

ALBANY STEAM TRAP CO. *v.* FELTHOUSEN  
AND OTHERS.

*Circuit Court, N. D. New York.*                      May 31, 1884.

PATENT—STEAM-HEATER—PRIOR  
INVENTOR—INFRINGEMENT.

Action for infringement of patent for steam-heaters with apparatus for returning condensed steam to boiler. Infringement proved, and defendant, not being able to substantiate his claim of being the prior inventor, judgment pronounced against him, without costs.

Argument on Final Hearing before Wallace and Coxe, JJ.

*Dickerson & Dickerson*, for complainant.

*George B. Goodwin* and *J. D. F. Stone*, for defendant.

WALLACE, J. The first of the four patents in controversy was granted to Helem Merrill, April 30, 1867, and the specific improvement in steam-heating apparatus which it describes consists in the devices for returning the water of condensation back into the boiler. The main contention of the parties is respecting the construction which should be placed upon the claims, especially upon the first and third claims of the patent, it being conceded by the experts for the defendant that the claims have not been anticipated by any of the earlier patents introduced in evidence by the defendant, if the claims are limited so as to restrict the patent to the specific devices of the description. The description of the patent is as follows:

“My improvement consists in the manner of returning the water of condensation back into the steam-boiler or generator when the heaters, evaporators, or condensers are above or below the water level in the boiler, thus keeping the coils and return pipes free from water. The steam, being dry,

imparts more heat for the purposes required, thereby causing a great economy in fuel.

“To enable others skilled in the art to make and use my invention I will proceed to describe its construction. Figure 1 is a front view of a steam boiler with a receiving and discharging cylinder; also a heater above, and one below the water level in the boiler, together with the necessary pipes and valves. Figure 2 is an enlarged vertical section of one of the cylinders and float as attached to the steam or water-cock. Figure 3 is a cross-section of a cylinder, float, and arm. Figure 4 is a vertical section of one of the check valves. The letters of reference show corresponding parts in the different figures represented in the accompanying drawings. Steam is generated in 634 boiler, A, figure 1. The air cocks, *g, g*, figure 1, receiving cylinder, G, and discharging cylinder, H, figure 1, are opened. The steam is let into the main pipe, C, through the stop-valve, B, and into the coil, D, which is above the water level, as indicated by red line, *i*, and also into coil, E, which is below the water line, through the cocks, *h, h*, all in figure 1. As the steam is condensed in the coils by the process of heating or evaporating, the water of condensation passes down into and through the condensing pipe, F, into cylinder, G, figure 1. When all the air is exhausted through cock, *g*, it is closed, and the water rises, carrying up the float, *a'*, figure 2, until it strikes the arm, *o'*, figure 2, and carries it up with the rod and arm, 6, figures 2 and 3, which are connected together through a stuffing-box on the outer side of cylinder. The connecting-rod, *c'*, is attached by a loose joint to the arm, 6, figure 2. The other end of the rod, *c*, has a slot that moves on a pin on the side of the ball-arm, P. When the float raises, the arm, 6, figure 1, brings the end of the slot in contact with the pin, and throws the ball, P, past the center, when it falls by its own weight, being loose on the pin which projects from the head of the key of the cock, N”,

