thereof. Briefly, the point here indicated is the time when the inventor or discoverer has struck out or arrived at the idea of his invention; that is, when the object to be attained and the means of attaining it are substantially clear to him. This point of time or of development is distinguishable, on the one hand, from the time when the inventor merely conceives that a certain result may be attained, though he knows not how; and, on the other hand, from the time when the details of his invention are complete, and the difficulties which may attend its reduction to practice are overcome.

Of such *invention or discovery* a drawing is sufficient evidence; and perhaps, when the contrivance invented was simple, — that is, easily reduced to practice, — a verbal description of it to some person by the inventor would be. *Vide* page 694, *ante*.

This subject, however, need not be dwelt upon here. The reader is referred to Chapter IX. pages 693, 694, *ante*, where the time at which it may be said that *invention* of a patentable improvement takes place is discussed with regard to the question of *prior invention*.

What is "Patented;" what is a "Publication."

325. What is meant by "patented, or described in any printed *publication*"?

An application for a patent, withdrawn or rejected, is not such a publication. This has been decided a great many times. The point is considered in the chapter on Prior Knowledge and Use. *Vide ante*, pages 626, 627. In the case of the Lyman Ventilating

1 "A description in a prior patent is no anticipation of a patent the application for which was filed before the application of such prior patent;" the two patents not being precisely for the same invention, so that the question of "due diligence" did not arise. Allen *v.* City of New York, 17 O. G. 1281.

and Refrigerator Co. *v.* Lalor (*ante*, page 141), Judge Blatchford remarked, upon a rejected application, as follows: —

"A written description of a machine, although illustrated by drawings, which has not been given to the public, does not constitute an invention within the meaning of the patent laws. Evidence that such a description was made does not show of itself a prior invention. Such a description has not the same effect as a printed publication. It lacks the essential quality of such publication; for, even though deposited in the Patent Office, it is not designed for general circulation, nor is it made accessible to the public generally, being so deposited for the special purpose of being examined and passed upon by the Patent Office, and not that it may thereby become known to the public. Although it may incidentally become known, the deposit of it is not a publication of it, within the meaning of the statute or the law. Moreover, although the description may be so full and precise as to enable any one skilled in the art to which it appertains to construct what it describes, it does not attain the proportions or the character of a complete invention until it is embodied in a form capable of useful operation." [1]

See also page 348, *ante*.

326. If one invents a contrivance and obtains a patent, in which he claims it only in combination with some other contrivance, such a patent is no bar to a subsequent one, in which the inventor claims the use of the contrivance by itself. This point was decided by the Supreme Court in the case of the Suffolk Co. *v.* Hayden, 3 Wall. 315; *post*, page 733.

327. In the case of McMillin *v.* Rees (17 O. G. 1222), it was held that a patent for a specific device is not invalidated by the fact that a prior patent issued to the same inventor, in which he described, without claiming, the invention claimed in the second patent. But see a *dictum* in James *v.* Campbell, 104 U. S. 356.

In a later case, Graham *v.* Geneva Lake Crawford Mfg. Co. (11 Fed. Rep. 138), Dyer, J., said: —

"It is insisted, first, that complainant's patent is invalid because, previous to its issuance, the patentee had procured a patent to himself and others as his assignees, in the specifications and drawings of which the invention now in question was described and delineated, and that,

[1] *Vide ante*, page 626, sect. 250, and pages 141, 401; also N. W. Fire Ex. Co. *v.* Philadelphia Fire Ex. Co., 6 O. G. 34; Barker *v.* Stowe, 14 O. G. 559.

therefore, the prior patent (meaning the patent of 1867) can be reissued so as to cover all that was invented by the applicant for the patent in suit; and also that the inventor, A. B. Graham, prior to his application for the patent of 1868, applied for the patent of 1867, in which application he set forth, but did not claim, the invention now in controversy; and that, by his failure at that time to make such claim, he impliedly admitted his device to be old, and was thereby estopped from afterwards claiming the same to be new in any subsequent application. In the McCormick case [an unreported suit on this patent], the court had occasion to consider this objection, and it was held untenable. It was there decided that it was not a proper case for reissue; that there was no defective or insufficient specification; and that the inventor had not claimed more than he had a right to claim as new. In the opinion, delivered by Drummond, J., it is said: —

" 'On general principles, we think that where a person has, within the meaning of the patent law, made an invention which he has described in specifications, including other matters of invention, for which last a patent has been issued, that he should not be precluded, for that reason alone, from applying for and obtaining a patent for that which was not claimed in the first patent. The object of the patent law was to protect a party who made an invention which was useful, provided he complied with the terms of the law and a patent issued for the invention; and unless there is something in the law which declares a patent issued under such circumstances to be invalid, it is the duty of the courts to sustain a patent for an invention thus made. It is to be borne in mind that the application for the second patent — that of 1868, the one in controversy here — was made while that for the previous patent was pending, and before the prior patent had been issued. There were thus pending before the Patent Office two applications at the same time where the claims were different; and we understand it to be in accordance with the practice of the Patent Office to allow applications to be made at the same time by the same party for different parts of the same machine.'"

328. It is scarcely necessary to add that, inasmuch as the statute says *printed publication*, an unprinted or manuscript[1] book will not satisfy its requirement.[2]

[1] Keene *v.* Wheatley, 9 Am. Law. Reg. p. 65.

[2] Under the English statute, however, it would seem that a written book, if publicly circulated, would be a sufficient anticipation. In Stead *v.* Williams (2 Web. P. C. 126; 8 Scott N. R. 449), Tindal, C. J., said: "We think, if the invention had already been made public in England by a description contained in a work, whether written or printed, which has been

329. A published drawing, or series of drawings, unaccompanied by any text, would be, we conceive, a "publication," if it were perfectly intelligible without explanation. This point, so far as we know, has arisen but once. It was in the case of Judson *v.* Cope, 1 Bond, p. 331. Judge Leavitt said: —

"I suppose it is not a matter of great importance in this case, but I should hesitate very much to accept a mere drawing, unaccompanied by any description whatever. I think it is not admissible under the present notice," *i. e.* of prior description in certain printed publications.

