

BRUSH ELECTRIC Co. *et al.* v. ELECTRIC IMP. Co.

(Circuit Court, N. D. California. October 3, 1892.)

No. 10,764.

1. PATENTS FOR INVENTIONS—PIONEER INVENTOR—ELECTRIC LAMPS.

Letters patent No. 219,208, issued September 2, 1879, to Charles F. Brush, for an electric lamp having two or more pairs of carbons, in combination with mechanism constructed to separate the pairs dissimultaneously or successively, thus producing a steady light for a long period of time, cover a pioneer invention, and are entitled to a liberal construction.

2. SAME—LIMITATION OF CLAIMS—PRIOR ART.

The invention was not a mere improvement or modification of the single-carbon lamp previously invented by Brush, nor was there anything to limit the scope thereof in the prior state of the art, either generally or as shown in the patent to M. Day, Jr., the French patent to Denayrouse, or the patented Jablochhoff candle. *Brush Electric Co. v. Ft. Wayne Electric Light Co.*, 40 Fed. Rep. 833, and *Brush Electric Co. v. Western Electric Light & Power Co.*, 48 Fed. Rep. 536, followed.

3. SAME—FUNCTIONAL CLAIMS.

The fact that the claims purport to cover broadly all forms of mechanism constructed to separate the two or more sets of carbons dissimultaneously or successively does not render the patent void as being for a function or result, since particular means are described in the specifications and referred to in the claims; and the patent covers such means or their substantial equivalents. *Brush Electric Co. v. Ft. Wayne Electric Light Co.*, 40 Fed. Rep. 833, and *Brush Electric Co. v. Western Electric Light & Power Co.*, 48 Fed. Rep. 536, followed. *O'Reilly v. Morse*, 15 How. 62, distinguished.

4. SAME—ABANDONMENT.

No limitation was placed upon the Brush patent by the fact that his claims, as first presented, were rejected as functional, and that the language was twice slightly changed, for the file wrapper shows that there was no change in the essential features of the claims, and that the patent office, after a contest, finally yielded to the patentee's views.

5. SAME—INFRINGEMENT.

The Brush patent is infringed by the lamp made under letters patent No. 480,722, issued June 24, 1890, to James J. Wood, in which the pairs of carbons are separated dissimultaneously or successively, notwithstanding the fact that this result is accomplished in the Brush lamp by a clutching device, operated directly by the electrical current, while in the Wood lamp it is produced by the interposition of clock mechanism, which is brought into action and controlled by the current.

In Equity. Suit by the California Electric Company (licensee of the Brush Electric Company) and others against the Electric Improvement Company, the Brush Electric Company being joined as a plaintiff. A preliminary injunction was granted. 45 Fed. Rep. 241. Decree for complainants.

M. M. Estee, J. H. Miller, and L. L. Leggett, for complainants.

W. F. Herrin and R. S. Taylor, for respondent.

HAWLEY, District Judge. This is a suit in equity for the infringement of letters patent No. 219,208, granted to Charles F. Brush, September 2, 1879, for an improvement in electric arc lamps. The Brush Electric Company is the owner of the legal title of said patent, and the

California Electric Light Company has an equitable title as the exclusive licensee for the states of California, Nevada, Oregon, and Washington. The defendant is charged with infringing this patent by the use of the Wood lamp under letters patent No. 430,722, granted to James J. Wood, June 24, 1890, for new and useful improvements in electric arc lamps. A preliminary injunction was ordered by Judge SAWYER, upon the authority of *Brush Electric Co. v. Western Electric Light & Power Co.*, 43 Fed. Rep. 533, and *Brush Electric Co. v. Ft. Wayne Electric Co.*, 44 Fed. Rep. 284. While declining to discuss the questions involved in this case, the learned judge expressly indorsed the views announced in the cases referred to, and stated that, in his judgment, "the Brush patent is valid, and the first six claims are infringed by the Wood lamp." 45 Fed. Rep. 242. The case is now presented upon the final hearing upon the testimony taken before the examiner.

The validity of the Brush patent has, in addition to the cases referred to, been sustained in *Brush Electric Co. v. Ft. Wayne Electric Light Co.*, 40 Fed. Rep. 826, and *Brush Electric Co. v. New American Electrical Arc Light Co.*, 46 Fed. Rep. 79. The learned counsel who argued this case for the defendant insists "that, notwithstanding all the suits that have been brought, and all the actions that have been taken, the questions arising in this case have not been settled or adequately presented or considered," and he therefore respectfully asks that all the points involved should be again independently considered and decided. Complainants claim that the principles announced and conclusions reached in the prior decisions are correct, and should be followed.

Mr. Brush's invention, as stated in his specifications—

"Relates to electric lamps or light regulators; and it consists—*First*, in a lamp, having two or more sets of carbons, adapted by any suitable means to burn successively,—that is, one set after another; *second*, in a lamp having two or more sets of carbons, each set adapted to move independently in burning and feeding; *third*, in a lamp having two or more sets of carbons, adapted each to have independent movements, and each operated and influenced by the same electric current; *fourth*, in a lamp having two or more sets of carbons, said carbons, by any suitable means, being adapted to be separated dissimultaneously, whereby the voltaic arc between but a single set of carbons is produced; *fifth*, in the combination with one of the carbons or carbon holders of a lamp employing two or more sets of carbons, as above mentioned, of a suitable collar, tube, or extended support, within or upon which the carbon or carbon holder to which it is applied shall rest and be supported."

