

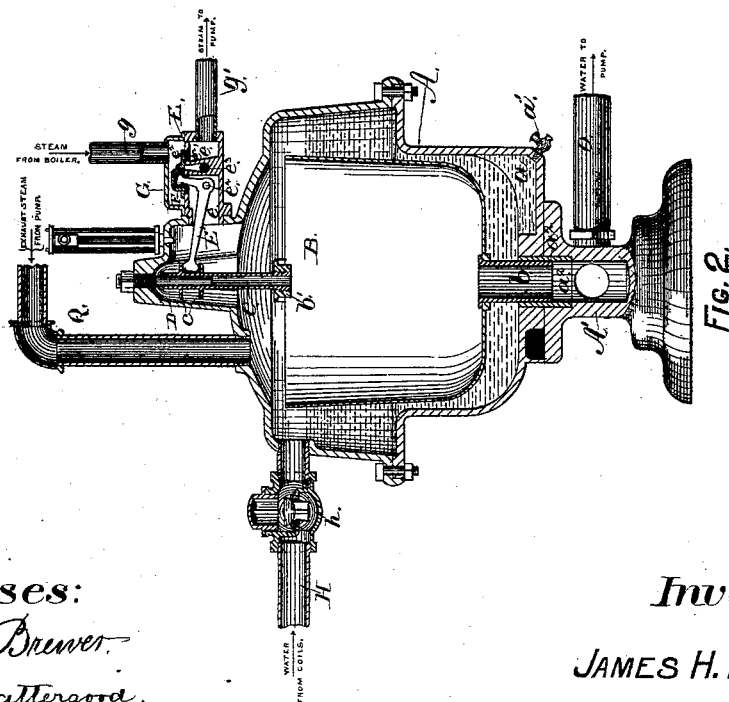
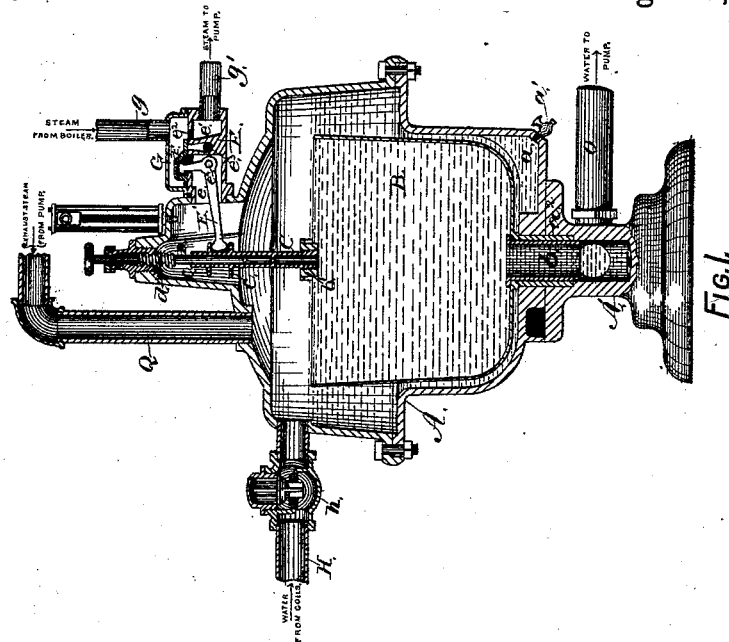
(No Model.)

2 Sheets—Sheet 1.

J. H. BLESSING.
PUMP REGULATOR.

No. 347,559.

Patented Aug. 17, 1886.



Witnesses:

S. B. Brewer.
H. V. Scattergood.

Inventor:

JAMES H. BLESSING

by William H. Low.

Attorney.