330. It is a question whether a book printed for private circulation, not sold or given to all comers, but given to special individuals, would be held to be a "printed publication."[1] We find no authority on this point, excepting a remark of Judge McKennan, in the case of Reeves *v.* Keystone Bridge Co. (5 Fish. p. 467), which implies that a book privately circulated would not be a "publication." He said: —

"Whether the work in evidence is a public or only a private work, intended merely for private circulation, is fairly a disputable question. It contains an illustration by a drawing of the thing intended to be represented, without verbal description; and whether this is a description at all, or such a one as the act contemplates, may well be denied on the authority of Seymour *v.* Osborne (11 Wall. 516), and the cases there referred to with approval. But it is unnecessary to decide *these* questions, as the proof is deficient in another essential particular; it is not shown that the work was published before the date of the complainant's patent."[2]

publicly circulated, in such case the patentee is not the true and first inventor within the meaning of the statute, whether he has himself borrowed his invention from such publication or not; because we think the public cannot be precluded from the right of using such information as they were already possessed of at the time of the patent granted."

[1] The act of 1793 used the expression, "some public work." And in the act of 1836 that expression and the present one are both used. *Ante*, page 51, note 2. Mr. Curtis argues from the use of the phrase, "some public work," and from "the apparent policy of the statute," that by "printed publication" is meant a book publicly printed and circulated, and not a book privately circulated. Curt. on Pat. § 376.

[2] It has lately been decided by Judge Wheeler that a "circular to the trade" is not a "publication." Parsons *v.* Colgate, 15 Fed. Rep. 600. We doubt very much if this decision will hold.

What Exactness of Description necessary.

331. Two important questions arise in construing this part of the statute. They are, first, how full and exact must be the description in a prior patent or printed publication; and, secondly, what, precisely, is a publication.

The first question is easily answered, and there is no conflict of authorities upon the point. In the case of Seymour *v.* Osborne (11 Wall. 516, *ante*, p. 99), the Supreme Court, by the mouth of Mr. Justice Clifford, said: —

"Patented inventions cannot be superseded by the mere introduction of a foreign publication of the kind, though of prior date, unless the description and drawings contain and exhibit a substantial representation of the patented improvement in such full, clear, and exact terms as to enable any person skilled in the art or science to which it appertains to make, construct, and practise the invention to the same practical extent as they would be enabled to do if the information was derived from a prior patent. Mere vague and general representations will not support such a defence, as the knowledge supposed to be derived from the publication must be sufficient to enable those skilled in the art or science to understand the nature and operation of the invention, and to carry it into practical use. Whatever may be the particular circumstances under which the publication takes place, the account published, to be of any effect to support such a defence, must be an account of a complete and operative invention capable of being put into practical operation. Web. Pat. Cas. 719; Curtis on Patents (3d ed.), § 278 *a*; Hill *v.* Evans, 6 L. T. N. S. 90; Betts *v.* Menzies, 4 Best & Smith (Q. B.), 999."

So also in the case of the Cawood Patent, *ante*, page 161.[1]

Cases in which the sufficiency of a prior patent or publication, as an anticipation of the patent in suit, was considered, may be found *ante*, at pages 91, 110, 114, 120, 122, 124, 125, 133, 135, 138, 151, 153, 155, 157, 160, 162, 165, 166, 167, 173, 175, 177, 179, 180, 182, 314, 319, 328 *et seq.*, 359, 361, 363, 420, 458, 464, 564 *et seq.*

232. In the case of McMillin *v.* Rees,[2] McKennan, J., said: —

"Of the publications exhibited, it may be said generally that they do not describe McMillin's invention. Remotely suggestive of it they may

[1] See also Webster Loom Co. *v.* Higgins, 16 O. G. 675; Jones *v.* Sewall, 3 Cliff. 563; Hays *v.* Sulsor, 1 Bond, 279; Judson *v.* Cope, id. p. 336.

[2] 17 O. G. 1222.

be, but they do not describe it in such terms that the public could construct and put it in practice without further invention.

"Prior publications must come up at least to this measure of fulness and precision. Even a stricter rule is prescribed by high authority; for in Hill *v.* Evans (6 L. T. N. S. 90), it is held that the publication must furnish knowledge equal to that required to be given by a patent; namely, such knowledge as will enable the public to perceive the very discovery and to carry the invention into practical use."

We quote in a foot-note the remarks of the Lord Chancellor, from which it will appear that Judge McKennan correctly reported them.[1] In a subsequent case, however, Neilson *v.* Betts,[2] the Lord Chancellor said: —

"I will merely note for a moment some little difficulty that appears to have been felt about an opinion I expressed in the case of Hills *v.* Evans. . . . In that case, as in the present, we were dealing with processes. My opinion was that the antecedent process, if it is to be relied upon as forestalling the second, must be so clearly and distinctly described, that those who read it, bringing to it competent mechanical

[1] "The information as to the alleged invention given by the prior publication must, for the purposes of practical utility be equal to that given by the subsequent patent. The invention must be shown to have been before made known. Whatever, therefore, is essential to the invention must be read out of the prior publication. If specific details are necessary for the practical working and real utility of the alleged invention, they must be found substantially in the prior publication. Apparent generality, or a proposition not true to its full extent, will not prejudice a subsequent statement which is limited and accurate, and gives a specific rule of practical application. The reason is manifest, because much further information, and, therefore, much further discovery, are required before the real truth can be extricated and embodied in a form to serve the use of mankind. It is the difference between the ore and the refined and pure metal which is extracted from it.

"Again, it is not, in my opinion, true in these cases to say that knowledge, and the means of obtaining knowledge, are the same. There is a great difference between them. To carry me to the place at which I wish to arrive is very different from merely putting me on the road which leads to it. There may be a latent truth in the words of a former writer, not known even to the writer himself; and it would be unreasonable to say that there is no merit in discovering and unfolding it to the world.

