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62D CONGRESS
1st Session

SENATE

DOCUMENT
No. 225

LETTERS PATENT

ARTICLE

FROM THE SCIENTIFIC AMERICAN OF SEPTEMBER 27 AND OCTOBER 4, 1913, READ BEFORE THE AMERICAN BAR ASSOCIATION AT MONTREAL, CANADA, ENTITLED "LETTERS PATENT IN RELATION TO MODERN INDUSTRIAL CONDITIONS"

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OCTOBER 30, 1913.—Ordered to be printed

WASHINGTON
1913

Ex 532 l

DEC 1 0 1928

LETTERS PATENT IN RELATION TO MODERN INDUSTRIAL CONDITIONS.[1]

By FREDERICK P. FISH.

ADEQUATE PATENT PROTECTION AN ABSOLUTE NECESSITY FOR PROGRESS.

The present is a critical period in the industrial history of the United States. We are at the turning of the ways. For more than a hundred years industrial progress was the great ambition of our people. Material development was preeminently their ideal. Our wonderful progress toward the ends of the nineteenth century excited throughout the Nation the greatest enthusiasm and satisfaction. The public had shown its sympathy with industrial expansion by deeds as well as by words. The Nation, the States, municipalities, and individuals had all worked together to secure as rapid expansion as possible. The building of transportation systems, large and small, was everywhere urged and was cordially promoted by governmental grants and by pledge of the credit of States and counties. Free land and remission of taxes for long terms of years were promised by municipalities and townships to any industry that was established within their borders. Money was liberally contributed for the same purpose. Public franchises were freely granted and extremely liberal corporation laws were adopted without dissent, to make it easy for our industries to obtain capital and to grow. Our protective tariff was a popular national institution because the people were persuaded that it operated to develop our manufactures. Foresight and capacity in business affairs were universally regarded as the most admirable of all qualities, for they contributed to the development of the national ideal. The captains of industry were among our great national figures.

This point of view prevailed until a few years ago, when a change occurred in public sentiment. It began to be recognized that our extraordinary industrial development might not be altogether ideal in character and in its relation to society. As the result of criticism, increasing from year to year, some of it well founded, but much of it, even when sincere, based upon a want of appreciation of the inherent difficulties and complexities of the situation, a reaction followed which has not yet run its course. At the present time there is but little left of the popular enthusiasm for our industrial successes which was so universal 20 years ago. Prevailing business methods are the subject of attack and many features of industrial organization which are most characteristic of modern conditions are re-

[1] Paper read before the American Bar Association at Montreal, on Sept. 2, 1913, and printed in the Scientific American of Sept. 27 and Oct. 4, 1913.

garded with suspicion. The reflection of the attitude of the public in legislative bodies and courts has resulted in a policy which is by no means friendly to business as it is carried on and which may make further industrial progress difficult, at least until our industries and those who direct them have learned how to adjust themselves to the new conditions of popular thought. I call attention to this matter at the very beginning of this paper to emphasize the proposition that in dealing with the subject of the patent system of the United States and the wisdom of the laws under which it is established and maintained there is no room for partisanship or prejudice. Whatever may be the views of those who think fairly upon the subject as to the propriety of a protective tariff, the powers to be given corporations and as to the extent and character of the control that should be exercised over large enterprises, or as to the necessity of reform in business methods, whatever may be the popular feeling as to the distribution of wealth that arises from our present social and industrial institutions, questions as to the value and importance of a patent system and as to the spirit in which it should be organized and administered are in fact and should be regarded as entirely independent of all such considerations.

THE PERFECT REWARD FOR INVENTION.

No one doubts that industrial prosperity is essential to the welfare of the community. Those who are to-day most critical of our business methods, of our great business organization, and, generally, of the relation between business and society are just as anxious for industrial prosperity as were the enthusiasts of 20 years ago whose admiration for our industrial conditions was unbounded. If it is clear that a liberal patent system is essential to industrial development, all must favor it, whatever side they may take in the acute controversies of the day. If that of the United States not only has definitely promoted our welfare in the past, but, because of its merit, its fitness to encourage invention and there promote the useful arts, is likely to be of equal or greater value in the future, it should receive unanimous support. Its importance to our national well-being is equally great, whatever may be our business methods, the form or spirit of our industrial organization or its relation to our society. It is true that our patent system has largely contributed to the development of our industries, great as well as small, with all their characteristic features, whatever they may be. So have our natural resources and the ability of our workmen and of our industrial leaders. But no one complains because nature has bountifully provided us with the opportunities for great productive capacity and everyone is anxious that our people should be, individually and collectively, more efficient. In like manner all must agree that the stimulation of invention and of the inclination to develop invention is a matter of prime necessity and altogether unobjectionable, even if it is in part responsible for the conditions as to which complaint is made.

It hardly seems necessary at this stage of industrial history to advance arguments in favor of an adequate patent system as an effective and as far as can be seen the only practicable stimulant for the promotion of the useful arts that can be given by the community.

For many generations it has been generally agreed that a definite and attractive reward was essential if inventions were to be made and introduced into use. Experience has demonstrated that no form of reward so fitted the achievement, was so productive of advantage to the community and was attended by so few advantages as the grant to an inventor of a monopoly of his invention for a limited time. While many other forms of reward have been suggested (such suggestions were made at the convention which adopted our National Constitution), they have nowhere been adopted as part of the machinery of society. Everywhere some form of exclusive control for a limited time has been recognized as the best way of dealing with the matter.

The encouragement of patent protection does not alone stimulate the inventor to intellectual effort; it excites to strenuous endeavor a long line of intermediaries, capitalists, investors, business administrators, licensees, and users who work with or under the patent and whose cooperation is vitally necessary that the invention may not be confined to a paper description, but may actually be used.

After all this line of public servants has been rewarded, the ultimate consumers get their advantage from the invention, even during the term of the patent, in the form of less cost, added facilities, increased comfort, and greater convenience; and their gain while the patent is in force is undoubtedly in almost every case infinitely greater than that of those who profit directly from working under the patent. Of course when the patent expires the invention is free to all.

This form of reward is strictly automatic. It only comes to those who meet a public need by giving to the community something that it desires and will use. Any other that can be suggested would surely be arbitrary. No other plan could be devised which, as is the case with patent protection, rewards the inventor and those who introduce the invention into use substantially in exact proportion to their real contribution to the good of the community. This is what the reward by way of patent monopoly for a limited term effects, and such reward is just and fair.

THE NEEDED STIMULUS FOR INVENTION.

Letters patent for inventions are now granted by practically every one of the civilized nations of the world and by many of the less progressive nations. Until 1888 Switzerland had no patent law. As pointed out by Prof. Shaler in his book on Nature of Intellectual Property, published in 1878, it was argued that situated as Switzerland was, in the heart of the industrial world, with a docile and intelligent population trained by an admirable system of education, and with the great advantages by way of water power which the country possessed, it could progress more rapidly if its citizens were all free to appropriate for the national industries the ideas, patented or unpatented, of the rest of the world without the grant of any monopoly to individuals in Switzerland itself. This policy was, however, found to be shortsighted and ill-advised, as Prof. Shaler declared it to be. The Swiss were not encouraged to invent. More than that, they were not encouraged to adopt and introduce inven-

tions. They did not develop the desire to improve. Because they had no patent system, their industries did not advance satisfactorily.

