

No. 695,948.

Patented Mar. 25, 1902.

A. ROESCH.
AIR VENT.

(Application filed May 5, 1899.)

(No Model.)

Fig. 1,

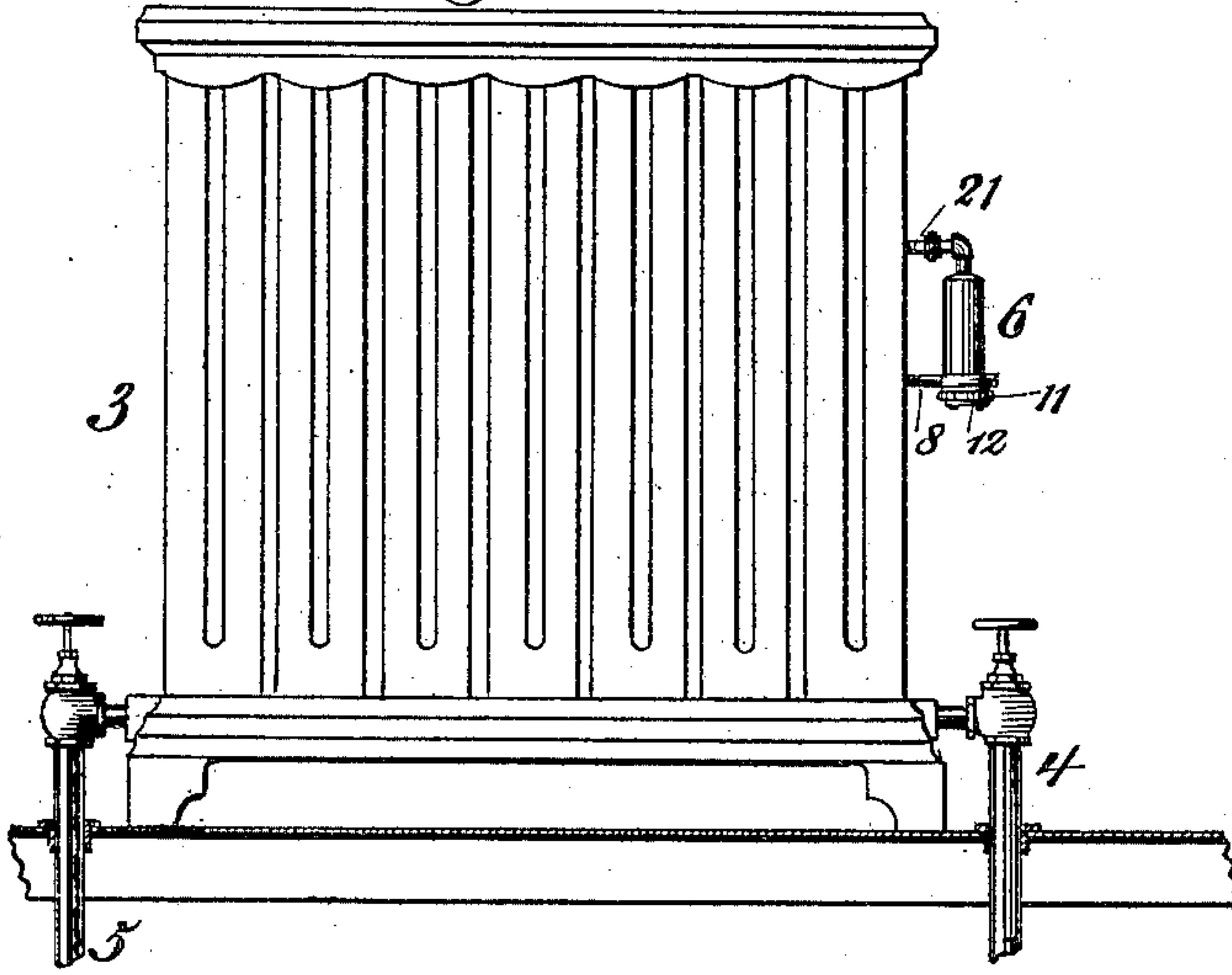
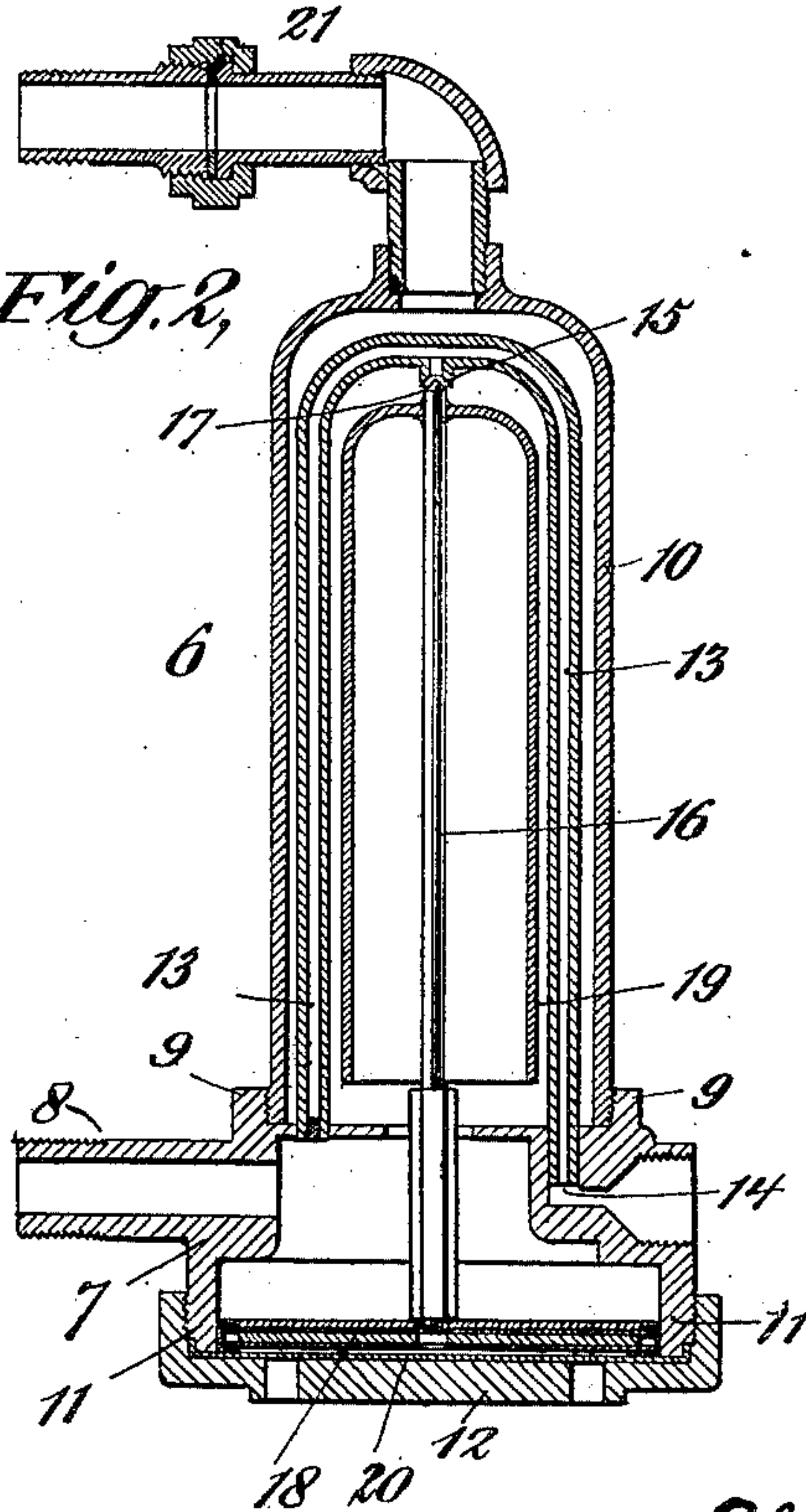


