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STEAM RADIATOR VALVES

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FIG. 1.

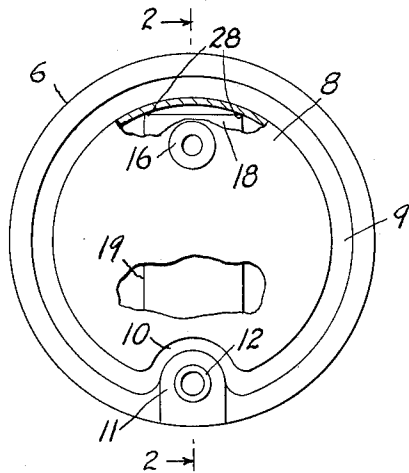


FIG. 2.

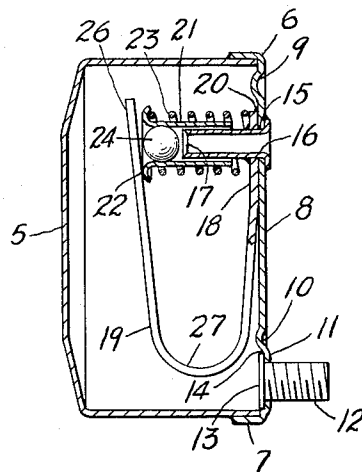
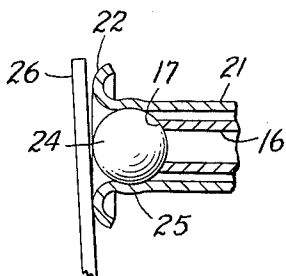


FIG. 3.



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## STEAM RADIATOR VALVES

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10 Claims. (Cl. 236-66)

This invention relates to valves for use in conjunction with steam radiators in automatically controlling operation thereof and, particularly, the discharge of air in maintaining the radiator in proper operation. More particularly, the invention deals with a simple and economical control valve controlling opening and closing of the exhaust or discharge from the casing of the valve.

Still more particularly, the invention deals with a valve structure, wherein all of the operative parts of the valve, including the means for mounting the same in connection with a radiator, are mounted on and supported by the cover of the casing of said valve, thereby simplifying and economizing on assemblage of the operative parts and assemblage of the complete valve.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

FIG. 1 is a face view of a valve made according to my invention, with part of the construction broken away.

FIG. 2 is a section on the line 2-2 of FIG. 1, with parts shown in elevation; and

FIG. 3 is an enlarged detail sectional view, generally similar to the showing in FIG. 2, but illustrating the valve in closed position.

In illustrating one adaptation and use of my invention, I have shown a casing 5, open at one side, the open side being closed by a cover 6, having a peripheral flange 7 snugly engaging the casing and soldered thereto in the usual manner. The wall 8 of the casing has, adjacent the periphery of the cover, an inwardly pressed annular groove 9, the lower portion of which has an inwardly set offset 10, note FIG. 1, which passes over a slightly outwardly offset portion 11. The portion 11 is apertured to receive a radiator nipple 12, having a flanged inner end, as seen at 13 in FIG. 2, which seats in the recess formed by the offset portion 11 and the flange 13 is soldered to the cover, as diagrammatically seen at 14.

The wall 8 has, adjacent the upper portion thereof, an aperture 15 for receiving an exhaust eyelet-type sleeve 16. The sleeve 16 projects into the casing and has, at its inner end, a bevelled valve seat 17.

The sleeve 16 passes through an aperture in the end portion 18 of a bimetal element 19, the end 18 being arranged directly upon the inner surface of the wall 8 and this end 18, together with the sleeve 16, are soldered to the wall 8, part of this soldering being diagrammatically illustrated at 20 in FIG. 2.

Mounted on and movable longitudinally of the sleeve 16 is a valve sleeve 21, the bore of which is larger in diameter than the outside diameter of the sleeve 16 to provide passage of air from the casing 5 into the sleeve 16 when the parts are in the position, as diagrammatically seen in FIG. 2 of the drawing. The valve sleeve 21 has, at its outer end, an outwardly extending rounded annular flange 22, which forms a seat for a coil spring 23, the other end of which seats upon the end 18 of the element 19, as diagrammatically seen in FIG. 2 of the drawing.