Under the stress of the necessity that invention should be fostered in the community, if industrial progress in competition with that in patent-granting countries was to be secured, a patent law was adopted in 1888. Since then there have been over 50,000 patents issued in Switzerland, and her industrial progress has been marked.

Holland in 1869, before the extraordinary expansion of the latter part of the last century had even begun, abolished her patent law, undoubtedly influenced by the hope that her situation was such as to make it more for her interest to take freely the inventions made anywhere outside of her own boundaries than to attempt to develop inventions and the inventive habit among her own people. It is significant, however, that she has, after trying the experiment for more than a generation, recognized its futility and has now again established a patent system.

Why is it that practically all countries grant patent monopolies? Switzerland and Holland found it necessary at this late day to adopt a policy the superficial effect of which is to grant exclusive rights for a limited term, not only to their own citizens who have made or who are promoting inventions, but to foreigners, rather than to attempt to develop the industries so vitally necessary to their well-being by leading every one free to appropriate all new ideas from within or without the country. The reason is clear. While industries necessarily exist in a country which has no patent system, and the people of that country may be industrious and intelligent, industrial progress is impossible unless the people of the country are as a whole stirred to inventive achievement and the aspiration for improvement; and for this the reward and stimulus of a liberal patent system is essential. Nothing can take its place.

The whole history of industrial development shows that it is only through the prospect of special gain that men will devote attention to inventing or to inventions. Without adequate hope of unusual returns neither the man of inventive capacity nor the business man and the capitalist can be induced to take the chances and go to the great trouble and expense necessary to work out inventions or to establish new industries or reorganize industrial methods so as to utilize inventions. As a class, they are wise enough to recognize that the chances of success are not so great as to justify the risk.

But if they are tempted by the definite promise that they shall control for a limited time a new process or an improvement in a machine or in the manufacture of a new article, they will cheerfully work, spend money and face the chance of disappointment and failure, first, because during the time of the patent monopoly their returns will be fixed by what the traffic will bear and not by destructive competition and, second, because during the term of the patent there is a chance to perfect manufacturing methods, to build up an enterprise or series of enterprises and to acquire a good will which will be of special value even after the patent has expired. Some men are, of course, more enterprising and more ready to take chances than others, but any man is far more likely to dare the risks of a novel enterprise and to institute and push a business that has

in it marked elements of uncertainty if, as owner, part owner, or licensee, he can have temporary protection under a patent against the competition which without the patent he would have from the beginning.

Nowhere can it be worth while to invent, unless there is opportunity for utilizing inventions if made. Even if every citizen were an Edison, it would not profit him to work out new ideas on paper or in a laboratory unless the conditions were such that they could be introduced into use with the chance of a proper return. The inventor therefore is helpless unless he has something to offer the manufacturer or the capitalist that will justify the latter in paying for rights to the invention. An adequate patent system gives to the inventor, who as a rule never could himself do anything with his invention, something that is tangible and of value, which he can transfer, in whole or in part, to the business enterprises which alone can make the invention of value to the community. Inventors, and business men who develop inventions and introduce them to the service of man, to exactly the same degree and for the same reasons are stimulated by the protection afforded by a patent, to efforts which they would never otherwise make. Each class would be helpless without the other. It is only when both are encouraged and protected, as they are by the grant of a patent, that the progress of the useful arts is promoted.

It is not always recognized how serious and difficult are the practical problems involved in invention, the reduction of inventions to practical form and the introduction of them into use.

Very few inventions are the result of a happy thought which comes without cost or expense and is complete and perfect at the time of its conception. Very few find a market ready made for them. In almost every case inventions are based on hard study, followed by a long period of experimentation and designing which involve most vigorous effort, often misdirected, before anything useful or tangible can be accomplished.

First of all, with most inventions, large or small, there is the necessity of a clear recognition of the problem; that is to say, that there is opportunity for a new device or method or for the improvement of a device or method already in use. This requires exact knowledge and judgment of a high order. Careful, intelligent, and often long-continued study of the field may be required before even the nature of the problem is clear. Next comes the intellectual effort to solve the problem. Before success is attained there is apt to be failure after failure with the waste of time and money involved in prosecuting a long series of fruitless experiments; and during all this period there is only the chance of real ultimate achievement to keep the inventor up to his work.

THE INDUCEMENT FOR DEVELOPING INVENTIONS.

Why should any reasonable man spend his time in efforts of this character when the probabilities of failure are so great, if he has no assurance that he individually will have control of the product of his imagination and thought in case of success? When there was no patent system, an invention made by a Swiss or a Hollander, unless

it could be kept as a trade secret, which in most cases was impossible, became immediately public property. The inventor, if himself in a business to which his improvement was applicable, could get no advantage from it as against his competitors. If, as is so often the case, he had no facilities for doing anything with his invention, or had not the capacity even to put it into practical form, he could offer no inducement to anyone to furnish the brains and money necessary to develop it and introduce it into use. Inventive effort was necessarily stifled under such conditions, and the stifling of inventive effort is a very serious matter. Not only does it destroy the possibility of that progress in the arts which is based upon radically new inventive ideas, but it incapacitates those who are engaged in the industries from the analogous intellectual effort required to make the mechanical improvements, not requiring invention, which are of such vital consequence. If the industrial workers of a nation are discouraged from inventing, they are not apt even to improve. They lack the training; they do not have the right habit of mind. On the other hand, if they are stimulated to invent, there is developed as an incident to inventing the capacity and the instinct to make mechanical improvements not amounting to invention, such as have proved to be of great value in the arts. Such improvements are the by-products of the inventive habit.

Let us consider for a moment more definitely the situation and instinctive attitude of the manufacturer or of the investor or capitalist, large or small, whose part in the development of inventions is hardly second to that of the inventor, as the same is affected by the presence or absence of adequate patent protection.

It is seldom that an invention, even if of a high order, obtains any foothold in the industries merely because it has been conceived and described as, for example, in the specification of a patent. Its first embodiment is almost always crude and uncommercial. Often and perhaps generally the original inventor has not himself the capacity to give the right mechanical organization to his new ideas. In every direction further work is required which can only be carried on by the aid of capitalists and trained business men. Competent designing engineers and skilled mechanics must be employed at a large expense to put the invention into commercial form. Its precise place in the art and its true relation to existing conditions must be determined. The direction in which it can be developed in order to meet the needs of the public must be found out. The best way to build up a market for it must be discovered and this is in many cases a problem of great difficulty. Often the new invention will displace devices or processes of manufacture which seem good enough to those who have them in use. Almost always its adoption will involve changes in the methods or in the shop or commercial practice of the prospective consumer which he will be disinclined to make. Machinery must be scrapped and workmen educated to new forms of activity before the invention can be employed. Selling methods must be modified and very likely entirely new plans of advertising devised. All this involves expense and trouble and the overcoming of inertia on the part of those who are solicited to adopt the invention.

