Case No. 577.

ASHCROFT v. BOSTON & L. R. CO.

{1 Holmes, 366;[1] 1 Ban. & A. 215; 5 O. G. 725.}

Circuit Court, D. Massachusetts. May, 1874.[2]

PATENTS FOR INVENTIONS—WHAT CONSTITUTES INFRINGEMENT—PRIOR PATENT—DISCLAIMER.

1. In view of the prior state of the art, the reissue patent granted E. H. Ashcroft, assignee of William Naylor, Nov. 9, 1869, for a steam safety-valve having an overhanging downward-curved lip surrounding an annular recess into which the steam passes as it issues from under the valve, if valid, must be limited to the combination of the other elements of the device with an annular recess of the precise form described.

{Cited in Consolidated Safety-Valve Co. v. Crosby Steam-Gauge & V. Co., 7 Fed. 769.}

{See note at end of case.}

2. So limited, the patent is not infringed by the use of a steam safety-valve substantially the same as that described and shown in the patent granted George W. Richardson Sept, 25, 1866, although that valve has an overhanging downward-curved lip and an annular recess surrounding the valve-seat, into which a portion of the issuing steam is deflected; the lip and recess being, in construction and mode of operation, substantially different from the lip and recess described in the Naylor patent.

{Cited in Consolidated Safety-Valve Co. v. Crosby Steam-Gauge & V. Co., 7 Fed. 769; Same v. Kunkle, 14 Fed. 733; Same v. Crosby Steam-Gauge & V. Co., 113 U. S. 162, 5 Sup. Ct. 513.}

{See note at end of case.}

{In equity. Bill by Edward H. Ashcroft against the Boston & Lowell Railroad Company to restrain the infringement of patent No. 58,962. Bill dismissed. An appeal was subsequently taken to the supreme court, where this decree was affirmed. 97 U. S. 189.}

James B. Robb, for complainant

J. G. Abbott and Benjamin Dean, for defendant.

SHEPLEY, Circuit Judge. The bill in this case charges the defendant with infringement of letters-patent of the United States, reissued Nov. 9, 1869, {No. 58,962,} to the complainant, as assignee of William Naylor, of the county of Middlesex, England, for an improvement in steam safety-valves. The answer of the defendant sets up in defence: First, that the reissued letters-patent are not for the same invention described in the original letters-patent. Second, that William Naylor was not the original and first inventor of the improvements specified in said reissued patent, but that the same were known to others and used by them, as stated specifically in the answer, prior to the alleged invention there of by Naylor. Third, that the reissued patent does not cover and embrace the valve used by the defendant. Fourth, that the valve used by defendant is described and contained in letters-patent of prior date to complainant's invention, granted by the British government to Thomas Green, also to Charles Beyers, and by the United States to Henry Waterman,

and also to George W. Richardson, and that the invention of George W. Richardson, described in his patent, was made prior to the invention of Naylor set out in the bill. The invention relates to spring safety-valves for use on locomotive, stationary, and marine engine boilers. As the spring on common safety-valves was compressed by the lifting of the valve, the force of the spring became stronger by tension, while, inversely, from other causes, the tendency of the valve to rise became weaker. The spring safety-valve, therefore, failed to relieve the boiler; for, as the spring was compressed by the lifting of the valve, its power to resist was largely increased, and if steam was rapidly generated, the pressure in the boiler continued to increase while steam was escaping at the valve. Various attempts have been made, as shown by the various patents in evidence, to obviate this defect in the operation of the common spring safety-valve.

William Naylor, in his specification filed in the great seal patent office of Great Britain, on the twenty-first day of January, 1864, described two methods of obviating this difficulty. One of these methods claimed by him as his invention, he says, "consists, when using a spring for resisting the valve from opening, in the employment of a lever of the first order, one end resting by a suitable pin upon the safety-valve, and the other end of the lever resting upon the spring being bent downward to an angle of about forty-five degrees from the fulcrum, so that, when the valve is raised by the steam, the other end of the lever is depressed upon the spring downward, and at the same time is moved inward toward the fulcrum, thus virtually shortening that end of the lever, and thereby counteracting the additional load upon the valve as it is raised from its seat by the greater amount of compression put upon the spring." This method he claimed as his invention in the specifications of his English patent. These specifications also described another method of obviating the difficulty. This consisted of the following contrivance: A lateral branch or escape-passage was provided for a portion of the steam after it passed the valve, the valve was made to project over the edges of the exit-passage for the steam, and the projecting edges of the valve were curved 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 a portion of it would be directed downward into the annular chamber which surrounded the central passage for the steam, which chamber communicated with the exit-pipe, while the other portion of the steam ascended past the edges of the valve. "By this

