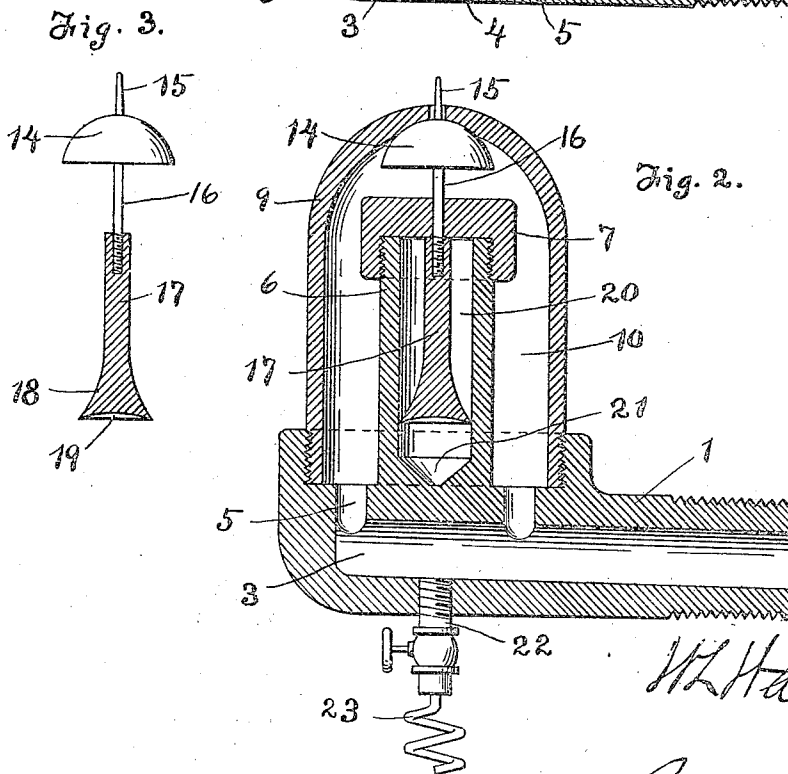
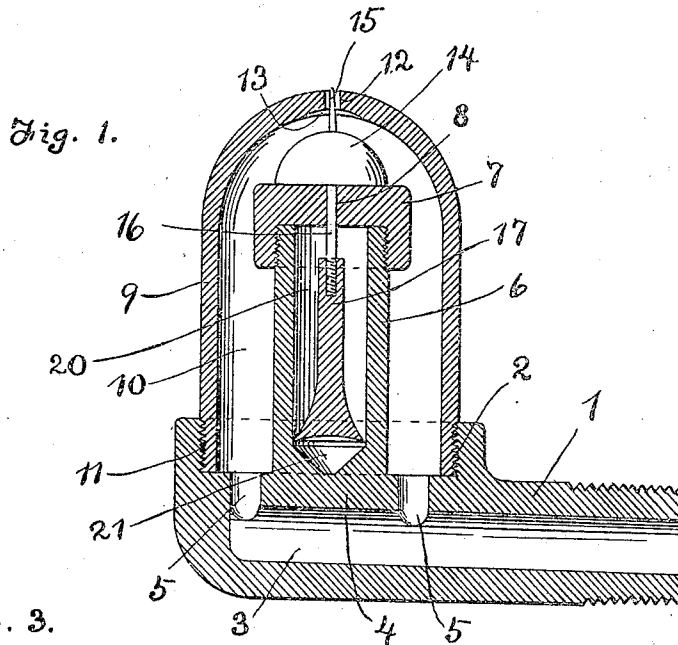


W. L. WALTER.  
 VENT ATTACHMENT FOR RADIATORS.  
 APPLICATION FILED JAN. 24, 1907. RENEWED SEPT. 16, 1909.

958,198.

Patented May 17, 1910.



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Witnesses

Stuart Hilder.  
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By

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# UNITED STATES PATENT OFFICE.

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## VENT ATTACHMENT FOR RADIATORS.

958,198.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed January 24, 1907, Serial No. 353,829. Renewed September 16, 1909. Serial No. 518,076.

*To all whom it may concern:*

Be it known that I, WILLIAM L. WALTER, a citizen of the United States, residing at Pontiac, in the county of Oakland and State of Michigan, have invented new and useful Improvements in Vent Attachments for Radiators, of which the following is a specification.

This invention relates to a vent attachment for radiators and the like, and comprises in its organization means whereby steam may be taken therefrom and conveyed through a condensing coil for domestic and other uses as will be more fully hereinafter set forth.

The vent attachment is of the automatically operated or thermostatic type and the opening and closing thereof is dependent upon the contraction and expansion of a liquid coöperating with a valve.

The essential feature of the vent attachment, in conjunction with the receptacle for the liquid, is a valve having a particular construction and relation to the closing means or cap for the receptacle to overcome any tendency of displacement of the valve before all of the air has been fully forced out through the vent body or inclosure and the pipes or coils of the radiator, and after said valve is elevated to close the vent opening by the expansion of the liquid, the steam pressure within the vent body assisting in holding the valve to its seat when in closing position.

The main advantage of the use of the improved vent attachment is that the radiator will be rendered effective in its feeding operation by reason of the fact that all the air is driven out therefrom completely and back pressure against the incoming steam is obviated, the valve automatically closing positively when all the air has been forced out of the attachment.

Other structural advantages will be fully hereinafter specified.

In the drawings—Figure 1 is a longitudinal vertical section of a vent attachment embodying the features of the invention. Fig. 2 is a view similar to Fig. 1 showing a condensing coil attached thereto. Fig. 3 is a sectional elevation of a valve and float member forming part of the vent attachment organization.