figure 1. The quadrant, which is attached firmly to the key of the cock, has two points projecting outward, against which the shaft holding the ball strikes in its fall, and carries the quadrant round, thereby opening the water-cock, N, figure 1, allowing the water to flow from cylinder, G, through pipe, J, and check-valve, I, and pipe, K, into discharging cylinder, H, figure 1. The air-cock, *g*, in Cylinder, II, being still open, there is no pressure on the top of the water, which rises, carrying the float and arms, as before described in figure 2, until it is near the top, when the air-cock, *g*, is closed, and the float, having raised the inner end of the arm, *b*, figure 1, it carries the outer end down by the shaft in the stuffing-box, being the axis, until it has drawn the ball-arm, P, down by means of the connecting rod, *c'*, figure 1, thus throwing the ball past the center, it falls and operates as before described for receiving cylinder, G, figure 1. The ball, P, in falling, moves the quadrant attached to the key of the cock, O, admits the steam from the boiler, A, through pipe, K, into the cylinder, H, on top of the water, which, being above the level, and by the pressure of the steam on its surface, causes it to flow downward by its own gravity through pipe, *k*, up through valve, L, pipe, M, and cock, *e*, into the boiler, A, figure 1. When the water is nearly all out of cylinder, H, the float having fallen, closes the steam-cock, O, by means of the lever, connecting rod, and ball-arm. By reversing the ball it stops the steam from entering the cylinder, H, figure 1. The cylinder, G, having discharged its water into the cylinder, H, the float has fallen and closed the cock, N, in the same manner as described for the steam-cock, O. While the water is again filling the cylinder, G, the steam is being condensed in the cylinder, II, thus reducing the pressure, so that when the water again rises sufficiently to open the cock, N, it rushes up, as before described, to fill the vacuum caused by the steam being condensed in the cylinder, H. The

pressure on the top of the water in the cylinder, G, also forces it up, thereby making the operation sure, the cylinders receiving and discharging alternately, as described. The cock, *f* figure 1, at the bottom of the cylinder, G, is for drawing off the water when the whole apparatus is not in operation. The float, *a*, figure 2, has a tube through its center, and is air tight. The rod which holds the float in the center of the cylinder passes through the tube, the float thereby being independent of the levers, until they come in contact by the rising or falling of the water. One or more coils or heaters may be used at the same time. If the motive power is required from the same boiler a separate pipe should be used for that purpose.”

The claims are as follows:

“(1) The retaining of the water in the receiving and discharging cylinders until at required height it exerts a power sufficient to perform the operations. 635 substantially as described and set forth; (2) the independent float, as connected and combined with the stop-cocks, making the whole apparatus self-acting, for the purposes as substantially set forth and described; (3) I claim the method of returning the water of condensation to the boiler, substantially as described.”

Upon the face of the claims grave doubt is entertained whether the first and third claims are not nugatory, because they do not particularly specify and point out the part, improvement, or combination which the inventor claims as his invention. The first claim is so vague and nebulous that it does not convey any definite meaning. The third is so general, that it is, in effect, the mere statement of the inventor that he claims what he has described in his specification. The first is a claim for the functions of some part of the apparatus described, whereby the water is retained and enabled to perform certain operations by reason of being retained in the receiving and discharging

cylinders; but what these operations are, and what devices co-operate thereto, is left open to conflicting theories. Both of these claims must be construed as claims for the apparatus which performs the functions mentioned in the first claim, and which is the means for effecting the method specified in the third claim; otherwise both claims are void as being for a function, or abstract effect, instead of the means by which it is produced. If the claims were for some of the specific devices employed, either separately or in combination, or if the description distinguished what was new from what was old in the state of the art, the scope and limits of the invention might be intelligibly ascertained.

Referring to the prior state of the art to ascertain what Merrill really invented, it appears that he was not the first to effect a return of the water of condensation to the boiler when the heating surfaces in a steam-heating system were located above or below, or above and below, the water level of the boiler. The English patent of July 8, 1857, to Bonsfield, and the United States patent of March 2, 1858, to Dennison and Sealy, show all the features of the closed pressure steam-heating system of Merrill, except the receiving chamber and the automatic valve-operating mechanism in that chamber, and in the discharge chamber. The United States patent to Barnes, of September 6, 1859, shows a closed pressure steam-heating system, in which the heating surfaces are located both above and below the level of the water. This system contains a receiving chamber located below the level of the boiler to receive the water of condensation, and a discharge chamber located above the level of the boiler. The chambers are connected, and the receiving chamber empties the water into the discharge chamber, and the discharge chamber empties it into the boiler. The pipe by which steam passes from the boiler into the discharge chamber, and the pipe by which the water flows back from that chamber into the boiler, are

provided with a stop-cock or valve to close or open the passage, which is operated by hand. The system 636 contains all the features of Merrill's, except the automatic-valve mechanism, the valves in this system being operated by hand.

