House, Front St., City, The Notorious." The epithet, although presumably offensive to the person addressed, is not per se indecent, scurrilous, or defamatory, nor of a threatening character, and the use of it, therefore, is not prohibited by the law, unless it is both calculated to reflect injuriously upon the character or conduct of a person, and obviously intended to have such injurious effect. The present inquiry may be limited to the simple question whether or not the intention to reflect injuriously upon the character or conduct of any person is obvious. From the style of the superscription it is not obvious that the words "The Notorious" were intended to characterize the person addressed, or any person. On the contrary, the Pease House would appear to have been intended to be designated as "The Notorious." But, assuming that the epithet applies to the person addressed, the words themselves do not necessarily reflect injuriously. Applied to a person without notoriety, they are meaningless. A man may be a notorious wit. Those who possess and exercise superior powers as orators, singers, or actors gain celebrity, and the holders of exalted positions are referred to as noted persons. Applied to persons of such character, the epithet would be considered by those acquainted with their reputations as being in bad taste, but not as implying any bad imputation.

The demurrer will be sustained, and the indictment quashed.

EDISON ELECTRIC LIGHT CO. et al. v. WARING ELECTRIC CO. et al.

(Circuit Court, D. Connecticut. January 6, 1894.)

1. PATENTS—INFRINGEMENT—ELECTRIC LAMPS.
The Edison incandescent electric lamp patent (No. 223,898) is infringed, as to claim 2, by the Waring lamp, (No. 497,038,) which only differs from it in that the Edison vacuum was to a large extent employed, but rendered somewhat less perfect by the introduction of a small quantity of bromine gas.

2. SAME—LIMITATION BY FOREIGN PATENT.
In determining whether an invention has been "previously patented" in a foreign country, so as to cause the American patent to expire with the foreign one, under Rev. St. § 4887, the date of the actual sealing and issuance of the foreign patent is to be taken, although it is antedated, as in the case of English patents. Telephone Co. v. Cushman, 57 Fed. 842, followed.

In Equity. Suit by the Edison Electric Light Company and the Edison General Electric Company against the Waring Electric Company and others for infringement of a patent. On motion for a preliminary injunction. Granted.

C. A. Seward, F. P. Fish, and R. N. Dyer, for complainants.
Charles E. Perkins and W. E. Simonds, for defendants.

SHIPMAN, Circuit Judge. This is a motion for a preliminary injunction against the alleged infringement of the second claim of letters patent commonly called the "incandescent lamp" or the "filament" patent, (No. 223,898,) dated January 27, 1880, to Thomas A. Edison. The patent has been, directly and indirectly, the subject

of exhaustive investigation before the courts of this country, and was carefully examined by the United States circuit court of appeals for this circuit in the case of Edison Electric Light Co. v. United States Electric Lighting Co., 3 C. C. A. 83, 52 Fed. 300. In the opinion of the court in that case, Judge Lacombe clearly states the history and the nature of the invention, which consisted, in general, in substituting carbon "reduced in size to the filamentary form, and placed in a nearly perfect vacuum," for illuminants, which had previously been the subjects of experiment; a change of material "which involved a reorganization of the lamp," and "presented the complete combination of elements, which, for the first time in the art, produced a practical electric light." The second claim is thus paraphrased by Judge Lacombe:

"The combination of carbon, filamentary or thread-like in size, and properly carbonized, used as an illuminant in an incandescent electric lamp, with a receiver made entirely of glass, and conductors passing through the glass, and from which receivers the air is exhausted to such an extent that disintegration of the carbon, due to the air-washing action of surrounding gases, or to any other cause, is so far reduced as to leave the carbon practically stable."

The defendants' lamp, called the "Waring Lamp," is the Edison lamp, with the alleged exception that in the receiver a nearly perfect vacuum has not been created by exhaustion of the air, but that into the partially exhausted receiver a portion of bromine gas has been introduced. This introduction of bromine, and consequent lessening of the vacuum, it is claimed, produce a marked improvement in the stability of the carbon, and in the diminution of the blackening of the glass of the lamp. This improved construction is protected by letters patent to John Waring, No. 497,038, dated May 9, 1893. The specification says that the atmospheric air may be partially withdrawn by means of an air pump, and the gas is then admitted.

"This gas admitted to the globes, and diluted by the air remaining in them, is then partially withdrawn, and more gas allowed to enter; this process being repeated until the extent to which the desired gas is diluted with foreign gases has become practically infinitesimal. If preferred, the atmospheric air may be at first exhausted, as nearly as possible, and the desired gas then admitted around the carbon. The amount of gas to be admitted will, in practice, vary with the size of the inclosing chamber, with the nature of the gas, and probably, also, with the nature of the other elements of the lamp."