He states at the outstart that his—

"Invention is not limited in its application to any specific form of lamp. It may be used in any form of voltaic arc light regulator, and would need but a mere modification in mechanical form to be adaptable to an indefinite variety of the present known forms of electric lamps. My invention comprehends, broadly, any lamp or light regulator where more than one set of carbons are employed, wherein—say in a lamp having two sets of carbons—one set of carbons will separate before the other. For the purpose merely of showing and explaining the principles of operation and use of my invention, I shall describe it in the form

shown in the drawings, as applied to an electric lamp of the general type shown in United States letters patent No. 208,411, granted to me May 7, 1878, reissued May 20, 1879, and numbered 8,718. The leading feature of this type of regulator is that the carbon holder has a rod or tube which slides through or past a friction clutch, which clutch is operated upon to grasp and move said carbon rod or holder, and thus to separate the carbons, and produce the voltaic arc light."

Before quoting further from the specifications, a brief reference to the prior state of the art will be made, in order that the true character and extent of this invention may be better understood. In 1810, Sir Humphrey Davy, with the aid of a galvanic battery of 2,000 cells, produced a light between two pencils of charcoal. This seems to have been the first dawn of a discovery which gave to the scientists of the world the thought of electric lighting. Unfortunately for Davy, he had no mechanism to adjust his electrodes, and, owing to the great cost of his battery, and the rapid combustion of the charcoal points,—lasting only a few minutes,—his invention was of no commercial value for practical use. In 1836 the more powerful battery of Daniell was tried. In 1839 the nitric acid battery of Grove was invented. In 1842 the Bunsen battery was produced. No practical result, however, in the way of advancement was attained until 1844, when Foucault substituted pencils made of hard gas carbon for the charcoal pencils of Davy, and thereby extended the duration of the light to some extent. But the expense was still too great to justify any general use of the light, and it was confined principally to laboratories, and for the experimental uses of scientists. In 1848, Archeran devised an imperfect regulating device, by means of which two vertical carbon electrodes were maintained in the same relative position. In 1857 the Holmes & Nollett machines were employed in producing the arc electric light in some of the lighthouses of France and England by the use of the Serrin lamp, which was a clockworking lamp, burning one pair of carbons, with a very expensive apparatus. It was not until 1870 that a current of sufficient strength to render electric lighting commercially practical by being generated at a small expense was attained. This was brought about by the invention of the dynamo electric machine of Gramme. None of the arc lamps invented up to this time were suitable for the purpose of general illumination. The defendant has set up, for the purpose of showing the prior state of the art, the following lamps and patents: The Archeran lamp, produced in 1848; the English patent for the Staites lamp in 1853; the Hart lamp, introduced in 1858; the Browning, Foucault, and Serrin lamps, in use prior to 1860; the patent issued in England to Louis Denayrouse, August 21, 1877; the United States patent to M. Day, Jr., February 24, 1874. The French patent granted to Khotinzky, March 19, 1875; the Rapiéff lamp, described in the Telegraphic Journal and Electrical Review of London, August 15, 1878; and the French patent for the Mersaune & Bertins lamp.

The patent of M. Day, Jr., is pleaded as an anticipation of the Brush patent; but in the argument defendant admitted that it was not an anticipation in a technical sense, and was only relied upon as showing the state of the art. The Day patent was held not to be an anticipation of

any of the claims of the Brush patent in *Brush Electric Co. v. Ft. Wayne Electric Light Co.*, 40 Fed. Rep. 833. Judge GRESHAM correctly said "it was unlike the Brush lamp, both in construction and mode of operation," and the same view is expressed by BROWN, J., in *Brush Electric Co. v. Western Electric Light & Power Co.*, 43 Fed. Rep. 536, to which reference is here made for a description of the Day patent, the French patent of Denayrouse, and the Jablochhoff candle in the patent of Jablochhoff, as the views therein expressed sufficiently, and, in my judgment, correctly, answer the argument of defendant's counsel in relation thereto. None of the devices set up by defendant contain the principle of the Brush patent. All of them were presented by the defendant in the several prior suits instituted by the Brush Electric Company, except the French patent for the Mersanne & Bertins lamp, which does not introduce any new principle tending to limit the field of invention that was open to Brush. BROWN, J., in referring to the inventions prior to those of Mr. Brush, very properly said:

"Most of them, however, were directed to improvements in the material of which the carbons were made, in the brilliancy and steadiness of the light itself, to improvements upon the dynamos, and in the mechanism by which the carbons were held in the same relative position during the process of combustion. One difficulty, however, remained to be overcome. The electrical resistance of the carbons was such as to preclude the employment of very long rods, and their consumption by burning away was hastened by their adjacent ends becoming highly heated to a considerable distance from the arc. This difficulty was partially remedied by covering the carbon pencils with a thin film of copper, electrically deposited thereon, by which the electrical resistance of the carbons was materially decreased, much longer rods were possible, and the light maintained continuously for from 6 to 10 hours. This was insufficient, however, for all-night lighting, and necessitated the extinguishment of the lamp, and a renewal of the carbons at some time during the night, in order to keep up a continuous light."

In tracing the history of the prior state of the art from 1810, it will be observed that scientific men were continually at work trying to invent some kind of a lamp that would automatically give such a light as would be suitable for general use, and also to discover, if possible, some means whereby the burning of the light could be further prolonged. Early in 1878, Mr. Brush invented a lamp which gave a steady light, and was suitable for general use; but only one could be burned on a single circuit. Shortly afterwards he invented the series lamp, whereby two or more lamps could be operated at one and the same time upon the same circuit. There still remained another and more important discovery to be made, which, as before stated, had engaged the attention of the brightest inventive minds for many years, without any successful results, viz., how to produce a long-continued light automatically without renewing the carbons. This discovery in the open field of invention was made by Mr. Brush in 1879, and for which he secured the patent in controversy, and gave to the world the most practical and useful lamp known to electrical science, and which has proven to be of great value and benefit to the public. In the specifications he said, among other things:

"I do not in any degree limit myself to any specific matter or mechanism for lifting, moving, or separating the carbon points or their holders, so long as the peculiar functions and results hereinafter to be specified shall be accomplished. The lifter, D, in the present instance, is so formed that when it is raised it shall not operate upon the clamps, C, C', simultaneously, but shall lift first one and then the other, (preferably the clamp, C, first, and C' second, for reasons which will hereinafter appear.) This function of dissimultaneous action upon the carbons or their holders, whereby one set of carbons shall be separated in advance of the other, constitutes the principal and most important feature of my present invention. In the lamp shown in the drawings the lifter, D, is actuated and controlled through the agency of magnetic attraction due to the influence of the current operating the lamp, and this is accomplished as follows: One, two, or more spools or hollow helices, E, of insulated wire, are placed in the circuit. Within whose cavities freely move cores, E'. The electric current, passing through the helices, E, operate to strongly draw up within their cavities their respective cores, E', in the same manner as specified in my former patent, above referred to. The cores, E', are rigidly attached to a common bar, E², and the upward and downward movement of this bar, due to the varying attraction of the helices, E, is imparted by a suitable link and lever connection, E³, E⁴, to the lifter, D. By this connection the lifter will have an up and down movement in exact concert with cores, E', and it is apparent that this connection between magnet and lifter may be indefinitely varied without any departure from my invention; and therefore, while preferring for many purposes the construction just specified, I do not propose to limit myself to its use. * * * The operation of my device, as thus far specified, is as follows: When the current is not passing through the lamp, the positive and negative carbons of each set, A, A', are in actual contact. When, now, a current is passed through the lamp, the magnetic attraction of the helices, E, will operate to raise the lifter, D. This lifter, operating upon the clamps, C, and C', tilts them, and causes them to clamp and lift the carbon holders, B, B', and thus separate the carbons, and produce the voltaic arc light; but it will be especially noticed that the lifting and separation of these carbons is not simultaneous. One pair is separated before the other; it matters not how little nor how short a time before. This separation breaks the circuit at that point, and the entire current is now passing through the unseparated pair of carbons, A'; and now, when the lifter, continuing to rise, separates these points, the voltaic arc will be established between them, and the light thus produced. It will be apparent by the foregoing that it is impossible that both pairs of carbons, A, A', should burn at once, for any inequality of weight or balance between them would result in one pair being separated before the other, and the voltaic arc would appear between the last-separated pair. This function, so far as I am aware, has never been accomplished by any previous invention; and by thus being able to burn independently, and one at a time, two or more carbons in a single lamp, it is evident that a light may be constantly maintained for a prolonged period, without replacing the carbons or other manual interference. In the form of lamp shown, I can, with 12-inch carbons, maintain a steady and reliable light, without any manual interference whatever, for a period varying from fourteen to twenty hours."

The claims of the patent are as follows:

"(1) In an electric lamp, two or more pairs or sets of carbons, in combination with mechanism constructed to separate said pairs dissimultaneously or successively, substantially as and for the purpose specified. (2) In an electric lamp, two or more pairs or sets of carbons, in combination with mechanism constructed to separate said pairs dissimultaneously or successively, and establish the electric light between the members of but one pair, (to wit,

the pair last separated,) while the members of the remaining pair or pairs are maintained in a separated relation, substantially as shown. (3) In an electric lamp having more than one pair or set of carbons, the combination, with said carbon sets or pairs, of mechanism constructed to impart to them independent and dissimultaneous separating and feeding movements, whereby the electric light will be established between the members of but one of said pairs or sets at a time, while the members of the remaining pair or pairs are maintained in a separate relation, substantially as shown. (4) In a single electric lamp, two or more pairs or sets of carbons, all placed in circuit, so that when their members are in contact the current may pass freely through all said pairs alike, in combination with mechanism constructed to separate said pairs dissimultaneously or successively, substantially as and for the purpose shown. (5) In an electric lamp, wherein more than one set or pair of carbons are employed, the lifter, D, or its equivalent, moved by any suitable means, and constructed to act upon said carbons or carbon holders dissimultaneously or successively, substantially as and for the purpose shown. (6) In an electric lamp, wherein more than one pair or set of carbons are employed, a clamp, C, or its equivalent, for each said pair or set, said clamps, C, adapted to grasp and move said carbons or carbon holders dissimultaneously or successively, substantially as and for the purpose shown. (7) In an electric lamp, the combination, with a carbon holder and the mechanism moving said carbon holder, of a lifter or support, K, or its equivalent, constructed to operate in compelling the said moving mechanism to sustain the weight of the carbon holder after its carbon is sufficiently consumed or removed, substantially as and for the purpose described."

It is claimed that this invention of Mr. Brush, as covered by his patent, is simply that of an attachment or modification of the single-carbon lamp previously invented by him. This claim cannot be sustained. The Brush double-carbon lamp operates in a materially different way, and produces different results, from any of the prior inventions. The single-carbon lamp invented by Brush had but one solenoid or magnet. His double-carbon lamp has two, so that it controls two pairs of carbons, instead of one. In the single-carbon lamp there is but one clutching and feeding mechanism, and in the double lamp there are two, and these are so combined with the other elements, and arranged in such a manner, that they perform new duties in the double lamp. Each clutch, it is true, lifts its respective carbon, establishes the arc, regulates its light, and controls the feed of the carbons, as was done in the single-carbon lamp; but, in addition to this, they serve to bring the idle pair of carbons into contact, and then separate them, and establish the arc at an exactly premeditated time, immediately after the first pair of carbons have consumed, and at which time the carbons of a single lamp would have to be manually renewed. By this new function of the clutches and the feeding mechanism, a new, distinct, and important result is obtained. The successive burning of the carbons, and a uniform and steady light, is secured throughout the consumption of both pair of carbons, extending from 14 to 20 hours, in such a manner that a steady and reliable light is produced between one pair of carbons until they have been consumed, and an equally good light between the second pair of carbons until they have been consumed. This new, successful, and beneficial result is automatically accomplished by the dissimultaneous or successive arc-forming separation of the two