Even if the invention meets a real demand there is frequently the opportunity and occasion for the expenditure of a vast amount of

money and of the greatest intelligence and energy on the part of those who are introducing it into use before commercial success can be attained; and always there is the chance of utter failure.

Under these circumstances, neither in Switzerland or Holland, nor elsewhere, could capital be expected or take up and push new inventions under conditions where, if success were achieved, the full benefit of the invention would necessarily be immediately shared by all competitors.

In fact, competitors would have a great advantage over the manufacturer or the capitalist who bore the brunt of the preliminary development. They would have borne no part of his burdens and expense, but would, without cost, adopt from him the perfected thing to which he had devoted so much energy and in which he had made such a large investment. They would reap where he had sown. Under such conditions even the most brilliant inventor can not get the help which he must have.

The effect of a sound patent system is to overcome these obstacles to the development of inventions, to encourage men to invent who would otherwise have very little reason for inventing, and to attract business men to the arduous task of perfecting and introducing inventions when otherwise they would be inclined to leave them severely alone.

I do not believe that anyone who has given thought to the question can doubt that at the present time no great industrial progress can be expected in a country which does not offer patent protection to those who have it in their power to promote the progress of the useful arts or fail to conclude that invention and the industrial development due to invention are in any country largely proportional to the extent to which the patent law of that country operates as an effective stimulant.

THE SUPERIORITY OF THE AMERICAN PATENT SYSTEM.

The patent system of the United States has existed for nearly 125 years. During practically all of this period it has had the strong support not only of those who have understood and thought about the matter, but of the public generally, who believed in it and encouraged legislators and judges to establish and maintain it on broad and sound foundations. Only once, in the late seventies, and as part of the movement which resulted in populism and the doctrine of fiat money, has it been the subject of noticeable criticism. Even then our patent system would probably have escaped attack if it had not been that a considerable number of individuals had been annoyed, as they thought wrongfully, by the harsh enforcement of certain patents, such as that on the driven well and some of the barb-wire fence patents. But when the matter was at that time brought before Congress it was clear that the people stood for the law as it was. No change was made, and the episode was soon forgotten.

Now, again, Congress is considering the revision of the patent laws and in a hostile spirit, if the report to the House of Representatives of the so-called Oldfield bill is an indication of the prevailing view

It is significant that there is no evidence whatever of any public demand for a change in our patent law or the principles upon which

it is based. There is a definite and widespread conviction that reforms are needed in the procedure both of the Patent Office and the courts. Nowhere, however, does there appear to be any real sentiment against the fundamentals of the law. The voluminous testimony taken before the Committee on Patents of the House of Representatives at its last session is most significant. A large number of manufacturers, patentees, lawyers, representatives of public organizations, and others in touch with the subject were heard by the committee. Practically no criticism of any moment was made by any of these witnesses on the underlying ideas or principles of our patent system or as to its beneficial effect upon our industries and our society. It is also to be noted that those who appeared before the committee were almost unanimous in opposition to those provisions of the bill, subsequently reported, that were under consideration at the time of the hearing.

The patent system of the United States is, I think, generally recognized as more effective than any other for the purpose intended. It differs from the English system, which alone preceded it, and from that of most other patent-granting countries, in two important particulars:

First. Letters patent for invention are granted in the United States only to the first inventor, to the man who himself definitely thought out the new conception. Under the English system and most others the reward of a patent is given to him who has introduced a new idea into the realm, whether he found it in some other country or himself originated it. The American patent law says, not only to citizens of the United States, but to the people of the world, "If any of you will think out an improvement in the useful arts and adequately describe it in a patent specification so that it becomes a part of the world's general knowledge and can be practiced from the disclosure of the specifications, we will grant to you, under the terms of our Constitution and laws, an exclusive right to control the invention for a limited period." It is the intellectual act of invention that is encouraged and rewarded. No consideration is given to the question whether a new industry or an improvement in an old one has, as a matter of fact, followed the invention. The framers of our Constitution and the statesmen and jurists who established and maintained our patent law saw clearly that if invention—an intellectual effort—were sufficiently encouraged, as would be the case if the complete control of the invention for an adequate term rested in the patentee and those whom he could induce to cooperate with him in exploiting the invention, sound development and rapid improvement in the industrial arts would surely follow.

Second. As a corollary to this main idea our law provides that the control of the invention, by statute vested in the patentee for a limited period and which he may ultimately share with those who join him in working under his patent, shall be absolute and exclusive in a true sense and subject to no conditions.

Our American patentee has 17 years of patent protection, during which he is free and untrameled in his efforts to get a return from the invention.

In most foreign countries fees are to be paid every year or every few years, and if not paid the patent lapses. If there is not actual

manufacture under the patent within a given short time, patent protection ceases. A compulsory license may be demanded of the patentee on terms not at all to his liking or under conditions that are fatal to his plans and hopes for working his patent to his own advantage.

It is generally recognized that of letters patent that are ever directly profitable to the inventor or to anyone else, and very many bring loss rather than gain, a great proportion, if not the majority, do not begin to bring in any appreciable return until the later years of the patent. Such being the case, the provisions of the patent laws of almost all foreign countries by which the patent becomes void, unless fees are paid from time to time or unless it is "worked" at an early date, and according to which the patentee's control may be destroyed by compulsory licenses, enforced against his will and interest, are undoubtedly most discouraging to inventors and to those who would cooperate with them.

The owner of a patent granted by the United States has none of these disadvantages. He has no fees to pay as a condition for the continuance of his rights. There is in our law no provision for "working" patents or for compulsory licenses. There is no obligation of any kind imposed upon the patent owner. He may deal as he pleases with his invention and his patent. He may or may not make any use of his invention. He may sell the whole or any part of his patent for the entire country or for any given territory. He may grant licenses to one or more people to make or to use or to sell the invention, either or all. He may license some to use it for one purpose or under certain conditions, and others for a different purpose or under different conditions. He may refuse to license if he pleases. He may charge what he thinks proper by way of license fees or by way of price for articles made under the patent. That he may attach any conditions "not definitely illegal" (Bement *v.* Harrow Co., 186 U. S., 70, 91) to any license is settled by the courts (Henry *v.* Dick Co., 224 U. S., 1), except in so far as the recent decision in Bauer *v.* O'Donnell (229 U. S., 1) denies him the right to attach a condition to an article which has been sold for the full consideration which the patentee expects to receive.

THE PERILS OF "COMPULSORY LICENSE" AND WORKING CLAUSES.

