

CONSOLIDATED SAFETY-VALVE CO. V.
CROSBY STEAM-GAUGE & VALVE CO.

Circuit Court, D. Massachusetts. April 30, 1881.

1. PATENTS Nos. 58,294 AND 85,963.

Patents Nos. 58,294 and 85,963, granted to George W. Richardson for improvements in safety-valves for steam-boilers, *held, not infringed* by valves constructed under patents Nos. 159,157 and 160,167, granted to George H. Crosby.

2. SAME—INFRINGEMENT.

Safety-valves containing the principles of additional area for the pressure of steam, and a stricture causing it to act by its expansive force, not being original with Richardson, he could not, whatever the words of his claim, enjoin the use of valves resembling his own only in its adoption of these ideas.

3. SAME—SAME—CLAIM—CONSTRUCTION.

If the defendant has taken the complainant's invention, the court will endeavor to construe the claim to conform with that fact

Complainant's device, consisting of an annular chamber outside the ground joint of the valve so regulated by the opening as to "huddle" the steam when it begins to escape, assist it to open more widely, and not interfere with its rapid fall before the loss of too much steam, *held*, in the state of the art, *not infringed* by defendant's device, composed of a primary and supplemental valve, both within the shell, the latter (which furnishes an additional area for the action of the steam when the valve is in operation) resting on a chamber closed at the bottom, with outlets to the exterior of the shell, the size of which openings may be so adjusted by a sleeve on the shell's exterior as to cause the escaping steam to exert more or less differential pressure on the supplemental valve.

In Equity.

T. W. Clarke, Benj. Dean, and Geo. Sheffield, for complainant.

W. A. Herrick and J. H. Millett, for defendant.

LOWELL, C. J. The complainant charges against the defendant an infringement of two patents granted

to George W. Richardson, for improvements in safety-valves for steamboilers; one dated September 25, 1866, No. 58,294, and the other, January 19, 1869, No. 85,963. The former patent is the important one; the other is for a device to assist in adjusting certain parts of the patented valve. Richardson's 769 valve went into general use upon the locomotives of this country and of Europe, immediately upon its introduction to the market, and is still made and sold very extensively. The defendant holds two patents granted to George H. Crosby, one dated January 26, 1875, No. 159,157, and the other dated February 23, 1875, No. 160,167. The questions argued in these cases are whether Richardson's patents are valid, and if they are, whether Crosby's patents represent subordinate or independent inventions.

The plaintiff's invention has been twice before this court. In *Ashcroft v. Boston & Lowell R. Co.* 1 Holmes, 366, the owner of the safety-valve patented by Naylor, in 1863, sued to enjoin the use of the Richardson valve; but the court held that the two were distinct inventions. This decision was affirmed in the supreme court, (*Ashcroft v. Railroad Co.* 97 U. S. 189.) Another suit, in which Richardson was plaintiff and Ashcroft defendant, was pending at the same time, upon the same evidence, and was decided in January, 1875, in favor of the plaintiff. Judge Shepley's opinion was orally given, and no minutes of it are preserved. From the reports of the former case, and the additional testimony in this record, the state of the art is pretty fully exhibited. The ordinary safety-valve still used upon certain kinds of boilers, and which consists of a valve kept down by a lever and weight, or by a spring balance, was not wholly satisfactory, nor always even safe when used with a helical spring, which is much the most convenient load for the valve of a locomotive. When steam is made very rapidly, this valve will not open fast enough to reduce the pressure

of the boiler, because the pressure of the spring is constantly increasing by its compression. To meet this difficulty, several inventors, before 1866, constructed and patented valves which had an additional surface, outside of the valve proper, to be acted on by the steam as soon as it had raised the valve, and thus to increase the lift as the force of the spring increased. Naylor's specification, as cited by Judge Shepley, 1 Holmes, 368, described a valve which was made to project over the edges of the exit passage for the steam, and the projecting 770 edges of the valve were made to curve slightly downward, so that the steam, on issuing between the valve and its seat, would impinge against the curved projecting portion of the valve, and would be deflected into an annular chamber which surrounded the central passage for the steam. He said that he thus made use of the recoil action of the steam against the valve, but he gave notice that he did not claim broadly this use of the recoil action, and of the extension of the valve laterally beyond its seat. In fact, these two features were found in Beyer's patent, which was issued a few months earlier than Naylor's. Ashcroft, the assignee of Naylor, was less modest. When he re-issued the patent he claimed the valve with its downward curved lip, and the annular recess, adding, by way of caution, "substantially as described." The courts held that, in view of what Beyer had described and patented, Naylor could not sustain a broad claim to a curved lip or an annular recess, generally, but must be limited to his own peculiar form of construction.