Fig. 2,



WITNESSES:

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ALFRED ROESCH, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE DAVIS & ROESCH TEMPERATURE CONTROLLING CO., A CORPORATION OF NEW JERSEY.

AIR-VENT.

SPECIFICATION forming part of Letters Patent No. 695,948, dated March 25, 1902.

Application filed May 5, 1899. Serial No. 715,708. (No model.)

To all whom it may concern:

Be it known that I, ALFRED ROESCH, a citizen of the United States of America, and a resident of Bridgeport, Fairfield county, Connecticut, have invented certain new and useful Improvements in Air-Vents, of which the following is a specification.

My invention relates to air-vents for heating systems, and particularly relates to such devices as are adapted to permit the discharge of air from the system, but which will prevent the discharge of the heating medium, such as steam, therefrom, the discharge of liquids of any description—such, for instance, as the water of condensation—and shall also prevent air returning into the system through the device after the steam-supply has been cut off and the steam in the system shall have condensed.

My invention also relates to a means whereby an air-lock is prevented in such device after same has been closed temporarily by the action of liquid, whereby the float operated by the liquid will be allowed to drop after the liquid has receded and the valve in said device be opened.

I will now proceed to describe in detail an air-vent embodying my invention and will then point out the novel features in claims.

Figure 1 represents a portion of a heating system provided with an air-vent embodying my invention. Fig. 2 represents a central vertical section through the automatic air-vent.

Similar reference characters designate corresponding parts in both figures.

Reference character 3 designates a radiator which is a part of a steam-heating system.

4 is a steam-inlet pipe, which may be provided with a suitable valve, as is usual, and 5 is an exhaust-pipe, which may also be provided with a valve.

6 designates the air-vent as a whole. It is shown clearly in detail in central section, on an enlarged scale, at Fig. 2.

