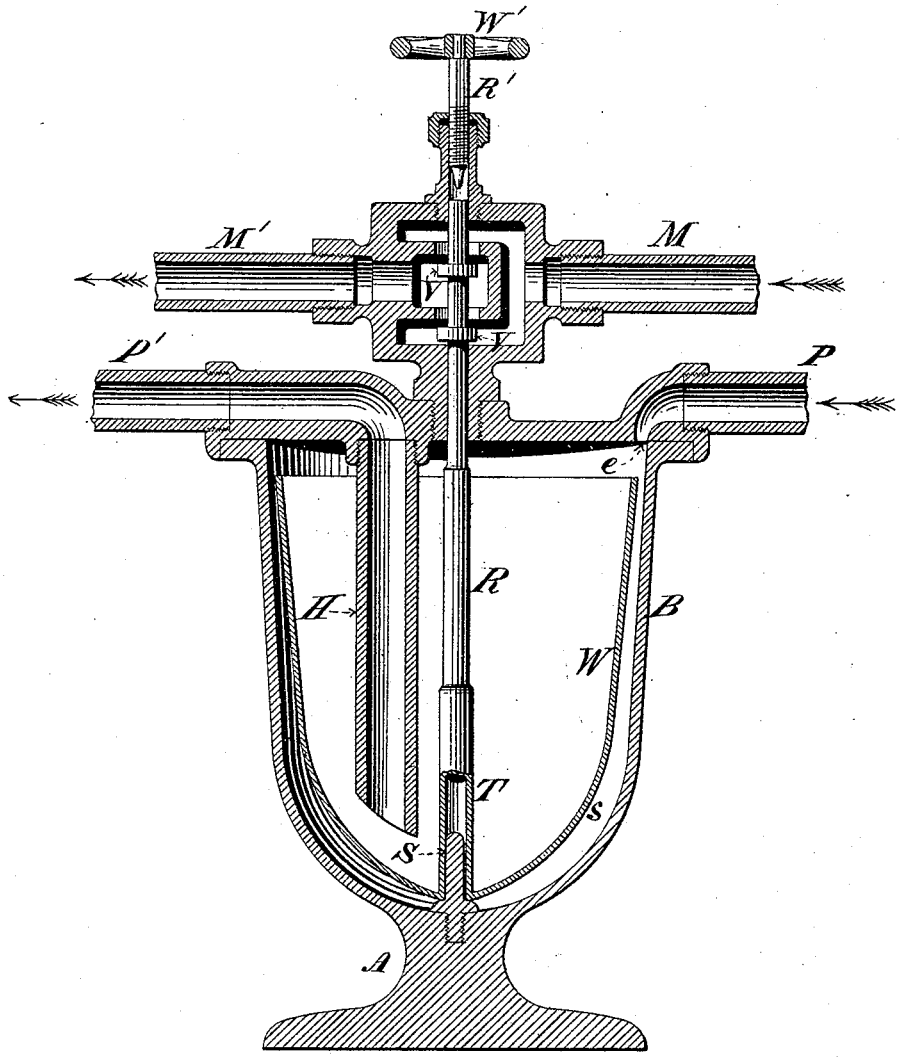
2 Sheets—Sheet 1.

J. H. BLESSING.

Pump Regulating Valve.

No. 207,483. Patented Aug. 27, 1878.

Figure 1.



Witnesses:
Geo. H. Miatt
Geo. H. Evans

Inventor:
James H. Blessing,
By his attorney
E. N. Dickerson Jr.

