

No. 897,895.

PATENTED SEPT. 8, 1908.

A. HARRISON.
AUTOMATIC WATER RELIEF VALVE.
APPLICATION FILED NOV. 2, 1904.

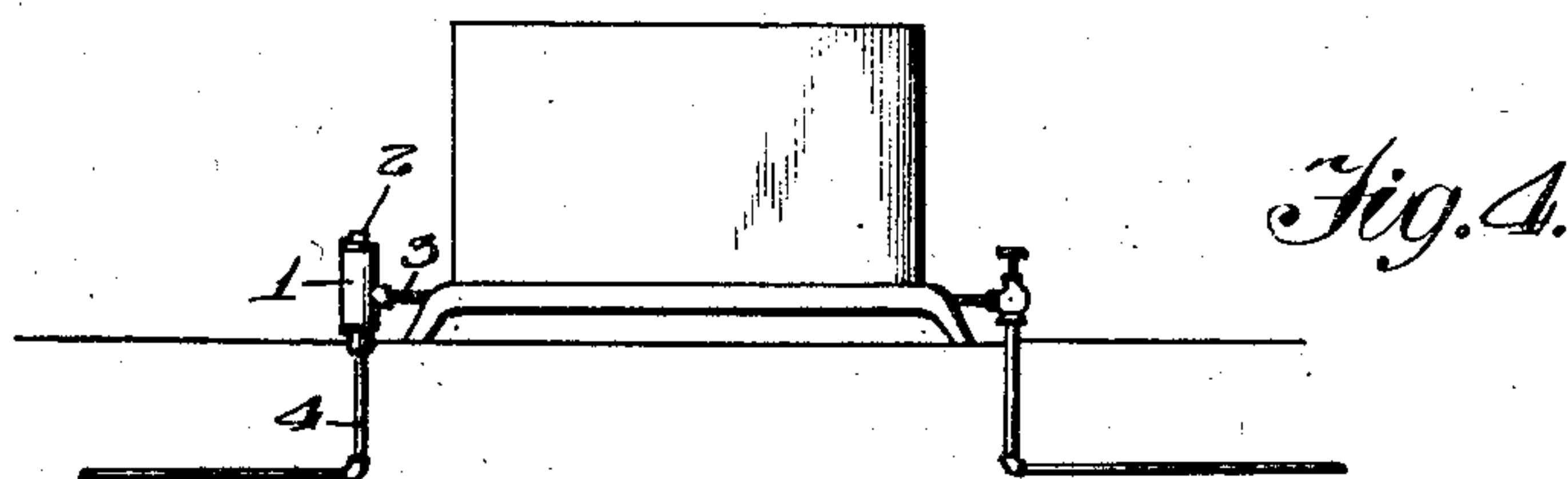


Fig. 1.