The automatic valve devices of Merrill were old in principle. An automatic steam-boiler feeder, consisting of a vessel interposed between the boiler and a water reservoir, and fitted with valves and a float so applied as to cause the said vessel to be alternately filled from the reservoir and discharged into the boiler, is disclaimed as old in the patent to James Hoover, of August 6, 1861. That patent describes automatic valve devices in the feeding vessel, which operate upon the same principle as Merrill's, to do the same work. The English patents to Routledge, of June 25, 1860, and Auld, of April 21, 1859, also describe a float and tumblebob devices for actuating equalizing valves in steam-boiler feeding apparatus.

What Merrill did was to introduce the automatic valve devices shown in these patents, with modifications, into the receiving and discharging chambers of the Barnes patent. By doing this, he effected an automatic return of the water to the boiler, a new result, and a valuable one, in a steam-heating system of the kind to which his invention relates. If he had claimed a method of returning the water by means of his new combination, pointing out the co-operative members, there would be nothing to impeach his claim. The difficulty of the complainant's case is to give any construction to the claims of the patent that will save the invention.

For present purposes, it is only necessary to construe the patent so far as to decide the precise point of difference between the experts as to the proper construction of the claims. As to the first and third claims the question is whether they must be confined to a combination of devices of which

the valve-operating mechanism of the lower cylinder or receiving chamber is a constituent. If they are to be limited to such a construction the defendant does not infringe, as he employs merely, an ordinary trap for his receiving vessel, without any automatic valve mechanism. It is insisted for the complainant that the only function of the receiving chamber is to receive and store the water for delivery into the discharging chamber, and therefore that this valve mechanism in the receiving chamber is not an essential element in the system. Undoubtedly the automatic return of the water of condensation can be effected successfully if the receiving chamber is merely a trap located below the level of the lowest heating surface. But how can this be ascertained from the claims and description of the patent? Not only does the description locate the automatic valve mechanism in the receiving chamber, but its operations there are pointed out with particularity. According to the theory of the specification, the automatic mechanism in that chamber regulates the supply of the discharge chamber by emptying the water at intervals, determined by the action of the float. The water is to be retained in the receiving chamber until it is full, and there is a fixed point which it must reach before 637 it can actuate the valve mechanism and escape into the discharge chamber. It seems very plain that the automatic valve mechanism in the receiving chamber cannot be eliminated from the invention described, and must be regarded as of the substance of the invention claimed.

The second claim of the patent must also be limited to such a float in general detail of construction, as is described in the specification, or the claim is anticipated by the independent float shown in the patent of Hoover, and the other references cited. The defendant does not employ such a float.

As to all the claims of this patent, the conclusion is therefore reached that the defendant does not infringe.

COXE, J. This is an equity action founded upon four patents for improvements in steam-heating and steam-traps. The first was issued to Helem Merrill April 30, 1867. The other three, known as the Blessing patents, were issued as follows: The first, February 13, 1872, reissued August 26, 1873; the second, September 2, 1873, reissued June 18, 1878; the third, August 27, 1878. The Blessing patents alone remain to be considered, it having been determined, for reasons stated in the opinion of the circuit judge, that the defendant does not infringe the claims of the Merrill patent. The object of the inventor in each of these patents was, as in the Merrill patent, to return the waters of condensation automatically to the boiler, to accomplish the same result upon similar principles but by different and improved mechanism. In view of the prior state of the art and of the construction given the Merrill, or foundation patent, it may be said at the outset that the claims now to be examined should be confined within exceedingly narrow limits. Each inventor must be restricted to the specific improvement and the particular device described and claimed by him.

Regarding the first Blessing patent, the controversy is limited to the first and fifth claims. They are as follows:

“(1) A receiving and discharging vessel, C, communicating with a steam-boiler by means of a steam-pipe, *G*’, and inlet-check valve, X, and with the same boiler by means of an out-let pipe, J, and a valve, 2, and so arranged between or in respect to the two valves that the water is received and allowed to fall to the bottom of the vessel, and the steam following is not compelled to pass through the water, all for the purposes of automatically returning water of condensation to the said boiler from steam-heaters,



substantially as described. (5) A receiving vessel, C, for the purpose of insuring the return of the water of condensation to the boiler which rises and falls on occasions, combined with a steam-heater and a steam-boiler, substantially as set forth.”

