

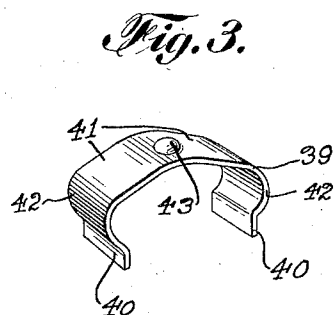
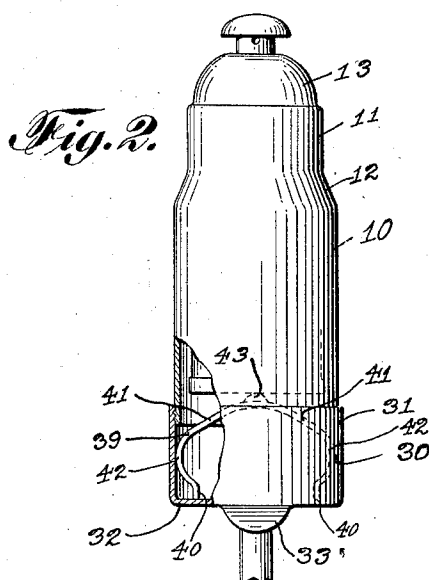
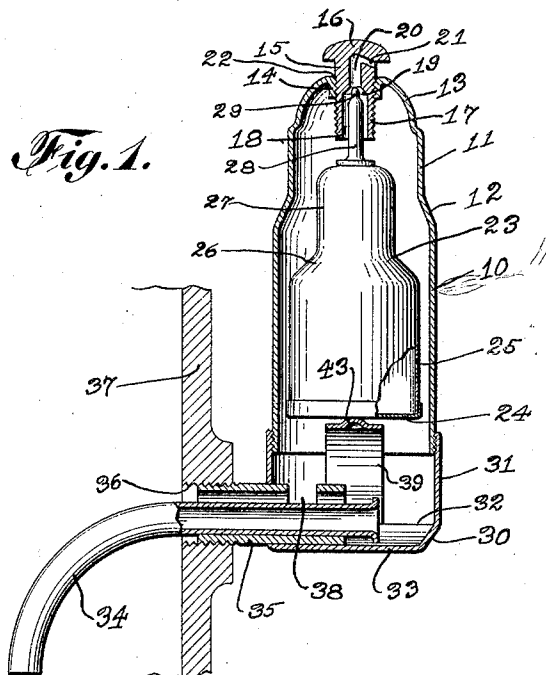
April 3, 1928.

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1,665,052

RADIATOR VALVE

Filed Sept. 13, 1926



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RADIATOR VALVE.

Application filed September 13, 1926. Serial No. 135,026.

This invention relates to air valves, and more particularly to a thermostatic radiator valve for steam, vapor, or hot water radiators.

5 One object of this invention is to provide a radiator valve of the above nature which will automatically close after the air has escaped from the radiator.

10 A further object is to provide a radiator valve of the above nature having an adjustable head adapted to be soldered in adjusted position in the valve casing, and also having a resilient U-shaped member for supporting a thermostatic valve-closing member.

15 A further object is to provide a device of the above nature which will be simple in construction, inexpensive to manufacture, easy to install and manipulate, compact, ornamental in appearance, and very efficient and durable in use.

20 With these and other objects in view, there has been illustrated on the accompanying drawings, one form in which the invention may be conveniently embodied in practice.

25 Fig. 1 represents a longitudinal section of the improved air valve, and a portion of the top of the radiator to which it is attached.

Fig. 2 is an end view, partly in section, of the radiator valve.

30 Fig. 3 is a perspective view of the U-shaped spring support for the thermostatic member.

Referring now to the drawings in which like reference numerals denote corresponding parts throughout the several views, the numeral 10 indicates the outer shell of the valve casing, said shell having a cylindrical open bottom section and a cylindrical upper section 11 connected with the bottom section by a conical section 12. The upper portion of the shell 10 terminates in a spherical dome section 13, said dome section having a downwardly extending central collar 14 for receiving an adjustable plug 15.

40 The adjustable plug 15 is provided on its upper end with a mushroom head 16 and has a tubular depending stem 17 threaded on its exterior to engage corresponding interior threads on the collar 14. The interior bore of the stem 17 is enlarged at its lower end 18 and the upper part of said enlarged section has a conical shoulder 19 which serves as a seat for the valve needle to be hereinafter described. The top 20 of the bore is reduced in diameter and has a downwardly

inclined outlet passage or vent 21 communicating with the outer atmosphere. The outlet passage 21 is located directly under the rim of the mushroom head 16 and is adapted to be projected by said mushroom head against clogging up with dust. The passage 21 is also hidden from view by the mushroom head, thus reducing the likelihood of unauthorized tampering.

In assembling the radiator valve, the adjustable plug 15 will first be screwed into the collar 14 to the desired adjusted position, and will be held in said position by an annular ring of solder 22 which may be placed at the junction of the collar 14 and the plug 15.