This vague description of the ultimate character of the vacuum, and of the amount of "desired" gas which was to be admitted, furnishes inadequate data by which to ascertain with precision the extent of the departure from the Edison lamp. The question naturally arises, how much desired gas is admitted after the atmospheric air has been exhausted "as nearly as possible?" The defendants' affidavits state the successive steps which are taken in practice, and the resultant vacuum is given in a number of the affidavits with adequate accuracy.

Prof. Appleton gives the essential features of the process, as he saw it in the ordinary manufacture of the lamps, as follows: At-

mospheric air was pumped from the bulb by a mechanical pump,—not by a mercury pump. Bromine vapor was allowed to fill the bulb, so that the orange-red color of bromine was visible therein. Then followed pumping by a mechanical pump, by which "bromine vapor and air are, to a large degree, removed." An ample amount of bromine vapor is again allowed to fill the bulb. A third mechanical pumping follows, by which "residual air and bromine vapor are largely removed, but some bromine vapor remains." The lamp is sealed by fusing the glass opening. The general conclusions, taken by themselves, of Prof. Appleton, and also of Prof. Carmichael, both competent analytical chemists, whose affidavits are introduced by the defendants, would far from satisfy the mind that a material departure from the exhaustion, which was the result of the Edison method of manufacture, had been sought in the Waring lamp. For example, Prof. Appleton says:

"My conclusions, therefore, are that the Waring Electric Company is undoubtedly introducing bromine in its lamps, in the process of manufacture; that the bromine remains in them after their entry in the market. In a given bulb, the quantity is small, but it is perfectly recognizable by the chemist; and it cannot, in an electric lamp, be fairly called unworthy of consideration."

Prof. Carmichael says:

"The vacuum, as deduced from the experiments cited, is considerably less perfect than that of the Edison lamp. By the ordinary factory test, of observing the duration of the vibration of the carbonized filament, the Novak (Waring) lamps, as supplied to me, appeared to be less perfectly exhausted than the Edison lamps, as I have ordinarily observed them in use."

Other experts upon each side of this controversy are, however, able to state with more mathematical accuracy the exact nature of the vacuum, and they do not essentially differ in their conclusions. The affidavit of Mr. Howell, in behalf of the complainants, after saying that all lamps exhausted to a high vacuum have residual gases remaining in them, which are "not common air, but are probably a mixture of gases, in which hydrogen predominates," states as follows:

"The vacuum produced, in practice, in the Edison lamps, is about 1-30000 of an atmosphere; i. e. 29,999 out of 30,000 units of atmosphere are removed from the globe. Or, in other words, if we assume the height of a mercury column at atmospheric pressure to be 30 inches, such a column, connected to one of these lamp globes, will be depressed 1-1000 of an inch, due to the pressure of the residual gas within the globe. A very much lower vacuum or higher pressure than this, however, can be used, in practice, without destroying the commercial character of the lamp, even when no special gas is introduced into the globe. A pressure which will lower the mercury column 1-100 of an inch, i. e. a vacuum of 1-3000 of an atmosphere, would, I believe, be sufficient for commercial purposes, without the use of any of the supposedly inert gases, although a higher vacuum is more desirable."

The results of Mr. Howell's tests are as follows:

"The Waring lamps contain a gas pressure which may be as high as 1-20 of an inch in the case of the 16 C. P. and 25 C. P. lamps, and which runs from that pressure down to 1-100 of an inch in the case of the 32 C. P. and 50 C. P. lamps. * * * In considering the effect of even so high a pressure as 1-20 of an inch, it should be borne in mind that this means a vacuum

of 1-600 of an atmosphere, involving the removal of 599 out of 600 parts of the air or other gases within the globe."

Mr. Thomas B. Stillman, for the complainants, found that each one of the 16 candle power Waring lamps which he tested contained a pressure of 1-666 of an atmosphere, or a vacuum in which 665 out of 666 units of gas are removed.

Turning now to the affidavits of the disinterested witnesses for the defendants, Profs. Wright and Anthony devote themselves, substantially, to a statement of their opinions in regard to the improved character of the Waring lamp over that of its Edison predecessor, by reason of the introduction of bromine gas, which they think preserves the transparency of the walls of the lamp and the stability of the carbon. While the question of the extent of an alleged improvement upon an existing patented combination may become incidentally important, in ascertaining the character of the departure from the peculiarities of the invention which were described in and protected by the patent, it is obvious that the first and vital question is, were all the elements of the patented combination used in the second and improved invention in the manner, and to produce the result, described in the antecedent patent? Without, therefore, attempting to ascertain the correctness of Prof. Anthony's conclusion that the introduction of bromine into the chamber of an incandescent lamp is a new step in the art, whose results "are of the utmost importance," I shall confine myself to a consideration of the question whether, before he took this step, he made use of the Edison entire combination, and whether the alleged improvement is an addition to, and not a substitute for, one of Edison's described elements.

