

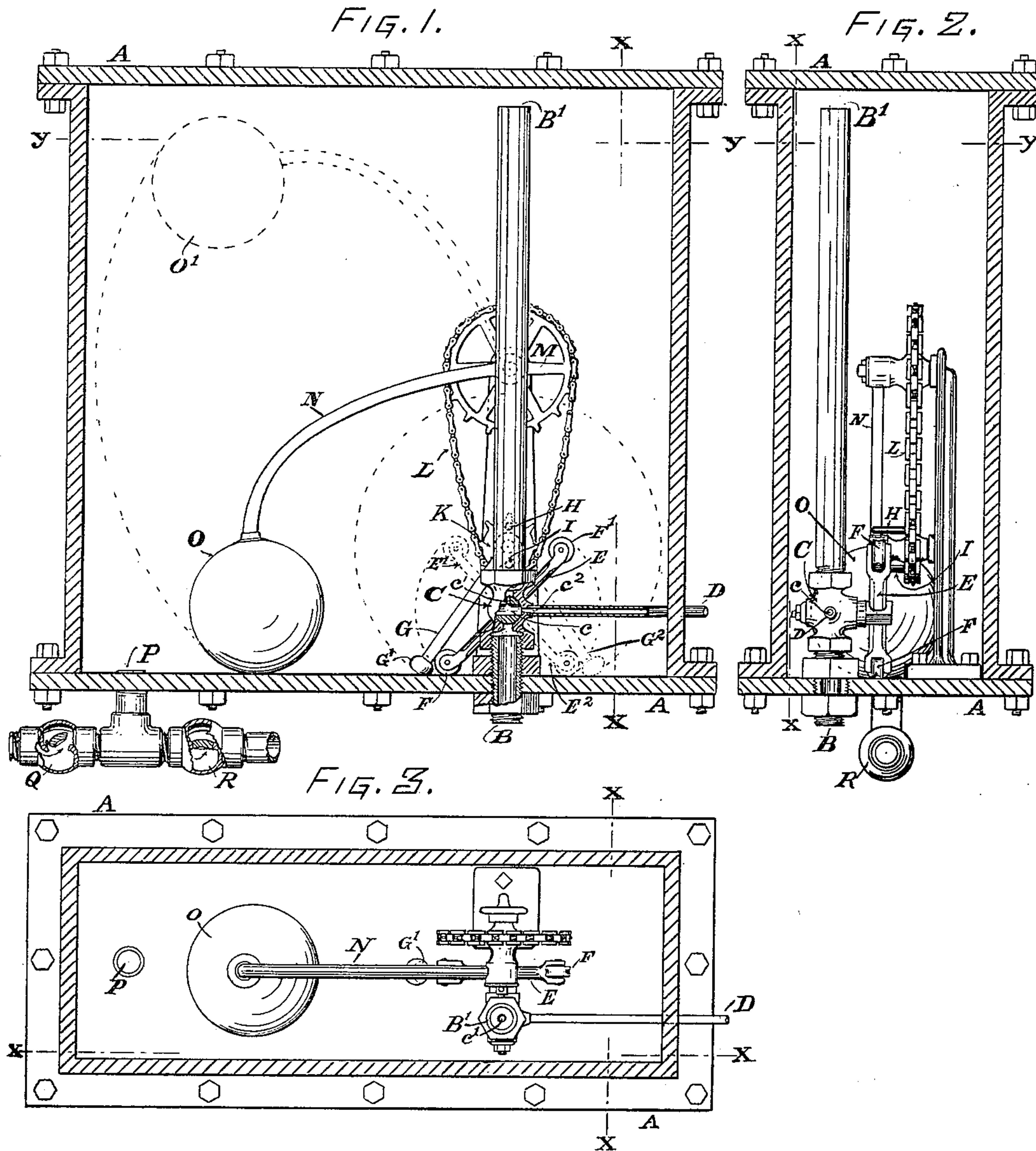
No. 663,433.

Patented Dec. 11, 1900.

L. E. HACKETT.
STEAM TRAP.

(Application filed June 3, 1898.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

LEWIS E. HACKETT, OF JACKSON, MICHIGAN.

STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 663,433, dated December 11, 1900.

Application filed June 3, 1898. Serial No. 682,478. (No model.)

To all whom it may concern:

Be it known that I, LEWIS E. HACKETT, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented a new and useful Return Steam-Trap, of which the following is a specification.