"Upon principle, therefore, I conclude that the prior knowledge of an invention to avoid a patent must be knowledge equal to that required to be given by a specification; namely, such knowledge as will enable the public to perceive the very discovery, and to carry the invention into practical use."

[2] L. R. 5 H. L. 1.

skill, would be enabled to work it out to the same result as that arrived at by the process contained in the subsequent patent."

333. In the case of Betts *v.* Neilson, L. R. 3 Ch. App. Cas. p. 432 (from which that of Neilson *v.* Betts was an appeal), Lord Chelmsford, Lord Chancellor, said: —

"The Court of Queen's Bench in the case of Betts *v.* Menzies (1 E. & E. 990) held (and I think correctly held) that Dobbs's specification [the alleged anticipation] might insufficiently describe the process so as to make the specification bad, and yet might disclose enough to show that what was claimed in the plaintiff's specification was not wholly new. I entirely agree with the opinion of Mr. Justice Williams in the case of Betts *v.* Menzies, that the publication of a notion that a certain useful art may be discovered without any information or knowledge of the means of discovery cannot preclude a subsequent first inventor of those means from taking out a patent for the entire art."

334. In the case of Stead *v.* Anderson (4 C. B. p. 823), Baron Parke said of a prior publication alleged to anticipate the patented invention in the case before him: —

"The question on this part of the issue will be, not whether the description furnished by Heard in his communications to the Society of Arts would have been sufficient to sustain a patent, or whether, if Heard had taken out a patent, the plaintiff's mode would have been an infringement, — but whether Heard's letters made known to the world a mode of paving substantially like the plaintiff's."

335. A prior publication stands on the same footing with communications, oral or otherwise, made to a patentee before or in the course of his invention.

In discussing that subject (*ante*, pages 623–625) we found, as the reader will remember, that the communications to a patentee which will defeat his patent must be such as to enable him to complete the patentable improvement *without the exercise of invention on his part*. And this, the reader will have observed, is the rule laid down by Judge McKennan with regard to prior publications; for he says of those set up in the case before him: —

"They do not describe it [the invention] in such terms that the public could construct and put it in practice *without further invention*. Prior publications must come up, at least, to this measure of fulness and precision."

336. It is not a sufficient objection to a prior patent or other publication that it describes the invention imperfectly, provided its deficiencies are such only as mechanical skill can correct.

In a recent case,[1] the Supreme Court said of two prior patents: —

"It is objected, however, that the machines described in these patents are mere paper machines, not capable of successful practical working; but on examination it sufficiently appears, we think, that the objections can be sustained only as to minor matters of detail in construction, not affecting the substance of the invention claimed, and *could be removed by mere mechanical skill, without the exercise of the faculty of invention*. In this view, the Wise and Smith patents are not rendered inefficient as defences in this suit by reason of the alleged imperfections of the machines described in them."

See also the case of Seymour *v.* Osborne, *ante*, page 103.

337. We may note here the obvious point that if a patent in suit claims an article, and not the process by which it is made, a prior publication which describes that article, but not the way to make it, is a sufficient anticipation. Cohn *v.* United States Corset Co., 93 U. S. 366; *ante*, page 158.

Date of Publication.

338. It is scarcely necessary to say that the defendants who set up a prior patent or publication are not allowed to prove that the invention therein described was made prior to the date thereof. Kelleher *v.* Darling, 14 O. G. p. 676.

339. The date of publication must, it would seem, be proved otherwise than by the date printed on the book. In the case of Reeves *v.* Keystone Bridge Co. (5 Fish. p. 467), McKennan, J., referring to a publication set up by the defendants, said: —

"It is not shown that the work was published before the date of the complainant's patent. This must be directly proved. It is not deducible from the imprint on the titlepage. That the work was then printed may be inferred from this imprint; but when it was put in circulation or offered to the public is a distinct fact, which must be proved independently. The intended circulation of a book of a public nature may be presumed from its being put into print; but it does not follow that a work, such as the one in question, was made accessible to the public as

[1] Pickering *v.* McCullough, 104 U. S. p. 319.

soon as it was printed, or that it was actually published at all. As it does not appear that this book was published before the patentee's invention, as evidence it is altogether inconsequential."

Foreign Patents.

340. "An invention is not 'patented' in England, within the meaning of the acts of Congress, until the specification is enrolled. The enrolled specification takes effect only from the date of its enrolment, and not from the date of the filing of the provisional specification."

This was the decision of Judge Sprague in the case of Howe *v.* Morton, 1 Fish. 586.

It was confirmed by the case of Smith *v.* Goodyear Dental Vulcanite Co., 93 U. S. 486. In that case it was proved that the invention patented was made in the spring of 1855.

An English provisional specification and patent were set up by the defence, of which the court said (p. 498):—

"Of the English patent of Charles Goodyear it is enough to say that, though the provisional specification was filed March 14, 1855, the completed specification was not until the 11th of September following. It was therefore on the last-mentioned date that the invention was patented."[1]

341. In case of a failure to file the complete specification, the English Patent Office publishes the provisional specification. It would seem that such a publication would be included by the words of our statute, "described in a printed publication." This point has arisen twice, at least; but it has not been decided, so far as we know.

In the case of Goff *v.* Stafford (14 O. G. 748), Clifford, J., held that the provisional specification adduced did not describe the patentee's invention with sufficient accuracy to anticipate it. He said, however:—

"Grave doubts are entertained whether such a publication, without more, is sufficient to show that the patentee of an American patent is not the original and first inventor of the improvement described in his patent; but it is not necessary to decide that question."

[1] A Canadian patent takes effect, not from its delivery to the patentee, but when it is signed, sealed, and registered. Bate Refrigerating Co. *v.* Gillett, 13 Fed. Rep. 553.

342. In the second of the cases referred to, namely, Coburn *v.* Schroeder (11 Fed. Rep. 425), before Wheeler, J., the invention covered by the patent in suit was made in February, 1866. The provisional specification relied on was left with the English Commissioner of Patents, Jan. 22, 1866. It was published in 1866, in a book deposited in the Astor Library in that year. Wheeler, J., said: —

"If this would be a sufficient printed publication, it would not be printed until the specification had been left, for some time at least; and this invention was so soon after that, that this publication would not appear to be, and probably was not, made until after the invention."