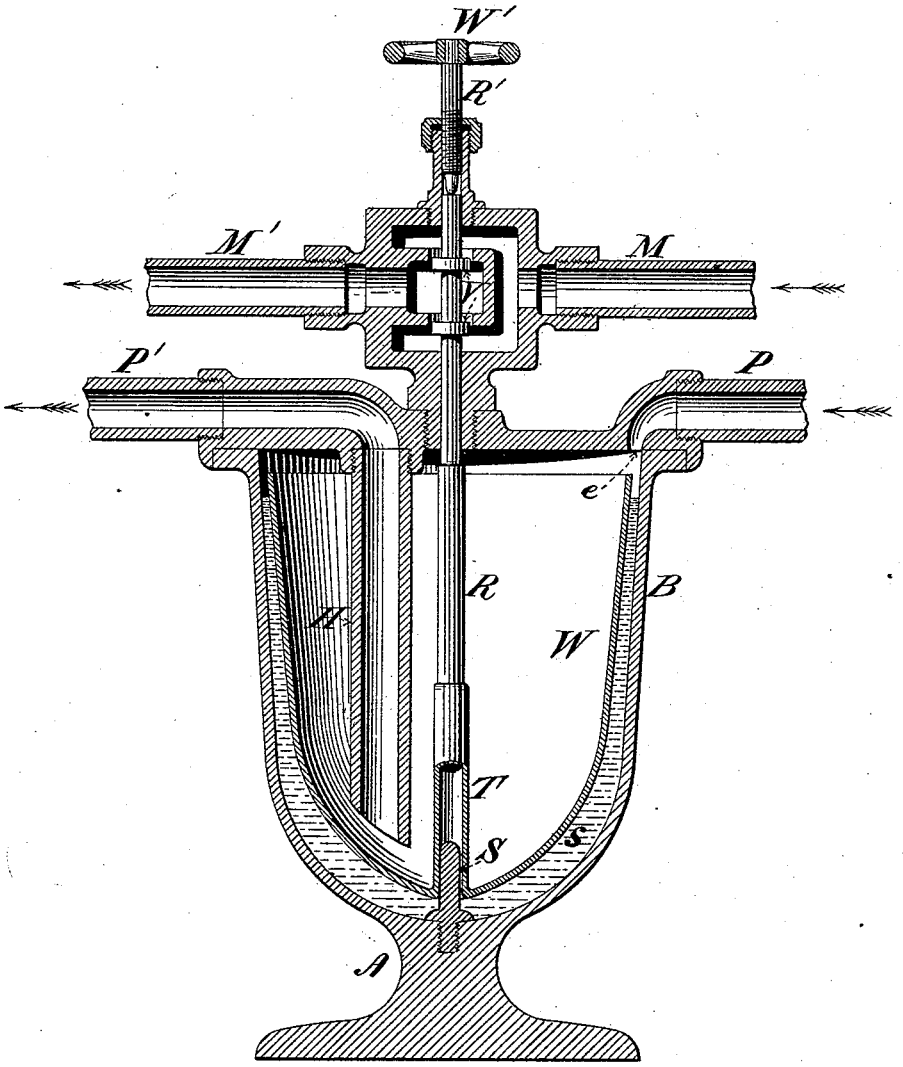
2 Sheets—Sheet 2.

J. H. BLESSING.

Pump Regulating Valve.

No. 207,483. Patented Aug. 27, 1878.

Figure 2.



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Geo. H. Miatt

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Inventor:

James H. Blessing

By his Attorney,

E N Dickerson

UNITED STATES PATENT OFFICE.

JAMES H. BLESSING, OF ALBANY, NEW YORK.

IMPROVEMENT IN PUMP-REGULATING VALVES.

Specification forming part of Letters Patent No. **207,483**, dated August 27, 1878; application filed February 16, 1878.

To all whom it may concern:

Be it known that I, JAMES H. BLESSING, of the city of Albany, county of Albany, and State of New York, have invented a new and useful Improvement in Pump-Regulating Valves, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

I have heretofore filed an application for a similar invention on the 15th day of January, 1878.

The object of my invention is to regulate the action of a boiler feed-pump by means of the quantity of water which is fed to such pump, so that said pump will only operate when supplied with water, and will practically cease to operate when the water-supply is stopped.

My invention is particularly useful in feed-water pumps which return to steam-boilers the water of condensation from heating-coils in buildings.

It is customary, in buildings which are not provided with an automatic return, to allow the water from the coils to drain into a tank, from which tank it is forced back to the boiler by means of a force-pump; and it has heretofore required the presence of an engineer to regulate said pump, since, the flow of the return-water being a variable one, if the throttle-valve of the pump were set at any particular point, it might follow that, owing to the decrease in the supply of the return-water, the pump would exhaust such return-tank, and, having no water to act upon, would attain a great velocity, and thereby destroy itself. It has therefore been customary to stop the pump to allow water to return into the tank from the coils, and then at intervals to operate the pump and return all the drain-water into the boiler, and then to stop the pump until its next operation.

