

M. BURTON.  
STEAM WATER ELEVATOR.

No. 66,000.

Patented June 25, 1867.

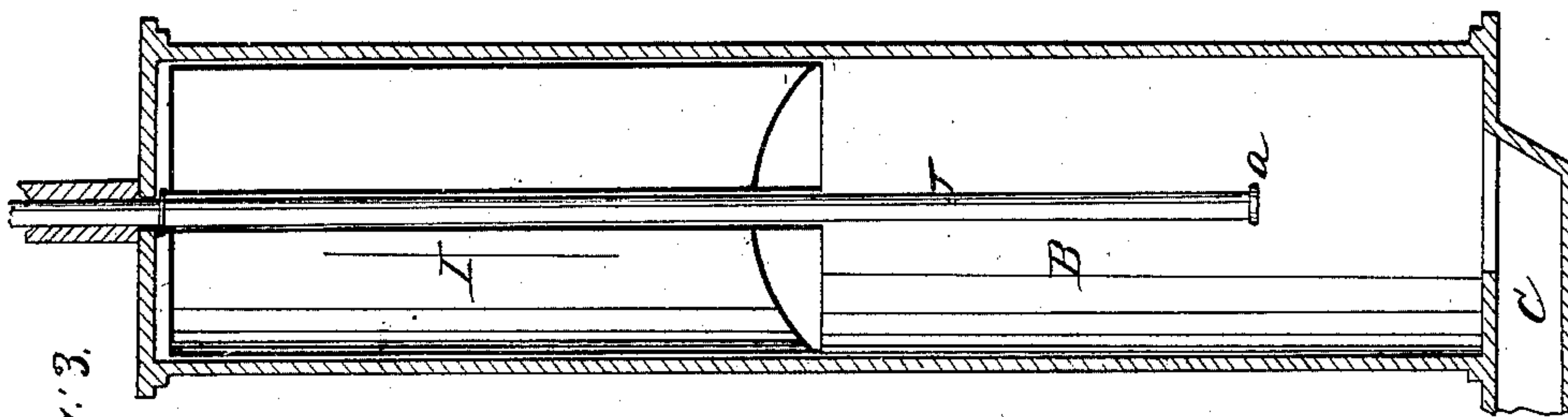


Fig. 3.