343. The following point was decided by Shepley, J., in the case of Kendrick *v.* Emmons, 9 O. G. 201 :—

"An English patent, taken out surreptitiously by any person who, without the knowledge of the American inventor, and without authority from him, endeavored to appropriate the benefits of his invention, would not thereby deprive the real inventor of any of his rights."

344. In France, "private" as well as public patents are granted. The object of the private patents is to prevent "strangers" and "vagabonds" from obtaining the inventions covered thereby, and carrying them out of the country. Reynault on Patents, pp. 113, 150. Such private patents are not within the language of our statute, and they do not invalidate patents granted for the same thing to inventors in this country. Brooks *v.* Norcross, 2 Fish. 661; Schoerken *v.* Swift & Courtney & Beecher Co., 19 Blatch. 209.

345. In the last case, the French patent was proved by a "copy certified by the Director of the Conservatoire National des Arts et Métiers of France, under the seal of that department, verified by the Minister of Agriculture and Commerce and the Minister of Foreign Affairs, under their seals, but not by the great seal of France."

Wheeler, J., held, under what evidence does not appear, that this certification proved that the patent was a public and not a private patent. We quote his remarks with regard to this patent in full: —

"This defence, as formulated in the Revised Statutes, is that the invention shall have been patented before the supposed invention by the patentee. Section 4920, par. 3. There are patents in France which

may, for public and special reasons, be kept secret. The expression 'patented,' in the statute, would seem, from the signification of the word, to mean only inventions laid open to the public and protected to the inventors; and such appears to be the construction which the expression has heretofore received. There is nothing to show whether this is an open patent or one made secret, except what can be gathered from the copy itself, and the fact of its production. Only public records are provable by copy certified merely; and these departments of the government of France would not have the patent in condition to certify by copy, if it was secret and not public. So the fact that it is certified shows it to be what could be certified, and that the invention described by it was, in the sense of the patent law, patented by the original patent of the copy produced."

346. Another point, also, was decided in the first of these cases, Brooks *v.* Norcross, *supra*. The French law formerly required that patents should be published for a certain length of time in the *Bulletin des Lois*, as a condition of validity.[1] This condition not having been complied with in the case of the French patent before them, the court held that the invention described by it was not "patented," in the sense of our statute.

347. The present French patent law directs that patents shall be published, but does not make such publication a condition of their validity. The provisions are as follows.[2] Act of 1854, art. 14:—

"A royal ordinance inserted in the *Bulletin des Lois* shall proclaim every three months the patents delivered."

"Art. 24. After the payment of the second annuity, the specifications and drawings shall be published, either without curtailment or by extracts. Moreover, at the beginning of each year a catalogue shall be published containing the titles of the patents delivered in the course of the preceding year."

When and how does a Publication become such.

348. When and how does a printed book become a "publication"?

This question has never arisen in the Federal courts, so far as we know, but in England it has thoroughly been discussed.

Three views are possible:—

I. By "publication" in the statute is meant a technical publi-

[1] The court so stated.

[2] 2 O. G. 505.

cation; and in this sense a book is published when it is offered to the public by exposure for sale in a shop, or, we conceive, by advertisement. When the book is published to this extent, the courts will not inquire whether the book has, in fact, been read by any of the public or not.

II. By "publication" is meant a technical publication, as above described, except that evidence may be given to show that the book has not been read; and if that fact be proved, "publication" is disproved.

III. The whole question is a matter of evidence. The courts will decide, upon the facts of the particular case before them, whether the information contained in the book has become public or not, technical publication being *prima facie* evidence of that fact.

349. In this country we conceive that the first and strictest of these rules would obtain. though perhaps, in an extreme case, it would be relaxed; as, for instance, in the contingency suggested by an English judge of an author's buying up and destroying the whole edition of his work the day after it was exposed for sale, and before a single copy had been bought or read. In such a case it might be maintained that publication was defeated.

350. Before examining the English authorities, it is very important to remark that the English statute contains no special provision in reference to prior publications. In the English cases, therefore, the question of publication is considered solely with a view to determine whether the invention described in a given book has been communicated to the public, so as to anticipate the patent of a subsequent original inventor of the same thing. Moreover, in England the fact that the invention in question has previously been described in a book published abroad and not brought into England, is no bar to a patent for the same thing.[1] However, as the question what constitutes "publication" was discussed and decided in the English cases, we present them.

351. In Heurteloup's case (Web. 553), no principle was announced. The publication relied upon was a French one, and a copy of it had been placed in the British Museum; and there was some other evidence of its introduction into England. This, by implication, was held to be a publication. But the case is of little authority.

[1] See the English statute provisions in the Appendix.

Stead *v.* Williams (8 Scott N. R. 449) is the first case of importance on this point. It was alleged that a description of the invention patented had been published in the Transactions of the Society of Arts.

Creswell, J., having instructed the jury that this would not invalidate the plaintiff's patent unless he had derived his invention from the publication, his charge was excepted to. In sustaining the exception, Tindal, C. J., said that the fact of publication must depend on the circumstances of each case; that it was a matter of evidence.

"The existence of a single copy of a work, though printed, brought from a repository where it had long been kept in obscurity, would afford a very different inference from the production of an encyclopædia. . . . The question will be whether, upon the whole evidence, there has been such a publication as to make the description a part of the public stock of information."

There was another suit (Stead *v.* Anderson, 4 C. B. 806), tried before Baron Parke, who adopted the statement of law made by the Court of Common Pleas in the case of Stead *v.* Williams; "without, however," he said, "holding myself bound by that opinion should the point ever come before me sitting in a court of error."

352. Next is the case of Lang *v.* Gisborne, 31 Beav. 133. This was decided by Lord Romilly, Master of the Rolls. The publication set up was a French one; and it was proved that four copies of it had been sold in England, one copy going to the Cambridge University Library.