The defendants' affidavits which are of importance in this connection are those of Profs. Carmichael and Robb, and Mr. Charles A. Stone. Prof. Carmichael says that the Waring lamp contains residual gases which occupy about 1-2000 of the whole volume of the lamp, and the bromine vapor about 11-10000, and together 1-625. Mr. Stone places the exhaustion of the Waring lamps between 1-500 and 1-1000 of an atmosphere. The conclusion of Prof. Robb—who, it is proper to say, has given more attention to this subject than has either of the other experts for the defendants—is that the bromine gas in the Waring 16 or 25 candle power lamp is under a pressure, when the lamp is heated, of about the 1-500 of an atmosphere. There is, therefore, no important disagreement between the experts on either side in regard to the vacuum in the lamps of those respective powers. The estimates vary from 1-500 to 1-666 of an atmosphere. It must be observed that Mr. Howell's tests of 50 candle power Waring lamps (not including those called "Lot No. 1," which turned out to be vacuum lamps manufactured by the Perkins Company) showed a high vacuum. He thinks that the vacuum in the 50 and in the 32 candle power Waring lamps exceeded that in those of lower power. The experiments of the defendants' experts had been limited to lamps of 16 and 25 candle power, and therefore I shall confine myself to the results which

flowed from those experiments, and which, of course, I assume to be true.

The defendants' legal position is authoritatively stated in Seymour v. Osborne, 11 Wall. 516, as follows:

"Inventors of a combination * * * cannot suppress subsequent improvements, which are substantially different, whether the new improvements consist in a new combination of the same ingredients, or of a substitution of some newly-discovered ingredient, or of some old one, performing some new function, not known at the date of the letters patent, as a proper substitute for the ingredient withdrawn from the combination constituting their invention."

Their theory is that the introduction of bromine gas into a globe only partially exhausted is the substitution of a newly-discovered ingredient for the air exhaustion of the Edison patent. What Waring puts into the receiver is not of prime importance, but the question to be solved is whether he exhausts the contents of the globe, whether air, residual gases, or newly-introduced bromine gas, to such an extent that when the globe is sealed he has used that part of Edison's combination to such an extent that thereby the carbon is rendered practically stable. The mere introduction of gases into the receiver is not important, but if, before they have been introduced, Waring takes away the atmospheric air and the residual gases, and after the new addition has been introduced he takes away the contents of the globe, by exhaustion, so that a practical vacuum finally remains,—not as high as Edison thought necessary for the spongy and porous cotton thread which he carbonized, but a vacuum which renders practically stable a carbon filamentary in size, and of whatever hard and dense material it may be composed,—then Waring has taken the combination of Edison, however much he may have improved it by the residuum of bromine gas, which Prof. Carmichael estimates to occupy 11-10000 of the volume of the lamp.

To ascertain the effect of the exhaustion by the Waring method upon the stability of the carbon, it is necessary to look at the result of Prof. Robb's instructive experiments, which were as follows:

Four Perkins 25 candle power lamps and four Edison 16 candle power lamps were taken to the Waring factory. Two Perkins lamps (Nos. 1 and 2) and two Edison lamps (Nos. 1 and 2) were left unaltered. The remaining lamps (Perkins Nos. 3 and 4, and Edison Nos. 3 and 4) were opened, and partially exhausted, and treated with bromine, as if they were Waring lamps, in the ordinary course of manufacture. The voltage required to raise the lamps to their normal candle power was measured:

Perkins	lamp	No.	1	(original	lamp)	gave	25	C. P. at	47.7 volts.
"	"	"	2	("	")	"	25	C. P. "	48.0 "
"	"	"	3	(bromine	")	"	25	C. P. "	50.9 "
"	"	"	4	("	")	"	25	C. P. "	49.5 "
Edison	"	"	1	(original	")	"	16	C. P. "	56.3 "
"	"	"	2	("	")	"	16	C. P. "	54.0 "
"	"	"	3	(bromine	")	"	16	C. P. "	59.0 "
"	"	"	4	("	")	"	16	C. P. "	59.5 "

The four Perkins lamps were then run at 65 volts for ten hours, and at 75 volts for four hours. The Edison lamps were run eight

hours at an average of 78 volts. The candle power of the lamps was then remeasured, at the same voltages as those at which the preceding measurements had been made, and it was found that:

Perkins lamp No. 1 (original lamp) gave 13.6 C. P.
" " " 2 (" ") " 13.8 C. P.
" " " 3 (bromine ") " 23.0 C. P.
" " " 4 (" ") candle power could not be measured, as filament broke a few minutes before run ended.
Edison " " 1 (original ") gave 6.1 C. P.
" " " 2 (" ") " 4.4 C. P
" " " 3 (bromine ") " 9.9 C. P.
" " " 4 (" ") " 11.0 C. P.

