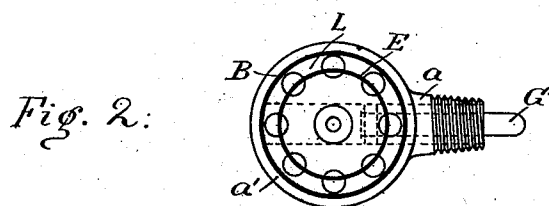
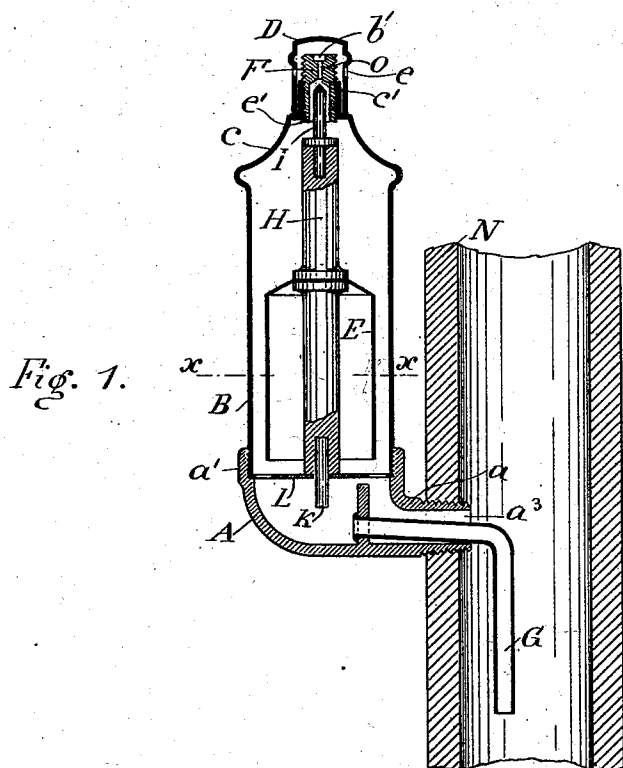


(No Model.)

C. E. VAN AUKEN.
AUTOMATIC AIR VALVE.

No. 531,666.

Patented Jan. 1, 1895.



Witnesses

W. E. Haselton
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Inventor

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UNITED STATES PATENT OFFICE.

CLARENCE E. VAN AUKEN, OF CHICAGO, ILLINOIS.

AUTOMATIC AIR-VALVE.

SPECIFICATION forming part of Letters Patent No. 531,666, dated January 1, 1895.

Application filed November 27, 1893. Serial No. 492,042. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE E. VAN AUKEN, 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 Automatic Air-Valves for Radiators, of which the following is a specification, reference being had to the accompanying drawings, which are made a part hereof, and in which—

Figure 1 is an axial sectional view of my improved valve connected to a radiator tube. Fig. 2 is a horizontal section thereof on the line X X Fig. 1.

The present invention relates to valves to be applied to steam heating radiators for the purpose of permitting cold air to escape from them in order to give place for the steam and the object of the said invention is to provide a valve that will not only permit the air to escape and to prevent the escape of steam, but that will also effectually prevent the escape of water from the outlet of the valve casing; also to provide means whereby all water entering the valve casing may be discharged back into the radiator by gravitation.

To this end the invention consists in certain features of novelty that are particularly pointed out in the claims hereinafter.

Referring to the drawings "A" represents the base of a valve having an externally screw-threaded projection "a" designed to be tapped into a radiator. Upon the top side of this base is an annular flange a' to which is screwed or brazed the cylindrical shell or casing B. At the upper end of this cylindrical shell is screwed or otherwise secured the head C having a screw thread opening e' .

F is an adjusting screw adapted to be fitted into the screw thread opening e' , and provided with a duct o that passes completely through it forming the vent or outlet of the casing and with a counterbore c' at its inner end and slot b' at its outer end.

D is a cap provided with vent holes e .

H is a post of vulcanite or other material possessing the qualities of expansibility when influenced by heat, greater than the shell B.

I is a needle valve secured to the top of the post, said valve being adapted to close outlet o whenever steam enters the casing from the radiator.

E is a float of inverted cup shape which is rigidly secured at its upper end to the post H and is adapted to close the outlet o when water enters the valve casing.

L is a perforated shield on which normally rest the post H and float E.

K is a guide pin secured to the bottom of the post H and extends loosely through a perforation in shield L.

G is a tube the upper end of which is in communication with the interior of the valve chamber and is so attached that while the valve is being screwed into the radiator it may not revolve with the valve. Such tube extending downward from the valve chamber is for the purpose of establishing a column of water sufficiently high, the weight of which will siphon any or all water contained in the valve casing into the radiator tube.

N shows a portion of a radiator tube having the valve attached at any desirable distance above the bottom of the radiator.

The several parts are so proportioned and arranged that when the radiator is cold they will occupy the positions in which they are shown in Fig. 1 the outlet o being open. When steam is admitted to the radiator the cold air is expelled therefrom passing through the duct a' and tube G into the valve casing and thus through the outlet o and holes e . When the cold air has been thus expelled from the radiator and steam enters the valve casing the post H becomes heated and expands, and in so doing closes the outlet o . It sometimes happens, however, that the radiator contains more or less water and that before the steam enters the valve casing and causes the outlet to be closed, as just described, more or less of said water finds its way into the valve casing and would eventually escape through the outlet o if the latter were not closed. By the presence of water in the casing the float E is lifted and carries post H, guide pin K and the valve I up closing the outlet o . The flow being thus checked, the water in the radiator will regain its equilibrium and fall below the threaded projection a whereupon the water will flow from the valve casing back into the radiator through the tube G. The float, post, guide pin, and valve will then fall by gravity to the position shown. The discharge of air through the outlet o will then be resumed and

will continue until again interrupted by the presence of either steam or water in the casing as described.

5 By placing the tube G in or about the manner shown, I am able to establish a column of water in such tube the weight of which is sufficient to overcome the capillary attraction and adhesion existing in the tube and the several parts of the valve casing, and thereby any or
10 all water contained in the valve casing will be siphoned out through the tube, it being understood that when such water is being siphoned out, air or steam will enter the valve casing through duct a^3 and does not or will
15 not enter through the duct o as long as the pressure in the casing and radiator is in excess of the atmosphere. It is also understood that any water entering the valve casing will pass through both the tube G and passage-
20 way a^3 and at the same time, and in so doing establishes a siphon in tube G for the above described purpose.

Having thus described my invention, the

following is what I claim as new therein and desire to secure by Letters Patent:

25 1. In an air valve, the combination of a casing provided with an inlet and an outlet, a valve arranged to close the outlet, means for operating said valve, and a tube communicating with the casing and extending from or
30 through the inlet, and of sufficient length to enable a column of water flowing therethrough to overcome the capillary attraction existing in the chamber, substantially as described.

35 2. In an air valve, the combination of a casing provided with an inlet and an outlet, a valve arranged to close the outlet, means for operating said valve, and a tube communicating with the casing, and so attached that the valve may be screwed into the radiator
40 section without the tube turning, substantially as described.

CLARENCE E. VAN AUKEN.

Witnesses:

CHAS. A. VOGT,

WM. J. MOORE.