

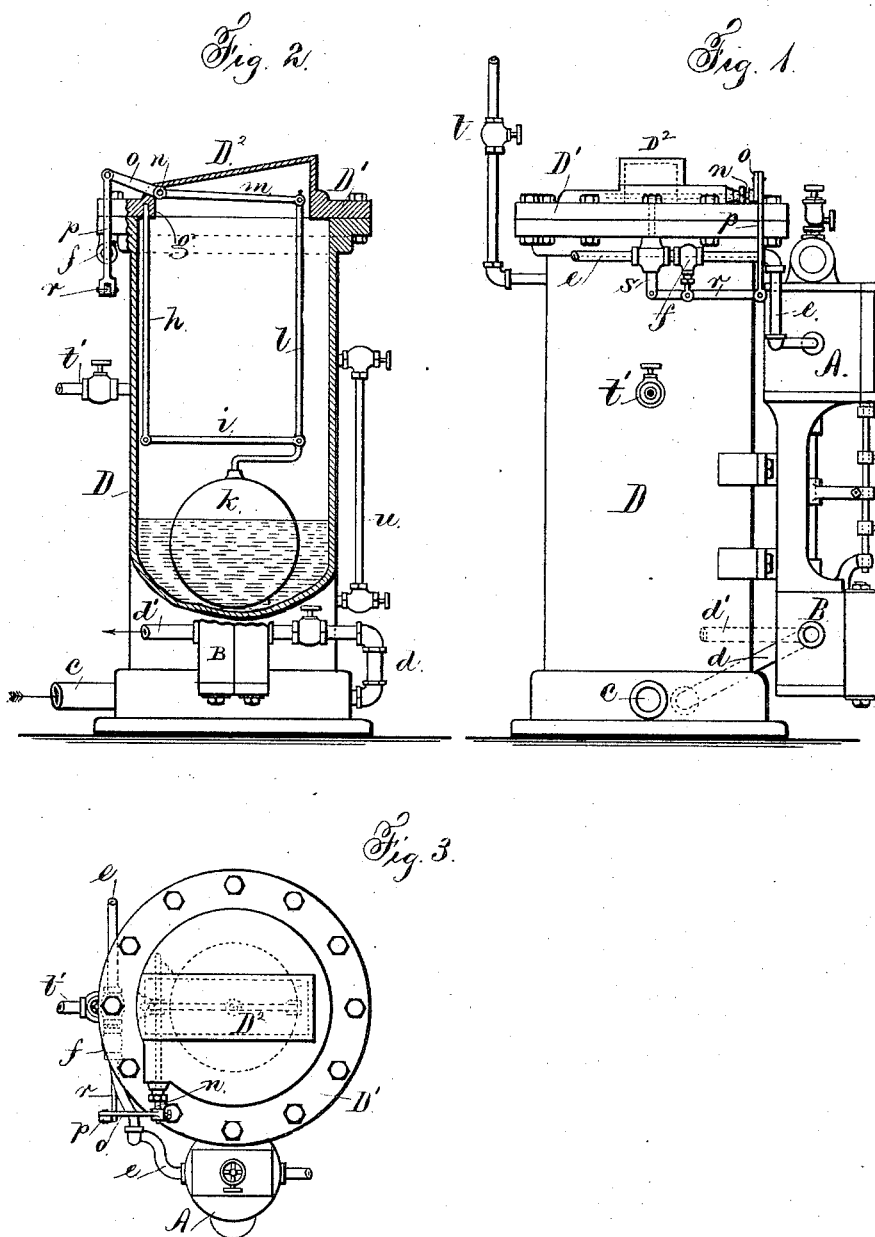
(No Model.)

J. H. BAKER.

AUTOMATIC PUMP REGULATOR.

No. 302,645.

Patented July 29, 1884.



Witnesses
Harold Serrell
Chas H. Smith

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UNITED STATES PATENT OFFICE.

JAMES H. BAKER, OF SARATOGA SPRINGS, NEW YORK.

AUTOMATIC PUMP-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 302,645, dated July 29, 1884.

Application filed January 7, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. BAKER, of Saratoga Springs, Saratoga county, and State of New York, have invented a new and useful Improvement in Automatic Pump-Regulators; and the following is declared to be a description of the same.

In heating apparatus the water of condensation is generally allowed to run back into the boiler, and in cases where the water of condensation is discharged at a lower level than the boiler it is received into a vessel. A pump has been employed that is brought into operation when there is a sufficient accumulation of water, and that stops or nearly stops when said water of condensation has been sufficiently removed from the receiving-vessel.

In Letters Patent granted to me under date of January 1, 1884, No. 291,271, a feed-water cylinder and automatic pump are shown and described, and the present apparatus is an improvement on the same. I make use of a float within the water-vessel, and rods and levers peculiarly constructed for insuring the vertical movement of the float, and sufficient leverage to open or close the steam-valve that leads to the vertical pump at one side of the water-vessel.

