(No Model.) 2 Sheets—Sheet 1.

E. REYNOLDS.

STEAM TRAP.

No. 566,870. Patented Sept. 1, 1896.

Fig. 1.

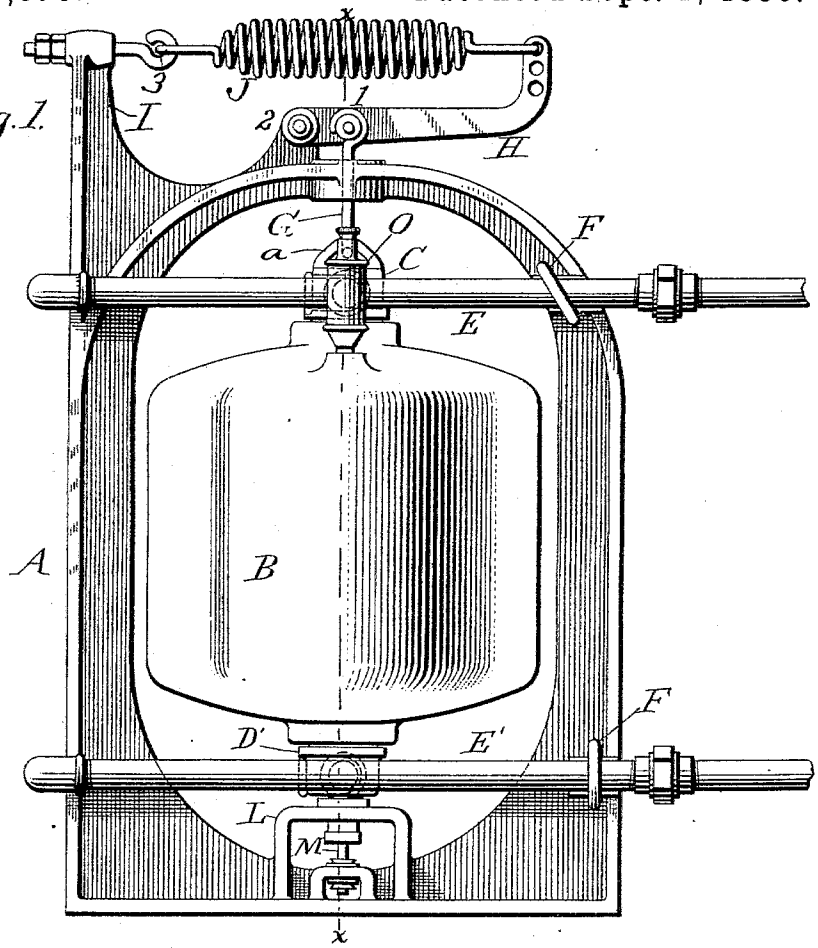
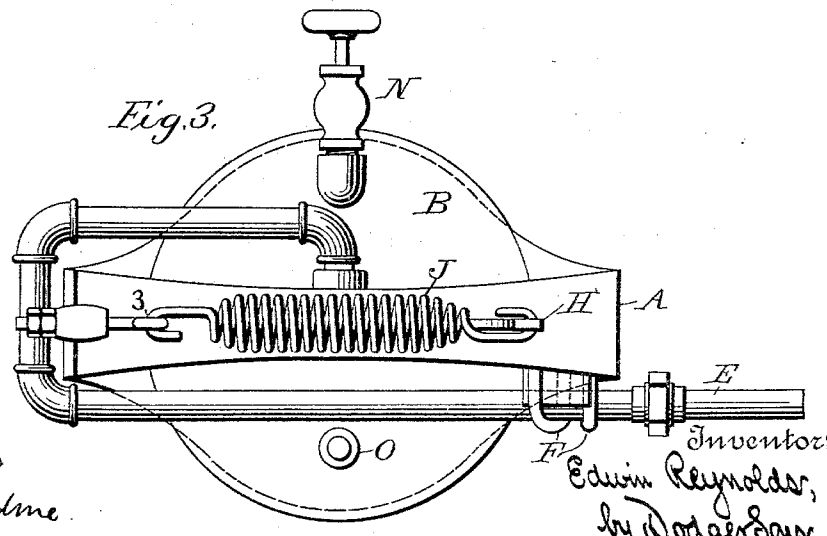


Fig. 3.



Witnesses
W. C. Burdine.
D. E. Burdine

Inventor:
Edwin Reynolds,
by Dodger Sons,
Attorneys.

