T. KIELEY.

STEAM-TRAP.

No. 190,719. Patented May 15, 1877.

Fig: 1.

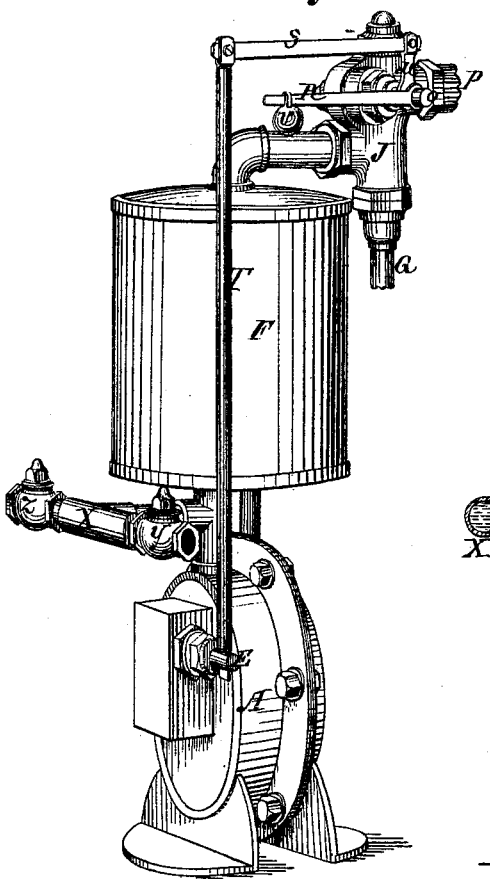
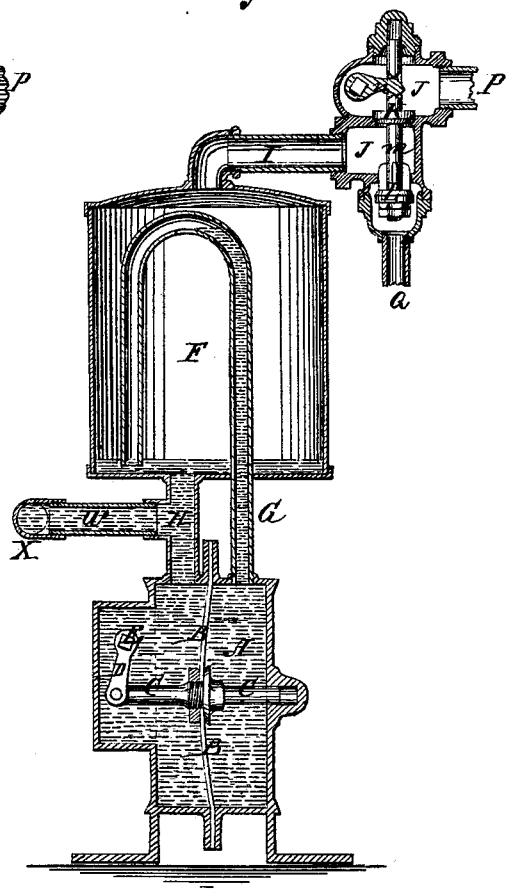


Fig: 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

TIMOTHY KIELEY, OF NEW YORK, N. Y.

IMPROVEMENT IN STEAM-TRAPS.

Specification forming part of Letters Patent No. **190,719**, dated May 15, 1877; application filed February 7, 1877.

To all whom it may concern:

Be it known that I, TIMOTHY KIELEY, of the city and county and State of New York, have invented a new and Improved Steam-Trap; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 is an elevation in perspective; and Fig. 2 is a vertical section, showing the whole internal construction.

This steam-trap consists of a reservoir, A, partitioned by a flexible diaphragm-plate, B, to the center of which there is connected a shaft, C, the end of which is fitted with a lever, D, the upper end of which is connected to a shaft, E, passing out of the reservoir through a stuffing-box, as shown in Fig. 1; and also of a receiver, F, placed above the said reservoir, and connected to it by means of two pipes, G and H, the pipe H beginning in the top of the reservoir and terminating in the bottom of the receiver, as shown by Fig. 2.

To the top of said receiver F is applied a pipe, I, the end of which is fitted with a double valve-chest, J J, a valve-stem, *m*, and two valves, K L, and two pipe-connections, P Q. Said valve-stem and valves are operated by means of a cam-lever, *n*, applied to the end of a shaft, *o*, which passes out of the upper valve-chamber through a stuffing-box, as shown by Fig. 1. To the end of this shaft *o*, outside of the stuffing-box, there are applied two levers, R *u*. Upon the end of the lever R a weight, V, is hung, and to the end of the lever, a link, *u*, is connected, uniting the valves with the diaphragm-plate by means of the rod T. To the side of the pipe H there is connected a pipe, *w*, to which is applied a pipe, X, fitted with receiving and delivering check-valve *y z*.

The trap, being constructed as above described, operates as follows: Let the pipe *z* be connected to the condensed-water side of the steam-heater, and the pipe *y* to the steam-boiler, and let the pipe P be also connected to the boiler, and the pipe Q to the sewer or waste-pipe, and let the trap be charged with water, as shown by Fig. 2 of the drawing.

The diaphragm-plate, owing to the column of water G, will be forced over to the left, as shown in the drawing; but as soon as the condensed water from the heater fills the receiver F, an equilibrium will be established on the two sides of the diaphragm-plate, which will then, by the aid of the counter-balance, be forced over to the other side, and carry with it the lever D. This will actuate the shaft E and the rod T, which, moving around the shaft E as a center, will move the lever *u* on the shaft *o*, and open the valve K and close the valve L through the cam *n*, by which the steam from the boiler will enter the top of the receiver, and force the water through the valve *y* back into the boiler, leaving the column of water G to press over the diaphragm-plate and close the steam-valve, as before. The condensed water will then begin to fill the receiver again, and so on continually, the valve L remaining open, while the steam-valve K is closed to allow the air to escape from the top of the receiver into the waste-pipe or sewer.

I claim—

The combination of the receiver F, pipe G and pipe H, chamber A, interposed diaphragm B, valves K and L, and mechanism for connecting the diaphragm and valve, substantially as and for the purpose set forth.

Dated February 2, 1877.

TIMOTHY KIELEY.

Witnesses:

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