

apparent from the face of the decree and from what we have said in *Brine v. Insurance Company*, that both the original decree of sale and the subsequent decree of confirmation are erroneous in refusing to allow the right of redemption under the statute, they must be reversed. If anything were necessary to add force to this reasoning it would be found in the fact that the appellant Mason, in his answer to the original foreclosure bill, expressly referred to the statute of Illinois, and asked that any decree made in the case should make provision for redemption within fifteen months after the sale.

Decrees reversed, and cause remanded for further proceedings in accordance with this opinion.

MR. JUSTICE HARLAN, having been absent during the argument, took no part in the decision of this case.

CLOUGH *v.* BARKER.

1. The claims of letters-patent No. 104,271, granted to Theodore Clough, June 14, 1870, for an "improvement in gas-burners," *infra*, p. 168, are valid, and they are infringed by a burner constructed in accordance with the description contained in letters-patent No. 105,768, granted to John F. Barker, July 26, 1870, for an "improvement in gas-burners."
2. A burner set up as anticipating Clough's invention, if used now in a way in which it was never designed to be used, and was not shown to have ever been used before his invention, might be made to furnish a supplementary supply of gas. It was not, however, designed for the same purpose as his burner, and no person looking at it or using it would understand that it was to be used in the way that his was used, and it was not shown to have been really used and operated in that way. *Held*, that it does not amount to his invention.
3. The combination of the first claim of Clough's is new, and he, having first applied a valve regulation of any kind thereto, is entitled to hold as infringements of the second claim all valve regulations, applied to such a combination, which perform the same office in substantially the same way as, and were known equivalents for, his form of valve regulation.

APPEAL from the Circuit Court of the United States for the Southern District of New York.

The facts are stated in the opinion of the court.

Mr. Edward N. Dickerson and *Mr. Roger H. Lyon* for the appellant.

Mr. William Stanley and *Mr. Stephen G. Clarke* for the appellees.

MR. JUSTICE BLATCHFORD delivered the opinion of the court.

This suit was brought by Theodore Clough against John F. Barker and others, to recover for the infringement of letters-patent No. 104,271, granted to him, June 14, 1870, for an "improvement in gas-burners." The Circuit Court dismissed the bill. The specification of the patent says:—

"My invention relates more particularly to the burners for burning illuminating gas made by saturating air with vapors of gasoline, commonly called air-gas. It has been found that common bat-wing or fish-tail burners are not adapted to burning this gas as ordinarily made, owing to the variable density of the gas coming from the generating apparatus. The object of my improvement is to adapt the slitted or bat-wing burner to the burning of air-gas. Said improvements consist,—*First*, in perforating the base of the burner-tube with small holes or passages for gas to escape at the base of the burner and surrounding the burner with a tube open at the top but closed at the bottom, and united to the burner below the perforations in the burner-tube. It is more convenient to screw the tube to the burner, but it may be attached in any suitable manner. *Second*, in regulating the escape of the gas from the perforations at the base of the burner by a sliding tubular valve or cut-off introduced into the burner-tube at the base and extending upward within it, the position of the tubular valve being regulated by a screw. These improvements, by furnishing a regulated supply of gas outside of the burner, but directed to the tip of the burner by the surrounding-tube, give steadiness and increased illuminating power to the flame of the bat-wing burner and make it a desirable burner for burning air-gas. The drawings represent a bat-wing burner as improved by me. Figure 1 represents an elevation of my improved burner attached to a short piece of gas-pipe. Figure 2, a view showing the surrounding tube in section and the burner therein. Figure 3, a vertical section through the burner and tube. Figure 4, a transverse section through the base of the burner-tube. Letter *a* represents the burner-tip; *b*, the burner-tube; *c*, perforations at the base of the burner-tube; *d*, the surrounding-tube screwed to the base of

the burner-tube; *e*, the tubular valve extending up in the burner-tube, and operated by an annular screw, *f*, attached to the lower end. Said annular screw, besides having a screw to work in the base of the burner, has an internal screw by which it and the burner is attached to the gas-pipe, as clearly shown in Fig. 3 and the other drawings, the gas-way being through the annular screw and tubular valve to the burner. As the burner is connected to the gas-pipe, *g*, by means of the annular screw, the adjustment of the gas escaping through the perforations of the burner-tube is easily made by turning the burner upon the annular screw. I claim as my invention and improvement in air-gas burners, the bat-wing burner, perforated at the base, in combination with the surrounding-tube, substantially as described. Also, in combination with the bat-wing burner, perforated at the base, and surrounding-tube, the tubular valve for regulating the supply of external gas to the burner, substantially as described."

