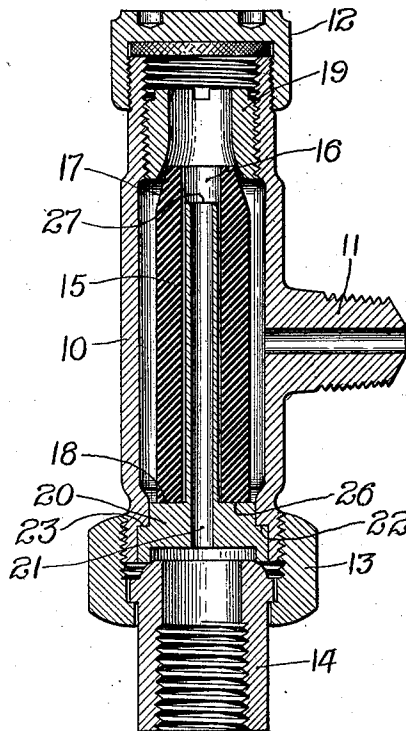


F. W. LEUTHESSER.
 AIR VALVE FOR RADIATORS.
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1,062,407.

Patented May 20, 1913.



Witnesses

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UNITED STATES PATENT OFFICE.

FRED W. LEUTHESSER, OF CHICAGO, ILLINOIS.

AIR-VALVE FOR RADIATORS.

1,062,407.

Specification of Letters Patent.

Patented May 20, 1913.

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To all whom it may concern:

Be it known that I, FRED W. LEUTHESSER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Air-Valves for Radiators, of which the following is a specification.

The present invention relates to that type of air valves employing a thermostatic member commonly termed an expansion post, which controls the escapement of air from a radiator.

The objects of the present invention are to arrange the operative parts of the valve so that the expansion post may be quickly and easily removed from the interior of the casing whenever it is desired.

Further objects of the invention are to stiffen or strengthen the expansion post, whereby the danger of its being rendered inoperative by buckling or warping is eliminated, and to so form the thermostat as to insure its correct insertion into the valve casing and to reduce the liability of a misfit between the member and its seat.

The invention further consists in the features of construction and in the combination of parts hereinafter described and claimed.

In the drawings, the figure is a longitudinal section of an air valve arranged in accordance with the present invention.

In the art of steam-heating, it is customary, when a system is first operated, to perform an operation which is known as a blowing-out of the system. It happens that in the casting of radiators, pipes, etc., a certain amount of sand used in the casting operation will adhere to the interior surfaces of the members, and when said radiators, pipes, etc., become heated, the expansion which takes place, slight as it may be, will be sufficient to loosen up this sand, with the result that it will circulate through the system, and in passing through the valves grind or cut them away, thus materially injuring them. This is especially true of the expansion posts of the air valves, which are made of relatively delicate material and are easily injured by contact with roughened surfaces. It is, therefore, customary, to blow steam through the pipes and radiators with the idea of removing this sand or grit. In performing this operation, it is desirable, if not essential, to remove the expansible mem-

bers, since the passage of grit through the air valves will grind or cut these members so that in many instances they are rendered useless.

It is one of the primary objects of the present invention to so arrange the parts composing the valve as to enable the expansible member to be easily and quickly removed from the interior of the valve casing to permit of this blowing-out operation. The prior art, so far as I am aware, shows an arrangement of the operative portions of the valve which renders the removal of said posts a matter of difficulty.

As heretofore stated, a further object of the present invention is to stiffen the expansible member so as to prevent buckling or warping. It frequently happens that in adjusting the abutments for the expansible member a careless workman will compress the expansion post so as to cause it to warp or buckle, whereby it will not properly seat upon its abutment, and hence will not perform its duties as a thermostatic valve member in a proper manner. Of course, this warping or buckling is sometimes brought about in other ways from that mentioned, but however it is produced, the effect is the same, namely, to render the valve useless for satisfactory operation.