Lord Romilly laid down the strict rule which we first stated, saying: —

"I am, however, of opinion that a publication takes place when the inventor of any new discovery, either by himself or by his agents, makes a written description of it, and prints it in a book, and sends it to a bookseller's to be published in this country. It is not at all necessary to establish the fact that one volume of that book has been sold."

353. But in the later case of Plimpton *v.* Malcolmson (L. R. 3 Ch. D. 531), Jessel, M. R., said, after quoting from his predecessor's opinion: —

"Now, there is no law upon the subject except this, that the judge, on the facts proved, has to come to a certain conclusion. If it were

necessary to express an opinion upon that, I should say it must depend on circumstances. It by no means follows, because the book has been printed and published and sent to a bookseller for sale, that it is part of the public knowledge."

And he reviews the authorities at great length.

The facts in the case before him were as follows: The publication was an American one. It was sent to the English Patent Library some years before 1865, the date of the English patent. It was stowed away in a room not open to the public, and by some mistake it was not entered upon the catalogue. There was evidence to show that its existence was unknown in England.

The Master of the Rolls said that this was not such a publication of the invention "as to deprive the man who first made it known to the world of that merit — the only merit, so far as the importer is concerned — which consists in making known a useful invention to the public."

354. There was another suit on this patent, the facts being substantially the same; namely, Plimpton *v.* Spiller, L. R. 6 Ch. D. 412.

Additional evidence was offered tending to show that in July of the year 1865 (the patent sued on was dated later in the year 1865) the book lay upon the top shelf of a corridor, open to the public, and leading from the reading-room of the library. But it appeared that the book was not catalogued, and that the chief librarian had no knowledge of it.

The Master of the Rolls did not feel compelled by this evidence to change his former decision; and the whole case now went up to the Lords Justices, who affirmed the decision of the Master of the Rolls. L. R. 6 Ch. D. p. 425, A. D. 1877.

355. James, L. J., after saying that he agreed with the Master of the Rolls in his conclusion that the book was not in the library in such a way as to be accessible to the public, continued as follows (p. 429): —

"That being so, it is not necessary to go further; but I should, if it were necessary, desire much further time to consider whether, even if it were proved that the book, one copy of which had been sent over as a present from a gentleman in America, was on the shelf in the library between the 20th of July and the 25th of August, that would be a sufficient publication, and would be such an addition to the stock of common knowledge in this country as would have prevented a man

from being the first and true inventor of this patent, — such an addition to the stock of common knowledge as a man was not entitled (to use the language of one of the cases) to deprive the public of."

356. Brett, L. J., in his *dicta*, went further than this; and he intimated that it would not be sufficient to prove that a prior publication had been offered for sale, or had been regularly placed in a library. He said: —

"With regard to the question of publication, I must say I entirely and absolutely agree with the proposition of law laid down by the Master of the Rolls. It seems to me that the real question to be decided by the court with regard to this matter is whether the invention was, before the patent in question, known to the public in the sense that the Master of the Rolls has described; *i. e.*, not known to all the public, but known to a sufficient number, so that you may properly say that it was known in England.

"In order to prove or disprove that fundamental proposition, you may show by way of evidence that there has been a prior invention, and that it has become as a fact, although it has never been written, known to the people in the trade. That is what Baron Parke says in Stead *v.* Anderson,[1] that it has become generally known in the sense that it has become known to the people in the trade. That is only one form of evidence which may be given in proof of the fundamental proposition. Another mode of proving the fundamental proposition is to show that a description of the invention has been published. But then, to show that, it is not sufficient merely to show that it has been published in one sheet or book. As Baron Parke himself says, '"published" means offered or dedicated to the public.' He then goes on to say that the question with regard to that is, Was the invention published or offered to the public to such an extent as that it was generally known among engineers or persons interested in the matter? The mere fact of its being dedicated, the mere fact of its being published, is not sufficient; it must be so far published as that you may fairly say it is known to a sufficient number of the public.

"Therefore I cannot agree with Mr. Davey [counsel for the defence] when he says that it is sufficient to show that the thing has been printed in a book, and that that book has been so placed that it might have been known to the public. It must be not only printed in a book, but that book must be placed in such a position and so used that you may fairly infer or assume that the contents of the book have become known to a sufficient number of people. Therefore, when you prove that this

[1] 2 Web. P. R. 147, 148.

book was put in the Patent Library, — I care not into what part, — I do not say that is no evidence of its having become known to the public; but I say that when you have other facts which show that, although it was put in the Patent Library, the proper inference is that nobody ever did see it there or elsewhere, then, although it has been in one sense, if you please, published, or in one sense, if you please, intended to be dedicated to the public, all I can say is that the public have not been able to take advantage of the dedication or the publication, and therefore you do not show that it was known to the public."

357. Baggally, L. J., however, appears to have leaned the other way. He said (p. 430):—

"I do not propose to express any opinion as to what might have been the case if there had been evidence that the volume of illustrations had been sent over to England, and had been placed in the library a sufficient time before the date of the letters-patent, had been catalogued in the usual way, and had been so placed in the library as to be accessible to the public using that library. That, certainly, would be evidence of prior publication, and I must say very strong evidence indeed."

358. Finally, we have the recent case of United Telephone Co. *v.* Harrison, 30 W. R. 724. It was proved in this case that a German scientific journal of telegraphy, containing a description of the invention in question, was placed in the library of the Patent Office, and also in that of the Institute of Civil Engineers, in London; but only one person was shown to have read the article in question, and he read it imperfectly.

Fox, J., held, though with hesitation, that the evidence of publication was sufficient.

In addition to the cases considered or mentioned in the foregoing remarks, we have only the following that are important:—

THE SUFFOLK COMPANY *v.* HAYDEN, 3 WALL. 315 (1865).

In December, 1854, Hayden applied for a patent for changes in the *interior* arrangement of an elongated trunk previously in use for cleaning cotton. While this application was pending, he also made an improvement in the exterior form of the trunk, and, wishing to patent this second improvement both separately and

in combination with the earlier one, he filed an application for such a patent in November, 1855, and it was granted March 17, 1857. In this second patent he made no separate claim to the device described in the first patent, but, of course, he described it so as to claim it in combination.