The defendants, in their answer, set up that they have not infringed the patent, and that it is void for want of novelty. At the request of both parties a trial at law was had in the court below, of two questions: "*First*, Whether or not the complainant is the first and original inventor of the improvement in gas-burners for which the first above-named patent has been granted to him. *Second*, Whether or not the gas-burners manufactured by the defendants are substantially identical with those described in the complainant's patent and schedule thereto annexed, in their construction and mode of operation." The issues were tried before the court and a jury, and the jury answered both of the questions in the affirmative. Afterwards, on a case made, the defendants moved, before the judge who tried the issues, for a new trial, on the ground that the verdict was against the weight of the evidence. He denied the motion in a written opinion, in which he stated that the weight of the evidence on the question of infringement was not such as to justify him in granting a new trial, and that he was satisfied with the conclusion of the jury on the question of priority. He afterwards signed and filed a certificate that in his opinion the verdict on both questions was sustained by the evidence given.

The burners made by the defendants were made in accordance with the description of the first form of burner described

in the specification of letters-patent granted to John F. Barker, one of the defendants, July 26, 1870, for an "improvement in gas-burners." The drawings of that patent consist of ten figures, which are thus referred to in the specification:—

"Figure 1 is a side view of one modification of my invention; Figure 2 is a side view of the shell; Figure 3 is a side view of the burner; Figure 4 is a vertical longitudinal section of the shell through line A B of Fig. 2; Figure 5 is a vertical longitudinal section of the burner through line C D of Fig. 3; Figure 6 is a side view of another modification of my invention; Figure 7 is a side view of the shell; Figure 8 is a side view of the burner; Figure 9 is a vertical longitudinal section of the shell through line E F of Fig. 7; and Figure 10 is a vertical section through line G H of Fig. 8."

The specification goes on to say:—

"My invention relates to a device for regulating the flow of carburetted air or gas from the burner to its point of combustion, and it consists of a burner having a screw-thread made upon its lower part, upon which is fitted, to turn freely thereon, a shell or tube, also having a screw-thread upon its interior lower part; and the bore of said tube or shell is somewhat larger in diameter than the diameter of the upper part of the burner upon which it turns. A series of perforations is made in the lower part of the burner, so that, when the burner is made or set for the combustion of carburetted air or gas of any certain quality, the flame may be increased or diminished by turning the shell either up or down, as the case may be, the shell, in its movements up or down, either closing or opening the holes or perforations, and letting out or stopping the flow of the gas through the said holes, as it is moved up or down. In the use of carburetted air for illuminating purposes it is almost always the case that, when the gasoline is first placed within the generator, it gives off a much greater amount of vapor, and the air, in passing through the generator, absorbs a greater amount of the carbon, and consequently becomes more thoroughly charged with, and is much richer in the illuminating qualities of, the gasoline, than when the generator has been charged for a greater length of time; and, as a result, the carburetted air is sometimes too rich to make a desirable light, with the same amount passing out of the burner, and at other times, as when the generator has been charged a longer time, the carburetted air flowing through the burner is deficient in illuminating power, and the light or flame produced is

