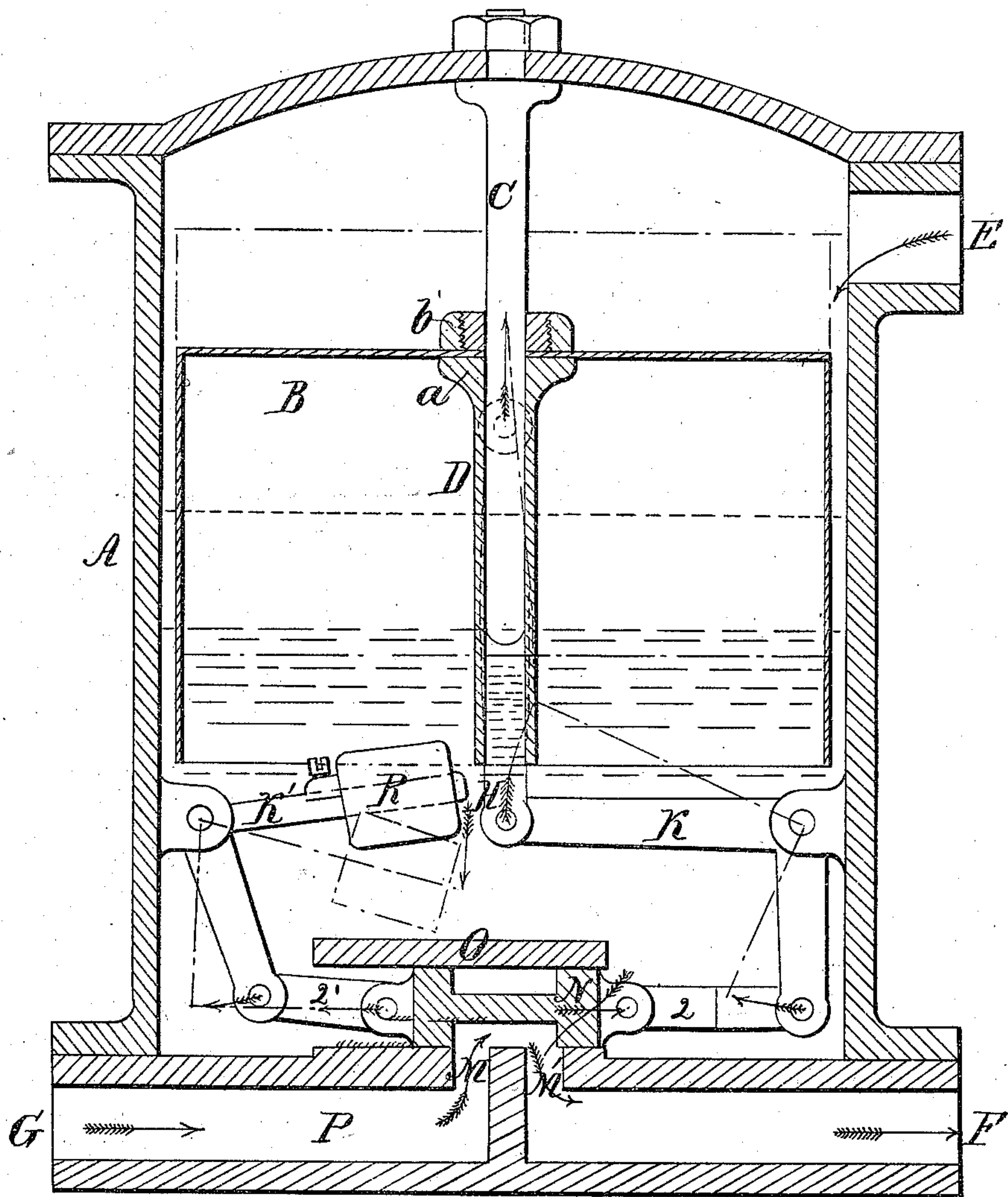


J. S. Burden.

Boiler Feeder.

N^o 94,937.

Patented Sep. 21, 1869.



Witnesses

W. B. Vincent

John D. Taylor

Inventor

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United States Patent Office.

JOHN S. BARDEN, OF PROVIDENCE, RHODE ISLAND.

Letters Patent No. 94,937, dated September 21, 1869.

IMPROVEMENT IN BOILER-FEED-WATER REGULATORS.

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, JOHN S. BARDEN, of the city and county of Providence, in the State of Rhode Island, have invented a new and improved "Water-Regulator;" and I do hereby declare that the following specification, taken in connection with the drawings, making a part of the same, is a full, clear, and exact description thereof.

The drawings represent a longitudinal section of my improved regulator, showing the interior mechanism.

My invention is more especially intended to regulate the supply of water to steam-boilers, though capable of being used for other purposes, and consists in the employment of a certain mechanism which shall at all times automatically furnish to the pump such a quantity of water as may be necessary to keep the boiler filled to its proper level.

A is a cylindrical vessel, which is placed at any point between the supply-tank and pump, and connected with both by pipes at G and F respectively.

The vessel A is also connected with the boiler at water-level, by a pipe entering the same at E.

O is a rod attached to the centre of the top, and extending downward, upon which the tube D slides.

The tube D is provided with a shoulder, *a*, between which and the nut *b* the air-chamber B is firmly held.

The tube D is connected with the bell-crank lever K, by the link H, so that as it moves upon the rod O it may at all times retain its perpendicular position.

The bell-crank lever K is connected, by the rod L, with the piston N, which moves in the cylinder O, attached to the inside and bottom of the vessel A.

The cylinder O is connected with the tube P upon the bottom and outside of the vessel A, by ports M and M', the other end of the piston N being connected with the bell-crank lever K', having upon its long arm a balance-weight, R, corresponding to the weight of the air-chamber B, so that the said air-chamber may constantly rest upon the surface of the water.

Commencing with the various parts occupying the position shown in the drawings, the operation of my invention is as follows:

The water from the supply-tank enters the tube P at the point G, passes up through the port M and down through the port M', and from thence to the pump, which forces it into the boiler.

The piston N being of much less diameter in the centre than at either end, allows the water to follow the course indicated by the arrows.

The water is now pumped into the boiler until it reaches the pipe which is connected with the vessel A at the point E, above which the water does not rise, but as it is pumped in passes from the boiler into and fills the vessel A, to the bottom of the air-chamber B.

As the water continues to rise the chamber B will be carried upward by its pressure, and the tube D, sliding upon the rod O, draws up the long arm of the bell-crank lever K, (which is attached to the side of the vessel A, as is also the lever K',) which causes the piston N, through the short arm and rod L, to gradually move forward as the water continues to flow in and raise the air-chamber B.

The port M' soon becomes closed, and the water from the supply-tank shut off from the pump, and consequently from the boiler, this movement continuing until the parts occupy the position shown by the red lines.

The port M' is now alone connected with the interior of the vessel A, and the water in the vessel A passes through the port M' to the pump.

The air-chamber B gradually moves downward as the water recedes, until the piston N is drawn back by the mechanism before described, and the port M' is again open, and the water permitted to flow from the tank to the pump, when the same operation is repeated.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the chamber B, tube D, link H, bell-crank lever K, rod L, and piston N, the whole constructed and arranged substantially as described.

2. The combination of the weight R, bell-crank lever K', rod L, and piston N, the whole constructed and arranged substantially as described.

3. The combination of the cylinder O, piston N, in connection with the ports M and M', and tube P, the whole constructed and arranged substantially as described.

JOHN S. BARDEN.

Witnesses:

W. B. VINCENT,
JOHN D. W. TAYLOR.