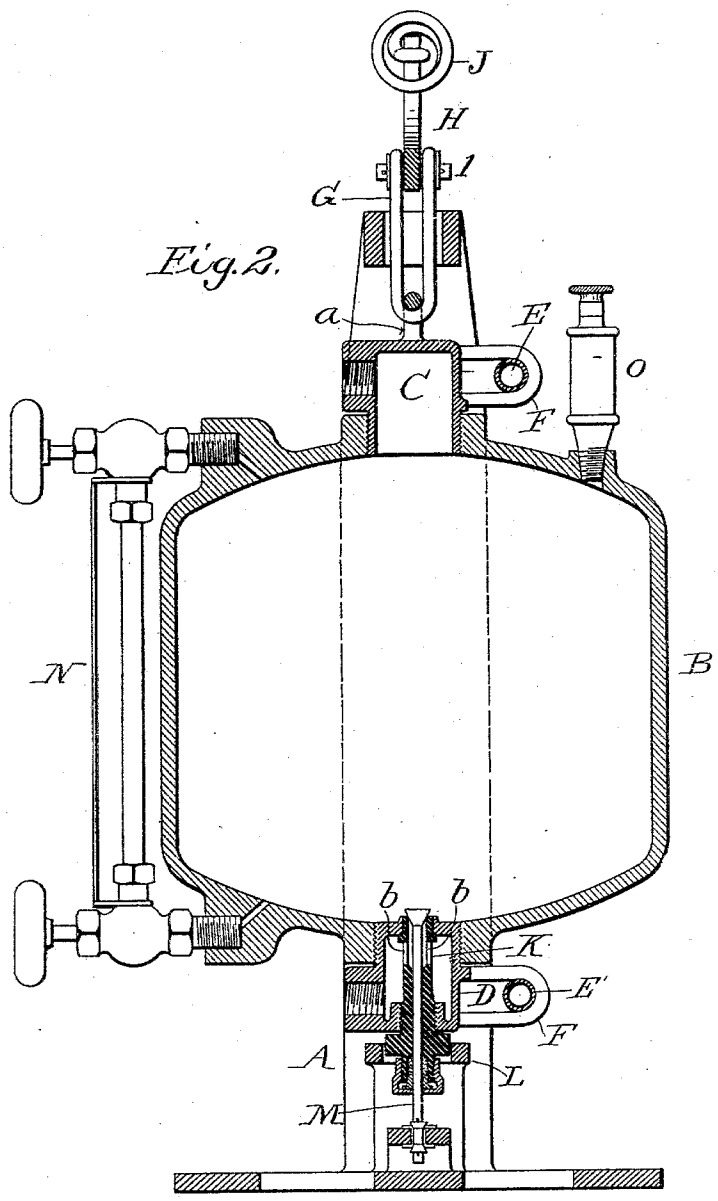
(No Model.) 2 Sheets—Sheet 2.

E. REYNOLDS.

STEAM TRAP.

No. 566,870. Patented Sept. 1, 1896.

Fig. 2.



Attest
C. C. Burdine
D. E. Burdine

Inventor:
Edwin Reynolds.
by Dodger Sons,
Attys.

UNITED STATES PATENT OFFICE.

EDWIN REYNOLDS, OF MILWAUKEE, WISCONSIN.

STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 566,870, dated September 1, 1896.

Application filed March 5, 1896. Serial No. 581,917. (No model.)

To all whom it may concern:

Be it known that I, EDWIN REYNOLDS, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Steam-Traps, of which the following is a specification.

The present invention relates to steam-traps, the construction and advantages of which will be hereinafter fully set forth.

The trap shown in the accompanying drawings when filling keeps its valve tightly closed and when dumping has its valve wide open. In this it does away with a fault which is common to many traps, that of cutting out their valve-seats, owing to the great velocity of the water through said valve because of its working continuously but a hair's breadth away from its seat.

In the accompanying drawings, Figure 1 is a front elevation of the trap; Fig. 2, a vertical sectional view on the line *x x*, Fig. 1; and Fig. 3, a top plan view.

A designates the frame or support within which is supported the trap.

The pot or cylinder B is formed with threaded openings at the top and bottom, into which are screwed fittings or nipples C and D, each of which is provided with a lateral opening, the upper one being the inlet-opening and that in the fitting D the exhaust. Into these lateral openings are secured the pipes E and E', said pipes passing about the frame or support to the opposite side, where each is seated in the recesses formed in the frame and secured thereto by U-bolts F.