pair of carbons. Another new function upon the clutching and feeding mechanism is secured by maintaining the carbons of one pair separated during the time that the other pair are consuming, so that the current may be sent through either pair whenever they are called into operation. Another function is imposed upon the duplex clutching and feeding mechanism of the lamp, which is to automatically adjust the two pairs of carbons when the current is first passed through the lamp preparatory to the formation of the arc, so that the arc is formed between only one pair of carbons, while the other pair is separated until required to burn. Still another function is imposed by the maintenance of arcs of equal lengths between the two pairs of carbons, and this is attained by compelling the regulating mechanism to support and carry the two carbon holders at all times during the operation of the lamp. It is evident at a glance that it required more than a mere attachment to his single-carbon lamp to bring into existence the idea of imposing upon the regulating mechanism of a lamp the additional duties, never before imposed, which produces a result never before accomplished.

Counsel for defendant has ably, intelligently, ingeniously, and exhaustively discussed the question as to the construction of this patent from three different standpoints, which are respectively denominated by him (1) "the complainant's construction," (2) the "liberal construction," (3) the "legal construction." His contention is: (1) That under complainants' construction the invention of Mr. Brush did not consist in the mechanism which he described, but the "invention relates to electric lamps or light regulators, and it consists, first, in a lamp, having two or more sets of carbons, adapted by any suitable means to burn successively,—that is, one set after another;" that, taken in this broad unlimited sense, the patent is void. (2) That the liberal construction takes the real invention disclosed in the patent as the true measure of its scope, notwithstanding any language contained in it, which would operate of itself to give the claims either a wider or a narrower application; and that, taking the patent in this sense, the Wood double lamp used and operated by defendant, is not an infringement. (3) That the legal construction applies to the patent the rule that any limitation put upon an application in the patent office by the applicant in order to obtain the patent is binding upon him in favor of the general public, and that, taken in this view, the claims of the patent are not infringed by the Wood double lamp. The proper construction to be given to the patent must be determined by the court, with due regard to the various provisions of the patent law, the principles thereof as interpreted by the courts, and by ascertaining the true meaning of the language used in the specifications and claims of the patent.

TANEY, C. J., in *O'Reilly v. Morse*, 15 How. 62, in summing up the provisions of the act of congress, said:

"Whoever discovers that a certain result will be produced in any art, machine, manufacture, or composition of matter by the use of certain means, is entitled to a patent for it, provided he specifies the means he uses in a manner so full and exact that any one skilled in the science to which it appertains

can, by using the means he specifies, without any addition to or subtraction from them, produce precisely the result he describes; and if this cannot be done by the means he describes, the patent is void; and if it can be done, then the patent confers on him the exclusive right to use the means he specifies to produce the result or effect he describes, and nothing more. And it makes no difference, in this respect, whether the effect is produced by chemical agency or combination, or by the application of discoveries or principles in natural philosophy known or unknown before his invention, or by machinery acting altogether upon mechanical principles. In either case, he must describe the manner and process as above mentioned, and the end it accomplishes. And any one may lawfully accomplish the same end without infringing the patent if he uses means substantially different from those described."

Brush conceived a new idea, and stated it in his specifications in such a plain way that it could be readily adopted and employed by any one "skilled in the science to which it appertains," so as to lead to a practical and useful result. He clearly described his machine,—a lamp,—and the principles thereof by which it could be distinguished from all other inventions, and stated in concise language what he considered to be the best modes to apply these principles, and in the claims pointed out the parts and improvements which he claimed as his invention and discovery, and thus brought himself within the essential requirements of the patent law. Section 4888, Rev. St. U. S. In his specifications he described but two modes—but declared that there were other methods—that could be used that would accomplish the same result. His invention not only embraced the lamp, and modes of construction and operation, which he described in his patent, but included all lamps which might be so constructed as to operate in substantially the same way, by any equivalent means, to accomplish the same results. By the express terms of the act of congress, the description of his lamp in his specifications, and the language of his claims, he was entitled to a patent for his "invention or discovery," and his patent should be so construed as to give him all that he invented, discovered, and claimed; nothing more, and certainly nothing less.

In determining the construction that ought to be given to the patent in controversy, it is the duty of the court to ascertain whether Brush was a pioneer or a mere improver in the field of electrical inventions, and constantly to bear in mind that his lamp has met the public want, and has long been in general and successful use.

COXE, J., in sustaining the patent of Swan for a perforated plate for secondary batteries, said:

"In approaching this subject it is well to remember, as the court has frequently had occasion to remark before, that we are dealing with a comparatively new and abstruse art, where the most important results are said to follow from changes apparently of the most unimportant character. Complete success has not been attained, but, if we may credit the statements of those who are entitled to speak *ex cathedra* on the subject, the rapid strides in that direction during the last decade are due to changes of form and material, which, in many other arts, would be insufficient to support invention. The substitution of one material for another in a doorknob is the work of the mechanic; the substitution of one material for another in secondary battery electrodes may solve a problem which will revolutionize the motive power of the world."

This principle is directly applicable to this case:

"Before Brush entered the field, electric lamps had been contrived which burned two sets of carbons alternately, shifting the arc from one pair to the other at short intervals, making a flashing, unsteady, and unsatisfactory light. The problem which Brush set himself to solve was to secure the complete combustion of one pair of carbons before the arc was transferred to the other pair, and the transfer of the arc to the other pair by the automatic action of the electric current, so that no attendant was needed to light the second pair after the first pair was consumed; thus securing a lamp which would give a steady arc light of from 16 to 20 hours' duration. This he accomplished by his mechanism, which caused the dissimultaneous separation of the two pairs of carbons by the automatic action of the electric current actuating his separating devices, and a feeding device for bringing the carbons together as fast as they were consumed. This long step forward in the art was taken by Brush, and at the present stage of the art it seems that the inexorable law of the electric current requires that, when two or more pairs of carbons are to be burned successively, the carbons of each pair must be dissimultaneously separated, and the arc produced between the pair last separated. Having done this for the art, Brush is entitled to cover all means equivalent to his own for obtaining the same result, one of which is a clock-work feeding device." 44 Fed. Rep. 285.

