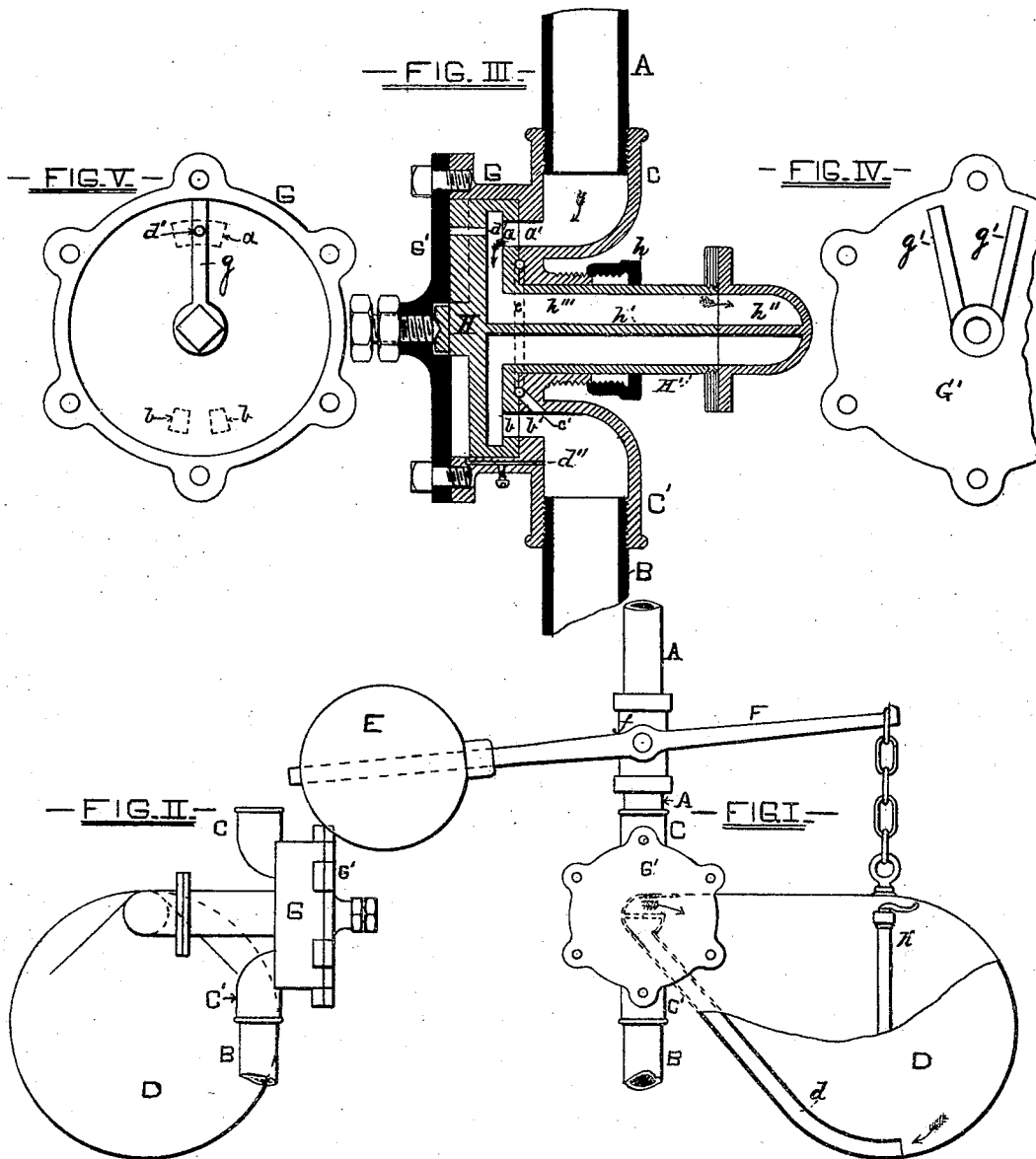


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Improvement in Steam-Traps.

No. 132,372.

Patented Oct. 22, 1872.



—WITNESSES—
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UNITED STATES PATENT OFFICE.

CHARLES SCHMANDT, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN STEAM-TRAPS.

Specification forming part of Letters Patent No. 132,372, dated October 22, 1872.

To all whom it may concern:

Be it known that I, CHARLES SCHMANDT, of the city of Baltimore and State of Maryland, have invented certain Improvements in Steam-Traps, of which the following is a specification; and I do hereby declare that the same is a full, clear, and exact description of my said invention, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention relates to an apparatus commonly known as a steam-trap, adapted to the uninterrupted drainage of the water arising from the condensation of steam from pipes, steam-chambers, and the like; and consists of the devices hereinafter explained and shown in the several figures of the drawing hereto annexed, forming a part of this specification.