means," he states, "I am enabled to avail myself of the recoil action of the steam against the valve, for the purpose of facilitating the further lifting of such valve when once opened; but I wish it to be understood that I lay no claim to such recoil action, nor to the extension of the valve laterally beyond its seat" And in the claims, at the close of his specifications, he made no claim for any such extension of the valve, or any device for effecting any recoil action of the steam. In fact, Charles Beyer, in his English patent, dated Oct. 21,1863, before the date of Naylor's patent, had fully described a valve made to project over the edges of the exit-passage for the steam, and the projecting edges of the valve were curved slightly downward, so that the steam, on issuing between the valve and its seat, would impinge against the curved projecting portion of the valve. The description is as follows: "This invention consists in forming a flange round the valve, commencing at the outer edge of the valve-facing, which flange is undercut and concave in shape, and the concave side is toward the seating of the valve, which has also a flange upon it, commencing at the outer edge of the valve-seating, but the upper surface of the flange is convex, and corresponds nearly to the concave surface of the flange upon the valve. There is a slight space between the concave and convex surfaces of the two flanges, which diminishes toward the outer edge of the flanges. When the steam begins to escape from between the surfaces of the valve, it gets between the concave and convex surfaces of the two flanges, and its force thus acts upon a larger area, and reacts, upon the concave surface of the valve, and causes it to open to a greater extent than the ordinary safety-valve." It will be seen from this description that the Beyers safety-valve had "an overhanging downward-curved lip or periphery and an annular recess," into which the steam will be directed downward on issuing between the valve and its seat, while a portion of the steam will also impinge against the curved projecting portion of the valve.

Without adverting to the patents of Henry Waterman and other devices older than Naylor's, we have seen that Naylor could not, with propriety, claim to have been the inventor of the combination, in a spring safety-valve, of every form of projecting overhanging downward-curved lip or periphery, with an annular recess surrounding the valve-seat, into which a portion of the steam is directed as it issues between the valve and its seat. Neither of the attempts to overcome the objections to the spring safety-valve in common use appears to have been so far successful as to have introduced either of the inventions into common or general use. Letters-patent of the United States, issued Sept. 25, 1866, [No. 58,294,] to George W. Richardson, of Troy, N. Y., for an improvement in safety-valves. The purpose of a safety-valve being to open and relieve the boiler, and then to close again at a pressure as near as possible to that at which the valve opened, Richardson accomplished it so far as to invent a valve which would open at the given pressure to which the valve was adjusted, and relieve the boiler, and then close again when the pressure was reduced about two and one-half pounds to the inch when the pressure in the generator was

one hundred pounds to the inch. This practically answered the required conditions for a useful spring safety-valve. It went very soon into general use. The complainant, who is a manufacturer in this country of safety-valves, then, as appears from the evidence in the record, endeavored to find something to anticipate the invention of Richardson. Finding in the patent office a model of the Naylor valve, with an overhanging lip and an annular chamber surrounding the valve-seat, he goes to England and purchases the right to the Naylor invention; and although Naylor himself had disclaimed the recoil action of the steam consequent on the passage of a portion of the steam downward into the annular chamber surrounding the central chamber, while the other portion of the steam ascends past the edges of the valve, and had also disclaimed the extension of the valve laterally beyond its seat, the complainant caused the patent to be reissued to him, as assignee of Naylor, with the following claims, which were not in the original patent:

"2. The safety-valve, C, with its overhanging downward-curved lip or periphery and annular recess, D, substantially as herein shown and described, and for the purpose set forth.

"3. The annular recess, D, surrounding the valve-seat, substantially as herein set forth.

"4. The combination of the valve, C, and the annular recess, as herein set forth, and for the purpose described."

