

(No Model.)

E. M. IVENS.

STEAM TRAP.

No. 358,556.

Patented Mar. 1, 1887.

Fig. 2.

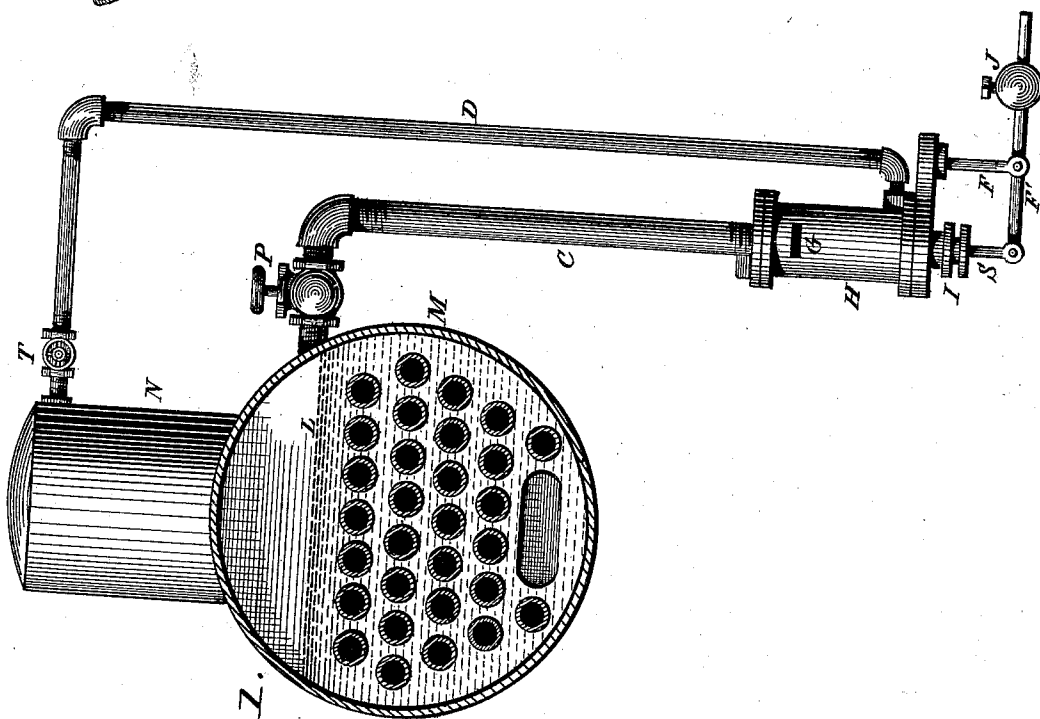
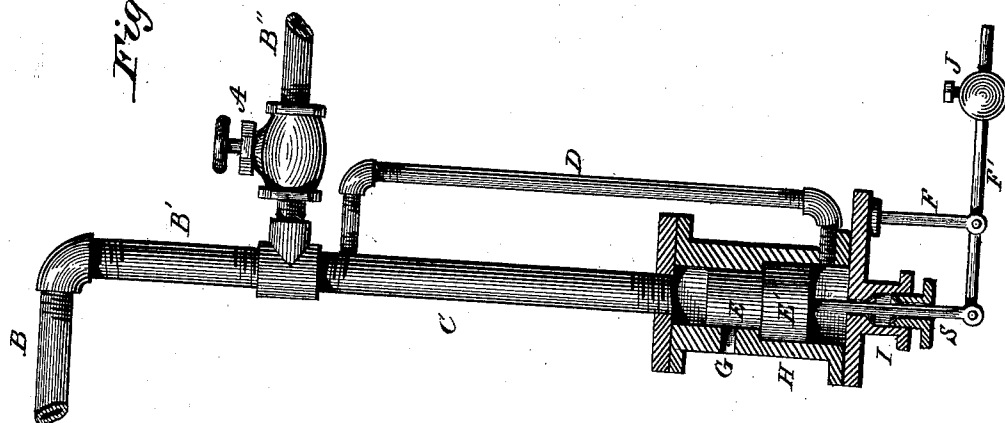


Fig. 1.