Reference character 7 designates a base-piece consisting of a casting provided at the rear with a hollow screw-threaded boss 8, by which it is connected to the heating system, and at the top with an internally-screw-

threaded cylindrical portion 9, which receives the inclosing dome or casing 10, screw-threaded to register therewith, and below with an externally-screw-threaded cylindrical extension 11, to which is fitted a cap or cover 12.

Reference character 13 designates a hollow tube connected at one end with the discharge-opening 14 and its opposite end closed and supported in the casting 7. It is substantially U-shaped, and in the bend or arch is provided with an opening, which affords communication between the interior of the said tube and the dome or casing 10. This opening flares outwardly and forms a valve-seat 15.

16 designates a valve-rod having a pointed end, which constitutes a valve 17, adapted to engage the valve-seat 15 and close the opening when forced upwardly.

18 designates a thermostat, which is more fully described in detail and claimed in a co-pending application of mine filed January 23, 1899, Serial No. 703,032. Briefly stated, the thermostat comprises a plurality of metal plates, so arranged that under conditions of rise of temperature, such as would be caused by steam impinging upon the thermostatic device, the said plates shall buckle and bear against the end of the valve-rod 16, causing same to rise and close the valve-opening, as above.

In the drawings the various parts are shown as they would be while air was being discharged and before the steam had acted upon the thermostat to close the valve.

20 designates a diaphragm arranged to close the lower end of the thermostat-chamber and is held in place between the cap or cover 12 and the cylindrical extension 11. This diaphragm is intended to independently close the valve 17 when the pressure in the heating system falls below atmospheric pressure, thus preventing the taking in of air through the air vent or discharge. The cap 12 has suitable orifices to allow the atmospheric air access to the under side of the diaphragm.

19 designates a bell-float with which the valve-rod 16 is provided and by which the said valve-rod and valve may be raised to

close the valve-opening should liquid, such as the water of condensation, rise in the heating system to such a height as to enter the dome or casing. When such action takes place and the valve-opening 15 is closed by the forcing upward of the valve-rod through pressure on the float 19, the said valve might have a tendency to remain closed owing to a suction in the dome or casing 10. I provide means, however, for relieving such suction by affording communication between the upper end of said dome or casing and the interior of the heating system at a point above the aforesaid connection 8. By this means the valve-rod and float are always ready to drop the moment the level of the liquid falls below the point at which the said float is forced upward thereby, provided, of course, the valve is not being acted upon by the thermostat 18 or diaphragm 20. The said communication is illustrated in the drawings by a pipe and coupling connection 21, so arranged that by unscrewing the coupling the dome or casing 10 may be removed for purposes of inspection or repair without having to remove the entire device.

What I claim is—

1. In an air-vent for heating systems, the combination with a tube constituting an air-discharge, of a valve for controlling said discharge, a rod carrying said valve, a thermostat supporting said rod and adapted to raise the rod or permit the rod to lower to correspondingly move the valve under variation in temperature, and a diaphragm adapted to raise and lower said rod independently of said thermostat under variations in pressures.

2. In an automatic air-vent for heating systems, the combination with an air-discharge of a valve adapted to close same, said valve being carried by a valve-rod arranged substantially vertically, and adapted to have a limited longitudinal movement, a thermostat supporting the lower end of said rod and adapted to raise and lower same to close and open the valve under variations in temperature, a diaphragm below said thermostat and adapted to raise and lower said valve-rod to close and open said valve independently of said thermostat under variations in pressure, and a float secured to said valve-rod, adapted to raise and lower same independently of

said thermostat and said diaphragm to prevent the passage of liquid, substantially as specified.

3. The combination in an automatic air-vent for heating systems, of a casing which is adapted to be in communication with the system, said casing having an air-discharge, of a valve for controlling said discharge, a rod carrying said valve, a float carried by said rod, a thermostat supporting said rod and adapted to raise the rod, or permit the rod to lower to correspondingly move the valve under variation in temperature, and a diaphragm for controlling said valve under variation in pressure.

4. The combination in an automatic air-vent for heating systems, of a casing which is in communication with the heating system, a second communication between the heating system and casing arranged at a higher altitude than the first-mentioned communication, a dome for said casing, a tube within said casing in communication with the dome and atmosphere, a valve for controlling the communication between the tube and dome or casing, a thermostat for controlling the valve under variations of temperatures, and a diaphragm for controlling the valve under variations in pressures.

5. In an automatic air-vent for heating systems, the combination of a casing in communication with said system, a dome carried by said casing and in communication with the heating system and casing arranged at a higher altitude than the first-mentioned communication, a tube located within said dome, and having one end closed and its other end, which is open, in communication with the atmosphere outside of the casing, and said tube also having an opening which forms a communication between the tube and the dome, a valve for controlling said opening, a rod carrying said valve and also a float, and a thermostat provided in the casing and on which said rod rests.

Signed by me at New York this 25th day of April, 1899.

ALFRED ROESCH.

Witnesses:

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