

No. 811,483.

PATENTED JAN. 30, 1906.

G. CLEMENTS & J. M. HOSTLER.
HEAT CONTROLLING APPARATUS.

APPLICATION FILED APR. 23, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

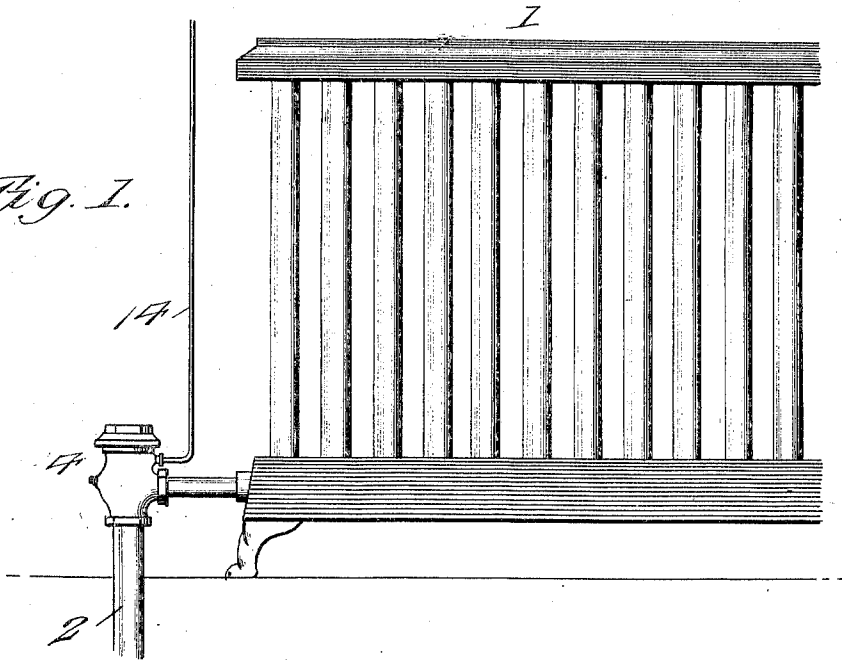
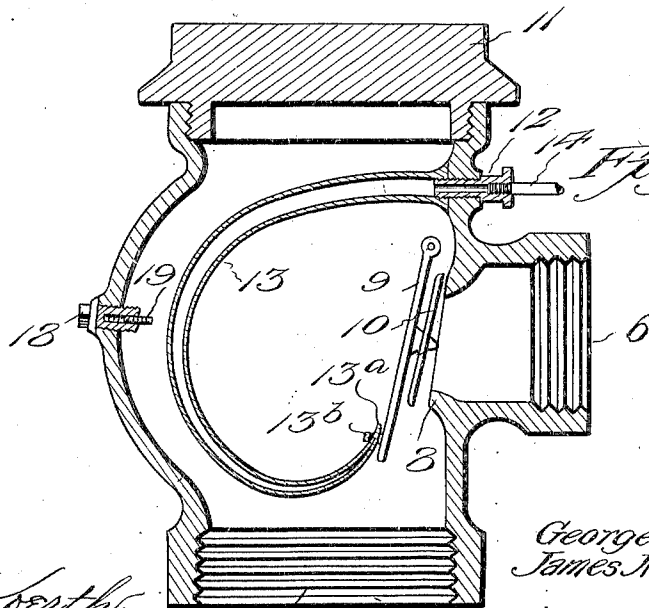


Fig. 2.