not uniform in its power or steadiness, and is sometimes liable to produce a smell or smoke when too rich in carbon. My invention is designed to obviate all difficulty in this respect, as the burner is set or made to let out at the tip the minimum quantity of gas that will produce a good flame, and, as the gasoline remains longer in the generator and becomes weaker in its illuminating qualities, the outer tube or shell may be turned so as to let out more gas and increase the flame without liability to smoke. That others skilled in the art may be enabled to make and use my invention, I will now proceed to describe its construction and mode of operation: In the drawing, L represents the main part of the burner, which is made similar to the common burner, except that the lower part has a screw-thread made upon the outside and inside. Figs. 1, 2, 3, 4, and 5, represent one modification, in which L is the burner, having the usual screw-thread made upon the lower interior part by which to secure it to the pipe. At a' is a conical shoulder or seat upon the exterior, shown in Figs. 3 and 5, and a screw-thread, d , made upon the exterior of the lower end, and the small holes c are made either at the seat a' or just below it. I is a shell or tube, the inside diameter of its upper part being somewhat greater than the outside diameter of the part L, and upon the interior of the tube, at a , is a conical-shaped seat, made to fit upon the exterior seat a' upon the burner L. A screw-thread d' is made upon the interior of the lower part of the tube I, which fits the thread d upon the exterior of the burner L. The operation of this modification is as follows: When the tube I is turned entirely on to the burner L, the inner seat a fits down upon the shoulder a' of the burner L, and the only place of egress for the gas is through the slot at the tip. When the gasoline is fresh or new this slot will be quite sufficient to supply the flame, but, as the gasoline becomes more exhausted of carbon, the tube or shell I may be turned up a little, so that the seat a shall be raised slightly from the shoulder a' , and more or less of the gas will pass out through the holes c and pass up between the tube I and the burner L as the tube I is turned up or down, and, when the gas which escapes through the holes c and passes up between the tube and burner reaches the top, it unites with that passing out of the slot at the tip, increasing the volume and flame. In this device the gas, after passing out through the holes c , is prevented from passing down between the tube and burner by the screw-threads d' and d upon the inside of the tube and outside of the burner. In the modification shown in Figs. 6, 7, 8, 9, and 10, both the burners and regulating tube are similar to that already described, except

that the thread d upon the outside of the burner L is carried up higher, and the holes c are made below the top of the outer thread but above the top of the inside thread. The thread upon the inside of the tube I is not so long as the outside thread upon the burner L , but is considerably less, so that, when the tube I is turned entirely down on the burner the holes will be above the thread on the inside of the tube; and there is no inside seat in the tube I to operate upon a bevelled or conical exterior shoulder upon the burner L , as in the other modification. The operation of this modification is as follows: If the flame be too weak, the tube I is turned down upon the burner L until the top of the inside thread of the tube begins to pass below the holes c , when the gas will escape and pass up between the tube and burner and increase the flame as before. If it should be desirable to stop the escape of gas through the holes c , it is only necessary to turn up the tube upon the burner, and, when the thread inside the tube covers the holes c , then there will be no escape of gas. It will be seen that the principles of the operation of both modifications are very much alike, and are intended to accomplish the same object, although the tube turns up in the first case to let out more gas while it turns down in the second case, both being equivalent, however, in their operation and accomplishing the same result. I am aware that gas-burners have been heretofore made to give an additional supply of gas to the flame, but in those that I have seen they consisted of more pieces and were considerably more expensive to manufacture, and in their operation the burner revolved with the tube, thus causing the flame to revolve also. This is very objectionable, as it is often desirable to have the flame stand in one particular direction. In this device the flame does not turn in the least, while the whole burner may consist of only two pieces, and is cheaply made, and its operation and effect are perfect."

The claim of that patent is, "An improved gas-burner, consisting of the burner or pillar L , having holes cc therein, and provided with the movable or adjustable shell or tube I , all constructed and operating substantially as and for the purposes herein described and specified."

After such certificate was signed and filed, the Gilbert and Barker Manufacturing Company, one of the defendants in this suit, brought a suit in equity in the court below, as owner of the said patent granted to John F. Barker, for the infringement of the same, against Clough, the plaintiff in this suit,

alleging as the infringement the making and selling of burners constructed exactly like the two forms described in the patent to said Barker. The only testimony taken directly in the present suit was that taken on the trial before the jury and embodied in the case made, on which the motion for a new trial was made. But considerable testimony was taken, for final hearing, in the suit against Clough, and that testimony is contained in the record in this case, and it is understood that such testimony was considered and used, by agreement of parties in the court below, as part of the proofs in this case.