When the discovery was made and explained to the public, it could readily be seen by other inventive and mechanical minds that the means whereby the result was produced were very simple and plain, and that they could be accomplished by slight changes in the construction of the lamp. As was said by BROWN, J.:

"One of the experimenters succeeds, while all the rest fail. After the one has succeeded, it is easy to go back into the limbo of these old failures, and, in the light of the successful machine, by perhaps slight changes, make these old abortive attempts do the work of the successful inventor. But it is the successful experimenter who has shown them the way, and he, and he alone, who is entitled to be called the inventor, and be protected by a patent."

Brush should not be limited, restricted, confined, or narrowed down to the rights of a mere improver of an old machine. His invention was not, as defendant's counsel claims, "a pretty duplication of parts in an existing apparatus, another barrel on an old gun, a reversible point on an old plow, a supplemental weight in an old clock, an extra reservoir from an old lamp." He was not a mere adapter. He solved the problem in electrical science that had never before been answered by controlling a force of nature in such a manner as to produce a continuous light without the aid of manual assistance, and he discovered and devised the means whereby these results could be successfully accomplished. When this problem was solved, it became apparent to him—as it now is to others—that the same results could be brought about by various changes that might be made in the construction of the lamp. Hence he said:

"I do not in any degree limit myself to any specific method or mechanism for lifting, moving, or separating the carbon points, or their holders, so long as the peculiar functions and results hereinafter to be specified shall be accomplished."

After minutely describing the construction and operation of his lamp, he "mentioned but two ways of imparting dissimultaneous motion to the carbons of an electric lamp, viz., through magnetic attraction and through the expensive attraction of heat;" but added that this function of his device might "be accomplished by clockwork or equivalent mechanical contrivance; and in this respect, as before stated, I do not limit my invention." The fact is, as shown by the prior state of the art, and by the testimony taken in this case, that Brush was a pioneer in this branch of electrical construction. Being a pioneer inventor, he is entitled to a broad and liberal interpretation of his patent. *McCormick v. Talcott*, 20 How. 402; *Hammerschlag v. Scamoni*, 7 Fed. Rep. 593; *Telephone Co. v. Spencer*, 8 Fed. Rep. 511; *Machine Co. v. Teague*, 15 Fed. Rep. 390; *Manufacturing Co. v. City of Buffalo*, 20 Fed. Rep. 127; *Manufacturing Co. v. Bancroft*, 32 Fed. Rep. 587; *Machine Co. v. Lancaster*, 129 U. S. 273, 9 Sup. Ct. Rep. 299; *Norton v. Jensen*, (9th Circuit,) 7 U. S. App. 103, 1 C. C. A. 452, 49 Fed. Rep. 859.

The rule is unquestioned that courts have no right to enlarge a patent beyond the scope of its claims as allowed by the patent office, and, when the terms of the claims in the patent are clear and distinct, the patentee is, of course, bound by them. But patents should be "construed liberally, in accordance with the design of the constitution and the patent laws of the United States, to promote the progress of the useful arts, and allow inventors to retain for their own use, not anything which is matter of common right, but what they themselves have created." *Winans v. Denmead*, 15 How. 341, and authorities there cited. "Mere rigid technicalities are to be set aside, unless there is a clear, legal necessity for sustaining them." (*Hamilton v. Ives*, 6 Fish. Pat. Cas. 253, and authorities there cited;) and "courts should not be astute to avoid inventions;" (*Davoll v. Brown*, 1 Woodb. & M. 53.)

The contention so earnestly pressed by defendant's counsel, that the first four claims of the patent are void, because they are for functions and results, and not for any specific mechanism, is directly, clearly, and in my opinion, correctly, answered in the previous decisions sustaining this patent. GRESHAM, J., in *Brush Electric Co. v. Ft. Wayne Electric Light Co.*, 40 Fed. Rep. 833, said:

"The specification describes mechanism whereby a result may be accomplished, and the claims are not for mere functions; nor, fairly construed, can it be said that they cover other than equivalent means employed to perform the same functions. The first claim construed in connection with the means described in the specification is for an electric arc lamp in which two or more pairs of carbons are used; the adjustable carbons of each pair being independently regulated by one and the same mechanism, and in which there is a dissimultaneous or successive separation of the pairs, so effected as to secure to the continuous burning of one pair prior to the establishment of the arc between the other pair. Thus construed, the invention claimed is limited to the particular means described in the specification, and their substantial equivalents. The second, third, and fourth claims also refer to the particular mechanism described in the specification for the accomplishment of results covered by those claims. They are for combinations of specific mechanisms, and their substantial equivalents, and not for results, irrespective of means for their accomplishment."