From the history of the art as previously given, and from a comparison of the original with the reissued Naylor patent, as well as from the language of the claims in the reissued patent, it is manifest that if these claims can be sustained, it can only be for the combination of the described valve with its overhanging downward-curved lip, with precisely such an annular recess surrounding the central chamber as he describes. Naylor did not invent the overhanging downward-curved lip or periphery, nor was he the first to use an annular chamber surrounding the valve-seat into which a portion of the steam is deffected as it issues between the valve and its seat. His claims must, therefore, be limited to the combination of the other elements, with precisely such an annular recess as he has described, and operating in the described manner so far as such recess, separately or in combination, differed in construction and operation (if it did materially differ in those respects) from those which had preceded it. The claims cannot be made to cover a safety-valve

like the Richardson valve, which, in its construction and mode of operation, is substantially different from the valve described in the Naylor patent, simply because the Richardson valve, in common with the Naylor valve, has the overhanging downward-curved lip or periphery, and an annular recess surrounding the valve-seat, into which a portion of the steam issuing from between the valve and its seat is deflected. The differences between the Richardson and Naylor valves in construction are apparent upon an inspection of the drawings in the respective patents. The difference in the mode of operation is most clearly proved by the testimony of the experts in the case. In the Naylor valve It appears that it was the intention of the inventor to use the impact of the issuing steam upon the concave lip of the valve to assist in lifting it, and only this, except so far as it was aided by the diminution of atmospheric pressure on the top of the valve, consequent upon the issuing of a portion of the steam in an upward direction around the periphery of the valve, the annular chamber into which the steam is discharged on leaving the valve serving no other purpose than that of a conduit for the steam when the valve is constructed in accordance with the drawings in the original patent. 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 outer 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 of 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. There would be no such variable stricture in the Naylor valve, and, in fact, there would be no stricture in it without substituting a diaphragm or some equivalent device for the radial bars which, in the drawings in the original patent, connected the inner and outer cylinders; and if Naylor's annular chamber had been intended to be closed, or partially closed, at the bottom by substituting a diaphragm for the radial bars shown in the drawing, or by substituting a small outlet, not shown, for the large one shown in the drawing, for the exit of the steam from the annular cylindrical chamber, then his device of a bent lever would not only have been useless, but injurious, in its operation; and this last device is the only one which he claimed in his original patent. The Richardson valve is the one used by the defendant; there is added an extension-cup and upward-curved flange to give an upward direction to the issuing steam and keep it away from the cab of the engine. This is an old device, and does not affect the principles or mode of operation of the valve proper.

There is a substantial difference between the Richardson valve and the valve in the specifications and drawings of the Naylor patent, not merely in degree. The increased practical utility of the Richardson valve results from a substantial difference in construction and mode of operation. Bill dismissed.

[NOTE. On appeal, this decree was affirmed by the supreme court. Mr. Justice Clifford, in delivering the opinion, said: "Throughout, the steam valve used by the respondents is the valve patented to George W. Richardson, whose patent makes a part of the record. He obtained his patent September 25, 1866, nearly a month earlier than the date of the original American patent granted to Naylor. His invention, as he describes it, consists in increasing the area of the head of the common safety valve outside of its ground joint, and terminating it in such a way as to form an increased resisting surface, against which the steam escaping from the generator shill act with additional force after lifting the valve from its seat at? the ground joint, and so, by overcoming the rapidly increasing resistance of the spring or scales, will insure the lifting of the valve still higher, thus affording so certain and free a passage for the steam to escape as effectually to prevent the bursting of the boiler or generator, even when the steam is shut off and the damper left open." After duly considering the evidence, the steam valve used by respondents was held not to be an infringement of that described in the specification of either of the three patents representing the invention claimed by complainant. Ashcroft v. Boston & L. R. Co., 97 U. S. 189. Richardson's patent (No. 58,294) was construed in Consolidated Safety-Valve Co. v. Crosby Steam-Gauge & V. Co., 7 Fed. 768; Same v. Kunkle, 14 Fed. 732; Same v. Crosby Steam-Gauge & V. Co., 113 U. S. 157, 5 Sup. Ct 513.]

[1] [Reported by Jabez S. Holmes, Esq., and here reprinted by permission.]

[2] [Affirmed by supreme court in Ashcroft v. Boston & L. R. Co., 97 U. S. 189.]