In order to cause the valve to close when the air has been expelled from the radiator, provision is made of a hollow thermostatic member or chamber 23 which is located within the shell 10. The thermostatic chamber 23 has a flat base 24 soldered or otherwise secured to a lower cylindrical section 25, said section 25 being connected by a conical section 26 to an upper cylindrical section 27.

80 Mounted upon the top of the thermostatic chamber 23 is a valve needle 28 having a point 29 which is adapted to seat in the shoulder 19 of the plug 15. The thermostatic chamber 23 is preferably filled with a suitable vapor, such as alcohol or ether, which will develop a high pressure when heated by the steam, vapor, or hot water which will be present in the valve after the air has been expelled, and as will be evident, the expansion of the chamber 23 will cause the radiator valve to close.

The bottom cylindrical section of the shell 10 is threaded on its exterior and is adapted to receive a socket 30, said socket having a cylindrical upper portion 31 and a flat base 32. The base 32 has a semi-cylindrical horizontal depression 33 which forms a support for a curved drain tube 34. The drain tube 34 is adapted to extend out of the valve casing through a laterally extending threaded inlet tube 35 of larger diameter, which is adapted to be screwed into a tapped opening 36 in the top of the radiator 37. The threaded tube 35 is soldered or otherwise secured in the socket 30 to form an air-tight connection, and the portion of the tube 35 in the interior of the socket 30 is provided with a cut-out recess 38 in its upper part so as to facilitate the flow of fluid from the radiator 110

tor into the valve. It will be understood that the curved pipe 34 will serve to drain any water which may accumulate in the bottom of the valve casing, back into the radiator.

In order to form a resilient support for the bottom of the thermostatic chamber 23, a substantially U-shaped spring member 39 is provided, as most clearly shown in Fig. 3. The member 39 is preferably made from hardened spring brass, and is provided with a pair of horizontal feet 40 which are adapted to rest upon the base 32 of the socket member 30 in such a position as to straddle the inlet tube 35 and the drain tube 34. The upper portion of the U-shaped member 39 is provided with a pair of downwardly diverging faces 41 which are connected to the feet 40 by curved sections 42. In order to provide a point contact for the resilient base 24 of the thermostatic chamber 23, the upper portion of the U-shaped spring member 39 is provided with an upwardly extending protuberance 43, preferably formed by punching up the metal thereof.

In the operation of the air valve, when steam or hot fluid is admitted to the radiator, any air which may have collected in the top thereof will be gradually forced out through the valve until the rising steam or fluid itself enters the valve and surrounds the thermostatic chamber 23. The chamber 23 will then be heated and will expand forcing the valve stem 28 upwardly and thereby closing the air vent 21.

One advantage of the use of the resilient U-shaped spring member 39 is that in the event of an unusual high pressure occurring in the valve, the danger of the thermostatic chamber being injured will be largely avoided.

While there has been disclosed in this specification one form in which the invention may be embodied, it is to be understood that this form is shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosure but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new, and for which it is desired to secure Letters Patent, is:

1. An outlet plug for the top of a radiator air valve, said plug having a head and a tubular stem adapted to extend within said valve, and forming a seat for a valve-closing member, said plug having a laterally extending passage communicating with the outer atmosphere, and means on said plug

for protecting the outer end of said passage from dust or injury.

2. An outlet plug for the top of a radiator air valve, said plug having a solid head and a depending tubular stem, said stem having an aperture forming an outlet for the escape of air, said stem also having a seat for a valve-closing member, the head of said plug serving to protect said outlet from dust or injury and to deflect escaping gases.

3. In a radiator air valve, a base adapted to be connected to a radiator, a shell member having an inlet and an outlet, a thermostatic valve-closing member adapted to shut said outlet when the air has been expelled from said valve, a drain tube extending through said inlet above said base, and a resilient U-shaped support on said base for said valve-closing member, said support straddling said drain tube.

4. In a radiator air valve, a base adapted to be connected to a radiator, a shell member having an outlet, a thermostatic valve-closing member adapted to shut said outlet when the air has been expelled from said valve, a drain tube in the bottom of said valve above said base, and a resilient U-shaped support on said base for said valve-closing member, said support comprising a strip of metal having curved sides and straddling said drain tube.

5. In a radiator air valve, a base adapted to be connected to a radiator, a shell member having an inlet and an outlet, a thermostatic valve-closing member adapted to shut said outlet when the air has been expelled from said valve, a drain tube extending through said inlet above said base, and a resilient U-shaped support on said base for said valve-closing member and straddling said drain tube, said support comprising a strip of metal having an arched top with its extremities resting upon said base, said arched top having an upwardly projecting protuberance adapted to engage the base of said thermostatic valve-closing member.

6. In a radiator air valve, a casing having an outlet in its top for the escape of air, an inlet tube extending into the bottom of said casing, an expansible vapor-holding hollow chamber in said casing, said chamber having means for closing said outlet after the air has been expelled from said radiator, a U-shaped supporting strip for said chamber, the legs of said strip straddling said inlet tube and being adapted to rest upon the base of said casing.

In testimony whereof, I have affixed my signature to this specification.

WILLIAM H. CADWELL.