Richardson's patent of 1866 embodied the same general mode of construction and operation as was shown in Beyer and Naylor, and in other patents now produced in evidence. Judge Shepley thus describes it:

"In the Richardson valve, when the valve opens, the steam expands and flows into the annular space around the ground joint. Its free escape is prevented

by a stricture, or narrow space formed by the edge of the lip and the valve seat. Thus, the steam escaping from the valve is made to act by its expansive force upon an additional area outside the valve proper, to assist in raising the valve; this stricture being enlarged as the valve is considerably lifted from its seat, and varying in size as the quantity varies of the issuing steam." 1 Holmes, 369.

The difficulty to be overcome in all these valves which use an additional lifting area after the valve is open, is to limit the lift so that too much steam shall not escape. It seems that Richardson's valve accomplished this by a careful adaptation of the width of his opening, or stricture, to the size of his chamber and the strength of his spring. In the reported case Judge Shepley said, and Mr. Justice Clifford, in the supreme court, agreed with him, that Richardson had succeeded in making a working valve of this kind which would lose but two and a half pounds when blowing off at a pressure 771 of 100 pounds. The validity of Richardson's patent was not in issue in that case, but only a comparison of his valve with that of Naylor, owned by Ashcroft. In *Richardson v. Ashcroft*, which is not reported, and which was not taken to the supreme court, Judge Shepley sustained the patent. He must, therefore, have found that the specification of Richardson was sufficient, and that he was the first to invent whatever the court considered to be claimed by him; but exactly what that was, I am not informed.

In this record the defendant introduces two English patents not brought out in *Richardson v. Ashcroft*, and has examined two accomplished experts in relation to them. They also produce the American re-issued patent to Waterman, which I suppose to have been before Judge Shepley in connection with the state of the art, but which, if we may judge from the pleadings, was not relied on to defeat the novelty of the Richardson patent. The original patent of

Waterman, which was considerably older than Richardson's, while claiming an improvement to a different part of the valve, showed a structure so much like Richardson's that Richardson sought out the inventor, and they made a joint stock of their two patents, and procured a re-issued of that of Waterman, in which he specifies a mode of construction by which, when the valve is raised from its seat, the escaping steam is so directed as to enter an overhanging or projecting annular chamber on the top or upper part of the valve, and outside of and beyond the ground joint. He describes how this force may be modified by a modification of the overhanging or projecting annular surface. He goes into all the details of the necessary and proper construction; and, in short, as I understand it, describes the Richardson valve, with a stricture and all, excepting that his additional lift was due wholly to the expansive power of the steam admitted to the annular chamber, while Richardson used both the impact of the issuing steam and its subsequent expansive power. Naylor had used the impact only.

The two patents newly found in this case are those of Ritchie and of Webster. Both describe and show, by drawings, valves intended to operate in the same general way with 772 those of Beyer, Naylor, Waterman, and Richardson. The experts have produced many valves, said to have been made from those descriptions and drawings, with more or less change. Mr. Hoadley, called by the defendant, considers the description and drawings in Webster to be as explicit and easy to be followed as those of Richardson. Either description, he thinks, would require to be supplemented by experiment before a working valve could be made. Richardson's patent, however, has been sustained by the court, and Webster's has not been.

My opinion upon the issue of infringement makes it unnecessary for me to explain at large the conclusions

concerning the state of the art,—at which I have arrived after a patient study of the record,—excepting to this extent: I consider it to be fully proved that some valves had been made before 1866, which operated on the same general principle with that of Richardson, and were of some value; especially is this true of the Naylor and Waterman contrivances, and probably of Beyer's. Waterman, I may say, is examined as a witness for the complainant, and says, in direct examination, that his valve was not good for much until he changed it with Richardson's patent in his hand. On cross-examination, he says that the chief difference between his valve and Richardson's was that he had a weight, and not a spring; and he testifies that the arrangement for joint ownership was made with Richardson upon his threat to re-issue his patent and claim the use of the spring. He means to say, I suppose, that the spring was a well-known equivalent for a weight, as it undoubtedly was. Richardson was twice examined, but says nothing on this subject. If Waterman wishes us to understand that his original invention was useless, he is contradicted by his oath to the re-issue. I find that Waterman had a valve of some valve, operating through the expansive power of steam exerted upon an additional chamber outside the ground joint. Richardson assisted in procuring a re-issue of this patent, and he set up the Beyer patent in answer to Ashcroft, by which we may infer that he considered both these inventions to be of some value.