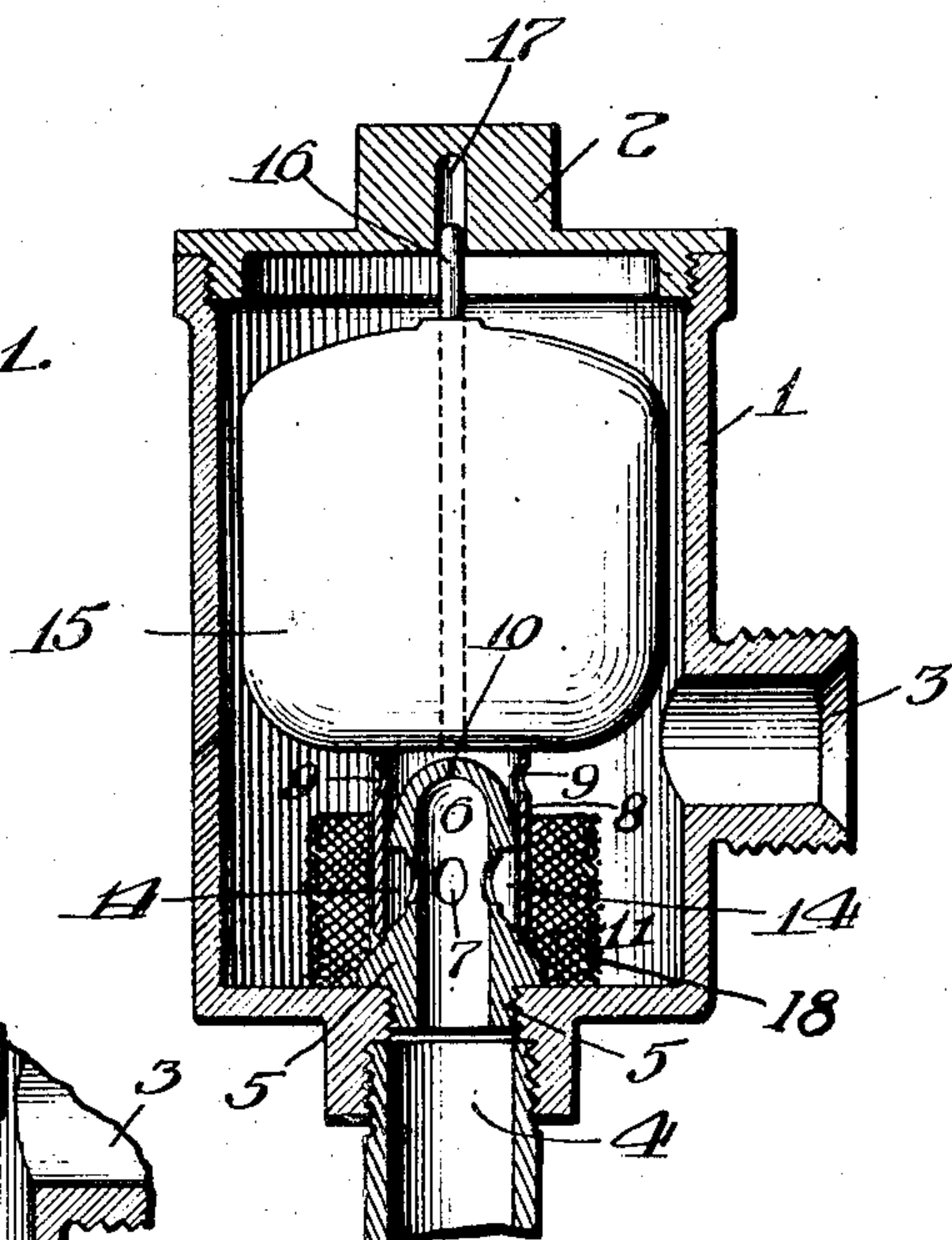


Fig. 3.