As to the first claim, the conclusion is reached that nothing valuable is there described which was not known before, and as to the fifth that the defendant does not infringe.

The points of difference suggested by complainant between the apparatuses in this and the Merrill patents are these: In the latter 638 the inlet and outlet passages to and from the trap are combined in one. In the former the inlet is at the top and the outlet at the bottom. In the former, too, the weight of the water is used to operate the equalizing steam-valve, the receiving vessel being counterbalanced by a weight combined with a lever. In the Merrill patent an airtight float rises and falls with the water in each cylinder. With these exceptions the principles of the two patents are substantially identical. Regarding the first claim it is unnecessary to repeat what is so well stated by Judge Wallace, or to refer in detail to the numerous references which have been so extensively commented upon by the experts and by Counsel. It suffices to say, that the patentee has, in view of what was before known in the art, done nothing to entitle him to a monopoly. It is, perhaps, true that the precise apparatus is not described in any prior patent, but every separate element was known and the mechanical change necessary to transform several of the devices referred to into the receiving and discharging vessel communicating with a steam-boiler, as described in the claim, would hardly amount to invention. The fifth claim refers to a receiving vessel, counterbalanced by a weight in such a manner that the vessel will rise when the water is withdrawn and sink when it is filled again. In the defendant's device

the trap is stationary and the float is caused to rise by what is termed “a water counterbalance;” that is, the water is introduced into the trap and the float, being empty, rises until the water, overflowing into it, causes it to sink. It is contended that this is the mechanical equivalent for the metal weight described. We cannot accede to this view. Indeed, the inquiry is suggested, why did the inventor, if he considered the one an equivalent for the other, describe and claim the equivalent so carefully in the second patent? To use the language of the complainant’s brief, the second patent shows, “Mr. Blessing’s first modification of the invention described in Exhibit first, Blessing patent, and it consists simply in the substitution for the weight, W, of a water counterbalance.” The method of operation in the defendant’s and complainant’s apparatuses is in practice, entirely dissimilar, and where the field of invention is so thoroughly occupied as we find it here, each patentee must be contented with the mechanism described by him.

The second Blessing patent contains the following claims:

“(1) A steam-trap, provided with a rising and falling bucket contained within a shell, into which the return-water is delivered, and from which it is discharged by a siphon-pipe which passes nearly to the bottom of said bucket, substantially as described. (2) A steam-trap provided with a rising and a falling bucket, contained within a shell, into which the water is delivered, and from which it is discharged by a siphon-pipe passing nearly to the bottom of the apparatus, the said bucket being attached to an apparatus operating the steam-valve, which apparatus does not open or close the steam-valve at the commencement of the fall or rise of the bucket, but allows an interval of time to elapse between the movement of the bucket and its action on the 639 steam-valve, whereby the bucket is entirely filled and discharged, substantially

as described. (3) An improved steam-trap, provided with a rising and falling bucket, through the top of which the water is delivered and discharged by means of a delivery and discharge-pipe, each provided with a check-valve substantially as described. (4) An improved steam-trap provided with a rising and falling floating bucket, into which the water is delivered, and through which it is discharged by means of a siphon-pipe reaching nearly to its bottom, and provided with an air-cock, by means of which the accumulated air may be discharged from the apparatus, substantially as described. (5) The inlet and outlet passages, b b, provided with check-valves, and combined with a water-receiver, containing a vertically movable bucket, T, into which the water enters and from which it is discharged, substantially as and for the purposes described.”