The commissioner not having acted on the first application by June, 1857, Hayden, in that month, made another similar application; and a patent was granted in December, 1857, for the same improvement in the interior of the trunk described in the first application. Subsequently the first application was acted on by the commissioner, and a patent issued in September, 1860.

Here, then, were three patents: —

No. 1. Applied for in December, 1854; granted in September, 1860.

No. 2. A patent for the same thing *in combination with* another thing. Applied for November, 1855; granted March, 1857.

No. 3. For the same invention covered by patent No. 1. Applied for June, 1857; granted December, 1857.

This suit was on the patent of December, 1857.

There were two questions: —

(*a.*) Was the description in No. 2 of the invention claimed in No. 1, and the omission to claim it therein a dedication to the public of such invention, the patent for which was granted after No. 2, though applied for before it? The court held that it was not.

(*b.*) Which patent was void, assuming that both patents were for the same thing, — No. 1 or No. 3? The court held that No. 1, the later patent, was void.

McMILLIN *v.* REES, 17 O. G. 1222.

W. D. OF PENN., 1880. MCKENNAN, J.

The patent was attacked on the ground that it was a duplicate of patent No. 52,730, applied for April 25, 1865, and granted Feb. 20, 1866, to the same person.

The patent in suit, and numbered 63,917, though the first ap-

plication was made July 23, 1855, was not granted till April 16, 1867.

Such being the facts of the case, the learned judge, after reviewing the authorities bearing upon it, laid down the following propositions: —

(1.) Of two patents for the same invention, the one last granted is void, although it may have been first applied for.

(2.) Whether two patents cover the same invention must be determined by the tenor and scope of their claims, not by the description in the specifications.

(3.) Separate patents for several parts of the same invention may be granted, although the whole invention is fully described in each of them in order to explain the purpose and mode of operation of the parts covered by the claims in such patents.

(4.) The connection or combination of a patented device or improvement with other devices may be the subject of a valid subsequent patent.

Accordingly, then, the patent of 1867 must be held to be valid.

ENGLISH CASE.

PATTERSON *v.* GAS-LIGHT & COKE CO., L. R. 3 App. Cas. 239.

House of Lords, 1877.

The patentee was one of three referees appointed under an act of Parliament to investigate the mode of purifying gas followed by the different companies, to ascertain the extent to which gas could be purified, to assist the companies with advice and information, and to make a report to the Board of Trade for the benefit of the public.

The patentee having discovered, as he alleged, a patentable improvement in the purification of gas, while conducting experiments at one of the gas factories in his capacity as referee, obtained a patent therefor dated March 9, 1872.

A part, at least, of his alleged invention was described in a report drawn up by the three referees, and dated Jan. 31, 1872, but not delivered to the Board of Trade or otherwise made pub-

lic until March 26, 1872. It was withheld, in order that the plaintiff might obtain his patent before its publication.

There was also evidence to show that the invention had been anticipated; but on this branch the case is not important, and was not much considered in the House of Lords.

On these facts the House of Lords confirmed the decision of the Lords Justices, from which the appeal was taken, holding the patent invalid.

The decision established the following points:—

(1.) That the invention was not novel.

(2.) That it was public property so soon as it was made; and, if not public property at that time, it became such so soon as it was communicated to the other referees.

(3.) Prior knowledge by the public, without use, is sufficient anticipation of a patent.

Lord Blackburn said:—

"It is not necessary that the invention should be used by the public as well as known to the public. If the invention and the mode in which it can be used has [*sic*] been made known to the public by a description in a work which has been publicly circulated, Stead *v.* Williams (7 M. & G. 818, 842); or in a specification duly enrolled, Bush *v.* Fox (5 H. L. C. 707); Betts *v.* Menzies (10 H. L. C. 117),—it avoids the patent, though it is not shown that it ever was actually put in use. . . .

"If the date of the patent had been after the circulation of the report amongst the gas companies, instead of being, as it was, a few weeks earlier, the case would, it seems to me, have been quite unarguable. The date of the patent was, however, before the contents of the report were known to the gas companies, though several weeks after they were known to the whole of the referees and their secretary; and, . . . from the moment the referees became aware of what was in the report, it became the property of the public, and they were bound to make it known. The appellant, indeed, contends that he made it known to the referees only confidentially. I do not pause to inquire whether this was the fact or not, for I think it immaterial. I do not mean to throw any doubt on the doctrine in Morgan *v.* Seaward (2 M. & W. 544), that a disclosure to assistants or partners of an invention whilst it is being perfected, under an obligation to keep it secret till the patent is taken out, is not a disclosure to the public, for such persons could not make the disclosure known without a breach of duty.

"But, in the present case, the disclosure was to paid public officers, who could not keep it secret without a breach of duty. They were

bound to make it known; and even if they, in breach of their duty, kept it back, the invention was not the less the property of the public from the time the referees knew it, which was at least as early as the date of the report." [1]

The following remark, on another point, also occurs in Lord Blackburn's opinion: —

"The appellant appears . . . to be of opinion that, if he first discovered the theory and reason of that which had before been done empirically, he is entitled to a patent.

"I need hardly point out that this is a mistake. If, by reason of knowing the theory, he is enabled to make some improvements, he may take out a patent for those improvements; but he cannot take out a patent to prevent others from using what they had used before, though only empirically." [2]

The Lord Chancellor (Lord Cairns) speaking of the fact that the invention was made known to the other referees before, or when the report was completed, said: —

"It was a communication made to them in the course of their duty as public officers, and the moment it was made to them it became public property. It was not within their power to withhold, in any way, from the public the full benefit of that communication."

[1] His Lordship also quoted as follows from the Lords Justices' decision: —

"It is to be borne in mind that the report then made belonged absolutely to the State. Every fact and figure in it had been ascertained and obtained at the public expense. Every hour of every referee, and of the secretary employed in the production of it, was public time. It was, of course, printed at the public cost. The withholding or wilful delaying of it was a plain breach of public duty, and it is difficult to see how the plaintiff can be in a better position than if he and his colleagues had done their duty, and duly presented their report as soon as it was completed. The consideration for every patent is the communication of useful information to the public. What consideration is there when the information was already the property of the State?"