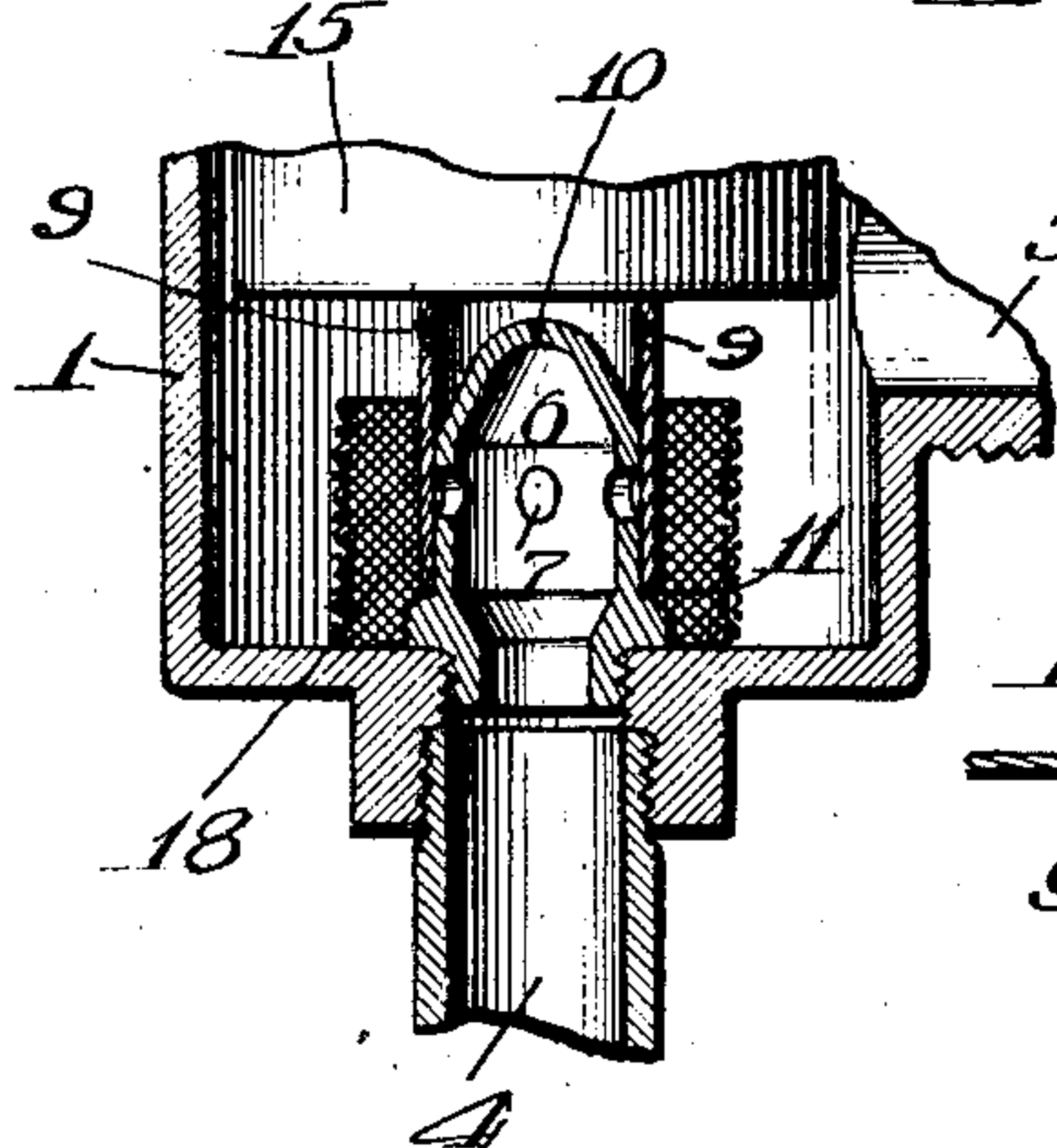
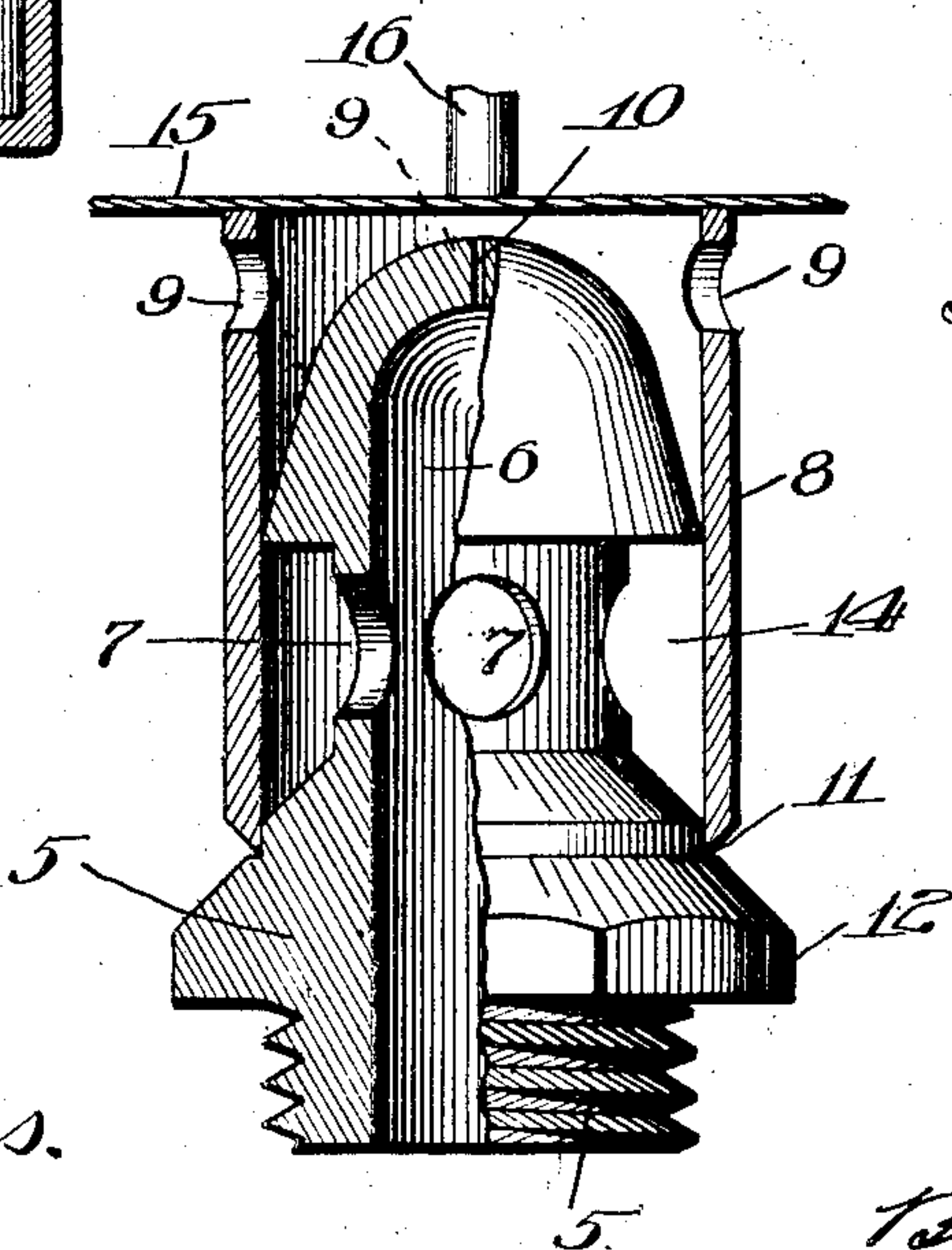


