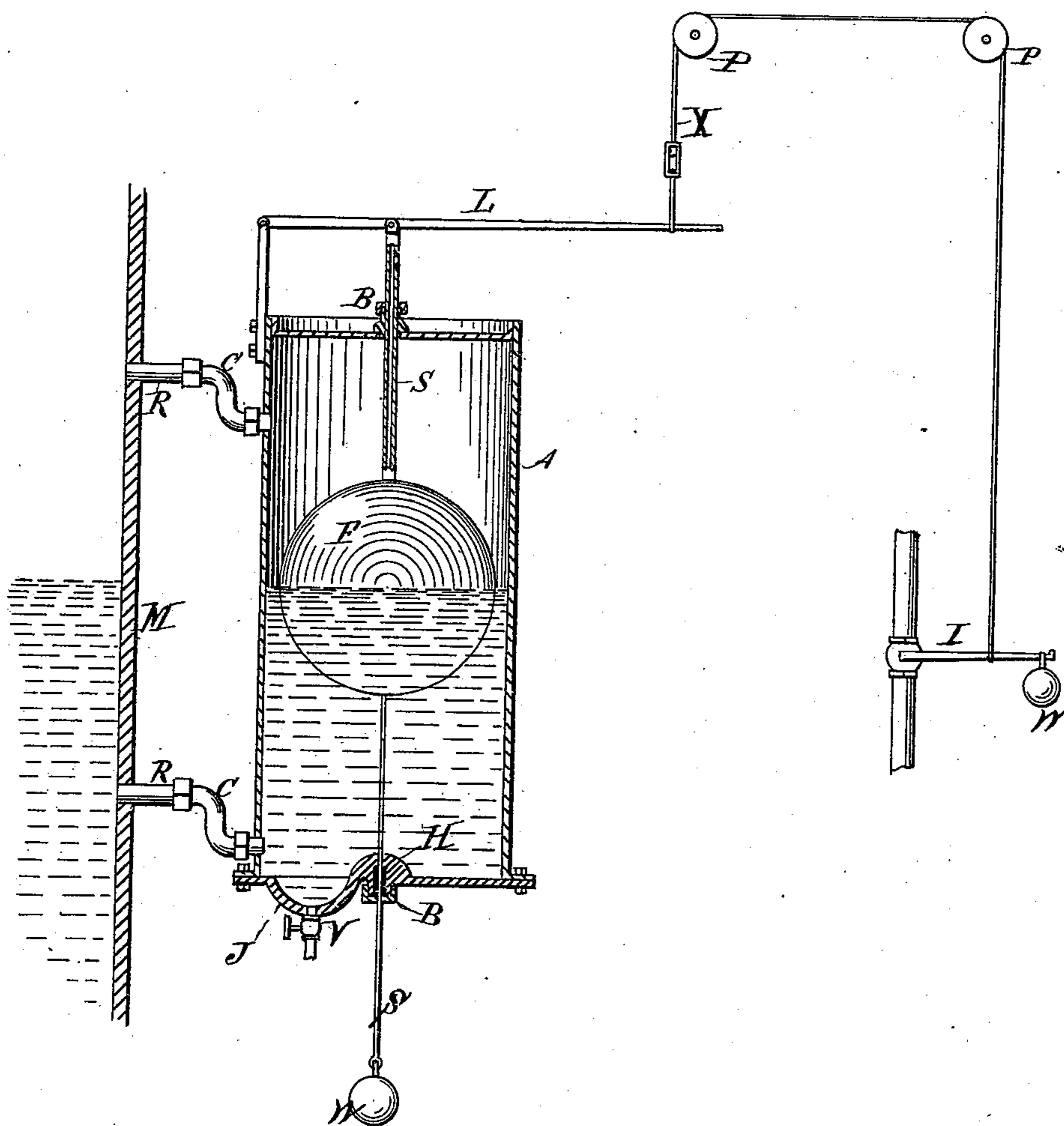


(No Model.)

G. W. DOOLITTLE.
FEED WATER GOVERNOR.

No. 355,440.

Patented Jan. 4, 1887.



Witnesses
E. C. Duffy
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Inventor
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UNITED STATES PATENT OFFICE.

GEORGE W. DOOLITTLE, OF KANSAS CITY, MISSOURI, ASSIGNOR OF ONE-FOURTH TO BACON & HARNSBERGER, OF SAME PLACE.

FEED-WATER GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 355,440, dated January 4, 1887.

Application filed July 2, 1886. Serial No. 206,948. (No model)

To all whom it may concern:

Be it known that I, GEORGE W. DOOLITTLE, of Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Feed-Water Governors; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention has relation to improvements in apparatus for the regulation of steam-pumps or water-valves in the feed-pipes in connection with steam-boilers, heaters, or tanks; and it consists in the construction, novel arrangement, and adaptation of devices, as will be hereinafter more fully set forth, and particularly pointed out in the appended specification.