My contrivance is intended to accomplish this result automatically, and I use the return-water itself as a means of regulating the speed of the pump, so that the pump will only operate when supplied with water, and will stop, or practically stop, when the supply ceases. I thereby dispense with the attendance of a controlling engineer, and render the apparatus entirely automatic.

In the apparatus described in my previous application I have made use of a diaphragm to regulate the supply of steam. In my present application I make use of an open-top float, which float controls a steam-regulating valve, which admits the steam to a feed-pump. By this means I avoid the use of a diaphragm, which is in some cases objectionable.

My invention is clearly shown in the accompanying drawings, in which similar letters refer to similar parts.

Figure 1 represents a cross-section of my apparatus, showing the steam-regulating valve V open. Fig. 2 represents a cross-section of the same, showing the said valve closed.

My invention consists of an outer containing-vessel, B, set on the pedestal A, which containing-vessel serves as a support for the operating parts of my machine. Within the vase-shaped vessel B is the open-top float W, which is supported on the stud S, sliding in the tube T. This tube is continued by the solid rod R, and passes through the top of the vessel. Attached to the upper end of the rod R is the balanced valve V, which is what is known as a "double piston-valve," and is clearly shown in the drawings.

Connected with the vessel B are the inlet and outlet pipes P and P′. The pipe P communicates with the water-supply. The pipe P′ communicates with the force-pump, and water is supplied to such pump through the pipe P′ only.

The pipe P has an orifice, *c*, so situated that water entering it first fills the annular space *s* between the open-top float W and the vessel B. The pipe P′ is connected with the siphon H, near the bottom of the open-top float W.

The valve V serves to close the double seat, which is clearly shown. The rod R′, operated by the wheel W′, bears against the upper end of the rod R, and thereby prevents the closing of the valve V under certain circumstances, as will be presently described.

The operation of my machine can now be understood. Water entering the apparatus by the pipe P first fills the annular space *s*, as shown in Fig. 2. This causes the float W to rise and to close the valve V, as shown in Fig. 2. If water continues to enter by the pipe P,

then it will overflow into the float W and cause the same to sink. In sinking, it opens the valve V, and allows steam to pass through the pipes M and M′, as is indicated by the arrows. This steam causes the pump to operate, and the pump draws the water from the open-top float W by means of the siphon H and delivery-pipe P′, as shown by the arrow. If, now, sufficient water continues to enter the float W to supply the demand occasioned by the operation of the pump, then said pump will continue to operate by reason of the valve V being open, as shown in Fig. 1; but in case the demand is greater than the supply, then the float W will rise and begin to close the valve V, thereby slowing down the pump and decreasing the demand; and if the water-supply should cease altogether, then the float would once more rise, as shown in Fig. 2, and close the valve V.

The purpose of the rod R′ is to prevent, under certain circumstances, the absolute closing of the valve V. In direct-acting pumps this contrivance would not be required, since such pumps start of themselves on the admission of steam; but in crank-pumps it is desirable, because such pumps, if once stopped, have to be started by hand. If once stopped, such pumps would come to rest, and the opening of the valve V would not again start them.

By means of the hand-wheel W′, I adjust the point of the rod R′ to such a position as to keep the valve open, even when the vessel W is empty and is floated by the water in the space *s*. It is desirable in crank-pumps to keep this valve just sufficiently open to allow the pump to run very slowly, even when there is no water in the vessel W.

It will be seen that by means of this apparatus the water-supply of a pump regulates exactly its action, so that if more water be supplied the pump will operate faster; if less water be supplied the pump will operate slower; and if no water be returned the pump will stop entirely, unless it is desirable to keep it in slow operation.

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

1. An apparatus for controlling the steam-supply of a pump by means of the water supplied to the same, which consists of a rising and falling float connected to a regulating steam-valve, constructed and arranged for operation substantially as described.

2. An apparatus for regulating the steam-supply of a pump by means of the water supplied to the same, which consists of a rising and falling open-top float, into which the return-water enters, and from which it is drawn by means of a siphon, constructed and arranged for operation substantially as described.

3. In an apparatus for regulating the steam-supply of a pump by the water supplied to the same, a float controlling the steam-valve of the pump, substantially as described.

JAMES H. BLESSING.

Witnesses:

S. F. SULLIVAN,

WM. J. SAWYER.