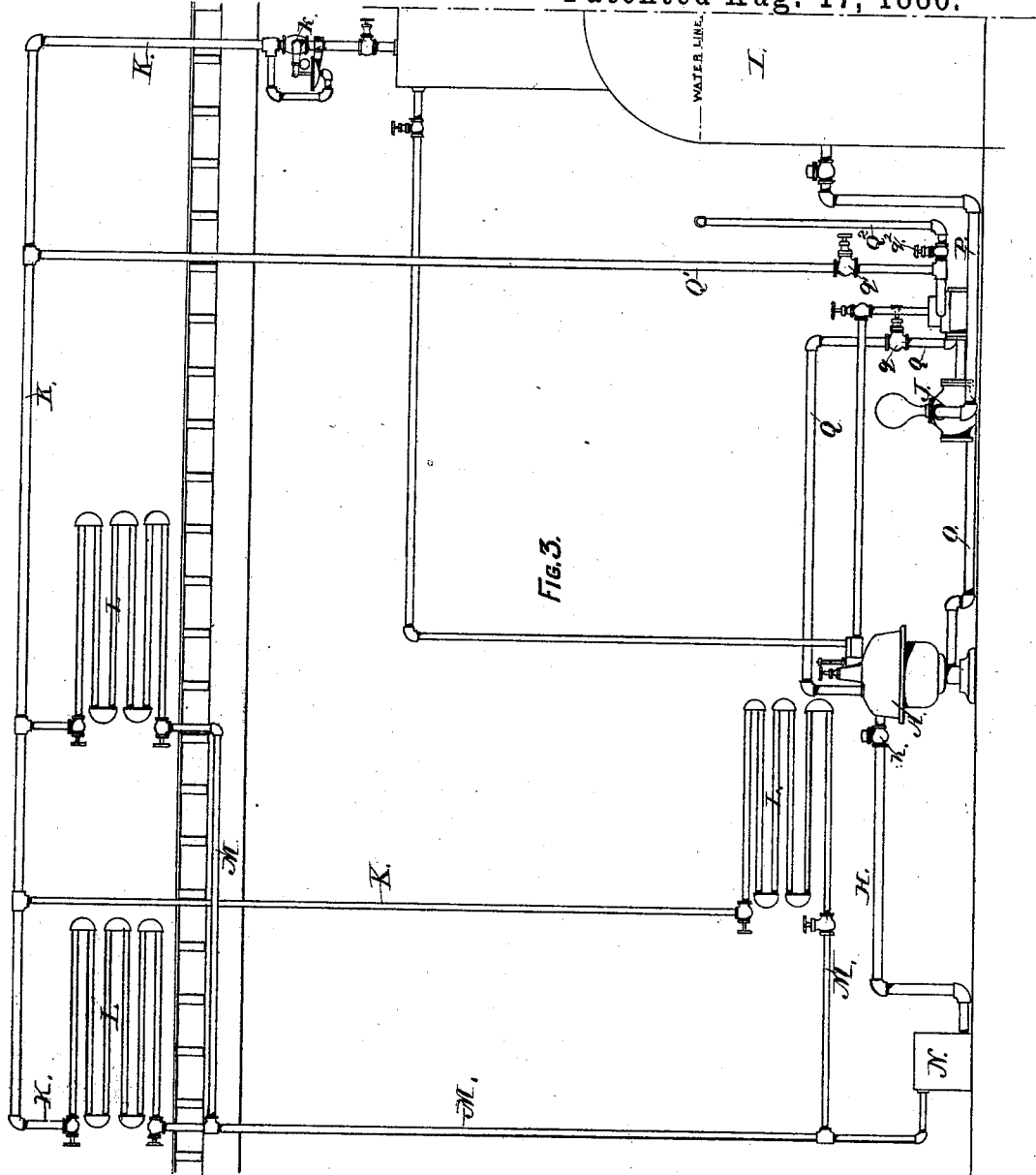
(No Model.)

J. H. BLESSING.
PUMP REGULATOR.

2 Sheets—Sheet 2.

No. 347,559.

Patented Aug. 17, 1886.



Witnesses:

E. B. Brewer
H. W. Scattergood.

Inventor:

JAMES H. BLESSING,

by *William H. Low,*

Attorney

UNITED STATES PATENT OFFICE.

JAMES H. BLESSING, OF ALBANY, NEW YORK.

PUMP-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 347,559, dated August 17, 1886.

Application filed July 2, 1886. Serial No. 206,910. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. BLESSING, of the city and county of Albany, in the State of New York, have invented a new and useful
5 Improvement in Pump-Regulators, of which the following is a specification.