WITNESSES

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STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 358,556, dated March 1, 1887.

Application filed June 8, 1885. Serial No. 168,679. (No model.)

To all whom it may concern:

Be it known that I, EDMUND M. IVENS, a citizen of the United States, residing at New Orleans, in the parish of Orleans, State of Louisiana, have invented certain new and useful Improvements in Steam-Traps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to make and use the same.

This invention has for its object the prevention of a surcharge of water in a steam-boiler, and of the passage of water from the boiler into the cylinder of the engine when that in the former is foaming; and it consists of a trap, which may or may not be provided with an automatic relief-valve to be operated by the weight of the overflowing water.

Referring to the accompanying drawings, Figure 1 represents my invention as applied to prevent a surcharge of water in the boiler; Fig. 2, the same applied to prevent the passage of water from the boiler into the cylinder of the engine in case of foaming in the boiler.

The same letters of reference occurring on both figures indicate like parts.

M represents in section an ordinary tubular boiler, and N its steam-dome. To the former, at or about the desired water-level, L, is attached a stop-cock, P, to which the water-trap is connected. This latter apparatus consists of a water leg or pipe, C, in which the overflow collects, and to the lower end of which is attached a cylinder, H, fitted with a piston, E E', the upper portion, E, of which is of less diameter than the lower portion, E', the cylinder being bored one-half of its length, or thereabout, to correspond with the diameters of the two portions of the piston, respectively. The upper portion, E, of said piston covers an opening, G, in the side of the cylinder, and acts as a slide-valve to open and close said aperture by its descent and ascent. This piston is furthermore supported by a rod, S, passing through an ordinary gland, I, and connected with a lever, F', having its fulcrum at F, and on said lever is a weight, J, which is adjustable toward and

from the fulcrum to counterbalance the weight of the piston. D is a small pipe connecting the lower end of the cylinder with the steam-dome N at a controlling stop-cock, T. It will thus be seen that when the stop-cocks P and T are open the steam-pressure above and below the piston will be equal, and the weight of the latter being sustained by a slight preponderance of the weight J on the lever F', the piston, with its valve portion E, will be borne upward and remain stationary until a surplus of water in the boiler shall flow over into the pipe C. The weight of such column of water resting on the piston E' will then cause the latter to descend until the aperture G in the side of the cylinder is uncovered by the piston-valve E falling, when the water will escape through said aperture. The weight J then preponderating will cause the piston to resume its normal position until more water shall flow over and repeat the discharge in the same manner.

This apparatus may be connected to the steam-pipe at any convenient point between the steam-dome of the boiler and the cylinder of the engine, as represented in Fig. 2, B B' B'' representing the steam-pipe provided with a stop-cock, A, to the vertical section B' of which the apparatus is attached, so that any water in the steam-pipe, either from condensation or foaming in the boiler, will continue its direct downward course into the pipe C, owing to its greater specific gravity than the steam, while the latter will pass on by the pipe B'' to the engine. The small pipe D, connecting the upper end of the pipe C, or the steam-dome, as the case may be, with the lower end of the cylinder H, as in its other application, equalizes the steam-pressure above and below the piston E E'. The valve E being operated, as before, by the accumulation of water in the pipe C, will allow such water to escape, and thus prevent its passage to the cylinder of the engine.

What is here claimed as new, and desired to be secured by Letters Patent, is—

1. The automatic water-discharge apparatus consisting of a nearly-balanced valve, E E', made to descend by the weight of over-

flow in the water-leg C, and to resume its normal position by preponderance of the weight J, as shown and described.

5 2. The pipe C, cylinder H, valve EE', counter-balance J, and steam-connection D, in combination with a steam-boiler, or with the steam-pipes of an engine, substantially as described, for the purpose set forth.

Signed at New Orleans, in the parish of Orleans, State of Louisiana, this 20th day of 10 December, 1884.

EDMUND M. IVENS.

Witnesses:

EDW. DE ARMAS,
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