(No Model.)

E. F. GORDON & H. HOBBS.

VENT VALVE.

No. 266,462. Patented Oct. 24, 1882.

Fig. 1.

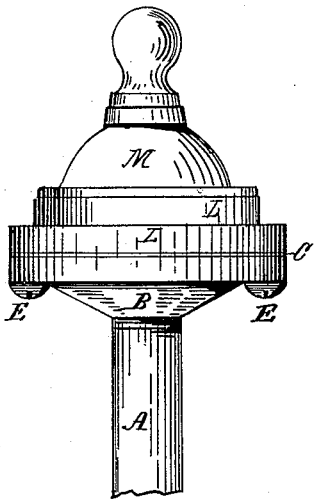


Fig. 2.

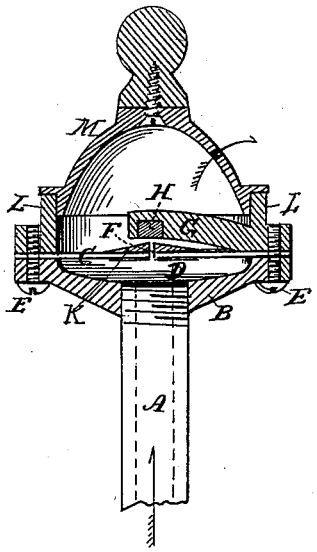
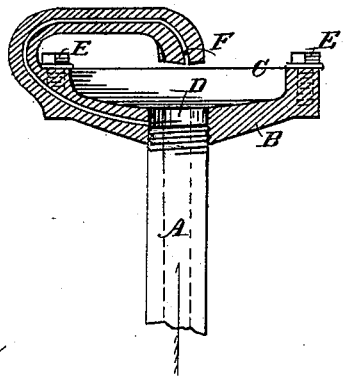


Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWARD F. GORDON AND HORATIO HOBBS, OF CONCORD, NEW HAMPSHIRE.

VENT-VALVE.

SPECIFICATION forming part of Letters Patent No. 266,462, dated October 24, 1882.

Application filed May 26, 1882. (No model.)

To all whom it may concern:

Be it known that we, EDWARD F. GORDON and HORATIO HOBBS, citizens of the United States, residing at Concord, in the county of Merrimack and State of New Hampshire, have jointly invented certain new and useful Improvements in Vent-Valves; and we do hereby declare that the same are fully described in the following specification and illustrated in the accompanying drawings.

This invention is designed to simplify and perfect vent-valves for steam radiators, generators, &c., so that air may pass freely through such valves into or out of the radiator or generator at low steam-pressure, while at high pressure the steam is automatically retained.

Our invention consists in a cup or bulb for a steam-pipe, spanned by a flexible diaphragm adapted to yield under pressure of steam, so as to prevent the escape thereof, and permitting the passage of air or steam when the pressure is materially reduced.

It also consists in such bulb or cup spanned by a flexible diaphragm and provided with a suitable vent, in combination with an arm or bar over the same, adapted to close the vent when the diaphragm is distended by the pressure.

It also consists in such devices, in combination with a cover to condense the escaping steam and a rim or wall to retain the water of condensation and return it to the steam-pipe.

In the drawings, Figures 1 and 2 represent in elevation and vertical section the best form in which we have applied our invention, and illustrate its various features. Fig. 3 is a modification, omitting certain of the parts.

A is a pipe or tube leading from the interior of the radiator, and B a cup mounted on it. C is a flexible diaphragm fitting upon the edges of the cup and inclosing or covering the steam-space D. Screws E and washers or other devices insure a tight joint.

When steam begins to form in the generator or is let into the radiator the air contained therein is gradually displaced; and in order to provide for its escape automatically, without permitting steam under full pressure to pass off by the same outlet, we form a vent, F, open under slight pressure, but closed by distention of the diaphragm under increased pressure. This vent may be in the form of an indirect tube leading from the space beneath the diaphragm C and terminating just above it, as in Fig. 3, in which the diaphragm is not perforated, and in its yielding comes into contact with the extremity of the tube and keeps the vent F closed while the pressure continues, but opens it when the pressure is relieved. We prefer, however, the construction shown in Figs. 1 and 2, in which the diaphragm is perforated centrally to form a vent, and an arm, G, projects from the edge thereof inwardly, so as to cover the perforation and close the passage when there is sufficient pressure to distend the diaphragm. The extremity of the arm is shown as provided in its under side with a plug, H, of vulcanized india-rubber, or of leather, against which the diaphragm, or a washer, K, thereon, impinges at the perforated point, the object of this yielding plug being to insure a more perfect joint. It is obvious, however, that a rubber or other flexible diaphragm pressing against the plane or convex surface of the smooth metal would be of similar advantage. The arm G is most conveniently formed integral with the annular rim L, which serves to retain the water of condensation due to any steam passing through the vent and condensed beneath the ventilated cover M. The screws E hold the rim L and the diaphragm in position.

We claim as our invention—

1. A vent-valve for radiators, &c., consisting of a steam-cup, a flexible diaphragm spanning the same, and a vent, the parts being arranged relatively to automatically close the vent under heavy pressure and open it when the pressure is relieved, for the purposes set forth.

2. The combination of a steam-cup spanned by a flexible diaphragm and provided with a suitable vent, and an adjacent arm or bar adapted to close the vent when the diaphragm is distended, substantially as and for the purposes set forth.

3. The cup B, with its perforated diaphragm, in combination with the arm G, retaining-rim L, and cover M, for the purposes set forth.

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

EDWARD F. GORDON.
HORATIO HOBBS.

Witnesses:
NATHANIEL E. MARTIN,
FRED H. GOULD.