The object of this invention is to provide a cheap and simple means for regulating the flow of steam to steam-pumps that supply water to boilers or tanks, or, when hydraulic pressure is used, to regulate the flow of water into boilers or tanks, the object being to keep the water at or near any desired height in such boiler or tank or heater, and as the water rises in the boiler or tank the flow therein is decreased, and as the water falls in the boiler or tank the steam or water valves are opened accordingly, thus increasing the flow of water.

In the accompanying drawings, illustrating my improvements by which these objects are accomplished, A indicates a cylinder placed in a perpendicular position and attached to the boiler by pipes R R, one above the water-line M for the introduction of steam and the other below the water-line for the introduction of water into the cylinder A, thus securing the same free circulation of steam and water in the cylinder as exists in the boiler. The cylinder is furnished with crank-joints C C, that may be elevated or depressed by a half-turn or less of their threaded joints, as may be required to change the water-line to any preferred height.

Cylinder A is made in about the proportions, as follows: eight inches in diameter and

sixteen inches in height, provided with a metallic float, F, (globular form preferred,) steam-tight and strong enough to bear the pressure required. The float F is provided with two metallic stems attached centrally opposite each other in perfect line, so that they will work smoothly through the stuffing-boxes B B, which are placed at the center of the upper and lower heads of cylinder A.

The object of the upper and lower float-stems, S S, is, first, to hold the float in perfect line to facilitate their easy working in the stuffing-boxes B B and to connect float F to lever L, thus transmitting the action of the float to the said lever; second, to balance the float in the water and thus dispense with any undue interference of the steam in its proper working, and give the water the complete control of the float, demonstration proving that all floats working in the water and under steam-pressure have as one of their greatest objections that the water does not have entire control of the float, as it should, but that it is either controlled by the steam or materially interfered with by it, the float fluctuating as the steam-pressure varies from time to time; demonstration also proving that a float-stem passing through a stuffing-box from steam-pressure on the inside to the open air on the outside is effected by the pressure of the steam in proportion as the steam-pressure exceeds the resistance of the air, and unless this difference is compensated the float will be forced in the direction that offers the least resistance; hence the necessity of the two float-stems for the purpose of neutralizing such steam-pressure, and thus properly balancing the float in the water and giving the water full control of the float; and, third, for the purpose of suspending from the lower float-stem S a weight, W, if necessary to properly balance the float F in the water if it should be too buoyant.

Weight W may be attached to lower float-stem S for the purpose of holding float F suspended about mid-side in the water in cylinder A, giving to float F such a preponderance of weight over the weight on valve I and the natural resistance of valve, pulleys, &c., caused by leverage, friction, &c., thereby giving ample power in favor of float F over valve I, or

other valves that may be attached, thus causing precision in its action to operate such valve or valves.

5 The sand-pit J is provided with a mud-valve, V, to blow out any dirt that might accumulate around the lower float-stem S. The upper end of the stem S is hollow and provided with a vent for the escape by evaporation of water that may enter the float.

o H represents the interior convexed lower cylinder-head, above which dirt is not allowed to accumulate.

The lever L is attached to the upper end of the float-stem S, its fulcrum being placed at 5 any distance from the float-stem that may be required, and the cord X, or other equivalent attachment, may be fastened to lever L at any distance from the stem S that may be required to open the valve or valves more or less; and, 10 also, lever L may be used to operate one or more valves, as desired.

Cord X is provided with a swivel-joint, K, to adjust the length of the same as may be necessary.

5 Having thus described my invention, what I claim is—

1. The combination of the float-cylinder with the float and the stems projecting from the top and bottom of the cylinder, the lower 10 stem being weighted, substantially as and for the purpose described.

2. The combination of the float-cylinder

with the boiler and the crank-joints or connecting-tubes, substantially as and for the purpose described.

3. The combination of the boiler with the float-cylinder, the lower head of which is provided with a sediment-chamber and blow-off cock, and the crank-joints, substantially as 35 shown and described.

4. The combination of the adjustable float-chamber with the float, the lever, the controlling-valve, and means for connecting the valve with the lever, substantially as described. 40

5. The combination of the float with the 45 chamber, the heads of which are provided with stuffing-boxes, and the lower head provided with a convex projection around the stem, substantially as described.

6. The combination of the boiler with the 50 adjustable float-cylinder, the float, the stems of the float projecting from each head of the cylinder, the lower one of which is weighted, the lever, the valve, and the cord attaching the lever to the valve, substantially as and for 55 the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

GEORGE W. DOOLITTLE.

Witnesses:

ALFRED F. CHRISTIAN,

HENRY L. BRETHAUER.