Similar characters refer to like parts throughout the several views.

Referring to the drawings 1 designates a tubular neck which is screw-threaded as usual for attachment to a terminal limb of a radiator or other device, and has a screw-threaded socket 2 in the upper portion of the free extremity thereof. The bore 3 of the neck extends fully throughout the length of the latter and is separated from the socket 2 by a horizontal wall 4 having openings 5 therein at intervals, as many of these openings being used as will be found necessary. Rising from the wall 4 is a hollow, preferably cylindrical member 6, the said wall and member in effect forming a receptacle for the reception of a liquid material such as mercury which is subject to expansion and contraction under the influence of heat and cold. The upper extremity of the receptacle 6 is screw-threaded and has a cap 7 removably mounted thereover and formed with a central bore 8. A dome or shell 9 is disposed over the receptacle 6 and forms with the latter a chamber 10, the said dome having its lower extremity screw-threaded as at 11 and removably fitted in the socket 2. In the top of the dome a vent opening 12 is formed in vertical alinement with the bore 8 in the cap 7 and in the under surface of the wall around the opening 12 a concaved valve seat 13 is formed.

A hemispherical valve 14 is mounted on the cap 7 and is of materially less diameter than the latter. Rising from the center of this valve is a guide stem 15 of materially less diameter than the opening 12, and depending from the center of the valve 14 is a second guide stem 16 which is freely movable in the bore 8 of the cap 7 and is screw-threaded at its lower end and connected to the upper register extremity of a float member 17, the latter having a lower bell-shaped or flared end 18 with a concaved bottom 19. The bottom of the chamber 20 of the receptacle 6 is of inverted conical contour as at 21 to receive the expansive liquid, the concaved bottom 19 of the float member 17 resting on the upper surface of this liquid and by its concavity rendering the said float member more sensitive in its movement or more quickly responsive to the expansion of the liquid. A material advantage results in having the guide stem 15 of less diameter than the vent opening 12 in that the said stem does not in the least occlude or close the said vent opening, the valve 14 acting

solely as the closing means for the vent and then only when said valve is fully elevated and which position of the valve will not be effected until all the air has been driven out of the radiator and the vent attachment. The leakage of any of the steam from the attachment when the valve is elevated is completely obstructed by the central convex portion of the valve firmly engaging the concaved seat 13 around the lower portion of the vent opening 12. Movement of the valve 14 by the outflow of the air is also prevented by means of the fact that the lower flat or horizontal face of the valve fits closely against the top surface of the cap 7 and the maximum diameter of the valve is materially less than the diameter of the cap, the air escaping through the attachment flows around and over the valve out through the vent opening 12 but never passes between the base of the valve and the upper surface of the cap. In the preparation of the valve and cap care should be taken to have the two opposing surfaces smooth for close juncture when the valve is lowered.

The steam flowing through the bore 3 of the neck 1 maintains the heat of the receptacle for the expansive liquid, but before the steam arrives fully within the attachment it will be understood that the transmission of heat from the radiator with respect to the attachment will be regular and the valve 14 will be gradually raised but will not close the vent 12 until all of the air has been fully expelled. After the valve has been raised the steam pressure within the shell or dome 9 will contact with the lower face of the valve and assist in holding the latter firmly to its seat and prevent leakage.

Depending from the neck 1 is a valved connection 22 having a condensing coil 23 attached thereto, the object of this connection and coil being to take steam from the neck 1 and the radiator and condense it in the form of hot water to facilitate making tea and coffee or for other purposes that may be desired, particularly in buildings where hot water is not readily accessible or procurable. This condensing coil may be of any improved form and extend any distance away from the radiator.

The several parts of the attachment may be quickly associated and readily separated when it is desired to repair the same or to replenish the supply of expanding liquid in the receptacle 6. The separable construction of the several parts is also advanta-

geous for the purpose of cleaning the interior of the attachment and to remove all sediment and other matter therefrom.

What I claim is—

1. A vent attachment for the purpose set forth comprising a tubular neck provided with a plurality of openings, a shell detachably connected to the neck and having a vent opening in the top thereof, and further provided with a convex valve seat, said valve seat arranged at the base of the opening, a receptacle arranged within the shell and supported by the neck, said receptacle, in connection with the shell, forming a chamber communicating with the interior of the neck through the openings formed in the neck, said receptacle having a substantially conical bottom, a cap mounted upon said receptacle and provided with a centrally-disposed opening, a hemispherical valve interposed between the cap and the shell and adapted to have its valved portion to seat on the cap, an upwardly projecting stem carried by the valve and extending through the vent opening, a depending stem carried by the valve and extending through the opening in the cap, and a float connected to the depending stem, arranged within said receptacle, and having the convex lower face, said receptacle adapted to contain an expansible liquid.

2. A vent attachment for the purpose set forth comprising a tubular neck provided with a plurality of openings, a shell detachably connected to the neck and having a vent opening in the top thereof and a valve seat at the base of said opening, a receptacle arranged within the shell and connected with the neck, said receptacle, in connection with the shell, forming a chamber communicating with the interior of the neck through the openings formed in the neck, a cap mounted upon the receptacle and provided with a centrally-disposed opening, a valve interposed between the cap and shell and adapted to engage said seat, an upwardly-projecting stem carried by the valve and extending in the vent opening, a depending stem carried by the valve and extending through the opening in the cap, and a float arranged within said receptacle and connected to the depending stem, said receptacle adapted to contain an expansible liquid.

In testimony whereof, I affix my signature in presence of two witnesses.

WILLIAM L. WALTER.

Witnesses:

MARCUS KORMAN,  
ABE KOZMINSKY.