(No Model.)

J. MOREHEAD.

STEAM TRAP.

No. 263,716. Patented Sept. 5, 1882.

Fig. 2.

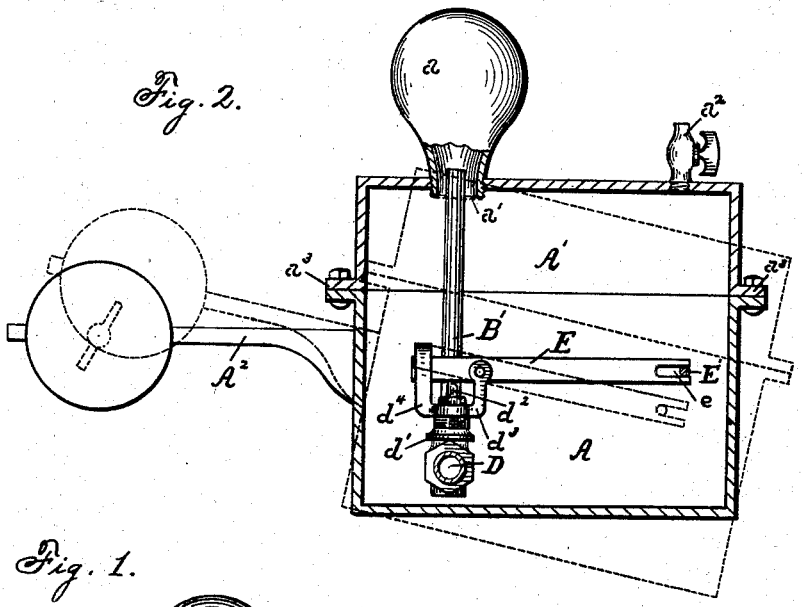


Fig. 1.

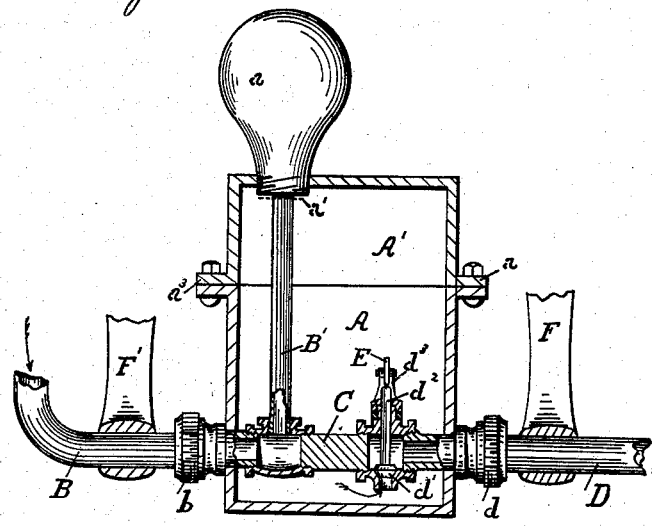
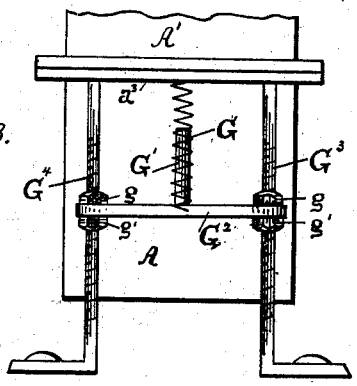


Fig. 3.



WITNESSES

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JOHN MOREHEAD, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-HALF TO LOUIS F. HERBST, OF SAME PLACE.

STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 263,716, dated September 5, 1882.

Application filed July 11, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN MOREHEAD, of Detroit, county of Wayne, State of Michigan, have invented a new and useful Improvement in Steam-Traps; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention consists in the combinations of devices and appliances hereinafter specified, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a vertical cross-section of a device embodying my invention. Fig. 2 is a longitudinal section. Fig. 3 is a variation.

The object of my invention is to provide a steam-trap to free the steam-pipes from condensed water.

Heretofore steam-traps have been made in which the body of the trap has commonly been stationary, while a float, lever, or other device within the stationary body has operated the valve of the trap. In a steam-trap so constructed it is difficult to tell when the mechanism is operating properly, or whether the steam is being blown off with the water. In my invention, however, the body or chamber of the trap is suspended on one side of the center of gravity, and kept in its proper plane by a weighted lever until the accumulation of condensed water within overbalances the weight and the chamber is thereby caused to tilt down. The tilting of the chamber automatically allows the free play of the valve within, when the pressure of the steam on the water automatically opens the valve and the surplus water is discharged. When this is done the weighted lever causes the chamber to rock back to its previous plane and the valve is closed. The operation of the trap is thus capable of being continually observed by the rocking to and fro of the chamber, so that the operator can always tell when it is properly working.

In carrying out my invention, A is a suitable receiving-chamber of any desired form and size, provided with a cover, A′. A^2 is a weighted lever attached to said chamber.

B is an inlet steam-pipe, provided with a stuffing-box, *b*. This inlet-pipe is provided within the chamber with the upright arm B′, open at its upper end and suitably extended so that the steam shall be delivered above the water in the chamber.

I prefer that the cover A′ should be constructed with an ordinary air-chamber, *a*, and that the arm B′ of the inlet-pipe should extend into the base of said chamber. I prefer, also, that at the base of this air-chamber a suitable strainer, *a′*, should be located, below the outlet of the arm B′, to prevent any sediment from being deposited which might impede the working of the valve mechanism.

a^2 is a suitable cock.