The second test was as follows:

"I took four lamps in the course of construction at the Waring Electric Company's factory, and had them exhausted on the pump at the same time. Two of these lamps (Waring lamps Nos. 1 and 2) were filled with bromine, and two (Waring lamps Nos. 3 and 4) with air, the degree of exhaustion being identical in all four lamps. The filaments in these lamps were intended for sixteen candle power lamps, and the voltage at which the lamps would yield sixteen candle power was measured at the physical laboratory of Trinity College, and it was found that:

Waring lamp No. 1 (bromine lamp) gave 16 C. P. at 118.0 volts.
" " " 2 (" ") " 16 C. P. " 115.9 "
" " " 3 (air ") " 16 C. P. " 128.9 "
" " " 4 (" ") " 16 C. P. " 126.9 "

"The lamps were then run at 115 volts for twenty hours. The candle power of the lamps was then remeasured at the same voltages as those at which the preceding measurements had been made, and it was found that:

Waring lamp No. 1 (bromine lamp) gave 16.0 C. P.
" " " 2 (" ") " 16.0 C. P.
" " " 3 (air ") " 9.4 C. P.
" " " 4 (" ") " 11.0 C. P.

These and kindred tests satisfy Prof. Robb that the vacuum in the bromine lamps is so poor that if the vapor in the lamps had been air, instead of bromine, they would have been considered worthless.

In view of the present condition of incandescent lighting in this country, I have no doubt that an Edison lamp, with the exhaustion which was given in the experiments, would be considered by the users of electric light as so far inferior to the ordinary standard of an Edison lamp as to be worthless, and would be discarded by those who were accustomed to the usual stability of an incandescent lamp. But these experiments show, to my mind, when read in connection with the other affidavits of the defendants, that Waring intentionally used the principle of exhaustion to a generous degree, and that the vacuum ingredient of Edison was to a large extent employed, and its benefits were partially enjoyed. Waring took the lamp which Edison gave in 1880, and which was the first practical incandescent electric light, and used all the ideas which were finally embodied in the Edison lamp, but used the idea of exhaustion to a more limited extent than the original inventor thought was necessary. Nevertheless, without the large exhaustion of the atmospheric air and the gases which Waring accomplished, his lamp

would be a failure. It will not be claimed that the inventor of an improvement upon a previously patented combination can use one of the patented elements in a dwarfed and incomplete way, but by its use receive the old resultant benefit, and escape the charge of infringement by reason of the low percentage of such use. The defendants' theory is that its use is so far unlike that of Edison that it can properly be said to be radically different. That theory is not supported in the Waring specification, and it does not seem to me to be supported by the facts. The statement in the specification that the atmospheric air may be at first exhausted as nearly as possible, and the desired gas then admitted, is significant. The amount of gas admitted Profs. Appleton and Carmichael's affidavits show to have been small.

The defendants claim that the Edison patent, which was dated January 27, 1880, has expired, by reason of the expiration of the British patent No. 4,576, for the same invention, antedated to November 10, 1879, but not sealed, and the specification of which was not enrolled until after the United States patent in suit had been issued. This question was recently examined by Judge Jenkins in Telephone Co. v. Cushman, 57 Fed. 842. He refers to the various decisions upon the question, and concludes that the invention is not patented abroad before the actual sealing and issuance of the patent, and that the term "patented," as used in section 4887 of the Revised Statutes, "does not mean the preliminary proceedings, but the actual issuance of the patent under the seal of the government, speaking the exercise of sovereign will, investing the patentee with the grant of a monopoly." In this conclusion I entirely concur.

The motion is granted. The terms of the order are to be settled upon notice.

KRICK v. JANSEN.

(Circuit Court, S. D. New York. January 4, 1894.)

PATENTS—INVENTION—FLORAL DESIGNS.

The Krick patent, No. 408,416, for a floral design, consisting of a foundation having holes in it, combined with picks for holding the flowers in position, shows patentable invention.

In Equity. Suit by William C. Krick against Edward Jansen for infringement of a patent. A demurrer to the bill was heretofore overruled. 52 Fed. 823. Decree for plaintiff.

Isaac S. McGiehan, for plaintiff.
Louis C. Raegener, for defendant.

WHEELER, District Judge. If the plaintiff's patent, No. 408,416, dated August 6, 1889, for a floral letter or design, was for the letter merely, consisting of the foundation, covered with flowers, as described, it would be anticipated, and void. But it is for such letters in combination with the holes and picks for holding them in position on large floral pieces. This combination seems to be new, and quite useful. It did not involve great invention; but great-