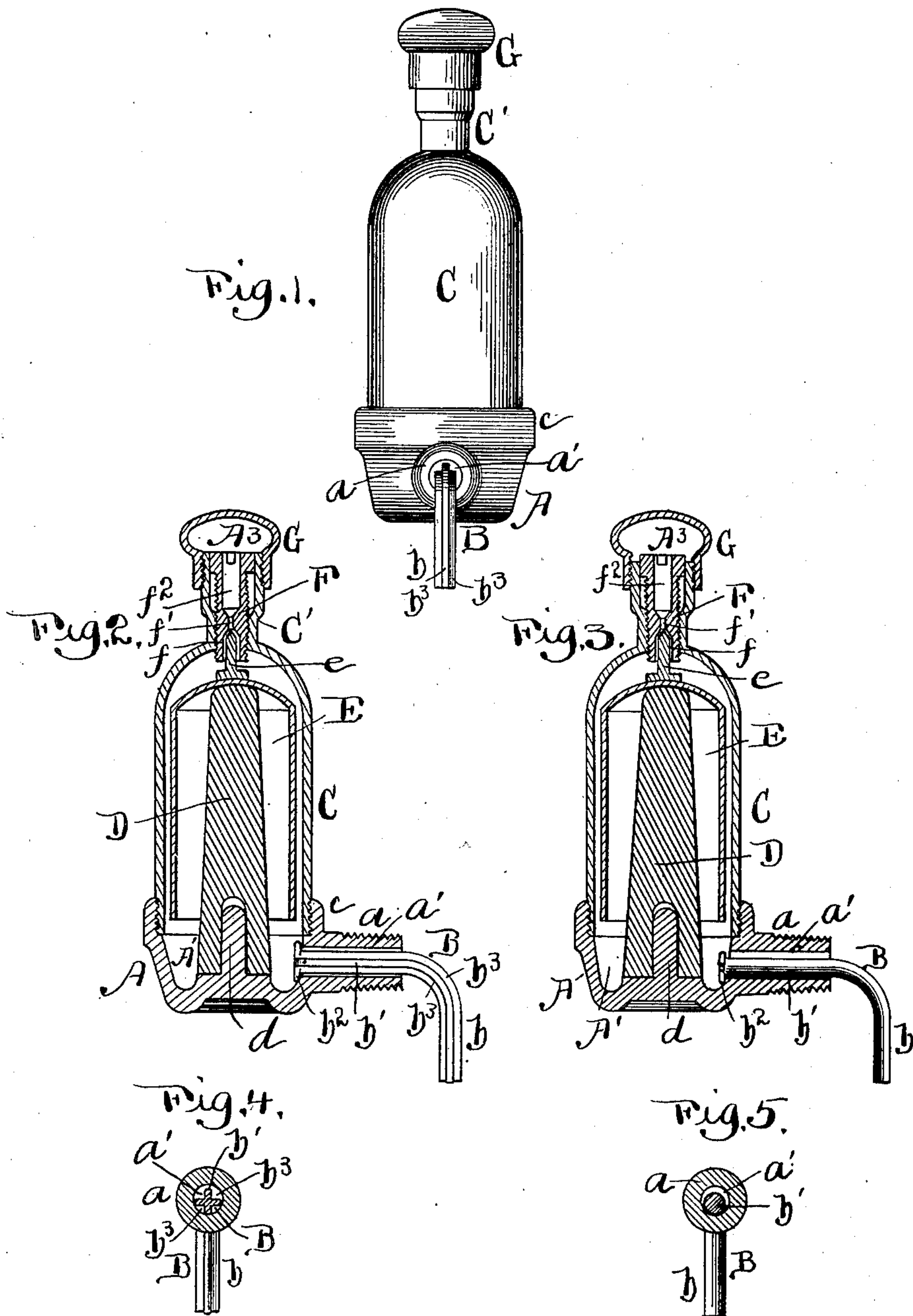


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F. W. LEUTHESSER.  
VALVE FOR RADIATORS.  
APPLICATION FILED FEB. 9, 1903.