Fig. 2.



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UNITED STATES PATENT OFFICE.

AMOS HARRISON, OF CHICAGO, ILLINOIS, ASSIGNOR TO WARREN WEBSTER AND COMPANY,
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AUTOMATIC WATER-RELIEF VALVE.

No. 897,895.

Specification of Letters Patent.

Patented Sept. 8, 1908.

Application filed November 2, 1904. Serial No. 231,043.

To all whom it may concern:

Be it known that I, AMOS HARRISON, a citizen of the United States of America, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Automatic Water-Relief Valves, of which the following is a description.

My invention relates to that class of devices employed upon steam heating systems and the like to discharge the water of condensation from the radiators or other parts of the system without permitting a wasteful escape of steam.

The object of my invention is to produce a durable and simple device of the kind described that is not liable to become clogged up or otherwise rendered inoperative when in use, and to this end consists in the novel construction, arrangement and combination of parts herein shown and described and more particularly pointed out in the claims.

In the accompanying drawings wherein like or similar reference characters indicate like or corresponding parts:—Figure 1 is a longitudinal diametrical section of my device. Fig. 2 is an enlarged partial section showing the arrangement of the valve and valve seat shown in Fig. 1. Fig. 3 is an enlarged partial section showing a modified form of valve seat and associated parts, and Fig. 4 is an elevation of a radiator showing the usual connecting pipes and the usual and preferred location of my device in relation thereto.

In the form of my device shown in the drawings, 1 is the outer shell or casing of my valve, provided with a removable cap 2, an inlet port or connection 3 for attaching my valve to a radiator or similar device, and an outlet port or connection 4 for attachment to one of the return pipes of the system. A tubular head 5, closed at one end, is arranged within the shell 1 with its open end screwed into or otherwise secured at the opening 4, with the chamber 6 within the head communicating directly with the part 4 and by means of the lateral openings 7—7 with the interior of the shell. A vertically movable tubular-valve 8 is provided to closely fit upon the exterior of the head 5 and when at the lower limit of its travel cover the openings 7—7 and prevent fluid passing from the interior of the shell 1 into the chamber 6. Preferably a plurality of openings 9 are ar-

ranged through the wall of the valve 8 above the head 5 to balance the valve, and permit free access of any air within the casing 1 to the upper end of the head 5 where an air vent 10 may be provided if desired. Preferably a shoulder 11 is provided upon the head 5 below the openings 7, to engage the lower end of the valve 8 and limit its downward movement, and when desired a flange or projection 12 may be formed upon the head to afford means for engaging the same with a suitable wrench or to otherwise assist in securing the head into the casing 1.

In the form of my device shown in Figs. 1 and 2 the head 5 is reduced in diameter at the openings 7 and the chamber 6 formed to suit. In this construction, when the valve is closed an annular chamber 14 extends around the head 5 communicating with each of the openings 7 and thus a very slight movement of the valve 8 will open free communication between the chamber 6 and the interior of the shell 1. The form shown in Fig. 3 is similar to that of Figs. 1 and 2 except that the head 5 is not reduced in diameter at the openings 7 to form the annular chamber 14.