This invention relates to improvements on the apparatus for which Letters Patent No. 207,483 were granted to me on the 27th day
10 of August, 1878; and the object of this improvement is to render the apparatus more efficient in its operation. This object I attain by means of the mechanism illustrated in the accompanying drawings, which are herein referred to and form part of this specification,
15 and in which—

Figure 1 is a vertical section of my pump-regulator with the bucket depressed; Fig. 2, a like section with the bucket elevated, and
20 Fig. 3 a skeleton outline showing my apparatus connected with a closed system of steam-heating.

As represented in the drawings, A is the casing, which is preferably made in two parts,
25 with the upper part of larger diameter than the lower one, and the latter being provided with a pocket, *a*, in which dirt and sediment may collect and be discharged through the cock *a'*. Said casing is supported on a pedestal,
30 *A'*, and a bored sleeve, *a''*, connects said casing and pedestal together. The latter is connected to the eduction water-pipe leading to the steam-pump, as hereinafter explained.

B is an open-top bucket, which nearly fills
35 the lower part of the casing A, sufficient clearance being given between the two to insure a proper flotation of said bucket without being brought into frictional contact with the casing. A hollow stem, *b*, is fixed to or formed
40 on the bottom of said bucket, and is fitted to slide freely in the sleeve *a''*. Said stem forms a guide for the lower part of the bucket B, and also serves as a pipe through which the water that is collected in said bucket can be drawn
45 out therefrom. Across the top of said bucket is a cross-bar, *b'*, to which is attached a hollow stem, C, having circumferential collars *c*. The said stem is fitted to slide freely on a pin, D, which is inserted through the casing A, and
50 forms, in conjunction with the stem C, a guide for the upper end of the bucket B. The pin D may be fitted, as shown in Fig. 2, to remain in a fixed position, or it may be provided with a screw-thread, *d*, as shown in Fig. 1, so as to

be vertically adjustable, in order to regulate 55 the height to which the bucket B can rise in the casing A.

E is a valve-seat fixed to the upper part of the casing and provided with the chambers *e* and *e'*, the first of which opens into the interior of the casing A, and the other has the steam-supply pipe *g'*, which leads to the steam-pump connected to it. Said valve-seat has a steam-port, *e''*, which leads into the chamber *e'*, and, preferably, it has an exhaust-port, *e'''*,
60 which connects with a passage and pipe, through which the steam within the casing may be discharged into the atmosphere.

F is a slide-valve, which is fitted to move on the valve-seat E, so as to reciprocally
70 cover and open the ports *e''* and *e'''*. The bell-crank lever *E'*, pivoted at *e''*, has its short arm adapted to engage in the exhaust-passage of the valve F, and its long arm fitted to engage between the collars *c* in such manner that by
75 the rising and falling movement of the bucket B the slide-valve F will thereby receive corresponding reciprocations—that is to say, by the falling movement of the bucket B the slide-valve F will be moved to open the steam-
80 port *e''* and close the exhaust-port *e'''*, as shown in Fig. 1, and by the rising movement of said bucket said valve will be moved to close the steam-port *e''* and open the exhaust-port *e'''*.
85 The slide-valve F is covered by a steam-chest, G, into which steam from a boiler is admitted through the pipe *g*.

H is an inlet-pipe, through which water is admitted into the casing A. Said pipe is provided with a check-valve, *h*, which is so arranged that when the pressure in said pipe
90 exceeds that in the casing A said check-valve will be raised, but when the excess of pressure is in a reversed direction the said check-valve will be closed.

In the arrangement shown in Fig. 3, I is a steam-boiler for supplying steam to a heating system; J, a steam-pump of any suitable style,
95 but preferably one of the duplex variety; K, the steam-pipe for supplying steam to the heating-coils L. Said steam-pipe is provided with a pressure-reducing valve, *k*, of any suitable construction; M, the drip-pipes by which the water condensed in the coils L is conveyed into the drip-tank N, the latter being con-
100 nected by the pipe H to the casing A; O, the water-induction pipe from the casing A of the pump-regulator to the steam-pump; P, the

water-eduction pipe from the steam-pump J to the steam-boiler I; Q, the exhaust-steam pipe leading from the steam-pump J into the casing A of the pump-regulator, and provided with a stop-valve, q ; Q', an exhaust-steam pipe, which is provided with a stop-valve, q' , and which leads from the steam-pump J into the steam-pipe K, by which the coils L are supplied; and Q'', a branch steam-exhaust pipe, which is provided with a stop-valve, q'' , and by which the exhaust-steam from the steam-pump can discharge directly into the atmosphere. By this arrangement of the several exhaust-pipes it will be seen that the exhaust-steam from the steam-pump J can be discharged at option either into the casing A of the pump-regulator, or into the steam-supply pipe K of the heating system, or directly into the atmosphere, as may be thought most desirable.

