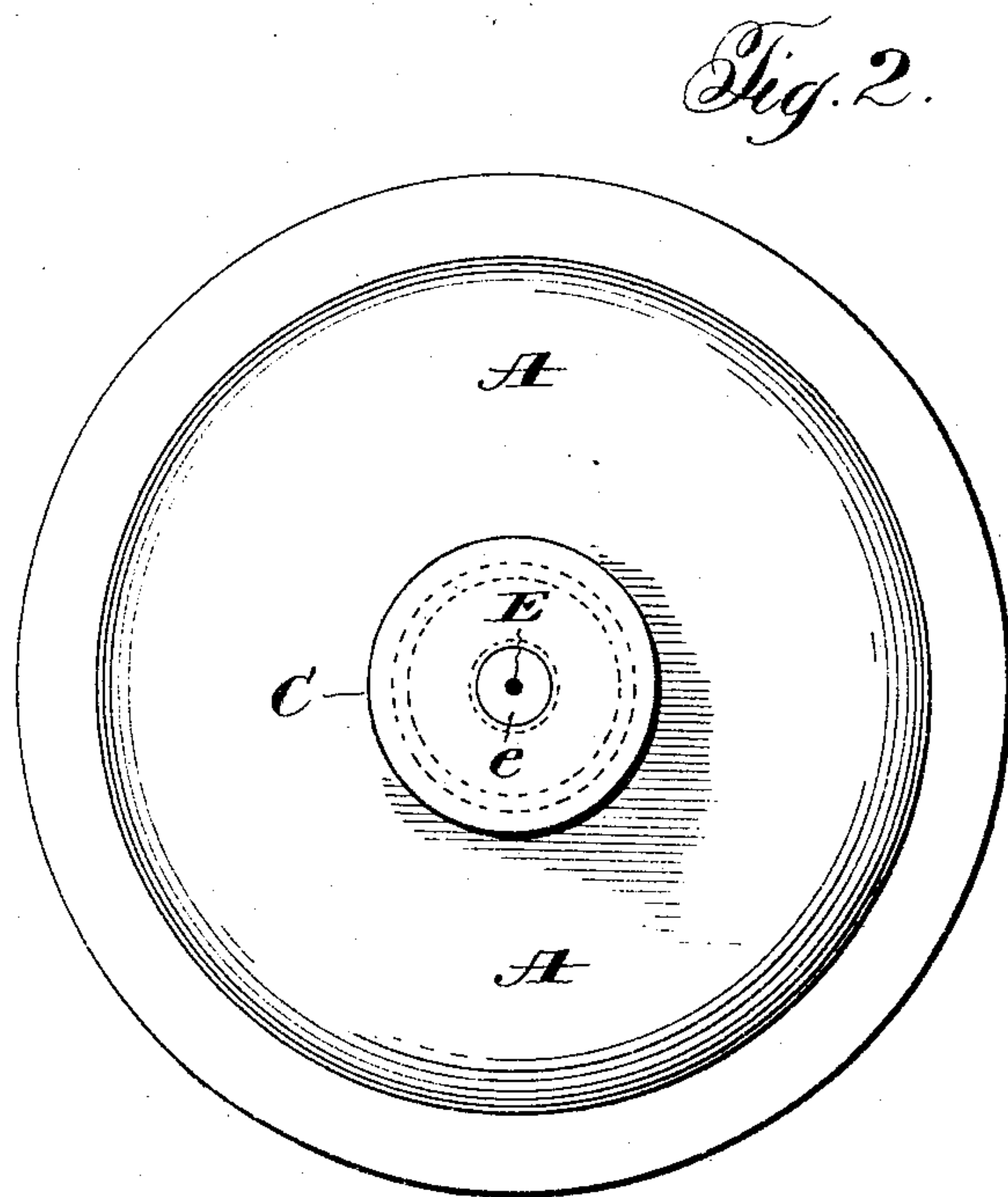
