EDISON ELECTRIC LIGHT CO. *v.* UNITED STATES ELECTRIC LIGHTING CO.

(*Circuit Court, S. D. New York.* 1891.)

1. PATENTS FOR INVENTIONS—ELECTRIC LAMP—INFRINGEMENT.
   The first claim of letters patent No. 223,898, issued to Thomas A. Edison, January 27, 1880, for an incandescent electric lamp, in which the leading wires are secured to a carbon filament by cement carbonized *in situ*, is not infringed by a lamp in which the leading wires are connected with the carbon by metal clamps.
2. SAME—PATENTABILITY.
   The second claim of said patent, consisting of a combination of carbon filaments with a receiver made entirely of glass, from which the air is exhausted, and conductors passing through the glass, is not invalid for want of patentable novelty.

In Equity. Bill for infringement.

Eaton & Lewis, (*Clarence A. Seward*, *Grosvenor P. Lowrey*, and *Richard N. Dyer*, of counsel,) for complainant.

Kerr & Curtis, (*Samuel A. Duncan*, *Edmund Wetmore*, *Frederic H. Betts*, and *Leonard E. Curtis*, of counsel,) for defendant.

WALLACE, J. Two claims of letters patent No. 223,898, granted Thomas A. Edison, January 27, 1880, for an improvement in electric lamps, are in controversy in this suit. These are claims 1 and 2. It is not asserted for plaintiff that the defendant infringes the other claims of the patent, consequently they will require no attention further than to see whether their terms may assist in defining the meaning of the claims in litigation.

The plaintiff contends that these claims are for fundamental inventions of great merit, and are entitled to a construction by which every incandescent lamp for electric lighting, consisting essentially of a filamentary carbon burner, hermetically sealed in a glass vacuum chamber, is within their terms. The defendant contends that, unless the claims are limited to narrow inventions, not employed by the defendant, they are invalid for want of patentable novelty. The questions of the validity and scope of the patent have been adjudicated in the courts of England and Germany with a diversity of opinion by the judges who have considered them. The specification is a perplexing one. The difficulty lies in its shadowy demarkation of the line between the essential and non-essential features of the invention described. It catalogues a number of discoveries which Mr. Edison has made. It sets forth some of the essential features of the lamp, and then it leaves to be found by inference from generalities what the elements are of the combinations included in the extremely elastic terms of the two important claims. Nevertheless, when a sufficient knowledge of the prior state of the art to which it relates has been acquired, the new departures from old devices which it describes, and which, presumably, the inventor proposed to incorporate into the claims of his patent, are reasonably apparent. The specification states that the object of the invention is "to produce electric lamps giving light by incandescence, which lamps shall have high resistance, so as to allow of the practical subdivision of the electric light." The subdivision of the electric light is the concrete term for the division of the electric current into numerous small units and their conversion into luminous centers. By "practical subdivision" is meant a distribution and division of the current and its conversion into lights comparable with those of ordinary gas jets, on a scale and under conditions of convenience and economy adequate to a system of illumination for domestic purposes, in villages and cities, analogous to that of gas. Prior to 1879 there was no method known by which this could be done practically. The problem involved the perfection of devices for the proper distribution and regulation of the current as well as those for translating it into light. No reference to the pre-existing devices for generating electricity, conducting it to the translating devices, or regulating its pressure and quantity, is necessary, except to state that the principles governing the relation of the resistance of translating devices to the character of the circuit in which they are arranged, whether in series or in multiple arc, were well known to electricians, and had been applied in various forms of electrical apparatus. There were two well-known devices for converting the current into light, —the arc lamp and the incandescent lamp. In the former the current is forced to leap an air gap separating two conductors, usually of carbon, and in overcoming the resistance of the air space heats the adjacent surfaces of the conductors and produces a light of great intensity. In the latter, light is produced by the incandescence of an electrical conductor, a conducting strip or burner, placed in a continuous circuit, through which the current passes, and which develops heat by its resistance to the flow. The arc lamp was suitable for use in streets, open spaces, and large halls; but its light was too concentrated and powerful for the illumination of dwellings or rooms of small dimensions. It was the generally accepted opinion of electricians that the hope of progress in the subdivision of the electric light was to be found in modifying the features of the arc lamp. The reasons for this conclusion need not be mentioned. It suffices to say that Mr. Lane-Fox in England, and Mr. Edison in this country, seem to have been the only notable dissidents, and each of them had expressed the conclusion that subdivision might be accomplished by the incandescent lamp, when provided with a conductor of high resistance and small radiating surface, arranged in a system of multiple arc. Lane-Fox had set forth the advantages of such a lamp in three patents granted to him in England,—two in October, 1878, and one in March, 1879,—and in a letter to the London Times, published in December, 1878; and Mr. Edison had done so in a patent granted to him in France, May 28, 1879, for improvements in electric lighting.