BROWN, J., in *Brush Electric Co. v. Western Electric Light & Power Co.*, 43 Fed. Rep. 537, said:

"While the claims are undoubtedly broad, they ought not to be interpreted as for a function or result, since there is nothing novel in substituting one pair of carbons for another, and thus securing a successive combustion of two or more pairs. It was done long before the Brush patent, and may still be done by manual interference by replacing one set of carbons with another, or by any mechanism which does not involve the dissimultaneous and dissimultaneously separating and feeding movement. What the claims purport to cover are, briefly, all forms of mechanism constructed to separate the two or more pairs or sets of carbons 'dissimultaneously' (a word coined for the occasion, but readily understood) or successively, in order that the light may be established between the members of but one pair or set at a time, while members of the remaining pair are maintained in a separate relation. It is claimed by the defendant, however, that the words 'dissimultaneously or successively,' contained in the first six claims of the patent, refer only to the exact instant—the very *punctum temporis*—of the separation of the carbons; and that, as the Scribner patent, under which the defendants are operating, provides for the initial simultaneous separation of the carbons, there is no infringement, though the light is formed between but one pair, the other being held in reserve to await their consumption. If this contention be correct, then it necessarily follows that Brush, who is acknowledged to be the actual inventor of the double carbon, and whom defendant's expert, Mr. Lockwood, frankly admits (page 243) to be justly regarded as having done more than any one else to make electric arc lighting on a large scale a practical success, secured by his patent the mere shade of an idea,—a wholly immaterial and useless feature,—abandoning to the world all that was really valuable in his invention."

It is true that neither of the judges reviewed the case of *O'Reilly v. Morse*, 15 How. 62, which defendant claims is a "sort of Paradise Lost among cases, * * * universally respected but rarely read;" but it is fair to assume, in justice to the learned counsel who argued the case for the defendants before Judges GRESHAM and BLODGETT, that he did not fail to urge the authority of that case against the validity of the claims of this patent with the same force and ability that characterized his argument in this case. I have carefully read the exhaustive and clear opinion of TANEY, C. J., in *O'Reilly v. Morse*, and the opinions of the supreme court in the *Telephone Cases*, 126 U. S. 1, 8 Sup. Ct. Rep. 778, and *Tilghman v. Proctor*, 102 U. S. 707, and also the pioneer case of *Neilson v. Harford*, 8 Mees. & W. 806, decided in 1841, and the other cases cited and relied upon by defendants. In the *Bell Telephone Cases* the case of *O'Reilly v. Morse* was relied upon to defeat the Bell patent. The fifth claim, which was there the subject of a fierce contest, reads as follows:

"The method of, and apparatus for, transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations, similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth."

WAITE, C. J., in delivering the opinion of the court, said:

"In *O'Reilly v. Morse*, 15 How. 62, it was decided that a claim in broad terms (page 86) for the use of the motive power of the electric or galvanic current called 'electro-magnetism,' however developed, for making or print-

ing intelligible characters, letters, or signs at any distances, although 'a new application of that power,' first made by Morse, was void, because (page 120) it was a claim 'for a patent for an effect produced by the use of electro-magnetism, distinct from the process or machinery necessary to produce it;' but a claim (page 85) for 'making use of the motive power of magnetism, when developed by the action of such current or currents, substantially as set forth in the foregoing description, * * * as means of operating or giving motion to machinery, which may be used to imprint signals upon paper or other suitable material, or to produce sounds in any desired manner, for the purpose of telegraphic communication at any distances,' was sustained. The effect of that decision was, therefore, that the use of magnetism as a motive power, without regard to the particular process with which it was connected in the patent, could not be claimed, but that its use in that connection could. In the present case the claim is not for the use of a current of electricity in its natural state as it comes from the battery, but for putting a continuous current, in a closed circuit, into a certain specified condition suited to the transmission of vocal and other sounds, and using it in that condition for that purpose. So far as at present known, without this peculiar change in its condition, it will not serve as a medium for the transmission of speech, but with the change it will. Bell was the first to discover this fact, and how to put such a current in such a condition, and what he claims is its use in that condition for that purpose, just as Morse claimed his current in his condition for his purpose. We see nothing in *Morse's Case* to defeat Bell's claim; on the contrary, it is in all respects sustained by that authority. It may be that electricity cannot be used at all for the transmission of speech, except in the way Bell has discovered, and that, therefore, practically, his patent gives him its exclusive use for that purpose; but that does not make his claim one for the use of electricity, distinct from the particular process with which it is connected in his patent. It will, if true, show more clearly the great importance of his discovery, but it will not invalidate his patent."

There is no principle announced in this or the other cases that can fairly be said, in the light of all the facts in this case, to be in opposition to the views I have expressed. In all that has been said the fact has not been overlooked that Brush did not receive his patent without a contest in the patent office. The file wrapper shows that the claims we have been discussing, as at first presented, were rejected as functional, and that the language of the claims was twice slightly changed. But an examination of the claims as first presented and as finally allowed clearly shows that no substantial change was made in any essential feature of either of said claims. The record shows that the examiner in the patent office finally yielded to the views expressed by the patentee, and allowed the claims in such language as to express the theory contended for by Mr. Brush. The truth is that Brush never consented to any limitation of his claims, and no limitation was, in fact, made, although the phraseology was, as before stated, slightly changed. During the contest in the patent office he took occasion, in person and by counsel, to explain at great length and with remarkable clearness the method of movement to which he for the first time subjected the electrodes of a lamp, and showed how the two pairs of carbons are burned; that only one set of carbons could be burned at a time, and that one set was always bound to burn; and particularly described the special functions effected by the independently acting mechanism when the lamp

is first put into operation, viz., the dissimultaneous separation of the carbons, and the establishment of the light between one pair only. I quote from the argument then made by Brush's counsel:

"It is this peculiar mode of moving the carbons that produces this splendid result, and that constitutes the real essence and fact of Brush's invention. When you have this new movement, you have the all; for the mere means of effecting said movements becomes, after the conception of the real invention, a matter of no more than mechanical ingenuity. It is true that many forms of device may be devised for carrying out Brush's invention, and we will grant that they may all be patentable; but every one of them must be fundamentally tributary to this pioneer invention of Mr. Brush. The mode of movement is his. It is this mode, and not the mechanism, that constitutes this pioneer discovery; for Brush has here found out this new principle of moving his multiple carbon sets, and the result is something the world has never before seen, and something that the world very much wants."