The pressure of steam in the boiler I being higher than that in the heating system, the operation of my pump-regulator will be as follows: The several parts of said regulator being in the positions shown in Fig. 2—that is to say, the bucket B being empty and at the highest point of its movement, so as to move the slide-valve F to cover the steam-port e' and uncover the exhaust-port e'' —thereby the passage of steam from the boiler I to the steam-pump J is cut off, (thus stopping the action of said pump,) and the interior of the casing A is open to the atmosphere through the exhaust-port e'' , so that the pressure in the steam-heating system will be greater than the pressure in the pump-regulator. By this excess of pressure the condensed water from the coils and drip-pipes of said system will be driven through the drip-tank N and inlet water-pipe H into the casing A, and will continue to pass thereinto until it flows over the upper edge of the bucket B, and fills the latter sufficiently to cause it to sink to its lowest position, as shown in Fig. 1. By the sinking of the bucket B the valve F is moved back to close the exhaust-port e'' and open the steam-port e' , and thereby the steam-passage through the pipes g and g' is opened to convey the steam from the boiler I to the steam-pump J and set the latter in motion. The steam-pump J draws the water through the induction-pipe O from the interior of the bucket B and discharges it through the eduction-pipe P into the boiler I, and when said steam pump is discharging its exhaust-steam into the casing A its pressure is exerted on the surface of the water to aid in forcing said water into the pump. When the water contained in the bucket B is drawn out to a sufficient degree, said bucket will be raised by the water which surrounds its outer side and returned to the position shown in Fig. 2, thus opening the exhaust-port e'' , to permit the pressure within the casing A to fall down to that of the atmosphere, and thereby the apparatus will be left in condition for a repetition of the operation above described.

When preferred, the exhaust-port e' may be dispensed with and the apparatus will perform its functions perfectly, but with less rapidity, for the reason that the pressure in the casing A will then have to be reduced by condensation produced by the external atmosphere acting upon the outer surface of said casing.

I claim as my invention—

1. An automatic pump-regulator for controlling the supply of steam to a pump by means of the fluctuations of water supplied to said pump, consisting of a close vessel containing a rising and falling bucket having an open top and adapted to discharge the water contained therein through the bottom of said bucket, and a steam-valve actuated by said bucket to reciprocally open and close the steam and exhaust ports in the valve-seat of said regulating device, as and for the purpose herein specified.
2. The combination, with an automatic pump-regulator consisting of a closed vessel containing an open-top bucket adapted to rise and fall in said vessel, and a valve actuated by said bucket, by which the supply of steam for operating the steam-pump is controlled, as herein set forth, of a steam-pump having its water-cylinder connected to receive its supply of water directly from the bucket of said regulator, and having its exhaust-steam pipe arranged to discharge the steam therefrom directly into the closed vessel of said regulator, as and for the purpose herein specified.
3. The combination, with a pump-regulator for controlling the supply of steam to a steam-pump by means of a steam-controlling valve actuated by the rising and falling of a bucket in said regulator, and a steam-pump arranged to obtain its supply of water through the bottom of the bucket of said regulator, and to discharge said water into the generator which supplies steam to said pump, of a closed system of steam-heating having its drip-pipes and tanks connected with said pump-regulator in such manner that the condensed water from said system will be delivered directly into the closed vessel of said regulator, as and for the purpose specified.
4. In a pump-regulator, the combination, with a close vessel having a section-pipe connected to a hollow pedestal which supports said vessel, and containing an open-top bucket that is adapted to rise and fall in said vessel, the said bucket having through its bottom a hollow sleeve which is fitted to slide freely in said pedestal, and through which the water is discharged from said bucket, of a steam-controlling valve connected to the said rising and falling bucket, and adapted to open and close a steam-port through which steam is conducted to a steam-pump, as herein specified.

Witnesses: JAMES H. BLESSING.
JOHN W. WHEELOCK,
WM. H. LOW.