When we consider the chances of failure that inventors, capitalists, manufacturers, and investors take and the trouble, expense, energy, and intelligence required to bring a new idea or even an improvement into commercial use, involving, as is the case, extensive experiments before and after the invention is made, the determination of the exact field for the invention, the overthrowing of habits, the education of the consumer, the discovery of how he can be induced to take up the new invention, and ultimately, in many instances, the scrapping of machinery and the modification of manufacturing methods, it would seem that the least encouragement adequate to keep men at such work would be an absolutely free hand for a short term of years, such as is given by the patent laws of the United States. There is no reason to believe that the present 17-year patent term is excessive. If it is too long, shorten it, but do not hamper the patentee during the term. In far too many cases has 17 years proved not long enough to enable the

inventor, whose ideas were ahead of the times or who was not able to secure cooperation of the right kind, to get an adequate reward for his achievement. But even if, as some believe, inventors and those working under patents have, on the whole, expended more than they have made in their efforts to develop inventions, enough inventions have succeeded to give the necessary stimulus to the American people to make them a nation of inventors.

It is obvious that the standards and rules imposed by foreign patent laws as to working inventions, and as to the grant of compulsory licenses, are and must be purely arbitrary. Even if wrong in principle they might happen to operate reasonably well as to some inventions. But in so far as those provisions are effective at all, they must be fatally destructive in many cases, and no man who is inclined to invent or to promote invention can be sure that any particular invention will not be one of a class that is necessarily rendered unprofitable because the law fails to give him a free field for effort during the term of the patent.

It must not be forgotten that among the other burdens of one who is undertaking to exploit an invention of any value is that others immediately desire to use it, and will do so if they can. They may be able to develop something else that is equally advantageous for the same purpose. One feature of the greatest value in an adequate patent system is that every invention is at once known, because it is patented, and because if of any value it is likely soon to come into use. Knowledge of the invention, whether gained from the patent or otherwise, immediately excites others to invent. An innumerable number of first-rate inventions would never have been made if there had not been an attempt or a series of attempts to meet a public demand by way of invention that got so far as to be patented, but which proved not to be of final value. He who finally succeeded in giving to the public what it wanted is the one who is entitled to receive and who does in fact receive the credit and the reward, even if his efforts were excited and perhaps in part directed and shaped by the failure of others. In like manner a successful invention often leads to others which equal or excel it.

The effort to devise something new in order to compete with an invention already made is most commendable; but would-be competitors do not confine themselves to such legitimate activity. If they can not evade the patent on technical grounds and the patentee does not regard it as for his interest to give them such a license as they want, they are sure to look to the "working" clause or the "compulsory license" clause of the patent law, if there are such provisions, to enable them to reap where they have not sown. Their influences and efforts, therefore, are altogether against the struggling patent owner whose attempts to comply with the obligation to work his invention they will nullify if they can and from whom they may get a compulsory license that will be fatal to his success.

After a somewhat careful investigation of the situation in foreign countries I am satisfied that the so-called working clauses and compulsory license clauses of foreign patent laws are hostile to the real public interest and that they operate greatly to the discouragement of invention and thereby distinctly stand in the way of the sound development of the useful arts. I believe that the simple provision of the United States patent law that after the grant of his patent the patent

owner shall control the invention absolutely for a short but definite term, having no more payments to make and no fear of interference from competitors during the term, gives to our people a far greater stimulus to invention than does the law of any other country.

PATENTS AS A FACTOR IN AMERICAN CHARACTER.

Certainly, for one reason or other, we have become a nation of inventors. It is almost a habit on the part of those in our country who are engaged in industrial pursuits to seek to improve the machinery and methods with which, respectively, they are familiar. Employees, from the highest grade to the wage earner, are on the lookout for new ideas and new methods that will result in economy, increased production, or the creation of new implements fit for the service of man.

The result has been that in almost every field of industry there have been inventions of the most striking character; but what is of no less importance the useful arts have been continuously promoted by an infinite number of smaller inventions which in the aggregate are very largely responsible for the efficiency of our modern industry. All this must be due almost altogether to the adequacy of our patent system. No other explanation is even plausible. Certainly nothing in our climate or the character of our population can account for it. Moreover there is no nation which is so ready to promote inventions or to adopt them in practice as the United States. The entire community has recognized not only as a theory but as a practical matter that progress depended upon continuity of invention and has been ready freely to adopt new things, even at the sacrifice of tradition and of existing methods and appliances. Capital has been available for the development of inventions which were supposed to be new and useful to a greater extent than has been the case elsewhere. Manufacturers and investors generally have had the necessary encouragement to seek out and foster inventive faculty and to undertake freely the large expenditures and great administrative effort required for the prosecution of inventions through their experimental stage to practical and commercial success. Administrative energy and executive ability of the highest order have been eager to cooperate.

There is no doubt that the history has been in part one of failure. Many inventors have been disappointed and much capital has been expended without return because of the failure of inventions that seemed promising, for the reason that they proved to be without merit because there was no immediate place for them in the industries or because difficulties in introducing them were found to be insuperable; but there have been great successes, resulting in a rich reward to inventors, which have stimulated other inventors to increased effort, and returns to capital that have encouraged it to seek the field of invention as one that was most attractive. The failures, pathetic as they frequently are, are forgotten, but the successes appeal to the imagination of the community.

The result is that to-day there are not only a very large number of men struggling with inventive problems or who are on the lookout for the opportunity to invent, but the effort has been systematized in accordance with the scientific principles upon which modern business

is carried on. With the large enterprises of the country invention is as much a part of the systematic organization of the business as manufacturing or selling. Intelligent men are employed to determine the problem of the business and to find in what direction improvements should be made that there may be extension into new fields, increased production, greater economy, or an improved product. Highly trained engineers and inventors attack the problems as they are presented and work them out in well-equipped laboratories, where not only technical skill but thorough scientific investigation, carried on almost regardless of expense, are applied to their solution. Meantime, as always, individuals, even the most humble, are inventing or hoping to invent.

They know that nothing is more likely to advance them in wealth and comfort than an invention, the opportunity for which is wide open before them, reward in proportion to the merit of what they may accomplish being almost more certain in this than in any other field of human endeavor.

It is interesting to note the increase in the number of letters patent that have been issued in the United States during the 40 or 50 years of our recent marked industrial development.

INDUSTRIAL DEVELOPMENT UNDER THE AMERICAN PATENT SYSTEM.

Up to the close of the year 1870 there had been taken out in the United States from the beginning 120,573 patents; from the beginning of 1871 to the end of 1911 there were issued 1,002,478 patents. In the year 1900 there were 41,980 applications for letters patent filed in the Patent Office. There were 54,971 in 1905, 64,629 in 1910, and 70,976 in 1912; in 1850 the number of patents issued by the United States Patent Office was 993; in 1860 it was 4,778; in 1880, 13,947; in 1900, 26,499; and in 1910, 35,930.