By arrangement in multiple arc no greater electro-motive force is required for a large number of translating devices than for a single one, and the amount of current can be graduated to the number employed; consequently, a lamp with a conductor of high resistance can be utilized as efficiently as one with a conductor of low resistance. Higher resistance in the conductor permits the use of a weaker current, and, consequently, of smaller and less expensive main conductors. With a small surface of conductor less energy is required to produce a candle-power, and the small incandescent mass will radiate a moderate light, like the domestic lamp. Electricians knew how to make conductors of high resistance, and how to make them with a small radiating surface. They knew that with material of the same specific resistance the total resistance of the conductor could be varied by varying its length or cross-section, high resistance being imparted by length and small section. They knew what materials were preferable, and what processes of treatment, to make conductors of high or low resistance. If they had only known how to construct a lamp in which the conductor would have adequate mechanical strength and durability for practical commercial use, while having the small radiating surface and high resistance desirable, there would have been nothing wanting, and electric lighting by incandescence would soon have been an accomplished fact. Although Lane-Fox and Edison had contributed to the state of the art the recognition of the principle that the conductor must have high resistance and small radiating surface, and each of them had embodied the principle in lamps for which they had severally obtained patents, neither of them had invented a lamp which satisfactorily met all the conditions of success, because a burner of the necessary materials, form, and complementary adjuncts was yet to be devised. As to materials, experiments had been tried with platinum, iridium, and alloys of these metals, and with carbon of various kinds. It was known that platinum, being a poor conductor, could be readily brought to incandescence by the electric current, but to do so it was necessary to raise it to a temperature very near the fusing point, and a minute increase would melt it. On the other hand, carbon was known to possess at an equal temperature much greater power of radiation than platinum, but the difficulty was that it would combine with oxygen at high temperature and rapidly disintegrate. It could only be used, therefore, in a vacuum from which the oxygen had been excluded, and a perfect vacuum was practically unattainable. From the earliest lamp, (disregarding the Geissler tube, because it has no burner in the true sense,) patented in England by King in 1845, to the latest examples, like those of Lane-Fox or Edison's platinum lamp, patented in 1878–79, the history of the art shows a variety of experiments to perfect a lamp in which a carbon burner, or a platinum burner, would have sufficiently long life for practical requirements. The result of these experiments may be succinctly shown by quoting two well-known electricians. Mr. Schwendler, in an article published in 1879, in the Telegraphic Journal, said:

> "Unless we shall be fortunate enough to discover a conductor of electricity with a much higher melting point than platinum, and the specific weight and the specific heat of which conductor is also much lower than for platinum, and which at the same time does not combine at high temperatures with oxygen, we can scarcely expect that the principle of incandescence will be made use of for practical illumination."

Mr. Sawyer, in a patent to Sawyer & Man, granted in June, 1878, said:

> "At the present day it is not new to produce a light by causing the electric current to heat a carbon conductor to incandescence in a vacuum, or in nitro-

gen, or in other gas; but no lamp has yet been devised which would be practically operative, and for these reasons: *First.* The methods which have been adopted for charging the lamp with the artificial atmosphere, such as a displacement of mercury, water, or air by the gas, or the combustion of phosphorous in the lamp, are imperfect. A perfect vacuum is unattainable. Some oxygen or other element or compound remains in the lamp, and slow consumption or disintegration takes place, for the remaining gas or vapor other than hydrogen or nitrogen attacks the carbon, which in turn is decomposed, with a result of depositing the carbon upon the globe, and setting free the oxygen to attack fresh carbon. *Second.* It has been found practically impossible, under the varying degrees of heat and pressure, to maintain perfect joints, and the result is that expansion of the artificial atmosphere by the heat from the luminous conductor expels a portion of the same, and the contraction of the atmosphere upon cooling causes a portion of the external air to penetrate the globe, thus supplying oxygen, which at the next lighting feeds upon the carbon. *Third.* The unequal expansion of the carbon and its holders has resulted in fractures of the former, so that, however perfect the atmosphere in the globe, the lamp has never been permanent."