The first claim of the Clough patent is a claim to "the bat-wing burner, perforated at the base, in combination with the surrounding-tube, substantially as described." The elements of this claim are, a bat-wing burner, with a burner-tube; the burner-tube perforated at its base with small holes or passages for gas to escape at the base of such burner-tube; and another tube, surrounding the burner-tube, open at the top, and closed at the bottom, and united to the burner-tube below the perforations in it. The method of regulating the escape of gas from the perforations is no part of the first claim. The office of the combination in the first claim is, as the specification states, to enable the surrounding-tube to direct to the tip of the burner the gas which comes through the perforations, such surrounding-tube being open at the top and closed at the bottom, and united to the burner-tube below the perforations.

Two forms of burner are presented as infringements of the first claim. They are both of them substantially like the first form of burner described in the patent of Barker, the outside tube, in both of them, turning up to let out more gas. Each of these burners contains the combination of the first claim of the Clough patent.

It was held by the court below that the combination covered by the first claim of the Clough patent was found in a burner called the Horace R. Barker burner, the existence of which, prior to Clough's invention, was held to have been satisfactorily proved. Of the Horace R. Barker burners it was said by the court: "In those burners the burner was a bat-wing burner, perforated at the base. The perforations did not consist of small holes, but the stem of the burner was slitted all the way

down to the base, allowing the gas to escape through the whole length of the slit. There was a surrounding-tube united to the burner below the lower end of the slit. The burner-stem had a cone near its top, and, when the surrounding-tube was screwed so as to be in a certain position with reference to such cone, the effect was to direct to the tip of the burner the supply of gas coming through the slit below, the surrounding-tube being open at the top and closed at the bottom, and the flame was thickened, and a ring of flame was formed. The structure and mode of operation of the combination were the same as those of the combination covered by the first claim of the plaintiff's patent. The fact that the perforations in the Horace R. Barker burner existed not only at the base, but were continued in the form of a slit all the way up, makes no difference. Nor does it make any difference that the Horace R. Barker burner had a cone near its top. The first claim of the plaintiff's patent is broad enough to cover the Horace R. Barker burner, and that claim must be held to be invalid for want of novelty."

On the trial before the jury the existence and operation of the Horace R. Barker burners were testified to by Horace R. Barker himself and by John F. Barker, and a copy of the rejected application of Horace R. Barker for a patent was put in evidence. The question was submitted to the jury by the court as to whether the effect produced by Clough's invention had been produced in the Horace R. Barker burner by a combination or mode of operation substantially the same as in the burner of Clough; and the attention of the jury was called by the court, in its charge, to the contention of Clough, that the object of the Horace R. Barker burner was to control the size of the slit in the burner by a clamp; that, if some gas escaped through an orifice at the top of the surrounding-tube, and was projected upon the burner-tip, the escape was accidental and not desired; and that in a well-made burner it was not intended to escape, and did not escape. The jury found for Clough on the question of novelty, as against the Horace R. Barker burner. When the motion for a new trial was made before the judge who presided at the jury trial, he said, in his opinion denying the motion: "The device mainly relied upon by the defendants upon the question of priority was a burner of Horace R.

