PLANT PATENTS

By JOSEPH ROSSMAN, PH. D.
Patent Examiner, U. S. Patent Office

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TEXT OF PLANT PATENTS LAW

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[S. 4015]

An Act To provide for plant patents

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That sections 4884 and 4886 of the Revised Statutes, as amended (U. S. C., title 35, secs. 40 and 31), are amended to read as follows:

"SEC. 4884. Every patent shall contain a short title or description of the invention or discovery, correctly indicating its nature and design, and a grant to the patentee, his heirs or assigns, for the term of seventeen years, of the exclusive right to make, use, and vend the invention or discovery (including in the case of a plant patent the exclusive right to asexually reproduce the plant) throughout the United States and the Territories thereof, referring to the specification for the particulars thereof. A copy of the specification and drawings shall be annexed to the patent and be a part thereof.

"SEC. 4886. Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof, or who has invented or discovered and asexually reproduced any distinct and new variety of plant, other than a tuber-propagated plant, not known or used by others in this country, before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, or more than two years prior to his application, and not in public use or on sale in this country 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 proceeding had, obtain a patent therefor."

SEC. 2. Section 4888 of the Revised Statutes, as amended (U. S. C., title 35, sec. 33), is amended by adding at the end thereof the following sentence: "No plant patent shall be declared invalid on the ground of noncompliance with this section if the description is made as complete as is reasonably possible."

SEC. 3. The first sentence of section 4892 of the Revised Statutes, as amended (U. S. C., title 35, sec. 35), is amended to read as follows:

"SEC. 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, or of the variety of plant, for which he solicits a patent; that he does not know and does not believe that the same was ever before known or used; and shall state of what country he is a citizen."

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SEC. 4. The President may by Executive order direct the Secretary of Agriculture (1) to furnish the Commissioner of Patents such available information of the Department of Agriculture, or (2) to conduct through the appropriate bureau or division of the department such research upon special problems, or (3) to detail to the Commissioner of Patents such officers and employees of the department, as the commissioner may request for the purposes of carrying this Act into effect.

SEC. 5. Notwithstanding the foregoing provisions of this Act, no variety of plant which has been introduced to the public prior to the approval of this Act shall be subject to patent.

SEC. 6. If any provision of this Act is declared unconstitutional or the application thereof to any person or circumstance is held invalid, the validity of the remainder of the Act and the application thereof to other persons or circumstances shall not be affected thereby.

Approved, May 23, 1930.

Plant Patents

The recent amendment to our patent statutes, unanimously passed by Congress, has radically enlarged the field of patentable inventions which now includes in addition to the well known statutory classes comprising art, machine, manufacture, composition of matter and designs, the inventions of anyone "who has invented or discovered and asexually reproduced any distinct and new variety of plant other than a tuber-propagated plant."

This law has been generally indorsed by the public as well as agricultural leaders. Thomas A. Edison, who is now seriously engaged in "plant inventing" in his experiments to produce a goldenrod that will produce rubber, endorsed the new law as follows: "Nothing that Congress could do to help farming would be of greater value and permanence than to give the plant breeder the same status as the mechanical and chemical inventors now have through the patent law. There are but few plant breeders. This will, I feel sure, give us many Burbanks."

Edison might have added to the name of Burbank, those of scores of other plant breeders, some of whom did work easily comparable if not greater than that of Burbank.

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The late Dr. Walter Van Fleet is an outstanding plant breeder. He is best known for his contributions to rose culture. He also developed new varieties of peppers, sugar-corn, tomatoes, gooseberries, strawberries, cannas and gladioli. His pioneer experiments in crossing the American chestnut with blight resistant Chinese species may yet result in the development of a form combining the desirable qualities of the American species in the ability to withstand the ravages of the blight disease.