The upper fitting C is formed with a loop *a*, to which is secured a stirrup G, said stirrup being pivotally connected to a lever H at a point 1. Said lever H is pivoted at a point 2 to a lug formed on the frame, the outer end of the lever extending upwardly and being provided with a series of holes or openings. Between the outer end of this lever and an upright arm I, formed integral with the frame, is secured a coiled spring J. The spring, acting through the lever H and stirrup G, tends to keep the pot or cylinder normally in an elevated position, and the outlet-valve, hereinafter described, closed. The eyebolt passing through the arm I, and to which one end of the spring is secured at a point 3, is threaded and provided with nuts by which it may be adjusted and the tension of the spring consequently varied.

The exhaust-valve is located in the lower fitting D. Extending vertically through the fitting and secured therein is a hollow shell K, the upper end of which forms the valve-seat, while immediately below said seat is formed a series of ports *b*, opening into the fitting D. The enlarged portion of the shell below the fitting D is guided in a way or opening formed in a bridge-piece or yoke L, cast integral with the frame. This yoke also serves to limit the descent of the pot, the fitting D coming into contact therewith when the pot is in its lowermost position.

M designates the valve-stem, which is secured to the frame and passes up through the shell K, it being of such length as to be closely pressed by the valve-seat when the pot is in its elevated position. Suitable packing-glands will of course be provided for the stem where it passes into the shell K.

A water-glass N is provided, so that the height of the water in the pot may be ascertained at any time. An air-valve O is also screwed into the pot to relieve the trap of any air that may accumulate.

The pipe connections E E', by having three elbows in each, are flexible enough to allow of the small movement of the pot which is necessary to open the valve.

The operation of the trap is as follows: We will assume that the pot is empty and in its upper position, the spring maintaining it there, and being adjusted to hold up about fifteen pounds more, or about a half-potful of water. The valve, of course, is then closed. Condensation-water now begins to come into the pot through the inlet-pipe, and the pot will fill up to a point where the weight of the accumulated water will just balance the strength of the spring. A little more water now added will overcome the spring, causing the lever H to be drawn down and the pot to drop down upon the yoke L. As the pot begins its descent, the lever H lowers and the spring loses its leverage, the pivot-points 1, 2, and 3 coming more nearly into a straight line. From the moment the pot begins its descent the spring begins to lose its leverage, and consequently the pot with the accumu-

lated water will quickly drop to the lowest possible point and the exhaust-valve be thrown wide open. The water will then pass out through the ports *b* and into the outlet-pipe E′ until the spring, which is so adjusted that it will not at any time lose all its leverage, is able to start the pot up again. The starting of the pot gives increased leverage to the spring through the elevation of the lever H, so that it is able to lift the pot to its original position, thus closing the valve. This operation will be steadily repeated, the pot filling with water until it overcomes the spring, then suddenly dropping and opening the valve wide, then exhausting through the wide-open valve until the spring is able to start it back again, when it will go suddenly shut.

Having described my invention, what I claim is—

1. In a steam-trap, the combination with the frame; of a pot provided with inlet and exhaust openings; pipes fitted in said openings and passing about, and secured to, one side of the frame; a lever pivoted to the upper portion of the frame; a stirrup connecting said lever to the pot; a spring for normally holding the lever in an elevated position; and a valve stem secured to the frame adapted to close the exhaust-opening.

2. In a steam-trap, the combination with the frame; of a pot provided with inlet and exhaust openings; pipes fitted in said openings, passing about and secured to one side of the frame; a lever pivoted to the upper portion of the frame; a stirrup connecting said lever and the pot; a spring connected at one end to the lever and at its opposite end to an extension on the frame; a valve-seat fitted in the lower portion of the pot; a guide and stop for the pot; and a valve-stem fixed to the frame beneath said pot.

3. In a steam-trap, the combination with the frame; of a pot mounted within the frame and provided with inlet and exhaust openings; a lever pivoted to the frame to one side of the vertical axis of the pot; a connection between the pot and the lever intermediate between its pivotal point and its end; and a spring connected to the outer end of the lever and having its opposite end attached to the frame in rear of the pivotal point of the lever.

4. In a steam-trap, the combination with the frame; of a pot mounted within the frame and provided with inlet and exhaust openings; a lever pivoted to the frame to one side of the vertical axis of the pot; a connection between the pot and the lever intermediate between its pivotal point and its end; a spring connected to the outer end of the lever and having its opposite end attached to the frame in rear of the pivotal point of the lever; and means for varying the tension of the spring.

In witness whereof I hereunto set my hand in the presence of two witnesses.

EDWIN REYNOLDS.

Witnesses:
IRVING H. REYNOLDS,
W. E. DODDS.