Preferably the movements of the valve 8 are controlled by a float 15 to which the valve 8 is directly attached in any suitable manner. The float is preferably provided with a guide or stem 16 projecting at its upper side and loosely engaging a suitable recess 17 in the cap 2 to guide the float and prevent lateral displacement and by the end of the guide 16 contacting with the end of the recess 17 limiting the upward movement of the valve. Obviously any preferred form of float may be employed either closed or open or a combination of a closed and open according to circumstances. Also if desired a screen 18 may be arranged within the shell 1 inclosing the valve 8 and head 5 as shown to prevent dirt entering at the part 3 from reaching the working parts of my device.

Obviously the head 5 may be made of any desired shape at its upper end. As shown the upper end is conical terminating in a spherical end. This form enables the valve to be readily placed in position upon the head, but obviously is not essential to the operation of the device. Also I prefer to bevel the lower edges of the valve 8 so as to bring the bearing surface upon the shoulder 11 at the interior surface of the tube as shown.

Having thus described my improvement it is obvious that various immaterial modifications may be made in my device without departing from the spirit of my invention.

5 What I claim as new, and desire to secure by Letters Patent is.

1. A device of the kind described, comprising a shell provided with an inlet and an outlet opening, means for connecting said shell
10 into a heating system, a chamber arranged within said shell inclosing said outlet opening, provided with one or more ports formed through its wall, and having a recess formed in said wall extending around said chamber
15 at said ports, in combination with a tubular valve inclosing a part of said chamber, by its position controlling said ports by covering said recess, and a float attached to said valve adapted to control its position.

20 2. A device of the kind described, comprising a shell provided with an inlet and an outlet opening, means for connecting said shell into a heating system, a chamber arranged
25 within said shell inclosing said outlet opening, and provided with ports formed through the side wall, and with an air vent through the end wall, of said chamber, in combination with a tubular valve, provided with one or
30 more openings near its upper end, inclosing a part of said chamber, by its position controlling said ports, and a float attached to said valve adapted to control its position.

3. A device of the kind described, comprising a shell provided with an inlet and an outlet opening, means for connecting said shell
35 into a heating system, a chamber arranged within said shell inclosing said outlet opening, provided with ports formed through the side wall, and with an air vent through the
40 end wall of said chamber, and having a recess formed in said side wall extending around said chamber at the ports, in combination with a tubular valve provided with one or
45 more openings near its upper end, inclosing a part of said chamber, by its position controlling said ports by covering said recess, and a float attached to said valve adapted to control its position.

50 4. A device of the kind described, comprising the combination of a shell provided with an inlet and an outlet opening, means for connecting said shell into a heating system,

a chamber arranged within said shell inclosing said outlet opening, and provided with ports formed through the wall of said
55 chamber, and with a recess formed in said wall extending around said chamber at the ports, a tubular valve inclosing a part of said chamber, by its position controlling said
60 ports by covering said recess, a float attached to said valve adapted to control its position, and a tubular screen arranged within the shell and partly inclosing said valve and chamber.

5. A device of the kind described, comprising the combination of a shell provided with an inlet and an outlet opening, means for connecting said shell into a heating system,
65 a chamber arranged within said shell inclosing said outlet opening, and provided with ports formed through the side wall and with an air vent through the end wall, a tubular valve provided with one or more openings
70 in its wall near its upper end, inclosing a part of said chamber, by its position controlling said ports, a float attached to said valve adapted to control its position, and a tubular screen arranged within said shell and partly
75 inclosing said valve and chamber.

6. A device of the kind described, comprising the combination of a shell provided with an inlet and an outlet opening, means for connecting said shell into a heating system,
80 a chamber arranged within said shell inclosing said outlet opening, and provided with ports formed through the side wall and an air vent through the end wall of said chamber, and having a recess formed in said side
85 wall extending around said chamber at the ports, a tubular valve provided with openings near its upper end, inclosing a part of said chamber, by its position controlling said
90 ports by covering said recess, a float attached to said valve adapted to control its position, and a tubular screen arranged within said shell and partly inclosing said
95 valve and chamber.

In testimony whereof, I have hereunto signed my name in the presence of two (2) subscribing witnesses.

AMOS HARRISON.

Witnesses:

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CHARLES I. COBB.