Others who would have benefitted by a plant law are Paul Stark, who had to protect his Delicious apple tree in an iron cage so that shoots for grafting would not be stolen; the famous Peter Henderson; E. G. Hill, the rose grower; Thomas Meehan, who brought out new varieties of grapes; and John Dreer, best known for his work with ornamentals.

Luther Burbank, himself, has been in favor of such a law. He said many years ago: "I have been for years in correspondence with leading breeders, nurserymen, and Federal officials, and I despair of anything being done at present to secure to the plant breeder any adequate returns for his enormous outlays of time, energy, and money. A man can patent a mousetrap or copyright a nasty song, but if he gives to the world a new fruit that will add millions to the value of earth's annual harvests, he will be fortunate if he is rewarded by so much as having his name connected with the result. Though the surface of plant experimentation has thus far been only scratched, and there is so much immeasurably important work waiting to be done in this line, I would hesitate to advise a young man, no matter how gifted or devoted, to adopt plant breeding as a life work until America takes some action to protect his unquestioned rights to some benefit from his achievements."

The Plant Breeder As Inventor

When a mechanic assembles gears, cams and levers to make a new machine the result can be predicted with certainty, but when two plants are united no human being

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can predict exactly what will happen. Our engineers and chemists have harnessed the forces of nature during the past hundred years by many amazing and wonderful inventions which have accelerated the technological advance of industry to an astonishing degree. The plant breeder has also been active, but his contribution to human welfare and progress cannot yet compare with the startling development of the technical industries. The tremendous forces of plant life have not yet been fully harnessed into service by man, but the advances made so far by the plant breeder clearly indicate that his contribution may some day be even greater and more important than the services of steam or electricity.

The plant breeder is seldom regarded as an inventor although he is actually an innovator of the highest type. Until recently he has had no legal protection for his new plant creations. The production of a new plant often requires more patience, skill, ingenuity, resourcefulness, knowledge, and observation than the making of a mechanical invention. The development of a better flavor, or larger size of fruit, the creation of a new flower with a pleasing perfume and graceful petals may take years of careful cultivation, constant experimentation and breeding. It often takes from ten to fifteen years to perfect a new plant so that it can be placed on the market. It took Burbank 19 years to perfect the amaryllis and over 20 years to give us a new hybrid lily. In developing the white blackberry over 65,000 hybrid bushes were grown and eliminated. Burbank has grown hundreds of thousands of plants just to select a single desirable one from them. A new fruit must pass more rigid tests than many successful inventions ever passed. It must pass the test of the average orchard, shipper, dealer, and consumer, each one seeking special characteristics in the fruit.

Plant Breeding Encouraged

The new law will undoubtedly encourage many original workers in the field of horticulture, for it gives the plant breeder the same status as the inventor of a new

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machine, alloy or dyestuff. Plant breeders will doubtless be more eager to produce new varieties, and more persons will take up this work. The remarkable advance in our industries has been largely caused by the granting of patents, which have been a powerful incentive to inventors for many decades. Every important advance in industry has inevitably taken its start by the grant of a patent giving the owner thereof a monopoly for seventeen years, during which time he has the exclusive right to his invention and can exclude all others from making or selling his invention. The plant breeder now has similar privileges and he can protect his new creations just as the mechanic can protect his new machine by obtaining a patent.

A new variety produced by the plant breeder once it left his hands could formerly be reproduced by all in unlimited quantity and the only financial reward he could obtain was through the sale of a few reproductions for the first few years. The plant breeder had no legal remedy to prevent pirates from exploiting his new plant which took him many years to produce at the expense of thousands of dollars and much work. Today, however, the plant breeder can secure legal protection by obtaining a patent. He can give the public immediate advantage of new varieties at a low price and he can safely encourage its wide distribution throughout the country, as that will mean greater profits to him in the form of royalties.