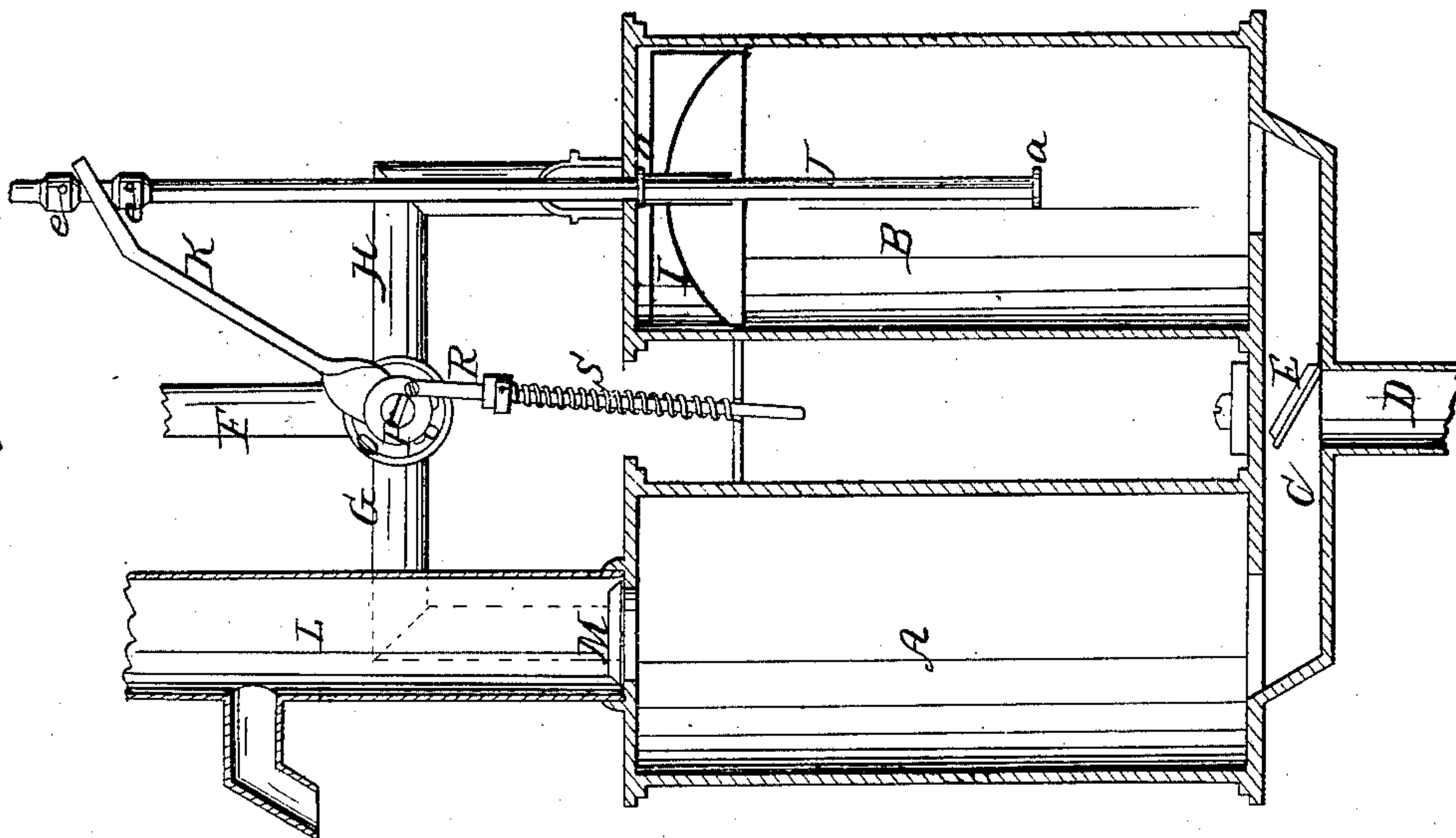


Fig. 1.

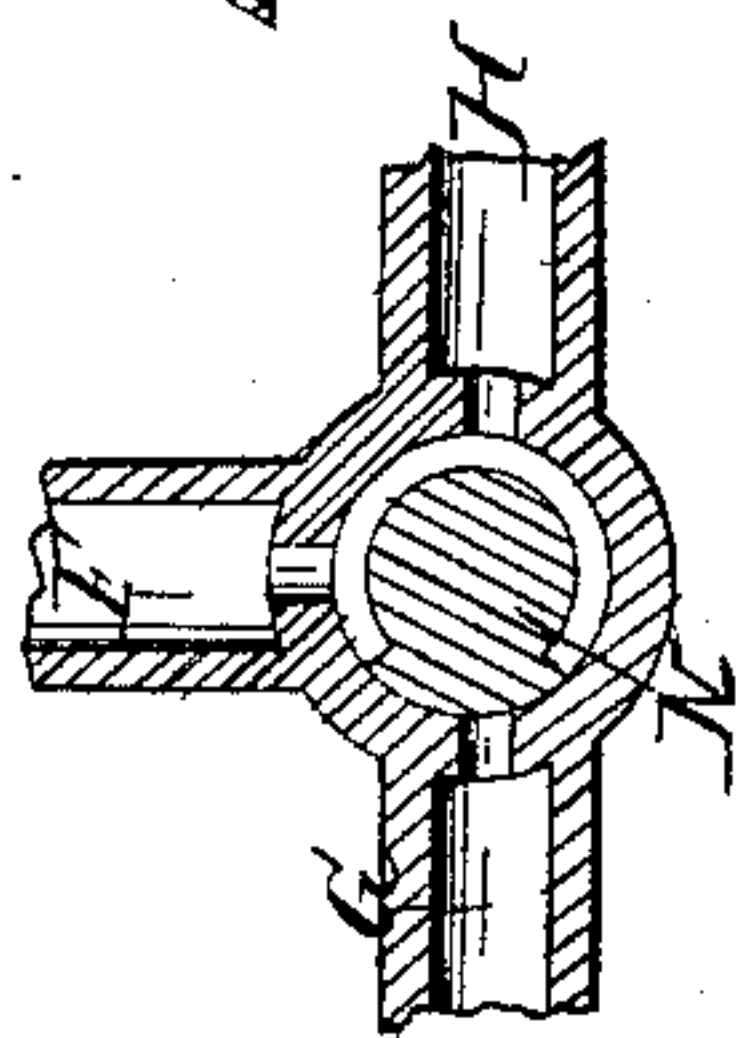


Fig. 2.

Witnesses;

C. F. Mayhew  
B. J. Foster

Inventor;

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# United States Patent Office.

MARTIN BURTON, OF INDIANAPOLIS, INDIANA.

*Letters Patent No. 66,000, dated June 25, 1867.*

## IMPROVEMENT IN STEAM WATER-ELEVATORS.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, MARTIN BURTON, of Indianapolis, in the county of Marion, and State of Indiana, have invented new and useful Improvements in Steam Water-Elevators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, making part of this specification, in which—

Figure 1 is a vertical section.

Figure 2 is a section through the steam cock and steam pipes at their junction.

