

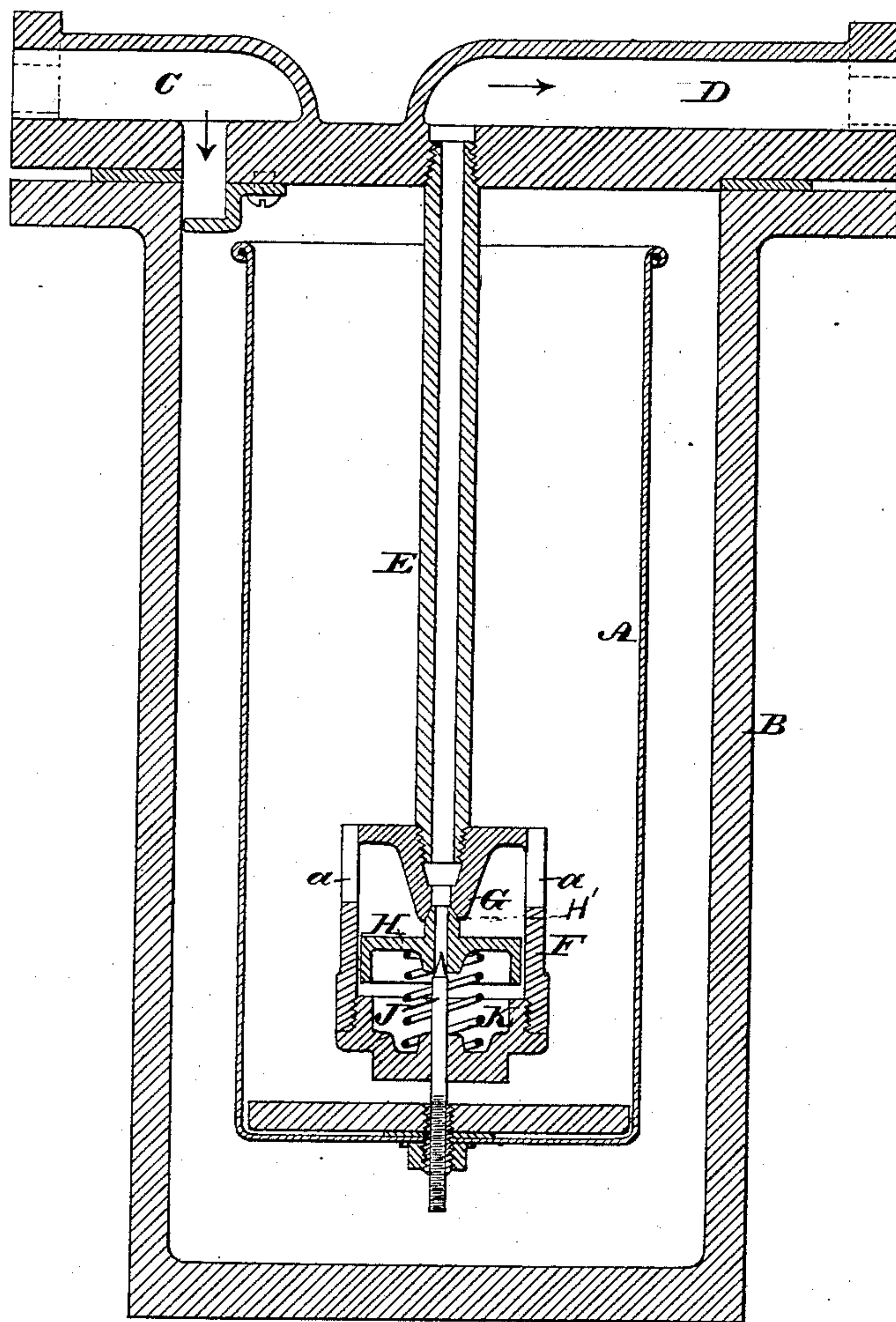
(No Model.)

R. B. HELLIWELL.

STEAM TRAP.