Brilliant Possibilities

The plant breeder today, unquestionably has wonderful opportunities before him not only in financial rewards but also in performing a great service to humanity. He has a vast field before him with unlimited possibilities. The entire world is a potential field for new plants. The possible combinations and selections which can be made are infinite. There are hundreds of problems and needs which are waiting to be met by the plant breeder. The diminishing agricultural population shown by the 1930 census may become ultimately a great menace to our food

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supply. The plant breeder must create new and plentiful sources of food supply which can be easily and abundantly produced. Our future national prosperity and health are in his hands. Food is a fundamental human need which has no substitutes. Our boasted advances in science and technology may come to naught and they would be of little service to us if our food supply should fail us. As the population of the world increases the plant breeder who will give us new foods may well become the world's idol and hero. He will also develop new medicinal plants for human ailments and solve many of the pressing problems of today. The very unsatisfactory situation with regard to the standardization of many drugs, such as digitalis, depends in large part on the development of uniform varieties. The food and timber supply of the future is dependent upon the introduction of new varieties. Millions of dollars are spent each year in fighting diseases and enemies of our plants. The plant breeder will create new varieties which will be disease resistant, cold and drought resistant. The north needs an apple with greater resistance to cold. An acceptable substitute for the rubber plant will make any plant breeder rich. The white pine blister rust, the chestnut blight, the "phoney" peach disease cost the country millions. The plant breeder has a golden opportunity to develop new varieties which will resist these ravages. An acceptable new fruit or flower will always find a ready market. Thus the plant breeder can not only improve the existing plants but he can also give us new ones. He will become more and more important in the future in maintaining public health and prosperity.

In order that the plant breeder may derive the full benefit of the new law it is essential for him to understand the principal features of the new patent law so that he may receive his earned reward. The same general principles governing the grant of patents for industrial inventions no doubt will hold good for plant patents. The plant breeder in obtaining his patent will enjoy the monopoly of seventeen years for his new variety of plant and he can prevent others from infringing his rights by

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reproducing his new variety of plant unless he permits them to do so. Any person who invents or discovers a new and distinct variety of plant other than a tuber-propagated plant, can obtain a patent for the exclusive right to propagate that plant by asexual reproduction; that is, by grafting, budding, cuttings, layering, division, and like, but not by seeds.

What Are Distinct Varieties?

New and distinct varieties can be divided into three classes—sports, mutants, and hybrids. Plants can be developed in one of three ways. It may sometimes happen that among a large number of the same kind of plants one plant, or perhaps just a part of it, takes on a new appearance or characteristic which make it distinctly different from the others. This sudden change is designated as a bud sport.

In order to save this freak or abnormality in plant life so as to make it useful to mankind it must be propagated asexually, that is, by grafting, budding, cutting, layering or division. In this way a distinct plant variety is produced which is patentable.

A new variety may suddenly appear among seedlings. It can be perpetuated by asexual methods and it is called a mutant.

The cross-pollinization or hybridization of different kinds of seedlings produces the great majority of our new plants. They are created by the plant-breeder when he artificially fertilizes one variety with the pollen from another variety. This new plant must also be reproduced asexually if it is to preserve its character. If an attempt is made to reproduce it by planting the seeds, many of the desirable characteristics found in the parent will divide up among the offspring with mathematical exactness as determined in Mendel's law of heredity, and others produced by the chance union of complementary mendelizing "factors," will not reappear in the progeny.

According to the Senate Committee report:

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"In order for the new variety to be distinct it must have characteristics clearly distinguishable from those of existing varieties, and it is immaterial whether in the judgment of those of the Patent Office the new characteristics are inferior or superior to those of existing varieties. Experience has shown the absurdity of many views held as to the value of new varieties at the time of their creation.

". . . . In order for a variety of plant to be distinct it is not necessary that it be a variety of a new species. A variety of plant may be patented if it is a new and distinct variety either of an existing or of a new species, or if it is an entirely new species of plant.