Pressure fitted into the flanged end portion of the sleeve 21 is a ball valve 24. This mounting can be such as to flex or expand the material of the sleeve 21 to a very slight extent, as diagrammatically seen in FIG. 3 of the draw-

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ing. Thus, the ball valve 24 will be permanently fixed in the sleeve 21. The valve 24 is shown in open position in FIG. 2 and in closed or seated position upon the seat 17 in FIG. 3 of the drawing. At 26 I have shown the operating end portion of the bimetal element 19, this end portion joining the end 18 in a rounded loop 27, as noted in FIG. 2. The end portion 26 of the element 19 serves to move the valve sleeve 21 against the action of the spring 23 in movement of the ball valve 24 from the open position of FIG. 2 to the closed position of FIG. 3; whereas, the spring 23 reverses this operation, in other words, moves the ball valve into open position to allow exhaust of air through the sleeve 16 in operation of the valve. Considering FIG. 1, it will appear that the corners 28 of the end 18 of the bimetal element 19 engage the inner surface of the reinforcing groove 19. This prevents any possible shifting movement of the end 18 of the element 19 if the air valve should be subjected to excessive shock in transit or be accidentally dropped.

It will be apparent, from a consideration of FIG. 2 of the drawing, that all of the operative parts of the steam valve are mounted upon the cover 6. This materially facilitates the assemblages and the soldering operations which are required and, after these assemblages have been made, the cover 16 and its assembled parts, can then be mounted on and in the casing 5 in finally completing the assemblage of the valve.

In the operation of the valve, it will be understood that the rounded flange 22 facilitates free and easy action of the end portion 26 of the bimetal element in movement of the valve sleeve 21 longitudinally of the sleeve 16, as will be apparent.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A radiator valve of the character defined comprising a casing open at one side, a cover fixed to the casing and closing said open side, a bimetal element mounted within the casing for actuating a valve assemblage, said assemblage comprising a fixed sleeve and a movable sleeve, said movable sleeve supporting a ball valve operatively engaging a seat at one end of the fixed sleeve, said bimetal element actuating the movable sleeve in one direction in movement of the ball valve into seated position upon said fixed sleeve, means providing a vent passage between the fixed and movable sleeves, tensional means for actuating said movable sleeve, and means for mounting the radiator valve in connection with a steam radiator for admission of air and/or steam into the casing of said radiator valve.

2. A radiator valve as defined in claim 1, wherein the bimetal element and the two sleeves and associated parts are all mounted upon said cover.

3. A radiator valve as defined in claim 2, wherein said last named means is mounted on said cover.

4. A radiator valve as defined in claim 1, wherein said ball valve has a pressure engagement and coupling with said movable sleeve.

5. A radiator valve as defined in claim 1, wherein said movable sleeve has a rounded flange end engaged by said bimetal element.

6. A radiator valve as defined in claim 5, wherein said tensional means comprises a coil spring, and said rounded end of the movable valve forming a seat for said spring.

7. A radiator valve as defined in claim 1, wherein said last named means includes a threaded nipple mounted in and secured to said cover.

8. A radiator valve as defined in claim 1, wherein said cover includes an inwardly pressed rounded circumferential portion adjacent the periphery of the cover.

9. A radiator valve as defined in claim 1, wherein said bimetal element includes an end portion fixed to the inner surface of the upper portion of the cover, said end portion of the element being apertured to receive said fixed sleeve,

and actuation of the movable sleeve by said bimetal element being through the medium of a free end portion of said element.

10. A radiator valve as defined in claim 1, wherein the means providing said vent passage comprises a larger inside diameter on the movable sleeve as compared with the outside diameter of said fixed sleeve.

**References Cited by the Examiner****UNITED STATES PATENTS**

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