Barker, for which he made an unsuccessful application for a patent prior to the date of the plaintiff's invention. It consisted of a bat-wing burner, slitted nearly to the base, and a surrounding-tube smaller at the top than at the bottom. There was a screw upon the inside of the lower part of the tube. When the tube was screwed down upon the burner, the top of the tube pressed against a conical and enlarged part of the burner, near its top, and the slit was closed. When the tube was screwed up the slit was enlarged. The defendants claimed that the top of the tube in connection with the protuberant part of the burner formed a valve, and that the gas passed to the tip, not only through the burner, but through the ring near the tip at the end of the surrounding-tube, in a double current, and that the device was substantially like the burner of the complainant. The complainant claimed that the object and the effect of this invention was to provide a burner in which the bat-wing slit could be enlarged or diminished at pleasure, and to consume but a single current of gas; that the top of the tube, in connection with the conical part of the burner, was not a valve but a clamp; that, when the burner was new or well made, this clamp prevented the escape of gas; and that there was no appreciable delivery of gas in a well-made burner, except through the tip. I am of opinion that the jury, upon this question of fact, did not misconceive the weight of the evidence." In the proofs taken in the suit against Clough, and used in this case by agreement, John F. Barker gave further testimony as to the prior use of the Horace R. Barker burners, and such testimony seems to have been understood by the court below as showing that the Horace R. Barker burner was used with the surrounding-tube raised to such a height that the horizontal line of its upper end was raised from its seat at the cone on the burner-pillar, and an additional supply of gas passed out of the top of the surrounding-tube and mingled with the gas which escaped from the burner-tip; that, by screwing down the surrounding-tube so that it would impinge sufficiently against the cone, the slit would be closed; that the effect of the operation of thus raising or lowering the surrounding-tube was to increase or diminish the supply of gas; and that the surrounding-tube, considered in connection with the cone on the pillar

of the burner, operated as a valve to control the flow of gas. In this view the structure and its mode of operation were held to be such as to anticipate the first claim of the Clough patent. But we are all of opinion that an erroneous view was taken of the purport of the additional testimony of John F. Barker. He was testifying in February, 1875. The question was as to what the Horace R. Barker burner was, and as to what was its mode of operation in use. In the specification of the patent of John F. Barker, issued in July, 1870, he said: "I am aware that gas-burners have been heretofore made to give an additional supply of gas to the flame, but in those that I have seen they consisted of more pieces, and were considerably more expensive to manufacture, and in their operation the burner revolved with the tube, thus causing the flame to revolve also." The expression "more pieces" means more pieces than in the burner he was patenting. His burner consisted of two pieces only. The Clough burner consisted of three pieces, and in it the burner revolved with the tube. In the John F. Barker patent the burner did not revolve with the tube. The Horace R. Barker burner consisted of two pieces only, and the burner did not revolve with the tube. Therefore, the reference by John F. Barker, in his patent, to the burners which he had seen which would give an additional supply of gas was to the Clough burners, which it is proved he had seen; and it is impossible that he could have then understood that the Horace R. Barker burners, which also he had seen, were burners which had been used to give an additional supply of gas to the flame.

The testimony as to any additional or supplementary supply of gas in the Horace R. Barker burner amounts really to this only,—that if that burner is used now in a way in which it was never designed to be used, and is not shown to have ever been used before Clough's invention, it may be made to furnish a supplementary supply of gas. Its structure was such that, to give full effect to its mode of operation, the surrounding-tube did not require ever to be raised so high as not to be in contact with the cone. As it was raised from its lowest position the slit opened, and, when the slit was opened to its full extent, the tube was still in contact with the cone, and there was no orifice between them. Any further raising

of the tube was accidental, and not a part of the law of the structure. The object of raising and lowering the tube was, by less or greater pressure on the cone, to open or close the slit in the burner. The specification of Horace R. Barker, in his rejected application, shows that the only object of his burner was to control the flow of gas through the slit in the burner, instead of controlling the flow at the cock or farther back. The spring of the two parts of the burner was intended to carry them away from each other and open the slit when the pressure of the tube against the cone was relieved, while the increased pressure of the tube against the cone closed the slit. Any raising of the tube unnecessarily high, so as to admit of a flow of gas through an orifice between the tube and the cone to the flame, cannot be regarded as amounting to an invention of what Clough invented. The structure was not designed for the same purpose as Clough's, no person looking at it or using it would understand that it was to be used in the way Clough's is used, and it is not shown to have been really used and operated in that way.

The foregoing remarks apply equally to the Coolidge burner, which was like the Horace R. Barker burner in structure, except that in the Coolidge burner the raising of the ring against an inverted conical projection closed the slip. The Solliday burner and the Lunkenheimer burner did not contain Clough's invention. We are, therefore, brought to the conclusion that the first claim of the Clough patent is valid.