"The characteristics that may distinguish a new variety would include among others, those of habit; immunity from disease; resistance to cold, drouth, heat, wind, or soil conditions; color of flower, leaf, fruit, or stems; flavor; productivity; including ever-bearing qualities in case of fruits; storage qualities; perfume; form; and ease of asexual reproduction. Within any one of the above or other classes of characteristics the differences which suffice to make the variety a distinct variety, will necessarily be differences of degree. While the degree of difference sufficient for patentability will undoubtedly be a difficult administrative question in some instances, the situation does not present greater difficulties than many that arise in the case of industrial patents.

"In specifying the differences in characteristics the Patent Office will undoubtedly follow the practice among botanists in making use of verbal descriptions and photographic and other reproductions, taking some known plant as a basis of comparison. Modern methods of identification, together with such amplification thereof as may reasonably be expected, will render it possible and practicable to describe clearly and precisely the characteristics of a particular variety. When this can not be done by an applicant for a patent, the variety is not clearly distinguishable as a distinct variety, and no patent would issue.

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"Of course, allowance must be made for those minor differences in characteristics, commonly called fluctuations, which follow from variations in methods of cultivation or environment and are temporary rather than permanent characteristics of the plant."

It is interesting to note that the Senate Committee failed to mention the use of genes and chromosomes in identifying distinct varieties. This is probably the only accurate and scientific method which can be used, for it is conceivable that the same plant under different soil, weather and the other environmental conditions might change to such an extent as to be hardly recognizable by mere external description. The new law, however, does not exclude this method of plant identification.

How will a plant breeder describe his new product? Botanists have a fairly good vocabulary for describing the shape of a fruit or a flower and can do fairly well with colors by reference to standard color charts. But the value of many flowers and fruits depends on odors and aromas, and there is no vocabulary whatever for the description of odors.

It is almost impossible to describe in words what a violet smells like, or a Jonathan apple tastes like. We can readily appreciate what the originator of an exquisite and expensive new odor will be up against. Another difficulty will lie in the tendency of the original plant itself to vary. A machine, once made, stays put; it cannot grow or change. But it is impossible to determine whether a Baldwin apple is like the original Baldwins that grew on the first tree of that variety when it was discovered in 1793.

Suppose a plant breeder states that he got his new "invention" by hybridizing Species A with Species B. That does not mean that anybody else could get it by repeating the same process. He couldn't do it again himself, for hybrids rarely turn out exactly alike. The hopeful patentee can do no more than to give as exact a description as he can write, make drawings, possibly supply samples, and let the horticulturists and the Patent Office decide.

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Unpatentable Plants

It must be remembered that patent protection will not be granted for the right of propagation of the new variety by seed but only by asexual methods. No monopoly is given for the sale of seeds because difficulties might arise when the seed, such as grain, is an article of commerce. Tubers are also excluded from patent protection because as in the case of the Irish potato and the Jerusalem artichoke, the plants are propagated by the same part of the plant that is sold as food. The term "tuber" is used in its narrow horticultural sense as meaning a short, thickened portion of an underground branch. It does not cover, for instance, bulbs, corms, stolons, and rhizomes. In spite of the specific class of plants covered by the new law it is evident that it offers a very wide field such as practically all new varieties of fruit and nut trees including apples, cherries, oranges, pecans, walnuts; many small fruits such as strawberries, raspberries and grapes; also ornamental shrubs and vines such as lilacs, roses, wisteria and peonies.

Legal Aspects of The Law

Commissioner Robertson raised the question of the constitutionality of the proposed bill which might be read to include the grant of a patent to anyone who finds an "already existing" plant and reproduces the same asexually. He said in this connection the following:—"The Constitution (Art. I, sec. 8) gives to Congress the power to grant exclusive rights to only two classes of persons, namely, authors and inventors.

"The courts have uniformly held that a valid patent can be granted only for an invention. In the case of *Thompson* v. *Boisselier* (114 U. S. 1) the Supreme Court of the United States said that the beneficiary under the provisions of the Constitution must be 'an inventor and he must have made a discovery,' and further, that the thing for which he seeks a patent must 'under the Con-

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stitution and the statute, amount to an invention or discovery.'