C is a blank joint secured to the pipe B.

D is an outlet-pipe, provided with a stuffing-box, *d*, and a valve, *d′*, the valve-chamber being connected with the blank joint C, said joint turning the steam up through the arm B′, preventing a continuous flow of steam through the valve and outlet-pipe.

The valve is provided with a valve-stem, d^2, an arm, d^3, which supports the lever E, and preferably with a guide for the lever d^4.

The lever E is constructed with a slot, *e*, through which it is supported on the arm or bolt E′, secured to the adjacent side of the chamber. The arrangement of the lever E is such that when the trap is held on a horizontal plane by the weighted lever A^2 said lever E will rest upon the valve-stem d^2; but when the chamber is tilted down, as shown by the dotted lines, the lever will be lifted sufficiently from the valve-stem to allow the pressure of steam upon the water to open the valve and permit the discharge of the surplus water, when the trap will return to its horizontal position.

The whole trap is pivoted on the boxes *b* and *d*, one side of the center of gravity, and may be supported in any desired manner upon proper bearings, F and F′.

It is evident that since the steam is carried in the upright arm B′ above the water in the chamber it will not be liable to blow off with the water when the valve *d′* is opened.

It will be seen that the air-chamber *a* may be dispensed with without departing from the main features of my invention, in which case the upright pipe might be extended into the

cover A′, and said cover constructed with or without a strainer below the orifice of said pipe.

It will be seen, also, that the weighted lever A^2 might be dispensed with and a suitable spring, G, as shown in Fig. 3, be substituted in its place.

In case the spring is used, it may be secured to the chamber A in any proper manner—as, for instance, upon a standard, G′, which standard is supported upon the bar G^2. This bar may be adjustably connected with the screw-cut standards G^3 and G^4, secured to the flanges a^3, by which the chamber A and its cover A′ are united, and resting on any suitable foundation.

The adjustment of the bar G^2 may be secured by means of nuts g and g', which can be raised or lowered to any desired position. Should the spring mechanism be used, however, I do not confine myself to the form of attachment here shown, as other methods would answer the same purpose.

What I claim is—

1. An automatic steam-trap for the discharge of condensed water from steam-pipes, consisting of a suitable receiving-chamber, an inlet steam-pipe which traverses the chamber at one side of the center of gravity and constitutes an axial support upon which the receiving-chamber may be tilted, an interior pipe connected therewith and carrying the steam above the water in the chamber, a discharge-pipe having its valve within said chamber, a lever arranged within said chamber and adapted to hold the valve closed when the receiving-chamber is in a horizontal position and leaving it free to operate when said chamber is tilted out of such position, and in combination therewith means whereby it shall be caused to occupy a horizontal position when relieved of its surplus water, substantially as described.

2. An automatic steam-trap for the discharge of condensed water from steam-pipes, consisting of a suitable receiving-chamber, an inlet steam-pipe traversing said chamber at one side of the center of gravity and forming a limited axis therefor, an interior pipe connected therewith adapted to carry the steam above the water in the receiving-chamber, a discharge-pipe provided with a suitable interior valve and valve-stem, a lever constructed and adjusted to rest upon the valve-stem when the receiving-chamber is in a horizontal position and to release its pressure upon the valve-stem when the receiving-chamber is tilted out of said position, and in combination therewith means whereby said chamber shall be caused to occupy a horizontal position when relieved of its surplus water, the whole construction being such than when the water unduly accumulates in the chamber it will tilt said chamber, relieve the valve from the pressure of the lever, and permit the pressure of the steam upon the water to open the valve and discharge the water until the equilibrium of the chamber is restored, substantially as described.

3. An automatic steam-trap for the discharge of condensed water from steam-pipes, consisting of a suitable receiving-chamber provided with a cock and weighted lever, an inlet steam-pipe, an interior pipe connected therewith adapted to carry the steam above the water in the receiving-chamber, a strainer below the orifice of said pipe, a discharge-pipe provided with a suitable valve connected by a blank joint to the inlet-pipe, said valve provided with a valve-stem, a lever constructed and adjusted to rest upon the valve-stem when the receiving-chamber is in a horizontal position and to release its pressure upon the valve when said chamber is tilted out of such position, and in combination therewith suitable stuffing-boxes whereby the receiving-chamber is pivoted upon the inlet and discharge pipes, substantially as described.

4. An automatic steam-trap for the discharge of condensed water from steam-pipes, consisting of a suitable receiving-chamber provided with an air-chamber, cock, and weighted lever, an inlet steam-pipe, an interior pipe connected therewith adapted to carry the steam into the air-chamber, a discharge-pipe provided with a suitable valve connected by a blank joint to the inlet-pipe, said valve provided with a valve-stem, a lever constructed and adapted to rest upon the valve-stem when the receiving-chamber is in a horizontal position and to release its pressure upon the valve when said chamber is tilted out of such position, and in combination therewith suitable stuffing-boxes whereby the receiving-chamber is pivoted upon the inlet and discharge pipes, substantially as described.

5. In a steam-trap for the discharge of condensed water from steam-pipes, a suitable receiving-chamber provided with an air-chamber, said air-chamber provided with a strainer, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

JOHN MOREHEAD.

Witnesses:

J. EDWARD WARREN,

N. S. WRIGHT.