[2] *Ante*, page 529.

APPENDIX.

I.

DESIGNS.

Rev. Stat. of the U. S., sect. 4929: —

"Any person who, by his own industry, genius, efforts, and expense, has invented and produced any new and original design for a manufacture, bust, statue, alto-relievo, or bas-relief; any new and original design for the printing of woollen, silk, cotton, or other fabrics; any new and original impression, ornament, pattern, print, or picture to be printed, painted, cast, or otherwise placed on or worked into any article of manufacture; or any new, useful, and original shape or configuration of any article of manufacture, the same not having been known or used by others before his invention or production thereof, or patented or described in any printed publication, may, upon payment of the fee prescribed, and other due proceedings had the same as in cases of inventions or discoveries, obtain a patent therefor." [1]

[1] Act of 1870, § 71. The first act making designs patentable was passed in 1842. It was followed by the act of 1861, and by the present act of 1870.

The act of 1842 is as follows (the act of 1861 differed from it only by omission of the sentence in brackets), sect. 3: —

"And be it further enacted, that any citizen or citizens, or alien or aliens, having resided one year in the United States, and taken the oath of his or their intention to become a citizen or citizens, who, by his, her, or their own industry, genius, efforts, and expense, may have invented or produced any new and original design for a manufacture, whether of metal or of other material or materials [or any new and original design for the printing of woollen, silk, cotton, or other fabrics]; or any new and original design for a bust, statue, or bas-relief, or composition in alto or basso relievo; or any new and original impression or ornament, or [*sic*] to be placed on any article of manufacture, the same being formed in marble or other material; or any new and useful pattern, or print, or picture, to be either worked into, or worked on, or printed, or painted, or cast, or otherwise fixed on any article of manufacture, or any new and original shape or configuration of any article of manufacture, not known or used by others before his, her, or their invention or production thereof, and prior to the time of his, her, or their application for a patent therefor, and who shall desire to obtain an exclusive property or right therein to make, use, and sell and vend the same, or copies of the

It is needless to say that the rules which govern the patentability [1] of inventions apply also to designs. To this statement, however, there is an important exception, for, in distinguishing one design from another, the law regards not the real but the apparent similarity of the two designs; the obvious reason being that designs concern appearances only, and not substances.

The rule was established by the Supreme Court in the case of Gorham Co. *v.* White, 14 Wall. 511. This case raised the question of infringement only, but it settled the point which we have stated as to what constitutes identity in the matter of designs. The particular question in the case was whether a design for ornamentation on a silver or plated fork was infringed by another design apparently the same but really dissimilar. The evidence was that an expert in the trade would not be deceived by the second design so as to mistake it for the first; that an ordinary customer, if he compared the two designs together, would detect the difference, but if he saw them separately, apart from each other, he would suppose them to be the same. The Supreme Court held that apparent, not real, identity was the test of infringement, and consequently that the second design in this case was an infringement of the first. Miller, Field, and Bradley, JJ., dissented from the judgment.

If a design be new and useful, it is of no importance whether it is more or less beautiful than other designs for the same thing. Lehnbeuter *v.* Holthaus, 105 U. S. 94.

Defendants who use a patented design are estopped to deny its utility. *Ibid.*

A design patent is *prima facie* evidence of novelty and utility. *Ibid.*

In the case of Clark *v.* Bousfield, 10 Wall. 133, the question was whether the patent claimed an apparatus or a design.

In the case of Burton *v.* Town of Greenville, 3 Fed. Rep. 642, it was *held* by Lowell, J., that

"a design patent is invalid if the device embraced thereby was in public use or on sale more than two years before the date of the filing of the application on which such patent was granted." (*Head-note.*)

So, also, Theberath *v.* Rubber, &c. Harness-Trimming Co., 15 Fed. Rep. 246.

same, to others, by them to be made, in the case now of application for a patent."

[1] The patentability of designs is most ably treated by Mr. Simonds in his work, "Simonds on Design Patents."

The patent would not be invalidated by such use or sale from a time less than two years before the application. Root *v.* Ball, 4 McLean, 177.

"To constitute an inventor of a design, it is not necessary he should have the manual skill and dexterity to make the drafts. If the ideas are furnished by him for producing the result aimed at, he is entitled to avail himself of the mechanical skill of others to carry out practically his contrivance." Betts, J., Sparkman *v.* Higgins, 1 Blatch. 205.

In the case of Burton *v.* Town of Greenville, *supra*, Judge Lowell also said: —

"A question is made by the defendants whether an inventor is not to be presumed to abandon his design when he exhibits it in the drawings of a mechanical patent. I do not see why this consequence should follow until the design has been in use for two years, but I do not decide this point."

In the following cases the patentability of the design in question was considered: Booth *v.* Garelly, 1 Blatch. 247 (a button); Wooster *v.* Crane, 5 Blatch. 282 (a reel); Collender *v.* Griffith, 11 Blatch. 212 (a billiard-table); Same *v.* Same, 2 Fed. Rep. 206; Adams, &c. Co. *v.* St. Louis, &c. Co., 12 O. G. 940 (a lamp); Northrup *v.* Adams, 12 O. G. 430 (a cheese-safe); Pratt *v.* Rosenfield, 18 Blatch. 234 (a button-card); Miller *v.* Smith, 5 Fed. Rep. 359 (a sleeve-button); Wood *v.* Dolbey, 19 Blatch. 214 (jewelry); Lehnbeuter *v.* Holthaus, 105 U. S. 94 (a show-case); Simpson *v.* Davis, 12 Fed. Rep. 144 (a newel post); Theberath *v.* Rubber, &c. Harness-Trimming Co., 15 Fed. Rep. 246 (harness-trimming).

II.

THE ENGLISH STATUTES CONCERNING PATENTS, SO FAR AS THEY RESPECT PATENTABILITY.