The number of patents issued in the United States as compared with those issued in the rest of the civilized world is shown by the following table:

	To 1870, inclusive.	From 1870 to 1911.	Total.
United States	120,573	1,002,478	1,122,051
France	103,934	336,964	440,898
Great Britain	53,408	371,966	425,374
Germany	9,990	238,110	248,106
Belgium	35,044	202,456	237,500
Canada	4,081	129,609	133,690
Italy and Sardinia	4,723	94,175	98,898
Austria	.....	64,793	64,793
Switzerland	.....	50,197	50,197
Spain	.....	44,987	44,987
Sweden	1,629	31,734	33,363
Russia	1,464	23,528	24,992

It is clearly far more than a coincidence that the number of patents issued has so largely increased simultaneously with the most extraordinary development in manufactures that the world has ever seen. There are undoubtedly other contributing causes, but the great number of new things designed and perfected and the vast improvements in methods and machinery and quality of product which are reflected in the million patents issued in the United States since 1870 are cer-

tainly a prime cause of our progress in the industries. A few figures are significant:

In 1850 the manufactures of every kind in the United States amounted to $1,019,106,616. In 1880 they had increased only to $5,369,579,191. In 1910 they had attained the enormous total of $20,672,051,870, an amount equal to one-fifth of all the wealth of the United States, 6 times the total money in circulation, 9 times the total gold and silver in circulation, 12 times the total domestic exports, 13 times the total imports, 20 times as much as what would be required to pay the national debt, and 216 times the value of all the gold produced in the United States.

This increase has not, even in recent years, been only in large individual enterprises. Between 1905 and 1910 the number of establishments engaged in manufacture increased nearly 25 per cent, from 216,180 to 268,491.

During the same period the number of employees increased nearly 24 per cent, from 5,987,939 to 7,405,313. The wages of employees increased from $3,184,884,275 in 1905 to $4,365,612,851 in 1910, nearly 38 per cent.

The amount of wages paid in manufacturing industries in the United States in 1910 amounted to nearly two-thirds of the total wealth of the United States in 1850, nearly one and a half times the total money in circulation in 1910, nearly twice the amount of wages paid out in 1900, over two and a half times the amount of exports and nearly three times the amount of imports in 1910, four times as much as would be required to pay the national debt, four and a half times the amount of wages paid out in 1880, 18 times the total wages paid out in 1850, and 70 times the total amount of money coined in 1911.

The following table illustrates the more recent progress in a few of our industries in which invention has played a conspicuous part, either because they were themselves new or because there have been such revolutionary improvements in the machinery and methods employed in them as to give them new life:

	1899	1904	Per cent increase.	1909	Per cent increase.
Agricultural implements	$101,207,000	$112,007,000	10.7	$146,329,000	30.6
Automobiles	4,748,000	30,034,000	532.6	249,202,000	720.7
Bags, paper	6,799,000	10,087,000	48.4	15,698,000	55.6
Boots and shoes	290,047,000	357,688,000	23.3	512,798,000	43.4
Cars	9,371,000	13,437,000	43.4	31,963,000	137.9
Cash register and calculating machines	5,675,000	9,875,000	74.0	23,708,000	140.1
Chemicals	62,637,000	75,222,000	20.1	117,080,000	56.5
Electrical machinery and supplies	92,434,000	140,809,000	52.3	221,300,000	57.2
Fertilizers	44,057,000	56,541,000	28.6	103,960,000	83.9
Food preparations	39,837,000	61,180,000	53.6	125,331,000	104.9
Optical goods	5,221,000	6,117,000	17.4	11,735,000	91.8
Paper and wood pulp	127,326,000	188,715,000	48.2	267,057,000	41.8
Paper goods	24,355,000	33,946,000	39.4	55,171,000	62.5
Pens, fountain and gold	1,706,000	2,774,000	62.2	4,739,000	70.8
Petroleum, refined products	123,929,000	175,005,000	41.2	230,998,000	35.4
Phonographs	2,246,000	10,237,000	355.8	11,726,000	14.5
Photographic apparatus and materials	7,779,000	13,023,000	67.0	22,561,000	73.2
Photo-engraving	4,190,000	7,208,000	73.5	11,624,000	59.9
Printing and publishing	395,187,000	552,473,000	39.8	737,876,000	33.6
Pumps	1,342,000	2,853,000	112.6	5,583,000	95.2
Rubber goods	52,622,000	62,990,000	19.7	128,436,000	103.9
Typewriters and supplies	6,932,000	10,640,000	53.5	19,719,000	85.3
Wire	9,421,000	37,014,000	302.4	84,486,000	128.8

Our foreign trade in manufactured goods, which depends so largely upon the soundness of our industrial development and our relative advantages in machinery and processes of manufacture, is greatly increasing in industries which have particularly profited by invention, as is shown by the following table:

	1901	1906	1911	1912
Agricultural implements	$16,313,434	$24,554,427	$35,977,398	$35,640,000
Automobiles, cars, vehicles	10,920,931	17,788,425	30,534,936	42,633,303
Chemicals	14,806,035	19,155,989	23,077,414	25,117,217
Copper manufactures	43,267,021	81,282,664	103,813,110	113,958,919
Cotton manufactures	20,272,418	52,944,033	40,851,018	50,769,511
Fertilizers	5,425,960	8,685,965	10,721,132	10,873,908
Iron and steel manufactures	117,319,320	160,984,985	230,725,352	268,154,262
Paper manufactures	10,911,244	15,375,517	19,215,499	19,458,050
Petroleum refined products	64,425,859	77,025,190	92,698,003	105,640,723
Photographic goods	1,908,445	.....	7,142,603	9,445,446
Rubber manufactures	3,659,361	6,543,735	12,452,562	12,822,918
Silk manufactures	244,678	595,124	1,538,543	1,992,765
Manufactures of all kinds	405,777,992	686,023,168	907,519,841	1,020,417,687

The figures given in the tables named only touch the situation. In an infinite number of other industries there has been a like marked development traceable directly to the fact that invention has been promoted and inventors and capitalists stimulated by our patent system to make and introduce improvements. The gain because of invention would appear even more clearly if there were space for the figures of earlier years.

For example, in 1880, the product of agricultural implements was $68,640,846; of boots and shoes, $196,920,481; of chemicals, $38,173,658; of electrical machinery only, $1,074,388; of fertilizers, $23,650,795; of paper and wood pulp, $57,008,364; of photographic apparatus and materials, $246,305.

The salaries and wages paid in manufacturing industries in 1880 were $947,953,395.

Our exports in 1880 in agricultural implements were $2,245,742; in chemicals, $2,756,469; in cotton manufactures, $9,981,418; in iron and steel manufactures, $12,605,786; in rubber manufactures, $306,680. In manufactures of all kinds they were $121,818,298 as against $1,020,417,687 in 1912.