The claim of defendant's counsel that Brush accepted a limitation of his claims is without any substantial foundation.

Under the construction which has been given to the patent, it necessarily follows, in my opinion, that the Wood lamp clearly embodies the invention of Brush, and is an infringement of his lamp. True, there is a difference in the construction of the lamps. Clockwork in the Wood lamp is substituted for the clutch mechanism of the Brush lamp, as was suggested in the patent might be done. But an inspection of the working of each lamp shows that both lamps operate in substantially the same way. The operation of each lamp is due to precisely the same causes and forces. They both automatically bring the idle carbon into contact with its mate in the same way, by the same mode of operation, by the same action of the current, and accomplish identically the same results. Every arc lamp performs three distinct functions: (1) The establishment of the arc; (2) the regulation of the length of the arc; (3) the feeding of the carbon as it is consumed. The Brush lamp has two separate and independently actuated ring clamps, which operate as clutches or latches, and when they are tilted and raised each clamp engages its smooth carbon rod, lifting it and its attached carbon, and thus separating the carbons and establishing the arc. The ring clamp or clutch associated with one of the pairs of carbons serves as a latch to hang up the feeding carbon of the idle pair during the entire time that the burning pair of carbons are consuming and are being regulated and fed. The regulation of the length of the arc is effected by the ring clamp or clutch raising or lowering the carbon just as much as may be necessary to compensate for the fluctuation of the strength of the current, or the imperfections in the carbon without necessarily feeding the carbon. The feeding of the carbon is effected by the varying frictional contact of the clamp or clutch with the smooth carbon rod. When this clamp descends, so that it impinges upon the floor of the lamp, it assumes a lesser angle of inclination to the rod, and its bite on the rod slightly diminishes, so as to allow the rod to slide or slip very slowly through the lamp, and thus feed the carbon. The two ring clamps operate, in conjunction with the floor of the lamp, as two

separate and distinct feeding mechanisms. When one is operating the other is idle, and *vice versa*.

Now, let us briefly examine the Wood lamp. It has the two clamps in the shape of two separate and independently actuated pinions, which respectively engage with the rack bars of their carbon holders; and when the pinion is raised by action of the magnetic mechanism of the lamp, it engages and raises its carbon rod and the carbon attached to it, and in this manner establishes the arc. The little final pinion or clutch associated with one of the pairs of carbons serves also as a latch to hang up one carbon during the entire time the other carbon is being regulated and fed until it has been consumed. The regulation of the length of the arc is accomplished by the pinion or clutch engaging its rack bar, and raising or lowering the carbon ever so little, as may be necessary to compensate for the fluctuations in the strength of the current or imperfections in the carbon, without necessarily feeding the carbon. The feeding of the carbon is accomplished by retarding or checking the action of the clutching pinion which engages the rack bar on the carbon rod. This is brought about by a train of gearing provided with an escapement common to both clutching pinions. The single stop of the Wood lamp is equivalent to the single floor in the Brush lamp, which operates to release or trip the feeding mechanism of each pair of carbons. When one pair of carbons is being fed, the combined clutching and feeding pinion associated with the other carbon is idle, and *vice versa*. The two pinions of the Wood lamp seem to be as much two separate and distinct feeding mechanisms as are the two ring clamps of the Brush lamp. The functions and results accomplished by the ring clamps of the one lamp, and the feeding pinions of the other, make them substantially identical. I am therefore of opinion that all of the claims of the patent have been infringed, and this view is certainly sustained by the authorities.

The contention of defendant's counsel that the lamps are essentially different, in that (1) the Brush lamp employs two feeding mechanisms, while the Wood lamp has but one, that operates both carbon pairs; (2) that the Brush lamp operates both carbon pairs, and automatically calls the second pair of carbons into function after the first pair is consumed, electrically, while the Wood lamp does this work mechanically; (3) that the Brush lamp imparts dissimultaneous initial separation to its two pair of carbons, while the Wood lamp separates the carbons of one pair only, the carbons of the other pair having been manually separated and latched up by the lamp trimmer before the lamp is put into operation, has been fully, and, as I believe, correctly, answered adversely to defendant in the previous decisions. The operation described by the words "dissimultaneous or successively," as used in the claims of the patent, "refers to that separation which results in the production of a single arc." 43 Fed. Rep. 533.

In *Brush Electric Co. v. Ft. Wayne Electric Co.*, 44 Fed. Rep. 284, where the only question seriously contested was that of infringement, BLODGETT, J., in delivering the opinion of the court, said:

"The Wood lamp, like that of Brush, is a duplex lamp, organized to burn two or more pairs of carbons successively; but the feeding device of the

Wood lamp is partially actuated by clockwork, instead of its being operated entirely by action of the electric current, as in the Brush. In the Wood lamp, however, the clockwork mechanism is brought into action and controlled by the electric current. The distinguishing feature of the Brush lamp is the arrangement of the feeding mechanism, so that the carbons of the two pairs shall be dissimultaneously separated for the purpose of forming the arc; and that, after the arc is formed, one of the carbons of the pair between which the arc is formed shall be fed towards the other as fast as it is consumed, so as to preserve a steady and uniform light; and that when the first pair of carbons is fully consumed, the current is automatically transferred to the other pair, and the arc is formed between them, which are in turn fed together by the feeding device until consumed. The Wood lamp has the same characteristics. The carbons of each pair are dissimultaneously separated, and the arc is formed by the action of the current passing through magnetic coils, as is done in the Brush lamp; but the feeding, as the burning carbons are consumed, is regulated in Wood's lamp by clockwork. It does not seem to us that the interposition of this clockwork to do the feeding after the arc is formed essentially differentiates the Wood device from that of Brush. The electric current is the efficient motor in both lamps for forming the arc and controlling the action of the feeding mechanisms. * * * It was strenuously urged by the able counsel for the defendant, both in his oral and printed arguments, that the Brush patent shows two feeding devices, while the Wood lamp shows but one feeding device or mechanism. This position, if correct, would hardly, we think, answer the charge of infringement; but we do not entirely agree with the learned counsel in his position that Wood has only one feeding device. The clockwork mechanism of Wood is practically as much a separate device for each pair of carbons as the clutch mechanism of Brush, for, while Wood's clockwork is made to feed each pair of carbons in turn, it feeds the first by one pinion, and the next one by another pinion, after the arc has been produced between the second pair by the action of the electric current; thereby making his device as much a duplex feeding device as is that of Brush.