Referring to the drawing, a valve casing 10 is shown, provided with a nipple 11, adapted to be attached to the radiator; and said casing is provided with the ordinary cap-piece 12. The lower end of the valve casing has screw-threaded or otherwise attached thereto a union or coupling nut 13, which engages with a nipple or stem 14 adapted to be attached to the upper end of the return pipe of the system. Lying within the casing is an expansible member 15, commonly termed an expansion post, which is formed with a longitudinally extending central opening 16, and has a tapered upper end 17 and a flat lower end 18. A screw-threaded ring-like member 19 is placed in the upper end of the casing, which forms an abutment or seat for the upper end of the expansion post, the seat in the upper abutment for the expansible member and the upper end of the expansion member being as shown beveled and normally spaced apart to provide an opening for the escapement of air. As is usual in valves of these types, this space is closed by the expansion of the expansion post thus cutting off the passage

of air in the manner well known by those skilled in the art.

A ring like member 20 is located in the lower end of the shell or casing which forms an abutment or seat for the flat lower end 18 of the expansion member; the flat lower end of the expansion member being always in engagement with the flat face 26 of the lower abutment there never is any appreciable escapement of steam past the lower end of the expansible member since the configuration of these surfaces is such as to practically insure a correct engagement therebetween. The lower ring-like member or abutment, as shown, is provided with an opening 21 communicating with the nipple 14 and with the opening 16 in the expansion post. The lower ring-like member 20 is formed with a shoulder 22, which engages with a shoulder 23 in the valve casing, the engagement of the shoulders holding the ring-like member against movement toward the expansion post. This ring-like member 20 has a free or sliding fit within the valve casing and is, therefore, readily removable from the interior of the casing. From a study of the drawings, it will also be seen that the expansion post 15 is in a free or loose condition within the valve casing, and by "free or loose" is meant that it is not positively attached or secured to any other portion of the valve mechanism. It is, therefore, obvious that with the expansion post in a loose condition within the casing, and the lower abutment for said post readily removable from the casing, the removal of the expansion post from the interior of the casing would be a simple matter when the means for locking the lower abutment in place are removed. The lower abutment is held in place by the engagement of the upper end of the nipple 14 with the lower end of the lower abutment. This nipple 14, when the valve is placed in operative position, is attached to the upper end of the return pipe, and, therefore, to all practical intents and purposes, it is a portion of the return pipe and may be considered in describing it as the upper end of the return pipe, although it is a portion made independently of the return pipe and is attached thereto when the valve is connected up.

When it is desired to remove the expansion post from the interior of the casing for the purpose of blowing-out the system, the union nut 13 is unscrewed from the lower end of the casing, after which the end of the return pipe can be swung to one side of the lower end of the valve casing and the lower abutment 20 and expansible member will then fall out because of the loose condition in which they are held within the casing.

It is then a simple matter to couple up the valve casing with the upper end of the return pipe, after which the blowing-out of the system can be effected without injury to the expansible members. Then, by the same operation which has heretofore been described, except taking the steps in reverse order, the expansible member can be replaced within the casing and the system is then ready for final operation. This very simple manner of enabling the removal of the expansible member eliminates all the waste of time and energy heretofore necessary in this operation; and, furthermore, the expansion posts when returned to the casing will be in the same position of adjustment with respect to the abutments as they were before they were removed, so that after such removal any re-adjustment of the parts is not necessary.

In order to correctly center the expansible member within the casing and stiffen the same thus preventing buckling or warping, the abutment has extending therefrom a hollow metallic tube 27 which lies within the opening 16 in the expansible member.

I claim:

In an air valve for radiators the combination of a casing having an outlet in the lower end thereof and an inlet intermediate the ends thereof, an expansible member within the casing, having a tapered upper end and a flat lower end and provided with a central longitudinal bore, an upper adjustable abutment for said member, located above said inlet, and provided with a tapered opening to receive said tapered upper end of the expansible member, a ring like abutment for the lower end of said member provided with a flat seating face for said flat lower end and with a central bore in alinement with the bore of the expansible member, said expansible member being freely detachable from said abutments, said casing having a shoulder adjacent its lower end, said ring like abutment being cut away to provide a shoulder to engage therewith, and formed to have a sliding fit within said casing, a tube centrally extending from the lower abutment and entering the bore in the expansible member, a circumferential flange around the lower end of the lower abutment, a nipple having a tapered upper end arranged to engage said flange and a nut for joining said nipple to said casing and forming the sole means of holding said lower abutment and expansible member in place, substantially as described.

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Witnesses:

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