The increase since 1899 in the number of establishments and of persons employed and in the capital invested and the salaries and wages paid in the above industries is shown in the following table:

Year.	Number of establishments.	Persons engaged.	Capital.	Salaries and wages.
Agricultural implements:				
1899	.....	.....	$157,708,000	$30,814,000
1904	.....	55,089	196,741,000	32,576,000
1909	640	60,229	256,281,000	38,749,000
Automobiles:				
1899	57	2,509	5,769,000	1,616,000
1904	178	13,333	23,084,000	8,416,000
1909	743	85,359	173,837,000	58,173,000
Bags, paper:				
1899	.....	2,329	6,917,000	997,000
1904	62	2,880	11,441,000	1,235,000
1909	74	3,683	10,780,000	2,020,000

Year.	Number of establishments.	Persons engaged.	Capital.	Salaries and wages.
Boots and shoes:				
1899	.....	159,579	$110,363,000	$70,083,000
1904	1,895	171,940	136,802,000	82,484,000
1909	1,918	215,923	222,324,000	117,092,000
Cars:				
1899	.....	7,226	10,782,000	4,699,000
1904	86	11,551	12,906,000	7,856,000
1909	541	23,699	38,899,000	15,690,000
Cash registers and calculating machinery:				
1899	16	2,394	5,242,000	1,579,000
1904	32	5,012	7,588,000	3,551,000
1909	50	9,249	27,224,000	3,048,000
Chemicals:				
1899	.....	21,143	80,069,000	12,316,000
1904	275	22,707	90,621,000	14,838,000
1909	349	27,791	155,144,000	20,222,000
Electrical machinery and supplies:				
1899	581	47,080	83,660,000	25,211,000
1904	784	71,485	174,066,000	42,933,000
1909	1,009	105,600	267,844,000	69,574,000
Fertilizers:				
1899	.....	13,293	60,680,000	6,310,000
1904	399	16,091	68,917,000	7,061,000
1909	550	21,050	121,537,000	11,883,000
Food preparations:				
1899	645	9,752	21,401,000	4,594,000
1904	766	14,739	51,784,000	7,397,000
1909	1,213	20,965	64,685,000	12,908,000
Optical goods:				
1899	91	4,090	4,212,000	1,886,000
1904	122	4,724	5,381,000	2,350,000
1909	217	7,809	10,147,000	4,551,000
Paper and wood pulp:				
1899	.....	52,581	167,508,000	25,247,000
1904	761	70,051	227,444,000	38,116,000
1909	777	81,473	400,348,000	50,315,000
Paper goods:				
1899	246	10,319	18,152,000	5,000,000
1904	308	16,696	27,345,000	7,570,000
1909	403	22,385	48,662,000	11,870,000
Pens, fountain and gold:				
1899	45	842	1,087,000	519,000
1904	49	1,196	1,545,000	731,000
1909	65	1,820	3,121,000	1,266,000
Petroleum, refined products:				
1899	67	16,400	95,328,000	8,528,000
1904	98	18,768	135,281,000	12,713,000
1909	147	16,640	181,916,000	12,759,000
Phonographs:				
1899	11	1,411	3,348,000	887,000
1904	14	3,940	8,741,000	1,350,000
1909	18	5,928	14,303,000	3,780,000
Photo-engraving:				
1899	203	3,175	1,994,000	2,200,000
1904	223	5,071	4,071,000	3,850,000
1909	313	7,277	5,474,000	7,599,000
Photographic apparatus and supplies:				
1899	.....	3,913	5,518,000	1,890,000
1904	.....	5,041	7,720,000	2,905,000
1909	103	6,596	18,918,000	4,499,000
Printing and publishing:				
1899	24,814	235,945	333,003,000	139,291,000
1904	27,793	310,047	432,854,000	194,944,000
1909	31,445	388,466	588,346,000	268,086,000
Pumps:				
1899	.....	727	1,201,000	331,000
1904	.....	1,721	3,230,000	934,000
1909	102	2,623	6,018,000	1,678,000
Typewriters:				
1899	47	4,872	8,400,000	2,884,000
1904	66	7,500	16,042,000	4,715,000
1909	89	12,101	20,300,000	8,928,000
Rubber goods:				
1899	.....	22,229	39,302,000	10,293,000
1904	224	23,051	40,208,000	12,269,000
1909	227	31,284	98,507,000	19,526,000
Wire:				
1899	.....	1,697	4,242,000	996,000
1904	25	5,325	14,809,000	3,652,000
1909	56	10,945	60,157,000	12,515,000

Moreover, manufacturing statistics, in and of themselves, do not begin to tell the whole story. Everywhere the community gets the benefit of the work of the inventors and of the capitalists who have aided them in the development of inventions. What would be the condition of our agriculture if it had not been for the invention of the wonderful agricultural machinery which alone makes it possible for us to prepare and care for the soil and plant and harvest our crops? Our apparatus for the development and transmission of power, our machinery, our great transportation systems, our road-beds, steam and street cars and locomotives, our ships, and railroad and ship apparatus generally, not less than our horse-drawn vehicles and motor cars, depend for their perfection, comfort, and safety upon an infinite number of patented inventions. Our present structural methods are largely based upon patented ideas. Our methods of reducing ores, our processes for metal working, the equipment of our stores and offices, our elevators and our lighting, heating, and sanitary conveniences are the result of a striking series of inventions. Our household utensils and domestic appliances, our furniture, and our wearing apparel reflect inventive ideas that are patented. Our laundries are filled with patented machinery.

PRESENT AND FUTURE NEED FOR ENGINEERING INVENTIONS.

Great as has been our accomplishment, even if the situation were normal and there were no new consideration affecting the question, it is clear that continued and incessant industrial improvement is essential to our well-being. In the practical arts there is no such thing as a stable condition that can be relied upon as permanently satisfactory. Unflagging invention is required at every stage of progress. What has been accomplished in the past is already absorbed and, as it were, expended. Unless there is continued improvement the industries of a country will stagnate. If the time ever comes when those who can invent and those who can promote inventions conclude that there is no longer the prospect of adequate reward in the field of invention, industrial progress will cease, and its cessation means a definite retrogression. Invention and a patent system that will stimulate invention are therefore required, even if all other considerations are favorable.

But there are special reasons of a serious character why it is at the present time more necessary than ever before that the progress of invention and the promotion of the useful arts should be stimulated.

Up to a recent time our situation in all respects has been such as to promote industrial development. We have had as a background for it an enormous amount of free land which was open to cultivation. This has now been practically exhausted. This circumstance affects our industrial situation disadvantageously; but it had to come. We must use every weapon to neutralize the loss of this asset.

Again, up to recent years (to repeat in part what has already been said) public opinion, the trend of legislation and of the law, and what seemed to be the settled ideas and principles of our social organization were distinctly favorable to our industries and conspired to promote them.

The relations between capital and labor were such that while the workingman received a larger return for his effort than came to him in any other part of the world, the margin of profit to the capitalist

and manufacturer was such as to encourage him to strenuous efforts. We have had a public sentiment which crystallized on the proposition that nothing was so important as industrial prosperity and gladly gave what may now be regarded even as excessive encouragement to industrial effort. Lawmakers and the courts, publicists, newspapers, and writers generally were all on the side of business expansion.

As a result of the conditions under which business was carried on we developed men of the highest administrative capacity, who organized industries, opened and exploited new fields, trained labor, and in every way enthusiastically promoted the expansion of industrial and commercial effort. These industrial leaders were admired and encouraged because of the extraordinary results of their efforts. If it had not been for this admiration and encouragement they would never have accomplished or undertaken to accomplish their great work. It was their pride of achievement and the consciousness that they were appreciated by the community far more than the prospect of gain that inspired them.

Such men are now the object of popular criticism, and there can be no reasonable doubt that, because of such criticism, they are becoming disheartened to such an extent as to lose at least a part of their capacity for serving the community.