"The feature of the Wood lamp which allows the attendant, when he lights the lamp, or puts the lamp in circuit, to separate the carbons of one pair by hand, instead of allowing that to be done by the operation of the electric current, as is done by Brush, does not, it seems to us, in any degree evade the Brush patent, because it clearly appears from the proof and operation of the machines, as exhibited upon the hearing of the motion, that, if the attendant did not latch up the upper carbon of one pair, the machine itself would automatically do so, the same as it is done in the Brush lamp; and the manual separation of one pair of carbons, even before the lamp is lighted, is nothing but the adoption of Brush's dissimultaneous law, and it leaves the arc to be formed between the pair of carbons last separated. In this, as in almost all cases of infringement, there are slight differences in mode of construction and devices for the result accomplished by the patent. It is rare that we find an infringing machine which is copied with Chinese fidelity from that which it is claimed to infringe, but the infringers always endeavor to escape the charge of infringement by some modifications which shall apparently cause their machine to differ from that of the patentee. The essential thing, however, to be considered in all such cases is whether the principle embodied and claimed in the patent has been substantially used by the defendant, and, if we find that it has been so substantially used, it is the duty of the court to protect the patentee, however ingenious may be the mode of infringement."

Complainant is entitled to a decree, and to a perpetual injunction. Let counsel for complainant prepare, and in due time submit, the findings.

CORBIN CABINET LOCK Co. v. EAGLE LOCK Co.

(Circuit Court, D. Connecticut. November 15, 1892.)

No. 519.

1. PATENTS FOR INVENTIONS—ANTICIPATION—TRUNK LOCKS.

In letters patent No. 285,916, issued October 2, 1883, to Frank W. Mix, for a trunk lock, the first and fifth claims both cover the combination of a hasp plate, a hasp hinged thereto, the keeper plate, the lock bolt or lock mechanism, and the dowel pin and socket, or similar means of interlocking the plates. The first claim includes, in addition, a spring constantly pressing the hasp outward. *Held*, that these claims were anticipated by the Star lock, which has all these elements; and it is immaterial that it differs from the patented article in that the lock is not mounted upon the hasp or hasp plate, and that there is no holding protection and socket other than the staple, which takes directly into the lock proper, and is engaged by the lock bolt, for these features are not included in such claims.

2. SAME—COMBINATION—PRIOR ART.

The first claim of letters patent No. 337,187, issued March 2, 1886, to Frank W. Mix, for a trunk lock, covers "a hasp plate and a lock plate, the adjacent edges of which are constructed to interlock with each other, in combination with a hasp hinged to the hasp plate, and provided on its free end with a lock, which is received in a cup or frame in the lock plate, substantially as set forth." *Held*, that as all these elements were old, the claim is too broad to be sustained in view of the prior state of the art, as shown by the "Star" lock; the Jones patent No. 44,869, November 1, 1864; the Utting patent, No. 62,453, February 26, 1867; the Terry patent, No. 107,133, September 6, 1870; the Hillebrand & Wolfe patent, No. 120,067, October 17, 1871; the Haskell patent, No. 214,252, April 15, 1879; and the Crouch patent, No. 285,180, December 7, 1880.

3. SAME—UTILITY.

The second claim covers a hasp plate "secured to the cover of the trunk," and a lock plate "secured to the body," the two plates extending to the edges of the cover and body respectively, and the lock plate having a cup or frame for the reception of the lock, which is carried on the free end of the hasp, the hasp being "hinged to the hasp plate a considerable distance above its lower edge." The claim concludes with the words "substantially as set forth," and in the specifications the hasp is described as being "spring-pressed." *Held*, that the claim must be limited by this element, and by the further element that the cup shall be so shaped as to receive and protect both the hasp lock and the hasp; and that, as thus restricted, giving due weight to the presumption of validity arising from the issuance of the patent, the claim is valid as producing a new and useful result.

4. SAME—UTILITY.

When the existence of invention is doubtful, the fact of utility should have great weight in favor of the patent. *Smith v. Vulcanite Co.*, 93 U. S. 486; *Washburn & Moen Manuf'g Co. v. Beat' Em All Barbed Wire Co.*, 12 Sup. Ct. Rep. 143, 143 U. S. 275; *Gandy v. Betting Co.*, 12 Sup. Ct. Rep. 593, 143 U. S. 537; and *Topliff v. Topliff*, 12 Sup. Ct. Rep. 825, 145 U. S. 156,—followed.

In Equity. Bill for infringement of patents. Decree for complainant.

Mitchell, Hungerford & Bartlett, for complainant.

Wilmarth H. Thurston, for defendant.

TOWNSEND, District Judge. This is a suit in equity, brought for the infringement of letters patent No. 285,916, dated October 2, 1883, and No. 337,187, dated March 2, 1886, for improvements in trunk locks, originally granted to Frank W. Mix, and by him assigned to the complainant. The defenses as to both patents are anticipation and want of patentable invention.

The object of the invention in both patents is to make the lock serve the double purpose of locking the trunk and of preventing lateral move-