My invention relates to improvements in steam-traps in which valves are arranged to automatically admit the drip from steam-heating pipes, steam-condensers, &c., and return it to the boiler; and the objects of my invention are simplicity, compactness, economy and durability of construction, and certainty and effectiveness of action. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my device with the nearer side of the inclosing steam-drip box removed by vertical section through the line $x x$ in Figs. 2 and 3 and portions of the working parts broken away to show construction and operation. Fig. 2 is an end view of the same with the nearer end of the box removed by vertical section through the line $x x$ of Figs. 1 and 3. Fig. 3 is a plan view of the same with the top of the box removed by horizontal section through the line $y y$ of Figs. 1 and 2.

Similar letters refer to similar parts throughout the several views.

A A is a steam-drip box which is provided with a pipe B passing through its bottom and is secured by a steam-tight joint. This pipe projects upward in the box to near its top, as shown at B', and is provided with a cock C, which controls the passage of steam from the boiler through said pipe B B' to the box A A. The cock C is also provided with a side opening c^2 , which leads out of the box through the pipe D. The plug of the cock C is provided with an opening c' , flanking the main opening c , through the plug.

E is the lever by which the cock C is opened and closed.

F F' are antifriction-pulleys upon which the gravity-bar G operates, its weight augmented by the ball G'.

H I are carry-pins projecting from the side of the sprocket-wheel K, which is driven by the chain L from the sprocket-wheel M, which is in turn operated by the lever N,

(which is the float-stem,) actuated by the float O.

P is a pipe through which the drip from the heating-pipes enters the trap and through which it is returned to the boiler, the check-valves Q R alternately opening and closing to direct it.

My device is connected with the heating apparatus thus: The steam-trap is set above the boiler and connected with it above the high-water line by the pipe B, and the drip-pipes of the radiators are connected to the pipe P, with the check-valve Q intermeshing. The return-pipe is also connected to the pipe P at one end, the other to the boiler, the check-valve R intervening.

The operation of my device is as follows: The exhaust steam and drip enter the steam-trap box at P. The steam-box being vented by the passage B' $c' c^2$ D, this being open, allows the drip-water to rise in the box, carrying the float O up toward the position marked at O', which revolves the sprocket-wheel M, and this by the sprocket-chain L revolves the smaller sprocket-wheel K, bringing the carry-pin I in contact with the gravity-lever G, carries it up until it passes a perpendicular position sufficiently, when it drops over onto the friction-wheel F, bears it down until the lever E assumes the position indicated by the dotted lines at E' E², and then the carry-pins H and I will have changed locations and the gravity-bar be as indicated by the dotted lines at G². Then the cock C, which at the commencement of the operation closed communication with the boiler, will be open and the opening $c' c^2$ closed. The full pressure of steam from the boiler will then enter the steam-trap box through the pipe B B' and counterbalance the steam-pressure from the heating-pipes, which entered at P. The drip-water will then of its own weight gravitate down through the pipe P, close to the check-valve Q, and course through R, returning into the boiler, and when the trap is empty the float has gravitated down, reversing the motion of the sprocket-wheels until the carry-pin H has reversed the gravity-bar G to its original position at G G, and the operation is continued.

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

1. A steam-trap comprising the boxing, a
valved exhaust-pipe communicating there-
with, a pipe connecting the boiler with said
boxing, a three-way cock in said pipe, a vent-
5 pipe communicating with said cock, a two-
armed lever for actuating the cock, sprocket-
wheels, a chain, a float, and pins on one of
the sprocket-wheels for moving the lever in
either direction, depending upon the height
10 of water in the boxing, substantially as de-
scribed.

2. In a steam-trap, a boxing, an exhaust-
pipe, a water-outlet pipe, a vent, a three-way
cock in the water-outlet pipe, a lever for ac-
15 tuating said cock, rollers journaled in the
ends of said lever, a pair of sprocket-wheels
connected by a chain, a float for actuating
the sprocket-wheels, and pins on one of the
sprocket-wheels for moving the lever for ac-

tuating the cock in either direction depend- 20
ing upon the rising and falling of the float, sub-
stantially as described.

3. In a steam-trap, a boxing, an exhaust-
pipe, a water-outlet pipe, a vent-pipe, a three-
way cock in the outlet-pipe, a lever for actu- 25
ating said cock, rollers in the ends of said le-
ver, a pair of sprocket-wheels, connected by
a chain, a float for actuating the sprocket-
wheels, pins on one of the sprocket-wheels,
and a gravity-lever actuated by the pins to 30
move the cock-controlling lever in either di-
rection as the float rises and falls, substan-
tially as described.

LEWIS E. HACKETT.

Witnesses:

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DESSIE SNYDER.