"A full discussion of the question with reference to what is a 'constitutional invention' is found in the decision of the Circuit Court of the District of Columbia in the case of *In re Kemper,* MacArthur's Patent Cases, page 1, written in 1841 by Justice Cranch.

"It may be doubted whether a valid patent can be granted for a patent even if it is a new variety, when that plant is reproduced by operation of nature, aided only by the act of the patentee in grafting it by the usual methods, and a very serious question arises as to whether the definition given to the words 'invention' and 'discover' in the proviso in the bill, namely, that they shall be interpreted 'in the sense of finding a thing already existing and reproducing the same as well as in the sense of creating,' does not go beyond the power which the Constitution grants to Congress. Under that proviso the person who is given the right to get a patent, if the found variety is new, has done nothing whatever in any way toward creating that variety. In fact, under this proviso any one 'finding' a plant a half a century old could, if he is the first to asexually reproduce one like it merely by the usual grafting methods, obtain a patent and prevent anyone else from likewise asexually reproducing that plant from a cutting taken from the original plant."

The objections of the Commissioner of Patents were fully considered and answered by the Patent Committee as follows:

"There is a clear and logical distinction between the discovery of a new variety of plant and of certain inanimate things, such, for example, as a new and useful natural material. The mineral is created wholly by nature unassisted by man and is likely to be discovered in various parts of the country; and, being the property of all those on whose land it may be found, its free use by the respective owners should of course be permitted. On the other hand, a plant discovery resulting from cultivation is unique, isolated, and is not repeated by nature, nor

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can it be reproduced by nature unaided by man, and such discoveries can only be made available to the public by encouraging those who own the single specimen to reproduce it asexually and thus create an adequate supply.

"It is obvious that nature originally creates plants but it can not be denied that man often controls and directs the natural processes and produces a desired result. In such cases the part played by nature and man can not be completely separated or weighed or credited to one or the other. Nature in such instances, unaided by man, does not reproduce the new variety true to type.

"Furthermore, there is no apparent difference, for instance, between the part played by the plant originator in the development of new plants and the part played by the chemist in the development of new compositions of matter which are patentable under existing law. Obviously, these new compositions of matter do not come into being solely by act of man. The chemist who invents the composition of matter must avail himself of the physical qualities inherent in the materials used and of the natural principles applicable to matter. Whether or not he is aware of those principles does not affect the question of patentability. The inventor of the composition of matter may have definitely in mind the new product and definitely worked toward it. On the other hand, as is true of many of the most important inventions, he may accidentally discover the product, perhaps in the course of the regular routine of his work. He does not have to show, for instance, that he mixed the elements and expected them to produce the particular composition of matter. He may simply find the resulting product and have the foresight and ability to see and appreciate its possibilities and to take steps to preserve its existence.

"The same considerations are true of the plant breeder. He avails himself of the natural principles of genetics and of seed and bud variations. He cultivates the plants in his own laboratory under his own eye. He may test and experiment with them on a variety of proving grounds. He may promote natural cross-pollination by growing the parent plants in juxtaposition. For instance,

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because of manual difficulties artificial hand pollination is impracticable in the production of seed of the genus compositae, including such species as dahlias, chrysanthemums, asters, daisies, and the like, and also in the case of many of the small fruits. In other cases hand pollination is unnecessary; natural pollination does equally well. On the other hand, if the periods of the bloom of the two parent plants differ, hand pollination and the camel's hair brush must be used. Again, orchids, avocados, grapes, and most orchard fruits are subjected to hand pollination. In the case of sports, the plant breeder not only cultivates the plants but may subject them to various conditions of cultivation to encourage variation, as, for example, in some recent developments, the subjection of the plants to the effects of X-rays or to abnormal fertilization. Finally, the plant originator must recognize the new and appreciate its possibilities either for public use or as a basis for further exercise of the art of selection. Moreover, it is to be noted that those wild varieties discovered by the plant explorer or other person who has in no way engaged either in plant cultivation or care and who has in no other way facilitated nature in the creation of a new and desirable variety are not within the scope of the bill.