These conditions, so favorable to industrial growth, have largely disappeared. The prevailing popular sentiment of to-day and the new laws and new interpretation of old laws based upon that sentiment are such as to require a definite readjustment of business and of business methods in all their relations. It may well be that it is a social necessity that such a readjustment should take place, that the monopolistic tendencies of business and of business men should be restrained, and that industrial methods and practices should be reformed, whatever may be the consequences. It may be essential that individualism should be checked and society reorganized on a basis that will insure a different distribution of wealth and of the fruits of productive effort. With that end in view it may be that we should go still further with legislation which operated to reduce the productive capacity of labor, and should accept as proper the reduced efficiency arising from the principles of trade-unionism. It may be that there should no longer be the element of protection in our tariff. It may be that distrust of business men and of business methods is a healthy sign of a sounder moral insight. It is not impossible that when we have lived through this era of change we shall be a stronger, better, happier, and more prosperous community. But the process of readjustment will surely be one of shock to our industries. They will endure, even if they could never have grown to their present proportions had the ideas of to-day prevailed 50 years ago. It is, however, clearly a time in which we should hold on to any feature of our social organization that is right and honest and able to sustain our industries during a period of stress. It is no time to reduce the encouragement to invention afforded by our patent system. As far as the matter of increased returns to labor is concerned, it is absolutely clear that we have been able to progress to so great an extent in this direction only because of our inventions. They have reduced cost, at least, as rapidly as it has been increased by the higher wages and shorter hours of our workingmen.

DANGERS THAT ONLY PATENT PROTECTION CAN AVERT.

We must not forget that, from this time on, the question of foreign competition is sure to be more serious every year. To-day, except for the artificial protection of tariff laws, the whole world, because of improvements in transportation facilities due to invention, is in immediate competition. No industry can thrive in any country unless that country has peculiar advantages, either natural or acquired, so as to be able to produce at such low cost as to meet the competition of other countries in that industry. The natural advantages of the United States are great in some directions, but are by no means altogether controlling. In our competition with foreigners we are hampered in many ways. In our cost of production we are embarrassed by the high cost of our labor as compared with that of other countries; for there is no doubt whatever that, whether measured in money or in commodities, our wages, as we desire to have them, are higher than in any other country in the world and much higher than in many of the manufacturing countries which are our sharpest competitors. We have in the past more than held our own in international competition, partly because we have surpassed all other countries in shop and business organization, but chiefly because of our superiority as inventors and in the quick and comprehensive adoption of inventions.

While it is true that the rest of the world may and does take our inventions freely, as we may and do take theirs, foreign countries have been for the most part a long distance behind us in the adoption of new ideas and methods and we have been able to maintain our advantage by the rapidity with which, with us, improvements have succeeded each other. But if the process of continuous improvement is checked, we shall lose this advantage and there will be no alternative except the destruction of some or many of our most important industries or a reduction in the wages and standard of living of our workmen. It is clear that the latter would be most disastrous and might well lead not only to industrial but to social crises of a most disturbing character.

An important consideration, often overlooked, is that the opportunity for improvements based upon invention is in many branches of industry growing less every year. There is no longer room for the striking advances in agricultural machinery, machinery for making fabrics and shoes, electrical and other power apparatus and machinery employed in the production and working of wood and metals and in other great departments of industry that there was a few years ago. It may almost be said that many of the arts are already developed almost to the point of saturation. It is not so easy as it was to find out how they can be improved and to improve them. This does not mean that there is not opportunity even in such industries for an infinite number of relatively small improvements, and occasionally for a larger invention, which, if we can make them, will be of the greatest value in the increase of efficiency and economy and the improvement of quality. But the conditions are clearly such that it is of the utmost importance that there should be adequate encouragement to make these inventions, and particularly that there should be every possible incentive to seek out and to develop an incessant series of the minor improvements which may in the aggregate

afford great possibilities of advancement. The latter are of a kind that especially requires encouragement, for they do not greatly appeal to the imagination and the direct returns from any one of them are not likely to be large. They are not often developed except by definite and strenuous work, intelligently applied. Close and careful study and scientific effort, carried on persistently, systematically, and at great expense, are generally required.

There are, of course, some arts of great importance in which development has not much more than begun. There is no limit to the inventions that may be made in chemistry, where the scientific men are constantly revising their theories as the result of persistent study, and every revision of a theory may lead to new and most astonishing practical applications. It is not impossible that agriculture and the production of food products may be revolutionized during the coming century by chemical inventions. In other fields there is room for many great and important improvements, which can not be realized unless our patent system affords the requisite encouragement.

There are other conditions and so-called "tendencies" of the times which surely operate to check industrial development, and may do so to a destructive extent. I call attention to a few only of them.

There can be no doubt that our present inordinate National, State, and municipal expenditure, which is constantly increasing and which is largely borne by our industries, imposes on them a most serious burden and thereby hampers their sound development. Much of this expenditure is wasteful, much of it is unproductive, but there seems no hope that it will be checked. The present uncertainty as to our monetary, banking, and currency system may continue for a long time. While it lasts it depresses industry. Uncertainty as to the law and as to new legislation, which may be passed affecting our commercial and industrial activities, seems likely to be a chronic evil for many years. It surely embarrasses and checks industrial enterprise. Individual extravagance is as marked as that of our governing bodies. From this our industries suffer. The inclination for amusement rather than for work, which seems to prevail as never before among all grades and classes of those who are engaged in industrial pursuits, must in the long run seriously affect their efficiency. It may well be that we are using up and perhaps wasting our natural resources to such an extent that in a comparatively short time our industries will suffer.

If such unstable conditions, affecting business at the present time, exist to anything like the extent which seems to me probable, it must be of vital importance that there should be no slackening of invention among our people. More than ever, when there are causes at work which depress enthusiasm and hold back development, should inventive effort be promoted and inventive spirit fostered. It would seem to be no time for the suggestion of drastic changes in our patent laws by reason of which the encouragement to invent and to introduce inventions into use will be reduced. Even the threat of such changes is unfortunate and ill advised. The public interest surely requires that our people should more than ever be encouraged and stimulated to invent, as our chief basis for hope that we may maintain our industrial supremacy or anything like our present material prosperity.

THREATS AGAINST THE PATENT SYSTEM—THE OLDFIELD BILL.

I can not help thinking that the Oldfield bill, which has been reported by the Committee on Patents to the House of Representatives at Washington, is a most serious attack upon our patent system. In the opinion of the writer it does not at all meet any evils of the present patent law, if there are such, but, on the contrary, its provisions are almost without exception definitely harmful. If it became law, the bill would surely discourage invention and the promotion of inventions to a marked degree, with no compensating advantages. Those of its provisions, sections 4, 5, 6, 7, 8, 9, 10, 11, and 12, which purport to develop the underlying principles of the Sherman antitrust law into a long series of drastic restrictions and negations, aimed only at patent owners and those who manufacture under patents, should clearly not appear in a bill dealing with the patent laws. If any of the provisions of those sections are wise for any purpose, they should be adopted as part of a revision of the antitrust law and not of the patent law. In the effort to put them on the statute book they should be discussed as relating to the alleged necessity of curbing trusts and monopolies, and not as germane to the patent system. There is obviously no justification whatever for such discrimination against patents and manufacturers under patents as is proposed.