The most advanced type of carbon-burner lamps in 1875 were the lamps of Lodyguine or of Konn, and until the spring of 1879 lamps like those of the Sawyer & Man patent, or the patent of Mr. Farmer. It was thought to be the merit of Lodyguine's lamp that it obviated the difficulty of the short life of the burner by using two burners, rods of diminished section at the luminous focus, in a glass receiver, hermetically sealed, and filled with nitrogen, electrically arranged so that the current could be passed to the second carbon when the first had been consumed. Mr. Konn provided his lamp with five carbon burners in the form of rods or pencils, and devices for bringing them successively into circuit. In the lamp of Sawyer & Man the carbon burner was a rod or pencil maintained in a globe charged with nitrogen gas, and the globe and its stopper (both of glass) were held together by a clamping device. In the lamp of the patent granted to Mr. Farmer in March, 1879, the burner was a carbon rod or pencil inclosed in a globe filled with nitrogen or other analogous gas, and the globe was closed by a rubber stopper. In none of the lamps, except the one described in Mr. Edison's prior French and English patents of 1879, had any attempt been made to make the vacuum chamber wholly of glass, with the parts sealed together by fusion, or to seal the conducting wires leading to the burner through the glass by fusion of the glass. The impracticability of maintaining a carbon burner under such conditions that it would be sufficiently durable had apparently so impressed those who were studying lighting by incandescence that we find that as late as in the early part of 1879 both Lane-Fox and Edison were trying to perfect a burner of other material. Edison's burner, in his French patent of May 28, 1879, and his English patent of June 17, 1879, was of platinum wire coiled upon a bobbin composed of an infusible oxide; and Lane-Fox's burner, in his patent of May 14, 1879, was of platinum-iridium alloy, or of spiral strips of metal surrounding a tube of glass, fire-clay, steatite, or lime, with the surface of the metal strips covered with asbestos or some vitreous material.

This cursory view of the prior state of the art is sufficient for an intelligent reading of the specification. The specification describes the general nature of the invention as follows:

"The invention consists in a light-giving body of carbon wire or sheets coiled or arranged in such a manner as to offer great resistance to the passage of the electric current, and at the same time present but a slight surface from which radiation can take place."

"The invention further consists in placing such burner of great resistance in a nearly perfect vacuum to prevent oxidation and injury to the conductor by the atmosphere. The current is conducted into the vacuum bulb through platina wires, sealed into the glass."

"The invention further consists in the method of manufacturing carbon conductors of high resistance, so as to be suitable for giving light by incandescence, and in the manner of securing perfect contact between the metallic conductors or leading wires and the carbon conductor."