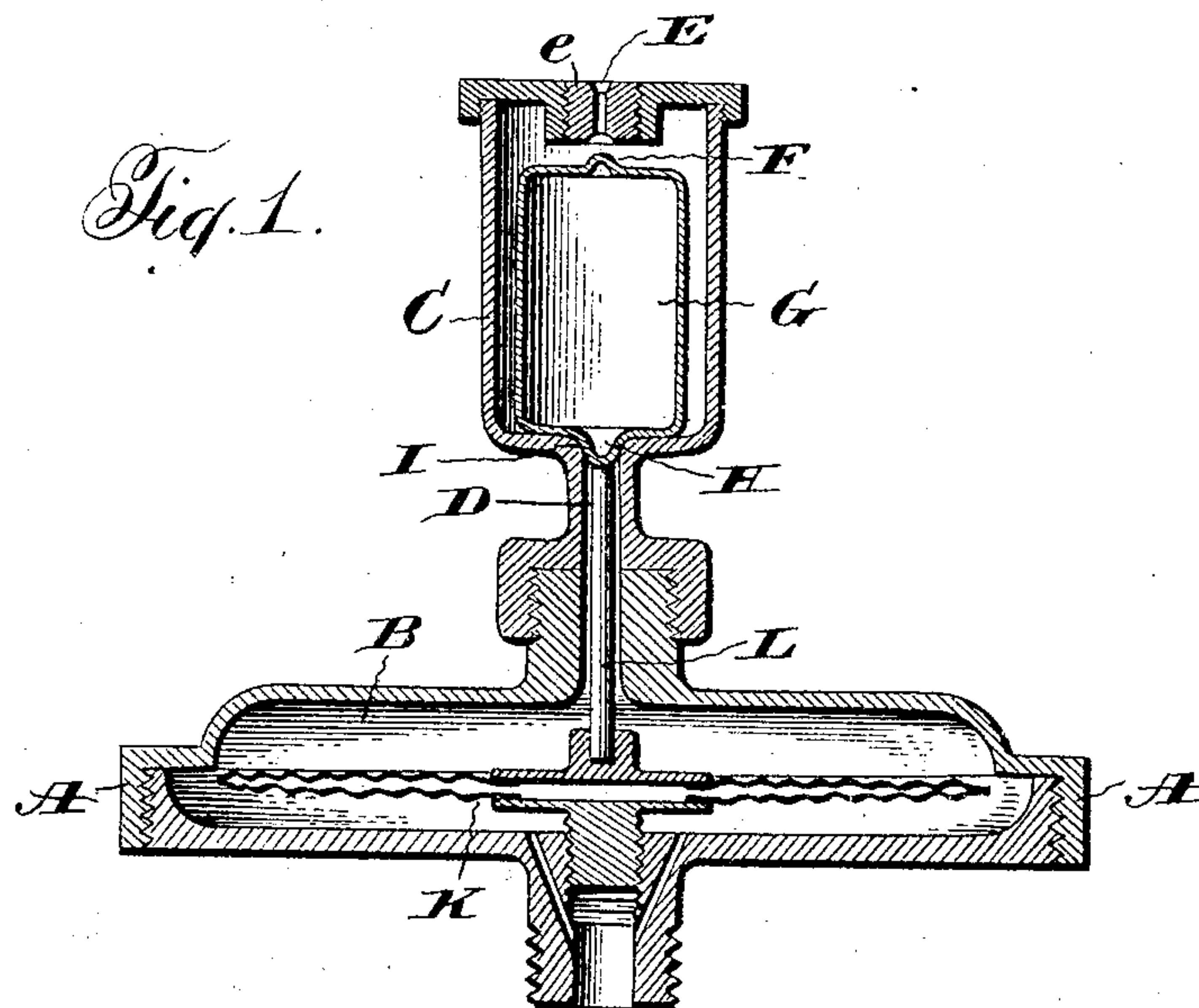