Figure 1 is a side elevation of my invention. Fig. 2 is an edge view of the same. Fig. 3 is an enlarged vertical section through the valve forming the center of the oscillating parts. Fig. 4 is a back view of the bonnet covering the valve. Fig. 5 is a front view of the parts covered by said bonnet, the bonnet being removed.

Similar letters of reference indicate similar parts of the invention in all the figures.

A is a pipe, to be attached to that pipe or steam-chamber from which the water of condensation is to be drained. C is the upper neck of the body of the valve, into which the pipe A is inserted. B is the waste-water or outlet pipe, connecting with the lower neck C' of the body of the valve. That part G of the body of the valve forms a diskal-seat or face-plate for the valve proper H. The valve H has a tubular stem or center, H', passing through the body of the valve, and packed steam-tight by means of the stuffing-box and screw-cap h. The stem or center H' is divided by the partition piece h' intersecting its area, and running longitudinally through the stem from the face of the valve to the end of the stem. It will be seen that the space in that part of the stem and valve above the intersecting piece h' connects by the openings a and a' with the interior of the neck C and the pipe A, and also that the corresponding space below the intersecting piece h connects, by the openings b and b' when they are brought together, with the interior of the neck C' and pipe B.

G' is the bonnet covering the diskal-seat or face-plate and valve H, and is secured to the seat by tap-bolts. D is a receiver, attached to the stem H', the use of which receiver, together with that of the lever F and weight E, is hereinafter explained.

To describe more fully the operation of the trap I will suppose, first, the pipe A to be attached to a pipe or steam-chamber from which it is desired to remove the water of condensation, and that the respective parts of the apparatus occupy the relative positions shown in Fig. 1. An open communication is always had through the openings a a', and the water descending through the pipe A at once passes into the space existing within the valve and stem above the intersecting pieces h' h'', and thence into the receiver D, following the course indicated by the arrows in full lines. The water rising within the receiver is forced, by the pressure of steam, up the pipe d, attached to the inside of the receiver. As the receiver is filling the air is allowed to escape through the space h''' and opening d', thence between the back of the valve H and the bonnet G' through the aperture d'' into the pipe B. During this time the openings b b' are closed. These openings are shown herein as only two in number, but they may be increased in number, or a single opening be used, as preferred. A sufficient weight of water having passed into the receiver to overcome the weight of the ball E upon the lever F, having its fulcrum at f upon the pipe A, the receiver falls, and a communication is made through the openings b and b', thus brought together, through which the water flows into the pipe B, its velocity being, of course, greatly accelerated by the pressure of steam. As soon as the weight of the receiver is lessened so as to admit of the return of the counter-balance to the position in which it is shown in Fig. 1, the openings b are again closed. The stop g upon the back of the valve acts in conjunction with those g' upon the bonnet, to prevent the too great lateral movement of the oscillating parts.

It will be seen that, as the opening a is never closed, the water of condensation is always being carried away from the pipes to which the trap is attached. By the action of the counter-balance E, all communication is closed between the pipes A and B when no water of

condensation remains to be carried off, the receiver then being chiefly occupied by steam. As soon, however, as the water has collected in sufficient quantity to be of such weight as is required to cause the receiver to fall from the position in which it is indicated by Fig. 1, the water therein is almost instantly discharged by the pressure of steam above. The communication between the pipes A and B is then immediately closed again by the fall of the counter-balance E.

A glass water-gage is shown by *k*, attached to the receiver, by means of which gage the condition and height of the water within the receiver can be conveniently discovered.

The annular space *c* and the outlet *c'* are intended to receive and carry into the pipe B whatever leakage of water passes between the valve and seat.

Although I have, in the several figures of the drawing annexed, shown my invention in the shape and order in which I preferably use it and in which it is now in successful operation, I might show many modifications of the same. For instance, the receiver and lever and counter-balance may occupy different positions with reference to each other and the valve; and the shape of the valve itself and its connecting parts might be so disguised as to scarcely resemble those herein shown, without changing in the least the principles therein involved, or accomplishing any new result whatever.

Having thus described my invention, what I claim as new, and wish to secure by Letters Patent, is—

1. A steam-trap having between the pipe A and a receiver attached to the stem of the valve a constantly open channel, substantially as shown by *a a'*, and a variable communication between the valve and pipe B, substantially as provided for by *b b'*, the said apertures *b b'* adapted to be opened and closed by the acting and counteracting of the weight of the water passing into the receiver, and that of a ball upon a lever connected with said receiver, substantially as hereinbefore set forth and described.

2. In the valve H, the tubular intersected stem H', stop *g*, aperture *d'*, and annular groove *c*, arranged substantially in the manner and for the purposes set forth.

3. The body of the valve having the aperture *d'* and annular groove *c*, in combination with the bonnet G' and stops *g'*, arranged substantially in the manner and for the purposes herein set forth.

4. In the receiver D, the combination of the intersecting piece *h''*, pipe *d*, and gage *k*, substantially as and for the purposes herein specified.

CHARLES SCHMANDT.

Witnesses:

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