Witnesses

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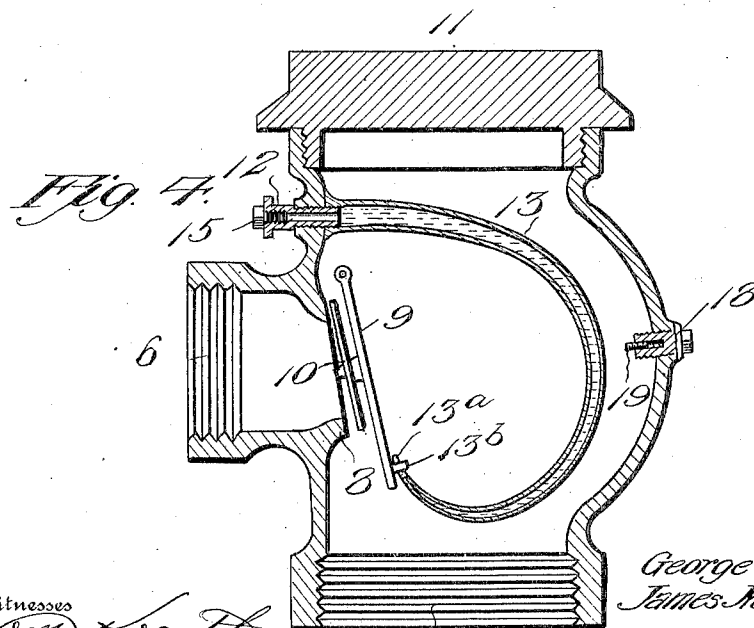
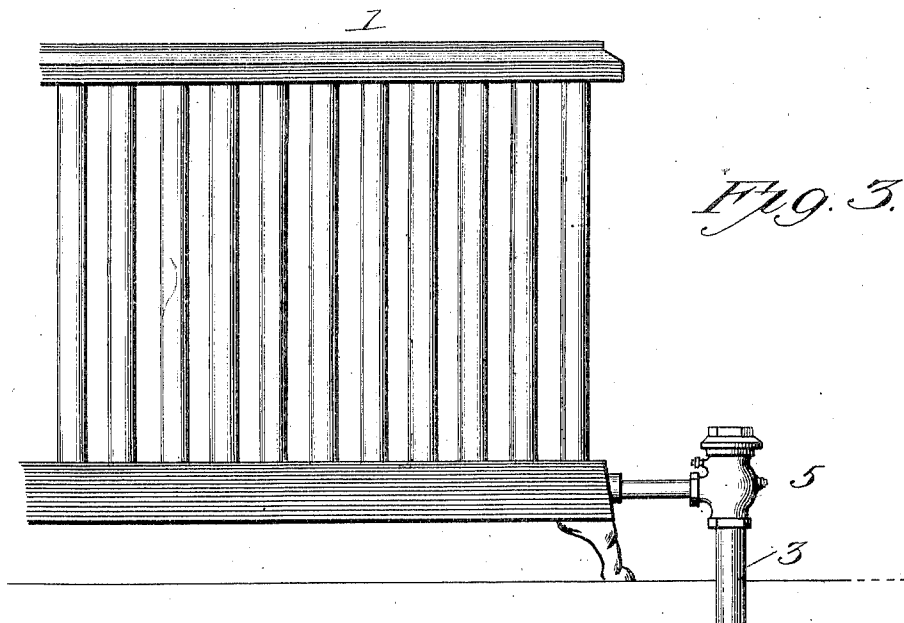
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UNITED STATES PATENT OFFICE.

GEORGE CLEMENTS AND JAMES M. HOSTLER, OF CHICAGO, ILLINOIS.

HEAT-CONTROLLING APPARATUS.

No. 811,483.

Specification of Letters Patent.

Patented Jan. 30, 1906.

Application filed April 23, 1904. Serial No. 204,638.

To all whom it may concern:

Be it known that we, GEORGE CLEMENTS and JAMES M. HOSTLER, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Heat-Controlling Apparatus, of which the following is a specification.

Our invention has relation to heat-controlling apparatus; and it consists in the construction and arrangement of parts, as will be hereinafter described and particularly claimed.

Figure 1 is a side elevation of one half of a radiator, illustrating the application of the valve to the feed-pipe. Fig. 2 is a central longitudinal sectional view of the valve-casing containing the mechanism for regulating and controlling the feed to the radiator. Fig. 3 is a view similar to Fig. 1 of the other half of the radiator, illustrating the application of the valve to the pipe adapted to convey the condensation away from the radiator. Fig. 4 is a central longitudinal section of this form of valve.

Referring to the drawings by reference-numerals, 1 designates a radiator of common construction, 2 a feed-pipe, and 3 the return-pipe, both of which are adapted to be connected to the radiator in any suitable manner. Interposed in said pipes at points adjacent the radiator are valve-casings 4 and 5, which contain the mechanism for seating and unseating the valves which control the feed and discharge of the condensation, respectively. The valve-casings are substantially duplicates in construction, and each is provided with an inlet 6 and an outlet 7, and arranged adjacent to the outlet of the casing 4 and the inlet of the casing 5 are valve-seats 8. Arms 9 are pivotally secured within the casing 5 and have suitably connected thereto valves 10, which are adapted to be automatically seated and unseated. The valve-casings have their upper ends open to permit of access being gained to their interiors, said openings being closed by removable caps 11. The casing 4 is provided at a point adjacent its outlet and the casing 5 is provided at a point adjacent its inlet with threaded openings adapted to receive externally and internally threaded sleeves 12, the inner ends thereof being adapted to project within the casings. Expansible members 13 are mounted within the casings and are so connected and associated with the valves that their expansion or