No. 318,249.

Patented May 19, 1885.



WITNESSES:

*O. Binder Jr.*  
*W. F. Fincher*

INVENTOR:  
*Robert B. Helliwell*  
BY *Wm. A. Diederichsen*  
ATTORNEY.

# UNITED STATES PATENT OFFICE.

ROBERT B. HELLIWELL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO DANIEL STEINMETZ, SR., AND PHILIP J. STEINMETZ, OF SAME PLACE, AND DANIEL STEINMETZ, JR., OF COLMAR, PA.

## STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 318,249, dated May 19, 1885.

Application filed January 24, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT B. HELLIWELL, a subject of the Queen of Great Britain, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Steam-Traps, which improvement is fully set forth in the following specification and accompanying drawing, in which the figure represents a central vertical section of a steam-trap embodying my invention.

My invention consists of improvements in a steam-trap, as will be hereinafter fully set forth.

Referring to the drawing, A represents a float, which is located within a casing, B, both formed of suitable metal or other material.

C represents the inlet, and D represents the outlet, of said casing the outlet being in communication with a pipe, E, which depends from the top or cap of the casing B, passes into the float A, and has its lower end connected with a valve-box, F, which latter, as will be seen, is located within the float near the bottom thereof.

On the inner face of the top of the box F is a valve-seat, G, below which, within the box, is a piston, H, from the center of which rises a valve, H', it being noticed that said valve and valve-seat are tubular or perforated, so as to be in communication with the pipe E.

The inner wall of the opening of the valve H' forms a seat for a valve, J, which is secured to the bottom of the float A, and passes freely through the bottom of the box F.

Bearing against the under side of the valve H' is a spring, K, the object of which is to force said valve against its seat G.

In the sides of the box F are ports *a*, which provide the means of communication between the float A and the interior of said box.

The piston H has a diameter a fraction—say one sixty-fourth inch—less than that of the valve-box.

The valve J, which I term an "auxiliary valve," is actuated by the float A, and rises

and falls therewith according to the level of water therein, and said float is balanced so that it will float just when the water-level therein reaches the middle of its depth, there remaining considerable water over the valve-box when the valve closes.

When the float becomes filled or partially filled with water, which rises in the casing B and flows into the float over the top of the same, it sinks, thus opening the valve J and allowing the pressure to leak out thereat, the excess of pressure on the upper side of the piston H then forcing the latter downwardly, and thereby opening the main valve H'. When the condensation ceases, the water becomes low in the float, and the latter then rises, and with it the valve J, so that the auxiliary valve J is again closed. The pressure on the upper side of the piston H now leaks down through the space between the piston and box F, and on the pressure becoming equal the spring K lifts the piston and closes the main valve.

The valve H may be enlarged or reduced in area, so as to give a valve-opening of any desired capacity without interfering with the effectual working of the trap or changing the size thereof.

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

1. A steam-trap provided with a float and having within the said float a depending pipe secured to the casing and a fixed valve-box secured to said pipe, the said valve-box having a main valve furnishing a seat for an auxiliary valve, substantially as described.

2. A steam-trap having a casing, and a float therein, and a fixed valve-box, the latter being within the float and provided with a main valve, an auxiliary valve, and seats therefor, the auxiliary valve being attached to and moving with the float, substantially as and for the purpose set forth.

3. In a steam-trap, a piston having a valve and a valve-seat, an auxiliary valve attached to the float of the trap, and a spring within



the valve-box bearing against the piston, for forcing the valve thereof against its seat in said box, said parts being combined and operating substantially as and for the purpose set forth.

5 4. In a steam-trap, a valve-box having a valve-seat, in combination with a piston carrying a valve and having a valve-seat for an aux-

iliary valve, which latter is connected with the float of the trap, said box and piston so having a space between them, substantially as and for the purpose set forth.

ROBT. B. HELLIWELL.

Witnesses:

JOHN A. WIEDERSHEIM,  
A. P. GRANT.