No. 779,599.

PATENTED JAN. 10, 1905.

O. C. HATCH.  
AIR, WATER, AND VACUUM VALVE.  
APPLICATION FILED AUG. 11, 1903.



Witnesses  
*Jas. C. Hutchinson.*  
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his Attorneys.

# UNITED STATES PATENT OFFICE.

ORVILLE C. HATCH, OF SALT LAKE CITY, UTAH.

## AIR, WATER, AND VACUUM VALVE.

SPECIFICATION forming part of Letters Patent No. 779,599, dated January 10, 1905.

Application filed August 11, 1903. Serial No. 169,066.

*To all whom it may concern:*

Be it known that I, ORVILLE C. HATCH, of Salt Lake City, in the county of Salt Lake, and in the State of Utah, have invented a certain new and useful Improvement in Air, Water, and Vacuum Valves; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of an air, water, and vacuum valve, and Fig. 2 is a plan view thereof.

The object of my invention is to provide a valve that will permit the quick escape of air from radiators or analogous devices when the steam is turned on, that will prevent the escape of water, and which will prevent the admission of air to the radiator or heating device when a vacuum exists therein; and to these ends my invention consists in the valve constructed substantially as hereinafter specified and claimed.

In the embodiment of my invention illustrated in the drawings my valve comprises a casing A, containing two chambers B and C, respectively, situated one above the other and the two chambers being in communication through a contracted opening D. The bottom of the lower chamber has a threaded neck or boss by which the valve may be attached to the radiator, and through such neck or boss is a passage placing the lower chamber in communication with the interior of the radiator. In the top of the upper chamber is an outlet port or opening E, which is preferably formed in a plug *e*, that is screwed in the chamber-top, so that the plug may be adjustable up and down. The bottom of the plug is formed into or constitutes a valve-seat for a valve F in the form of a projection upon the upper end of a float G within the chamber C, and on the bottom of the float is a second valve, H, also in the form of a projection, for which a valve-seat I is provided at the upper end of the contracted opening D. The distance between the valves F and H is such that both do not engage their respective seats at the same time. Normally the valve H rests upon its seat and closes the top of the passage or opening D.

Within the lower chamber B is an expan-

sion device K, comprising two disks or diaphragms that are united at their peripheries, forming a chamber that contains some volatile fluid. Said expansion device is secured in place by having a threaded lug or boss at its under side that screws into a threaded opening in the bottom of the chamber B. On its upper side the expansion device carries a rod or stem L, that passes loosely through the opening D, and such rod or stem has such length that when the expansion device expands to a predetermined extent the upper end of the rod or stem will engage the valve H on the bottom of the float and, lifting the latter, will raise the valve H from its seat and carry the valve F to its seat, and thereby close the outlet E in the upper end of the chamber C.

The operation of my valve is as follows: When steam is turned into the radiator, the water and any air therein are forced first into the lower chamber B and passing from thence through the opening D enter the upper float-containing chamber C, lifting the float sufficiently to raise the valve H from its seat, but not lifting it enough to close the outlet-port E by the valve F until enough water has entered the upper chamber to lift the float high enough to place the valve on its seat, and thus close the outlet E. It will be seen that until the float is lifted sufficiently to close the outlet E air will pass through the latter. Should there not be sufficient water to lift the float to close the outlet E, the closing of the latter will be effected by the action of the expansion device by means of the steam entering the lower chamber B, the expansion of said device operating through the medium of the rod or stem L to lift the float to place the valve F upon its seat, and of course so long as the radiator is in use the valve F will be maintained on its seat and escape of steam from the outlet E be prevented. When steam is cut off from the radiator and the parts cool, the expansion device or member will contract, lowering the rod or stem L and permitting the descent of the float and the seating of the valve M on its seat, thus closing the passage D and preventing access of air to the idle radiator.

It will be understood that I do not restrict



myself to the particular construction and arrangement of parts which I have illustrated and described, as the invention is capable of embodiment in other forms.

5 Having thus described my invention, what I claim is—

1. A radiator attachment, comprising two chambers, one of which has a passage to the radiator and the other has an outlet to the at-  
10 mosphere, the chamber having said outlet having valve-seats at opposite ends, a valve for each of said valve-seats carried by a common part, an expansion member in the other chamber, and means actuated by said expan-  
15 sion member to operate said valves.

2. A radiator attachment, comprising an upper and a lower chamber and having a pas-  
sage between the radiator and the lower cham-

ber, a passage uniting the chambers, and an outlet-passage from the upper chamber to the  
20 atmosphere, the upper chamber having a valve-seat at each end, a float within the upper chamber coöperating with either of said valve-  
seats, and an expansion member in the lower  
25 chamber and having an extension within the passage which unites the chambers, said extension coöperating with the float, whereby the attachment serves as an air, water and vacuum valve.

In testimony whereof I have hereunto signed  
30 my name in the presence of two subscribing witnesses.

ORVILLE C. HATCH.

Witnesses:

EMMA HODGES,

G. B. HARTLEY.