contraction will either close or open said valves. The members are hollow and approximately U-shaped, each having one of its ends rigidly connected to the casing in such a manner that its other, free, end is adapted, during the expansion or contraction of the member, to relatively move toward and from an adjusting-screw, hereinafter referred to. The members have their fixed ends open, said fixed ends being secured to the inwardly-projecting portions of the sleeves 12, while the free ends are provided with projections 13^a, adapted to be received by slotted lugs 13^b, formed upon the lower ends of the arms 9. It is apparent in view of the peculiar construction of the members that when they contract their free ends are adapted to move away from the valve-seat in acute planes with relation to the longitudinal centers of said valve-seats, which movement, through virtue of the connection between the arms and said free ends, will cause the valves to be unseated or opened. The expansion of the members will cause the free ends to move reversely, and consequently seat or close the valves. The projections 13^a are adapted to have a slight movement in the slots of the lugs 13^b to compensate for the peculiar movement of the free ends of the members 13 when said members either contract or expand.

A pipe 14 has its lower end secured to the sleeve 12 of the casing 4 and its upper end suitably connected to a thermostat (not shown) which is adapted to regulate a flow of compressed air which is conveyed by the pipe 14 to the member 13. When the atmosphere within the room rises to a certain temperature, the thermostat operates to permit the compressed air to flow into the member 13, which causes the latter to expand and seat or close the valve, whereby the flow of the fluid to the heating apparatus is cut off. When the temperature falls, the thermostat will operate to cut off the flow of compressed air and permit the escape of that remaining in the pipe 14 and member 13, which permits the member to contract of its own adherent nature and unseat or open the valve to permit the fluid to readily flow to the heating apparatus. It is apparent that the valve mounted within the casing 4 may be opened to a greater or less degree to regulate the amount of fluid conveyed to the heating apparatus.

The expansion and contraction of the member 13, which controls the valve mounted within the casing 5, is adapted to be caused

by any suitable expansible fluid mounted within said member. After the member has been supplied with fluid a plug 15 is inserted in the sleeve 12; whereby said fluid is confined 5 between said plug and the closed end of the member. It is apparent that as the condensation accumulates within the heating apparatus the interior of the valve - casing 5 will become cooled, which cooling will cause 10 the fluid in the member 13 to contract, and thereby permit the member to contract, and as the contraction of the member will unseat the valve said condensation will be free to flow off. As soon as a sufficient quantity of 15 the cooled condensation has passed off to bring the heated condensation or that in close relation to the steam the interior of said casing will become heated, and thereby cause the fluid within the member 13 to expand, which 20 expansion will also cause the expansion of the member and seat the valve.

It is apparent from the above description, taken in connection with the accompanying drawings, that we provide a valve which may 25 regulate the flow and discharge of a heating fluid to an apparatus in such a manner that a room may be kept at an even temperature.

Plugs 18 are movably mounted within the rear of the casings and have their ends projecting therewith. The plugs are provided 30 with threaded recesses adapted to receive threaded bolts 19, which are adapted to lie in the path of the members 13, so as to be engaged by the latter to limit their expansion. The

bolts are adapted to be moved outwardly and 35 inwardly to regulate the degree of expansion of the members to permit the valves to be moved away from the seats at various distances.

Having thus fully described the invention, 40 what is claimed as new is—

1. A valve-casing, an arm within and pivoted to the casing adjacent to the valve-seat, said arm carrying intermediate its ends a 45 valve, a hollow member connected at one end to the valve - casing and at its other end loosely connected to the free end of the arm, said member adapted under variations of internal pressure to operate the arm, and thus 50 the valve.

2. A valve-casing, an arm within and pivoted to the casing adjacent to the valve-seat, said arm carrying intermediate its ends a 55 valve, a hollow member connected at one end to the valve - casing and at its other end loosely connected to the free end of the arm, said member adapted to expand under internal pressure to close the valve, and contract 60 of its own inherent nature to open the valve when said pressure is removed.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE CLEMENTS.
JAMES M. HOSTLER.

Witnesses:

JOHN DOWNEY,
MICHAEL J. HAW.