Figure 3 is a section view of a contemplated modification of one of the chambers, and of the float therein.

Similar letters of reference indicate corresponding parts in the several figures.

The following description will enable those skilled in the art to make and use my invention.

A and B are steam-tight chambers, which may be of either metal or wood. They communicate with each other at the bottom by means of the open connecting pipe C, from which a pipe, D, leads to the water. This pipe is furnished with a valve, E, as shown, to retain the water after it is drawn up into the chambers A B. Pipes G and H connect the chambers with each other at the top, and a pipe, F, connects the pipes G and H with a steam boiler, (not shown.) At the junction of pipes F G H is a three-way cock, shown in section in fig. 2, of which N is the valve. This cock is arranged to alternately admit steam from the boiler into chamber B, and then to cut off such admission of steam and simultaneously open communication between chambers B and A. This is effected automatically by means of the float I, rod J, and lever K attached to the cock, as hereinafter described. The float I is a hollow piston, of metal or other suitable material, possessing such buoyancy as to float upon water, and is made to fit neatly but to move freely within the chamber B, the sides of which should be parallel and quite smooth for this purpose. The rod J passes through a stuffing-box in the top of the chamber, and also through the float, having free play in the latter. The rod is provided with projecting flanges *a a*, above and below the float I, against which the latter strikes in descending and ascending, reciprocating the rod J vertically. The upper end of the rod passes through the slotted lever K, which is attached to the valve N, and by means of the projections *e e*, above and below the lever, turns it to admit or cut off the steam. The float I is not rigidly attached to rod J, but moves freely, up or down, without moving the rod until it engages with the projections *a a*, and consequently the valve N is not turned to open and close the ports to pipes F and G until the float has descended to near the bottom, or ascended to near the top of chamber B. The object of this arrangement for operating the valve is to prevent any portion of the steam being cut off during the descent of the float, and, when cut off and condensed to cause a vacuum, it may not be re-admitted until the chambers are filled with water. The float I may, however, be rigidly attached to the rod J, and the projections *e e* set apart so as to operate the lever K, to open and close the ports F and G by valve N in a similar manner as above described. The time of opening and closing the ports of pipes F and G, by the valve N, is adjusted by means of the movable projections *e e* above and below the lever K, and by the movable ring *a* above the float. These projections being simple rings secured to the rod J by a set-screw, may be set at any position on the rod so as to engage with the lever and float to operate the valve as may be desired. The valve N may be operated to open and close the ports of pipes F and G, with a quick movement, if desired, by means of any of the well-known devices in use for a similar purpose. One method of doing this is here shown, but being no part of my invention I do not deem it necessary to describe it. Fig. 3 is a modification of chamber B, showing how it may be made higher, and the float I longer in order to prevent the water rising high enough to wet and cool the surface of the upper part of the chamber where the steam comes in contact with it as the float descends; thus avoiding the condensation of the steam while employed to drive the float down.

The operation of my invention is as follows: Partly fill the chambers A and B with water, though this is not absolutely necessary, as steam may be admitted to fill the chambers and drive out the air, and a little time allowed for it to condense, when the water will flow in from the well. Then raise the lever K up to the position shown in the drawings, which turns the valve N to admit steam from the boiler, by way of pipes F H to chamber B. The steam forces the float I to the bottom of the chamber, driving the water contained therein into chamber A, and, if more than enough to fill it, the remainder will be forced up into suction pipe L. The valve M prevents the water from returning from the pipe to the chamber. When the float has descended to near the



bottom of the chamber, by the means heretofore described, the valve N is turned to open the port in pipe G and close that of F, simultaneously cutting off the steam from the boiler with opening communication between chambers B and A, allowing the steam to escape from the former to the latter, which being filled or partly filled with water condenses the steam, causing a vacuum in both chambers that is immediately filled by the influx of water from the well by way of induction pipe D and connecting pipe C. Valve E prevents the water in the chambers from returning to the well. The influx of water to the chambers raises the float I, and when it ascends to near the top of the chamber the valve N is operated, as before described, to open the port of pipe F, which again admits steam to chamber B, simultaneously closing the port of pipe G and closing communication between the chambers A and B. The steam forces the float down, driving the water from chamber B into A and up pipe L, as before. Pipe L may extend to any desired practicable height, and thus the device may be applied to elevating water for supplying cities, manufacturing establishments, or domestic use, in a simple and efficacious manner.

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

1. The arrangement of the chambers A and B, and pipes G, H, and C, in the manner and for the purpose substantially as set forth.
2. The arrangement of the steam-induction pipe F, water-induction pipe D, eduction pipe L, and valves E, M, and N, float I, rod J, and lever K, substantially as and for the purpose set forth.

MARTIN BURTON.

Witnesses:

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