In this state of the art, Richardson describes an annular 773 chamber outside the ground joint of a valve, and so regulated by the crack, or opening, between its lip and the main body of the valve, that it will confine or "huddle," as the experts say, the steam, when it begins to escape from the chamber, and will presently afterwards open more widely and let the steam escape, and not interfere with the rapid fall of the valve before it has lost too much steam. It

holds it up just long enough. His single claim is “a safety-valve with the circular, or annular flange or lip, *c c*, constructed in the manner or substantially in the manner shown, so as to operate as and for the purpose herein described.”

The Crosby patents, owned and used by the defendant, describe two forms of valve operating substantially alike, and which I can describe sufficiently without nicely discriminating between them. The valve is so made that, when it rises, an additional part of its under surface is exposed to the action of the steam in the chamber. This additional part is either masked or neutralized until the valve begins to rise. This furnishes an additional lift, proportioned to the additional area now exposed. The pressure of the steam in the chamber is further regulated and adjusted, thus: When the valve rises, it opens a way for the steam into a smaller chamber inside the principal one. This lesser chamber has several outlets to the air below, the sum of whose area is about equal to that of the lesser chamber itself. If these holes are all open, there is simply a free escape of steam below as well as above, though not of the same size; and the operation is like that of an ordinary old-fashioned valve, except that it has a vent below as well as above. But, in practice, the holes are rarely left wide open; and the most approved means of closing them to the desired extent are found in a brass ring or sleeve, fitted by a screw-thread to a thread on the outside of the casing. In the second patent, this sleeve is described, instead of the stop-cocks and bushings mentioned in the first patent: “This sleeve is of cup shape, or has an upturned annular flange, which directs upward the escaping steam.” When these holes are thus diminished, there is a “huddling” of steam, as the plaintiff calls it, or a differential pressure, as the specifications describe it; that is, the amount of

774 pressure which will be exerted on the valve is adjusted, in part, by the size of the openings below.

Now, it is plain that this contrivance does not come strictly within the language of the plaintiff's claim of a safety valve, with the circular or annular lip, etc. The curved lip or flange in the defendant's valve, when he uses it, has nothing to do with the pressure of the steam; it merely prevents it from scalding the engineer. There is a lip or flange in the plaintiff's *claimed* flange co-operates in the making of his stricture. The defendant's flange is merely attached to the sleeve which aids in making his stricture. But the important comparison is between the two things. If the defendant has taken the plaintiff's invention, I should try to construe the claim to conform to the fact, rather than to leave the parties to the dubious expedient of a re-issue.

I understand the resemblances and differences to be these: The defendant, like the plaintiff, employs an additional surface to lift the valve as soon as it begins to blow; and the pressure is regulated, in part, by a stricture. The defendant's valve is unlike the plaintiff's in the following particulars: The additional area is not outside the ground joint, but inside; it is not acted on independently of the valve itself, but is a part of it. The escaping steam does not act at all by impact, but wholly by expansion. The stricture is not variable, opening wider as the power increases, but is adjusted once for all by the operator.

Considering the state of the art, as I have found it to be, that Richardson was not the first to invent and apply, more or less well, the principle of the additional area, nor that of the stricture, he could not, whatever the words of his claim, successfully enjoin the use of a valve resembling his own only in its adoption of these general ideas. I am of opinion, then, that Richardson neither claims, nor could properly claim, a valve having

such a mode of operation as I find in this valve of the defendant.

Case No. 1,199 depends upon the decision of No. 1,184, because the improvement which forms the subject-matter of 775 that suit is merely a mode of adjusting the pressure in the valve, which is the subject-matter of the patent sued on in No. 1,184.

Bills dismissed, with costs.

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