The specification then recites that previously light by incandescence had been obtained from rods of carbon of one to four ohms of resistance, placed in closed vessels, in which the atmospheric air had been replaced by gases that did not combine chemically with the carbon; that the vessels holding the burner had been composed of glass cemented to a metal base; that the connections between the leading wires and the carbon has been obtained by clamping the carbon with the metal; that the leading wires had always been large, so that their resistance should be many times less than the burner; and generally the attempts of previous persons had been to reduce the resistance of a carbon rod. It then points out the disadvantages of such a lamp, stating that it could not be worked in great numbers in multiple arc without the employment of main conductors of enormous dimensions; that, owing to the low resistance the leading wires have to be of large dimensions and good conductors, and a glass globe cannot be kept tight at the place where the wires pass in and are cemented, and consequently the carbon is consumed because there must be almost a perfect vacuum to render it stable, especially when it is small in mass and high in electrical resistance; and that the use of gas in the receiver at the atmospheric pressure serves to destroy the carbon by attrition. The specification then states in substance that the patentee proposes a new departure, and that he has discovered that even a cotton thread properly carbonized and placed in a sealed glass bulb exhausted to one-millionth of an atmosphere offers from 100 to 500 ohms resistance to the passage of the current, and that it is absolutely stable at very high temperature; that, if the thread be coiled as a spiral and carbonized, or if any fibrous vegetable substance which will leave a carbon residue after heating in a closed chamber be so coiled, as much as 2,000 ohms resistance may be obtained without presenting a radiating surface greater than three-sixteenths of an inch; that, if such fibrous material be rubbed with a plastic composed of lamp-black and tar, its resistance may be made high or low, according to the amount of lamp-black placed upon it; that carbon filaments may be made by a combination of tar and lamp-black, the latter being previously ignited in a closed crucible for several hours, and afterwards moistened and kneaded until it assumes the consistency of thick putty; that small pieces of this material may be rolled out in the form of wire as small as seven one-thousandths of an inch in diameter and over a foot in length, and the same may be coated with a non-conducting, non-carbonizing substance, and wound on a bobbin, or as a spiral, and the tar carbonized in a closed chamber by subjecting it to high heat, the spiral, aftur carbonization, retaining its form; that he has carbonized and used cotton and linen thread, wood splints, papers, coiled in various ways, also lamp-black, plumbago, and carbon in various forms, mixed with tar, and kneaded so that the same may be rolled out into wires of various lengths and diameters; that each wire should be uniform in size throughout; that all these forms are fragile, and cannot be clamped to the leading wires with sufficient force to insure good contact and prevent heating; that, if platinum wires are used, and the plastic lamp-black and tar material be moulded around it in the act of carbonization, there is an intimate union by combination and by pressure between the carbon and platinum, and nearly perfect contact is obtained without the necessity of clamps; that the burner and the leading wires should be connected to the carbon ready to be placed in the vacuum bulb, and, when fibrous material is used, the plastic lamp-black and tar should be used to secure it to the platina before carbonizing. The specification proceeds as follows:

"By using the carbon wire of such high resistance I am enabled to use fine platinum wires for leading wires, as they will have a small resistance, compared to the burner, and hence will not heat and crack the sealed vacuum bulb. Platina can only be used, as its expansion is nearly the same as that of glass."

"By using a considerable length of carbon wire and coiling it, the exterior, which is only a small portion of its entire surface, will form the principal radiating surface; hence I am able to raise the specific heat of the whole of the carbon, and thus prevent the rapid reception and disappearance of the light, which on a plain wire is prejudicial, as it shows the least unsteadiness of the current by the flickering of the light, but, if the current is steady, the defect does not show."

The specification then gives directions for carbonizing the carbon thread in a manner to prevent its distortion, for blowing a glass bulb over it after it is formed, for exhausting the glass bulb, and for hermetically sealing the bulb when a high vacuum has been reached.

The claims are as follows:

"(1) An electric lamp for giving light by incandescence, consisting of a filament of carbon of high resistance, made as described, and secured to metallic wires, as set forth. (2) The combination of carbon filaments with a receiver made entirely of glass, and conductors passing through the glass, and from which receiver the air is exhausted, for the purposes set forth. (3) A carbon filament or strip coiled and connected to electric conductors, so that only a portion of the surface of such carbon conductors shall be exposed for radiating light, as set forth. (4) The method herein described of securing the platina contact wires to the carbon filament, and carbonizing of the whole in a closed chamber, substantially as set forth."

The specification is addressed to those who were skilled in the art to which it relates; who appreciated the advantages of arranging incandescent lamps in a system of multiple arc, and of providing the lamp with a burner of high resistance and small radiating surface; who knew how high resistance, both specific and total, is imparted to a conductor; who knew that the rods, pencils, or other forms of carbon burners previously used, had not been designed to embody the principle of high resistance; who knew how desirable it was to maintain the burner in a perfect vacuum, or in gases that would exclude the oxygen; who knew what had been attempted and had proved impracticable in that behalf; who knew that such materials as are mentioned in the specification (even the tar-putty compound seems to have been used in Gauduin's process) would compose a carbon of high resistance when subjected to a proper process of carbonization; and who knew how to practice proper processes for the carbonization of such materials. Read by those having this knowledge, the radically new discovery disclosed by the specification is that a carbon filament as attenuated before carbonization as a linen or cotton thread, or a wire seven one-thousandths of an inch in diameter, and still more attenuated after carbonization, can be made, which will have extremely high resistance, and be absolutely stable when maintained in a practically perfect vacuum. It informs them of everything necessary to utilize this discovery and incorporate it into a practical lamp. It describes, with the assistance of the recital in the second claim, as the vacuum in which the burner is to be maintained, a bulb made wholly of glass, exhausted of air, sealed at all points by the fusion of the glass, and in which platinum leading wires are sealed by the fusion of the glass. It describes the materials of which the burner is to be made, and instructs them that the materials are to be shaped into their ultimate form before carbonization. It describes the use of platinum for the leading wires, and a method of securing the leading wires and filaments, intended to dispense with clamping, which consists in moulding tar putty about the joints, and carbonizing the whole in a closed chamber. Besides stating that the resistance of the burner will be greatly increased and the radiating surface still be kept within moderate limits by coiling it in the form of a spiral, the specification states that, by increasing the length of the filament coiled, the exterior only will be the principal radiating surface, and greater steadiness of illumination will be promoted.