"But even were the plant developer's contributions in aid of nature less creative in character than those of the chemist in aiding nature to develop a composition of matter which has theretofore been non-existent (an assumption which the committee does not believe to have basis in fact and which is here made solely for the purposes of argument), nevertheless the protection by patents of those engaged in plant research and discovery would not be beyond the constitutional power of the Congress."

Patent Office Procedure

The new plant law is so young that the full procedure for handling plant patents has not yet been worked out. The filing fees will be the same as for mechanical patents.

According to an official circular: "In filing an applica-

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tion the specification should be in duplicate and the drawing also, where colors are involved. Color drawings must be made on heavy Whatman paper in permanent water colors. Where color is not a variation upon which the plant depends for its patentability the drawing may be filed in black and white, in which case only one copy of the drawing will be necessary. The reason for filing the drawings and specifications in duplicate is that it may be necessary to have the experts in the Agricultural Department pass upon the applications as to whether or not the variety is new, and in such cases the Office would not care to allow the original application to pass out of its possession."

The same circular also calls attention to the fact that Sec. 5 of the act of May 23, 1930, provides that no variety of plant which has been introduced to the public prior to the approval of the act shall be subject to patent.

More Work For Patent Attorneys

Mr. David R. Barbee has made some humorous remarks in the *Washington Post*, May 25, 1930 which is quoted here on account of its interest. He said that—"There is one large and estimable group of Washingtonians, who make a living out of the Patent Office, who will denominate this act: 'A bill to force patent lawyers to learn a new profession.' This is what they say every time any forward step is taken by the Patent Office. When mechanical refrigeration became a commercial success, every patent lawyer had to study physics, chemistry, electrical engineering, and oh, so many other technical subjects. One of them now advertises that he 'knows all about ice machines and can make electric refrigerators.'

"There are great possibilities in this bill, and they will surely force the patent lawyers to study botany, horticulture, climate, soil, chemistry, and every constituent thing that goes, for instance, into the composition of a rose. He will have to be able to define what is a plant, a thing that no agriculturist now can do; what makes a rose smell sweet and why it must have thorns; why some roses run,

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some climb, some ramble and some stand still; if the tea rose gives tea, or is just misnamed; why some are hybrids and some are sports; what makes them blush and why all are not red.

"It is obvious, at the mere suggestion of only one per-cent of the new things the patent attorney must learn, if he does not already know them, that pretty soon all of them will move to Takoma Park and there begin the cultivation of roses, or else a new class of patent attorneys is going to spring up."

It will be extremely interesting to follow the new developments in plant breeding in order to determine the influence of the new patent protection on agriculture. In years to come, much of the food consumed, many of the clothes worn and even the houses occupied by man may be radically changed by the mass attack of plant breeders so that the future generations may speak of a horticultural revolution rivaling, if not surpassing the great industrial revolution.

Books On Plant Breeding

Mr. Robert C. Cook, editor of the *Journal of Heredity,* published by the American Genetic Association, having its headquarters in Washington, has kindly compiled the following list of books on plant breeding which should be useful to all those who are interested in this subject. The *Journal of Heredity* also publishes each month valuable articles of interest to plant breeders.

Jones, D. F. Genetics in Plant and Animal Improvement. 1924. John Wiley Co., New York.

Wright, S. The Principles of Livestock Breeding. U. S. Dept. of Agri. Bul. 905, 1926—gives a concise discussion of Mendelism, much of which applies as well to plants as to animals.

Walter, H. E. Genetics. An introduction to the study of heredity. Macmillan, New York. 1926.

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