"It is quite clear that the prerogative of the crown to grant the sole use of inventions is derived from the common law itself, and not from any statute."[1]

What inventions are patentable, however, is determined by statute.

The statute abolishing monopolies, 21 Jac. I., A. D. 1623, contained a provision excepting from its operation patents for inventions, as follows: —

Sect. 5. This section excepted patents already granted.

[1] Hindmarch on the Law of Patents, ch. ii. p. 7. But see Macaulay's History of England, ch. iv. p. 127.

Sect. 6:—

"*Provided, also, and be it declared and enacted*, that any declaration, before mentioned, shall not extend to any letters-patents and grants of privilege, for the term of fourteen years or under, *hereafter to be made*, of the sole working or making of any manner of new manufactures within this realm [1] to the true and first inventor and inventors of such manufactures, which others, at the time of making such letters-patents and grants, shall not use, so as also they be not contrary to the law, nor mischievous to the State, by raising prices of commodities at home, or hurt of trade, or generally inconvenient, the said fourteen years to be accounted from the date of the first letters-patents, or grants of such privilege hereafter to be made; but that the same shall be of such force as they should be if this act had never been made, and of none other."

English patents contain the following proviso. We have italicized the only part of it which adds anything as a condition of patentability to the statute.

"*Provided always*, and these our letters-patent are and shall be upon this condition, that if, at any time during the said term hereby granted, it shall be made appear to us, our heirs or successors, or any six or more of our or their Privy Council, that this our grant is contrary to law, or prejudicial or inconvenient to our subjects in general, *or that the said invention is not a new invention as to the public use and exercise thereof* [2] in that part of our United Kingdom of Great Britain and Ireland, called England, our dominion of Wales, and town of Berwick-upon-Tweed [and also in the Islands of Guernsey, Jersey, Alderney, Sark, and Man, and in all our colonies and plantations abroad [3]] aforesaid,

[1] If an invention be unknown in the realm, he who imports it from a foreign country is a true inventor within the meaning of this statute, and he may obtain a patent. Hind. on Pats. ch. iii. p. 28.

[2] *Vide* pages 640, 641 of this book.

[3] Mr. Hindmarch says (ch. iv. p. 63):—

"There was indeed formerly a very general opinion amongst the profession that it was only necessary that an invention should be new in England, Wales, and Berwick-upon-Tweed; but that opinion was exploded by the decision of the House of Lords in Brown *v.* Annandale (1 Webs. R. 433). In that case it seems to have been erroneously supposed that the effect or intent of a patent is to grant a privilege on the terms merely of the conditions comprised in the patent, excluding all others. But that is clearly not so, for it is declared by the habendum in the patent that the inventor, his executors, administrators, and assigns, shall have and enjoy the privilege *according to the statute in such case made and provided;* and, therefore, it is manifest that the grant is intended to be made subject to all the conditions required by the statute of monopolies. If the patent had provided that novelty within a smaller district than [*sic*] required by law should *be sufficient*, the patent would have been void in that respect, if not *in toto*, for the crown has no power to dispense with the provisions of an act of Parliament. But the crown is not restrained from making conditions which are not *contrary* to law; and a condition which is in accordance with the law will not be bad or avoid the

or not invented and found out by the said J. G., as aforesaid, then upon signification or declaration thereof to be made by us, our heirs or successors, under our or their signet or privy seal, or by the lords and others of our or their Privy Council, or any six or more of them under their hands, these our letters-patent shall forthwith cease, determine, and be utterly void to all intents and purposes, anything hereinbefore contained to the contrary thereof in any wise notwithstanding."

Finally, the statute 5 & 6 Will. IV. ch. 83, § 2, provides that the Privy Council, on petition of the patentee, *may* confirm a patent, when the patentee has discovered that he was not the true and first inventor of the thing patented, *provided* (1) that the patentee, when he obtained his patent, believed himself to be the true and first inventor, and (2) that the invention had not been publicly and generally used before the date of his patent.

"The granting of a confirmation," says Mr. Hindmarch (ch. viii. p. 201), "is entirely discretionary with the Judicial Committee of the Privy Council, and will only be exercised in extreme cases, and where the confirmation will not prejudice any existing rights."

See Heurtelòup's Case, Web. 553, and Wells's Case, Web. 554.
This power has not been exercised of late years.
The statute runs as follows: —

"*And be it enacted*, that if in any suit or action it shall be proved or specially found by the verdict of a jury that any person who shall have obtained letters-patent for any invention or supposed invention was not the first inventor thereof, or of some part thereof, by reason of some other person or persons having invented or used the same, or some part thereof, before the date of such letters-patents, or if such patentee or his assigns shall discover that some other person had, unknown to such patentee, invented or used the same, or some parts thereof, before the date of such letters-patent, it shall and may be lawful for such patentee or his assigns to petition his Majesty in council to confirm the said letters-patent or to grant new letters-patent, the matter of which petition shall be heard before the Judicial Committee of the Privy Council; and such committee, upon examining the said matter, and being satisfied that such patentee believed himself to be the first and original inventor, and being satisfied that such invention or part thereof had not been publicly and generally used before the date of such first letters-patent, may report to his Majesty their opinion that the prayer of such petition ought

patent because it is not so extensive with Scotland and Ireland, not being as the law itself. The fact is, that the form of this condition in a patent was adopted at a time when the realm only included England, Wales, and Berwick-upon-Tweed, and the alteration in the law produced by the union adverted to, the officers of the crown have adhered to the old form which was in use prior to the alteration of the law. The condition ought now to require an invention to be new within the realm."

to be complied with, whereupon his Majesty may, if he think fit, grant such prayer; and the said letters-patent shall be available in law and equity to give to such petitioner the sole right of using, making, and vending such invention as against all persons whatsoever, any law, usage, or custom to the contrary thereof notwithstanding: *Provided*, that any person opposing such petition shall be entitled to be heard before the said Judicial Committee: *Provided also*, that any person, party to any former suit or action touching such first letters-patent, shall be entitled to have notice of such petition before presenting the same."

III.

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