The first claim must be read with several limitations. The filament is to be made of carbon of high resistance; that is, as the experts agree, of high specific resistance. The filament is to be made as described; that is, the materials are to be of some of the kinds described, and are to be shaped in filamentary form and then carbonized. The filament is to be secured to metallic wires according to the method of the patent, because the claim implies the elements of a globe and metallic conductor arranged in circuit with the burner; otherwise the combination would not be operative, and it would have been needless to specify the securing of the metallic wires to the filament unless it was intended to import into the claim the specific method of doing so emphasized in the specification. The defendant does not infringe this claim, if for no other reason, because the leading wires in its lamps are not secured to the filament according to the method of the patent; that is, by cement carbonized *in situ*, but by clamps such as the specification condemns.

The second claim is broad enough in its phraseology to secure the real invention described in the specification, and can be read consistently with its language, so as to import into it every essential limitation. It was a remarkable discovery that an attenuated thread of carbon would possess all the long-sought qualities of a practical burner when maintained in a perfect vacuum. The extreme fragility of such a structure was calculated to discourage experimentation with it, and it does not detract in the least from the originality of the conception that previous patents had suggested, that thin plates, or pencils, or small bridges could be used. The futility of hoping to maintain a burner in vacuo with any permanency had discouraged prior inventors, and Mr. Edison is entitled to the credit of obviating the mechanical difficulties which disheartened them; but what he did in this respect was a matter of only secondary merit, and was no longer new in the art, because he had already disclosed it in his French and English patents. What he actually accomplished was to unite the characteristics of high resistance, small radiating surface, and durability in a carbon conductor by making it in a form of extreme tenuity, out of any such materials as are mentioned in the specification, carbonizing it, and arranging it as he had previously arranged his platinum burner in an exhausted bulb made wholly of glass, and sealed at all points, including those where the leading wires entered, by the fusion of the glass. He was the first to make a carbon of materials and by a process which was especially designed to impart high specific resistance to it; the first to make a carbon in the special form for the special purpose of imparting to it high total resistance; and the first to combine such a burner with the necessary adjuncts of lamp construction to prevent its disintegration and give it sufficiently long life. By doing these things he made a lamp which was practically operative and successful, the embryo of the best lamps now in commercial use, and but for which the subdivision of the electric light by incandescence would still be nothing but the *ignis fatuus*, which it was proclaimed to be in 1879 by some of the learned experts who are now witnesses to belittle his achievement and show that it did not rise to the dignity of an invention.

The coiled form of the burner is only an alternative feature, and is not a constituent of the second claim. It is the subject of the third claim. Nor is the bent form or any form other than the filamentary. It may be that in the haste which has always seemed to characterize Mr. Edison's efforts to patent every improvement, real or imaginary, which he has made or hoped to make, he had not stopped to reflect when he framed his application for the patent that the filamentary burner would do its work just as well uncoiled as coiled, provided the same length and cross-section were used. It is true that it is said in the general statement of the nature of the invention that the burner is so "coiled or arranged" as to offer high resistance and present a small radiating surface; but this description is satisfied by any arrangement, whether by coiling a considerable length in a small globe, or using the same length uncoiled in a larger globe, by which sufficient total resistance is obtained from a filament of small diameter. It certainly would not involve invention to omit the coiling and elongate the globe; hence, it is manifest that the invention described is the same thing essentially whether the coiled form is used or not. The language is satisfied if the burner is filamentary and so arranged as to offer great resistance and slight radiation, without importing into it anything which is not of the essence of the invention. No precise limitation upon the maximum diameter of the filament can be defined from the specification or is required as an element of the claim. The specification mentions by way of illustration the threads of linen or cotton which become more attenuated after carbonization, and the carbon wire which after carbonization would be from four to five one-thousandths of an inch in diameter; while the smallest rods of carbon previously known were about a millimeter in diameter, thus having a cross-section fifty times as great as the carbon wire. It is to be implied from the suggestions in the specification that it is to have sufficiently high total resistance for efficient use when the lamps are arranged in multiple arc, and to be used with leading wires of fine platinum. The claim is not limited to a carbon filament made of non-fibrous material. The conductors of the claim are the platinum wires mentioned in the specification. The receiver is the vacuum described in the specification. The peculiar method of securing the conductors to the filament, made a constituent of the first claim, is not imported into the second claim. A more exact interpretation of the meaning of the claim than has thus been indicated is not necessary in the present case, because each of the three lamps representing the kinds used by the defendant embodies the invention of the claim as thus interpreted.