The second claim of the Clough patent is for a combination of the bat-wing burner, perforated at the base, the surrounding-tube, and the tubular valve for regulating the supply of external gas to the burner, substantially as described. The specification describes the tubular valve as extending upward into the burner-tube. The view taken by the court below as to this second claim was, that there was in the Horace R. Barker burner a regulation of a supplementary flow of gas, and by a valve-arrangement, the raising of the tube above the cone allowing the gas to flow out of the tube, and the lowering of the tube to bear against the cone closing the orifice. The court said: "In view of the existence of that burner, which contained the combination of a bat-wing burner, a perforated

tube in substance like that of the plaintiff's patent, and a tubular valve for regulating the supply of external gas to the burner, the construction of the second claim of the plaintiff's patent must be such as to limit that claim to the form of tubular valve which he describes, namely, one in the interior of the burner-tube and not forming part of the surrounding-tube. Under this construction, the second claim of the plaintiff's patent is not infringed." The defendants' burners had no tubular valve extending up into the burner-tube. In them the tubular valve formed part of the surrounding-tube, and reached or left its seat by screwing up or down the surrounding-tube. The surrounding-tube could not be permanently attached to the burner, because it carried the movable valve. In the Clough burner the surrounding-tube may be permanently attached to the burner, because the tubular valve is not carried by the surrounding-tube, but is a third and separate instrument, carried by an adjustable cylinder inserted within the burner-tube from below.

The combination of the first claim of the Clough patent being new, and, consequently, there never having been any valve-arrangement applied to regulate the flow of gas in such a combination, the premises on which the decision of the court below proceeded fail. Clough is entitled to the benefit of the doctrine of equivalents as applied to the combination of the burner, surrounding-tube, and regulating-tube, covered by the second claim of his patent. The regulation in the defendants' burners was by a tubular valve on the outside of the perforations instead of on the inside, and performing its work by being screwed up or down, as in Clough's. Although in the Clough structure the burner and surrounding-tube revolve together in adjusting their position in reference to that of the tubular valve, so as to let in or turn off the supply of gas through the perforations, and although in the Clough structure the flame revolves by the revolution of the burner, and although in the defendants' burners the revolution of the surrounding-tube regulated the supply of gas through such perforations, and neither the burner nor the flame revolved, the defendants' valve-arrangement must be held to have been an equivalent for that of Clough to the full extent to which that of Clough

goes, involving, perhaps, patentable improvements, but still tributary or subject to the patent of Clough. It is true that that patent describes the tubular valve as being inside of the burner-tube. But Clough was the first person who applied a valve regulation of any kind to the combination to which he applied it, and the first person who made such combination, and he is entitled, under decisions heretofore made by this court, to hold as infringements all valve regulations, applied to such a combination, which perform the same office in substantially the same way as, and were known equivalents for, his form of valve regulation. The record shows that prior to the existence of the appellant's burner it was common in gas-burners to check the flow of gas out of the burner by applying an obstruction operated by a screw indifferently outside or inside of the burner. It follows, from these considerations, that the defendants infringed the second claim of the Clough patent.

The decree of the Circuit Court will be reversed, with costs, and the cause remanded with directions to enter a decree for the appellant for an account and an injunction, as prayed in the bill, with costs, and to take such further proceedings therein as shall be in conformity with law and with the opinion of this court; and it is

So ordered.

CLOUGH *v.* MANUFACTURING COMPANY.

1. The claim of letters-patent No. 105,768, granted to John F. Barker, July 26, 1870, for an "improvement in gas-burners," is valid.
2. Although, in its method of supplying additional gas and in its valve-arrangement for regulating the supply, a gas-burner made according to the description of those letters infringes both of the claims of letters-patent 104,271, granted to Theodore Clough, June 14, 1870, for an "improvement in gas-burners," yet, as it dispenses with the interior tubular valve of Clough, and is made in two pieces instead of three, and is less expensive to make, and as, in regulating the supply, the shell alone revolves, and the flame always remains in one position, the modifications are new and useful, and therefore patentable.

APPEAL from the Circuit Court of the United States for the Southern District of New York.

The facts are stated in the opinion of the court.