NO MODEL.



Witnesses  
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## UNITED STATES PATENT OFFICE.

FRED W. LEUTHESSER, OF CHICAGO, ILLINOIS.

## VALVE FOR RADIATORS.

SPECIFICATION forming part of Letters Patent No. 756,383, dated April 5, 1904.

Application filed February 9, 1903. Serial No. 142,641. (No model.)

*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 a certain new and useful Improvement in Valves for Radiators, of which the following is a specification.

The invention relates more particularly to that class of air-valves for radiators used in connection with what is known as the "radiator" system and in which steam is employed as the heating medium. It is well known that more or less condensation takes place with the cooling of the radiator, producing more or less amount of water, which settles or remains in the valve and if not discharged or drawn off will form a seal, which would interfere with the correct working of the valve in venting air and admitting steam.

The object of the invention is to apply to the air-valve a drainage or draw-off stem which will always be operative in insuring the drainage of the valve from any water of condensation and which will not cause the opening leading into the radiator from the valve to become clogged or stopped from sediment or other material.

The invention consists in the construction and application of the drainage or draw-off stem hereinafter described and claimed.

In the drawings, Figure 1 is an elevation of an air-valve for radiators, showing the drainage or draw-off stem of the invention inserted in the passage of the valve leading from the radiator to the chamber of the valve; Fig. 2, a sectional elevation of the valve and drainage or draw-off stem shown in Fig. 1; Fig. 3, a sectional elevation of the type of valve shown in Fig. 1 with a solid circular drainage or draw-off stem instead of a solid drainage or draw-off stem having grooves in its body; Fig. 4, a cross-section through the attaching-nipple and drainage or draw-off stem of Fig. 2, and Fig. 5 a cross-section through the attaching-nipple and drainage or draw-off stem of Fig. 3.

The base or cup A of the valve has an interior chamber A' and on one side has a nipple a with an exterior screw-thread for attaching the valve to a radiator as usual, the nipple

having a passage a', furnishing communication between the radiator and the chamber A' of the base or cup and the interior of the valve, through which passage air and steam can flow from the radiator into the valve as usual in the type of air-valve for radiators shown. The drainage or draw-off stem B (shown in Figs. 1, 2, and 4) is a solid body bent to have a depending portion b, which lies within the passage of the radiator, and a horizontal portion b', which lies within the passage a' of the valve-nipple, so that when the valve is attached to the radiator the depending portion b of the drainage or draw-off stem will downwardly hang within the passage of the radiator for the stem to act as a conductor by capillary attraction to cause the water of condensation which has accumulated in the chamber of the cup and in the chamber of the valve to flow out, with the stem as a guide for the outflow. The end of the horizontal portion b' of the drainage or draw-off stem which is within the chamber A' of the cup is upset or has a ridge b<sup>2</sup> formed thereon to prevent the stem from falling out in attaching the valve to the radiator, and the body of the stem has in the construction shown in Figs. 1, 2, and 4 grooves b<sup>3</sup>, which furnish an increase of space for escaping the water, allowing a stem having a diameter nearly as large as the diameter of the passage a' to be used without danger of clogging the passage, as any sediment or particles of any kind will not adhere to the stem, but will be forced forward and outward through the passage by the outflow caused by capillary attraction. The drainage or draw-off stem instead of having its body grooved longitudinally could have a plain exterior face, as shown in Figs. 3 and 5, in which case the diameter of the stem in cross-section should be considerably less than the cross-diameter of the passage a', so as to leave a sufficient clearance between the wall of the passage and the face of the stem for the outflow of the water and not have the passage blocked or partially stopped by any sediment or other particles carried out with the water.