This is not the time or place for a discussion of these provisions in detail, but I urge the members of the American Bar Association to read sections 5, 7, 8, and 9 of the proposed act, so that each member may determine for himself whether there was ever suggested more unreasonable and illogical legislation. Those sections, in phrases which, though in many cases vague, obviously involve the most far-reaching and destructive restrictions, penalize those manufacturing under patents while allowing those who make unpatented articles under the same conditions to be entirely free to do their business without any such restrictions.

These antitrust provisions in the Oldfield bill were taken almost bodily from the so-called Lenroot bill, which was of general application and which the Judiciary Committee of the House of Representatives, after full hearing, did not report. It seems incredible that they can ever become law, whether general in their application or confined to the field of patented manufacture.

The remainder of the Oldfield bill is significant by reason of its attack on certain fundamental principles of the United States patent law to which I have already referred. The American patent law from the beginning has applied definitely and radically the provision of the Federal Constitution that for the purpose of promoting the useful arts and as an inducement to inventive effort there shall be granted to him who makes a patentable invention the "exclusive" right to make, use, and sell the same for a relatively short period. Under the Constitution, the statutes, and the decisions of the courts he who turns his attention to inventing has always known that if he succeeded in securing a patent, his right during the term of the patent to deal with the invention as he chose was absolute. He or his successor in title could use it or not. He could license others to use it or refrain from so doing. He could sell the whole or a part, or make

any contracts "not definitely unlawful" with relation to it. In his efforts or in the efforts of his assignees or licensees to build up a market for the invention he or they had a free field for the exercise of ingenuity in determining how to handle the patent properly in such a way as to get from it adequate returns. The patentee could offer to capital the same monopoly that he had himself. He was entirely free to make practically any contract or any series of contracts "not in their very nature illegal" which he chose. Having given to the world a new thing he could impose, during the short term of the patent, any conditions which seemed to him to his advantage that are not inconsistent with restrictions imposed in the exercise of the police power or in violation of underlying and fundamental principles of law. There is no question that this legal situation has resulted greatly to the public good.

The inventor or the investor backing him, knowing that if success were attained the patent owner would have a free hand for 17 years, from the beginning of our history as a nation has been ready to take great chances by way of effort and expenditure of money, although he knew that many inventions fail and that a substantial part of them are of commercial value only in the later years of the term of the patent.

Any provision in the law preventing the imposition of conditions as part of a sale or license of a patented article or of a contract authorizing its manufacture or use, or any requirement that would impose a penalty if the invention was not manufactured, and particularly any requirement by which under any circumstances a license to use the invention could have been acquired without the patent owner's consent by a person or corporation to whom the patent owner did not wish to grant a license, would undoubtedly have checked invention and the development of inventions to a marked degree. The testimony before the Oldfield committee of those familiar with the subject is practically unanimous on this point.

And yet it is just such an inroad upon the established law of the land that characterizes the Oldfield bill not only in the antitrust provisions already referred to but in its remaining sections. It provides for a compulsory license in certain contingencies and for a limitation upon the right to impose conditions, such as are now lawful, in the disposition of a patented product. The specific provisions of the bill on these subjects may not seem very drastic; they may not be very effective; but they would, if they became law, undoubtedly operate to discourage invention to a marked degree. And a most serious consideration is that there would be an attack upon a basic and most important principle of our patent law which opens the door to further like attack. It is at the beginning of such a crusade that the matter should be carefully considered, and if such a change in the law is unwise, all possible effort made to prevent it. I urge every member of the American Bar Association to study the Oldfield bill and, if possible, to read the testimony before the Oldfield committee. If, after full consideration, the members of the association conclude that the bill in whole and in part is thoroughly bad, in that it would operate to discourage invention at a time when it needs most to be encouraged, and is an entering wedge for further destructive legislation, they can perform a public service by opposing it. I only call

attention to the fact that a very large number of our business enterprises have been established and their methods developed, relying upon the law as it stands. Whether it is for the public interest that these enterprises should be demoralized by such a modification in the law as is proposed or whether expediency or good faith permit such change are questions not within the scope of this paper.

I believe that there is but little occasion for the revision of our patent laws in so far as fundamental principles or the provisions of the statute are concerned. The substantive law seems altogether admirable. It is far otherwise with the procedure of the courts and Patent Office. The entire practice in patent cases in the courts up to the recent rules formulated by the Supreme Court of the United States was vicious and defective to the last degree. It is doubtful if it will be satisfactory under the new rules.

Reform in the procedure in patent cases is a legitimate field for effort. The methods of the Patent Office, particularly in interference cases, need thorough revision. All such changes can be easily brought about if only sufficient and definite attention is given to the subject.

Under the present system of nine circuit courts of appeal there is serious confusion in the application of the patent law to special cases, resulting in some instances in a divergence of views between two different courts of appeal as to the validity and scope of the same patent, and generally in the different circuits in a want of harmony as to questions of patentability, construction of patents, and infringement; that is a serious evil. The establishment of a single court of appeals in patent causes, for which the American Bar Association has worked so assiduously for more than 10 years, will correct these evils. Although there is no valid argument against such a patent court of appeals and no real criticism upon the American Bar Association's bill providing for its establishment, Congress has as yet failed to act. This most important of all reforms in patent matters is sure to come, and the more vigorously the members of the American Bar Association press for it the sooner will the law be passed.

I have said nothing in this paper as to the sense and justice of a full recognition of intellectual property as a real thing, or as to the clear right of such property to protection on scientific, logical, and ethical grounds. I have endeavored to approach the subject matter entirely from the point of view of the interest of the community as a whole, which, in my opinion, requires for its prosperity an adequate patent system. I believe that ours is adequate, that in its substance it is not open to serious criticism, and that it would be a national misfortune if it were weakened as proposed by the Oldfield bill.

I have only touched upon many most important phases of the situation which would require complete discussion if the question under consideration were whether or not our patent law should be amended on the lines of the Oldfield bill or otherwise. For example, I have not undertaken to advance the many reasons why compulsory licenses would surely be arbitrary, unfair, and utterly ineffective for the purpose intended. I have not dealt, except incidentally, with the allegation which is sometimes made that any patent system, and that of the United States in particular, promotes monopoly to an offensive extent. I have made no reference to such charges as that

inventions are "suppressed" and patents "pigeonholed," a proposition which, as a substantial matter, has never been and can not be supported by any evidence. The testimony before the Patent Committee of the House of Representatives, to which reference has already been made, deals with these and many like questions. My single purpose in this paper is to emphasize the controlling importance of a liberal patent system, to point out that at the present time it is more essential than ever to our national well-being, and to express my belief that no fundamental changes in our law are now desirable. Particularly, there should be, in my opinion, no change in the direction foreshadowed by the Oldfield bill.

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