They all relate to an open-top float contained within a shell constructed with a siphon-pipe, so that the water is discharged from the top, instead of the bottom of the float. The water from the coils is by means of a pipe forced directly into the float which, when a sufficient quantity has been introduced, is thus caused to sink. In the defendant's trap the water is showered down from the perforated diaphragm to the bottom of the containing shell. As the water flows into the trap it causes the float, which is empty, to rise until it comes in contact with a plate at the top of the trap where it remains until the circumjacent water flows over its edge, and when the trap and float are filled the latter sinks to the bottom of the former. It is insisted that this difference is immaterial, though the complainant's expert admits that “perhaps it is an improvement to deliver the water outside of the bucket.” It certainly is an improvement and one to which the defendant would be entitled, provided he first made the discovery. Step by step has the advance in steam-traps been made, each inventor adding

something, until, at the present time perfection has been nearly reached. The progress made by Blessing, as shown in this patent, since the several devices which preceded it, is surely no more beneficial and important than that made since the patent, as illustrated by the defendant's trap and the third Blessing trap.

The claims of the third Blessing patent are as follows:

“(1) An automatic steam-trap for the purpose of returning water to the boiler, having an open-top float, into which water enters and whence it is delivered to the boiler, thereby causing said open-top float to rise and fall, when the said open-top float is connected to an equalizing steam-valve by a connecting apparatus which does not connect a steam-space and the atmosphere, nor two steam-spaces of different pressures, and when the opening and closing of the steam-valves is not effected gradually, but suddenly and surely, by reason of the fact that there is a certain amount of lost motion between the movement of the open-top float and its action on the valve. (2) An automatic steam-trap consisting of a containing vessel and a rising and falling open-top float, when the water which enters said trap first fills the space between the open-top float and the containing vessel, and when the equalizing steam-valve is not immediately actuated by the movement by the open-top float, but the open-top float is connected to said steam-valve by means of apparatus allowing a certain amount of lost motion, substantially as described. (3) An automatic steam-trap which consists of an inclosing-vessel, A, and a rising and 640 falling open-top float, B, when the inclosing-vessel is provided with a tank communicating with its upper portion, substantially as described. (4) An automatic steam-trap having a vessel, A, provided with a tank, T, connecting with its upper portion, which tank communicates with the vessel by means

of two or more small openings, thereby delaying the escape of the water in the tank into the inclosed-vessel, substantially as described. (5) An automatic steam-trap for returning water to the boiler provided with a rising and a falling vessel and with apparatus as substantially described, independent of the mere inflow of water from the supply, whereby the water-level between the rising and falling vessel and the containing-casing is maintained, and raised after the vessel begins to ascend. (6) The combination of the vessel, A, open-top float, B, and rod, *p*, provided with collars, *g* and *f*, operating the steam-valve, *t*, when the collars *g* and *f*, are separated for the purpose of allowing a certain amount of lost motion before opening or closing the valve, substantially as described. (7) In an automatic steam-trap for returning water to the boiler the combination of the shell, A, with a siphon, C and C, provided with the air-cock, *x* for the purpose of filling said siphon, substantially as described. (8) An automatic steam-trap provided with the tank, T, connecting with the upper part of said trap by means of appertures, *m*, *n*, and operating the steam-valve by means of apparatus substantially as described, whereby a certain amount of lost motion is allowed between the rising and falling open-float and the equalizing steam-valve, substantially as described.”

It will be observed that the trap here described is almost the exact counterpart of the defendant's. In principle and operation the two are substantially alike, and we have no hesitancy in saying that the defendant infringes. The main controversy, therefore, has reference to the alleged anticipation by the defendant who asserts that he is the prior inventor. Upon this issue the burden is upon him, and he has failed to prove to our satisfaction the allegations of the answer in this behalf. The evidence relied on to establish prior use is vague, shadowy, and uncertain. No part of the trap which, as is alleged, anticipated

complainant's invention is produced, and there is nothing definite as to the manner of its construction. Opposed to the defendant's testimony is the positive statement of Blessing that he conceived his invention in the spring of 1874, though it was not perfected till the spring of 1875. In corroboration of this statement the patterns are produced and the pattern maker identified them as having been made by him in the months of February, March, and April, 1874. Our conviction is that the defendant has not succeeded in proving a defense.

There should, "therefore, be a decree for the complainant upon the third Blessing patent, but as the complainant has been defeated upon three of the four patents in suit, the decree will not allow costs.

This volume of American Law was transcribed for use  
on the Internet  
through a contribution from [Lessig's Tweeps](#).