The valve shown has an outer shell or casing C threaded into the rim c of the cup or base and has an expansible stem or member D



socketed onto a stem  $d$ , projecting up from the center of the base or cup. A float E surrounds the expansible stem or member D within the chamber of the shell or casing, the top of the float resting on the upper end of the stem when the valve is normal for venting air. The top of the float has a pin-valve  $e$ , which enters a passage  $f$  in a plug F, threaded into the neck  $C'$  of the outer shell or casing, the end of the stem-valve  $e$  being cone-shaped and seating against a cone-shaped face at the end of the vent-port  $f'$  of the plug F, which port leads into a passage  $f''$  in the upper end of the plug. A cap G is threaded onto the end of the neck  $C'$ , which cap forms a guard against tampering with the adjustment of the plug F and furnishes a chamber from which a vent-hole opens to escape the air as usual. The parts C, D, E, F, and G, with the appurtenances belonging to each part, are of the usual and well-known form of construction for air-valves for radiators and operate in the usual way, and their construction and operation are therefore not specifically described.

The operation of the drainage or draw-off stem is based on capillary attraction, by which the moisture accumulating on the stem serves as a conductor for the water of condensation to flow on the exterior face of the stem through the horizontal passage  $a'$  and thence flow on the vertically-downward-hanging section  $b$  of the stem back into the radiator, leaving the chamber of the valve free of water to an extent that will furnish a free passage for the air and without liability of a seal from the water of condensation in the chamber of the cup or of the casing of the valve. The stem, owing to its exterior face, serving as a conductor for discharging the water, presents a free surface for the outflow of the water, to which sediment and particles will not adhere, so as to clog or partially close the passage and impede the outflow of the water. The loose fit of the horizontal portion of the drainage or draw-off stem in the passage  $a'$  allows of the insertion of the nipple into the opening of the radiator-tube and the attachment of the valve to the radiator without interference from the drainage or draw-off stem, as the depending or downhanging portion of the stem always sinks or remains downward within the passage of the radiator-tube and the open head of the stem allows plenty of space for the passage of the water to follow the body of the stem in clearing the chamber of the valve from the water of condensation, and while it is preferred to have the stem to lie loosely within the nipple-passage it is to be understood that the stem

could be fixedly secured in the passage so long as a clearance was left between the stem and the wall of the passage, and it is to be further understood that the exterior face of the stem can have the grooves run parallel with the body of the stem or diagonal thereto or on a curvature or otherwise so long as the arrangement is one that will allow capillary attraction to act and drain or draw off the water from the valve with a stem having a solid center.

What I regard as new, and desire to secure by Letters Patent, is—

1. In an air-valve for radiators, the combination of a valve base or cup having a chamber with a lateral passage leading therefrom and through the wall of the base or cup, and a drainage or draw-off stem entered into the lateral passage, the stem having a solid body and bent to furnish a horizontal portion and a depending vertical portion, the horizontal portion of the stem when in the passage having a clearance between it and the wall of the lateral passage, leaving the solid body of the stem to act on its exterior as a drainer and prevent clogging of the passage, substantially as described.

2. In an air-valve for radiators, the combination of a valve base or cup having a lateral nipple for attachment of the valve with a passage through the nipple, in communication with the chamber of the base or cup, and a drainage or draw-off stem entered into the passage of the nipple, the stem having a solid body and bent to furnish a horizontal and a depending vertical portion, the horizontal portion of the stem when in the passage of the nipple having a clearance between it and the wall of the nipple, leaving the solid body of the stem to act on its exterior as a drainer to prevent clogging of the passage, substantially as described.

3. In an air-valve for radiators, the combination of a valve base or cup having a chamber with a lateral passage leading therefrom through the wall of the base or cup, and a drainage or draw-off stem entered into the lateral passage, the stem having a solid body with grooves in its exterior face and bent to furnish a horizontal portion and a depending vertical portion, the horizontal portion of the stem when in the lateral passage having a clearance between it and the wall of the lateral passage, leaving the solid body of the stem to act on its exterior as a drainer and prevent clogging of the passage, substantially as described.

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