It is of little import what Mr. Edison, or his patent solicitor, may have thought about the meaning of the claim during the pendency of the application for a subsequent patent, or that Mr. Edison may have supposed a resistance as high as 100 ohms in the burner would be required for use with the means of distribution which he expected to employ with his system of lighting. There are many adjudicated cases in which it appears that the inventor builded better than he knew; where a patent has been sustained for an invention the full significance of which was not appreciated by the inventor when it was made. In the case of the Bell telephone patent there was great room for doubt whether the speaking telephone had been thought of by Mr. Bell when he filed his application for a patent, but the court said: "It describes apparatus which was an articulating telephone, whether Bell knew it or not." *American Bell Tel. Co.* v. *People's Tel. Co.*, 22 Blatchf. 532, 22 Fed. Rep. 309. The nearest approach in the prior art to the invention of the second claim is undoubtedly the lamp of Edison's French and English patents with a platinum burner. It seems almost preposterous to argue that the substitution of the carbon filament for the platinum burner of that lamp was an obvious thing to electricians. It would have been, probably, if there had been such a thing as a filamentary carbon in the prior art. But the nearest approximations to it were the ribbon-shaped carbon burner of low resistance of Mr. Adams, (which was not a part of the prior art, but an isolated example, known only to a select few,) and the low resistance carbon rod burners of the patent of Sawyer & Man. Undoubtedly the improvements that have been made in the art—such, for instance, as the method of electrical carbonization of the filament—since Mr. Edison's inventions have been of great value, and the perfected commercial lamp of to-day is far superior to the one which could be made by applying to the description of the patent all the the knowledge and skill then possessed by those to whom it was more particularly addressed; but as was said by BOWEN, L. J., in the court of appeal in England: "The evidence shows that lamps made solely on the patent will and do succeed, although subsequent improvements have been ingrafted on the original design." It is impossible to resist the conclusion that the invention of the slender thread of carbon as a substitute for the burners previously employed opened the path to the practical subdivision of the electric light.

The questions which have seemed the most meritorious of those argued at the bar have now been considered. Others, to which no reference has been made, have not been overlooked, and may be dismissed without discussion, and with the single remark that nothing which has been presented by the voluminous proofs and the exceedingly able and elaborate arguments of counsel seems to supply any valid reason for refusing to decree for the plaintiff. The usual decree for an injunction and accounting is accordingly ordered.

JUDSON MANUF'G CO. *v.* BURGE-DONAHOO CO.

(*Circuit Court, N. D. California.* July 27, 1891.)

PATENTS FOR INVENTIONS—EVIDENCE OF INFRINGEMENT.

In an action by an assignee of a patent for its infringement, it appeared that ten machines alleged to be infringements had been manufactured by a third person, and consigned to defendant prior to the assignment. Of these, eight were in defendant's shop unsold, and two, which had been sent out on trial, were condemned and returned; but it did not affirmatively appear when they were sent out or tried. In settlement with the manufacturer, these two had been billed back and held subject to its order. *Held*, that the evidence failed to show any infringement, sale, or use of the machines prior to the filing of the bill.

In Equity. Bill by Judson Manufacturing Company against the Burge-Donahoo Company for infringement of a patent.

John L. Boone, for complainant.

Wm. Hoff Cook, for respondent.

HAWLEY, J. This is a suit in equity for the infringement of letters patent No. 327,683, granted October 6, 1885, to L. B. Hogue, for "combined cultivator and weed-cutter." Hogue assigned the patent to Mi-