In the drawings, Figure 1 is an elevation of the apparatus. Fig. 2 is a vertical section at right angles to Fig. 1, and Fig. 3 is a plan of the same.

The steam-engine cylinder A and its pump B are of any desired character. The engine and pump are supported at one side of the water-vessel D by brackets or otherwise, and the water of condensation from the steam coils or radiators or other source is allowed to run into the vessel D by the pipe c, and from the vessel D there is a pipe, d, to the pump B. Steam is supplied to the engine by the pipe e, leading from the boiler or generator, and in said pipe e there is a valve, f. The cover D' of the cylinder D is made with a hollow raised portion, D², and is provided with an opening and stuffing-boxes for the shaft n. Upon one end of the shaft n is fastened the lever m inside the hollow portion D², where it has space to move, and to said lever m is attached the bent arm l, supporting the float or ball k. To the other end of the shaft n is fastened the crank o, and the link p is pivoted to

the crank o and lever r, for operating the steam-valve f. The arm i is also pivoted to the bent arm l, and is about the length of lever m, and as the float rises and falls it moves said arm i and lever m, and they keep the arm l perpendicular and impart to it a parallel motion and keep the float k in about the center of the vessel D. There is a lug, g, upon the interior of the cover or head D', and into this lug is secured a perpendicular rod, h, extending down into the vessel, and to the end of said rod is pivoted the arm i. The lever r is pivoted to a stud or rod, s, and said stud acts as a support for the steam-inlet pipe e, and is continued through the flanges connecting the vessel D and its head D', and here it assumes the office of a bolt, assisting in securing the flanges together. The rock-shaft n passes through stuffing-boxes in the head D', to prevent leakage. As the water accumulates in the vessel D the float k will rise, and eventually it will be lifted sufficiently to open the valve f through the medium of the bent arm l, lever m, rock-shaft n, crank o, link p, and lever r. The steam will now enter the engine-cylinder and start the same and pump, and water will be drawn from the vessel D through pipe d to the pump B, and said water will be forced from the pump through pipe d' to the boiler, or to any desired place. As the water descends the float will fall, and the supply of steam will be lessened and the speed of the pump also lessened, and said engine and pump will be thus regulated according to the quantity of water running into and to be taken off from the vessel D. The office of the rod h and pivoted arm i is to keep the float near the center of the vessel D and steadily at its work.

The exhaust-steam from the pumping-engine may be condensed in any desired manner, and the water of condensation discharged into the vessel D. There is a pipe, t, from the vessel D, that can be connected with the steam-main of the radiators for equalizing the pressure, and I provide a pipe, t', from said vessel D to blow off grease or other impurities arising to the surface of the water. There is a glass gage at u, for indicating the height of the water in vessel D, and a gage may also be used denoting the pressure. When the radiators are not in use and there is no water of condensation running into the vessel D, fresh water may be

supplied into such vessel by the pipe *c* from any suitable head, and the steam-pump may be used for pumping water to an elevation or into a boiler.

5 I claim as my invention—

1. The combination, with the steam-pump and steam-valve, the vessel *D*, and float *k*, of the bent arm *l*, lever *m*, rock-shaft *n*, crank *o*, link *p*, lever *r*, and valve *f*, substantially as
10 set forth.

2. The combination, with the steam-pump, vessel *D*, and float, of the rod *h* and arm *i*, lever and rock-shaft, and means, substantially as described, for connecting the float *k* to the
15 steam-supply valve *f*, as and for the purposes set forth.

3. In a trap, the rod *h*, connected to a lug upon the inside of the cover *D'*, the arm *l*, and the arm *i*, pivoted at one end to the rod *h* and
20 at the other end to the arm *l*, and the float suspended from the bent end of the arm *l*, as and for the purposes set forth.

4. The combination, with the vessel *D*, of a cover, *D'*, having a hollow raised central por-

tion, the rock-shaft *n*, passing through the side 25 of such raised portion, the lever *m*, arm *l*, float *k*, and the connection from the shaft *u* to the steam-valve, substantially as set forth.

5. The combination, with the vessel *D*, of the cover *D'*, having a raised central portion, 30 the rock-shaft *n*, lever *m*, arm *l*, float *k*, arm *i*, and rod *h*, the upper end of which rod *h* is connected to the cover, substantially as set forth.

6. The combination, with the vessel *D* and 35 the feed-water pump connected therewith, of the pipe *c*, through which the water enters such vessel, the pipe *t*, connected to the steam-supply pipe of the radiators to equalize the pressure in the vessel *D*, and a float and cock 40 to regulate the supply of steam to the pump-engine, substantially as specified.

Signed by me this 4th day of January, A.
D. 1884.

JAMES H. BAKER.

Witnesses:

GEO. T. PINCKNEY,
HAROLD SERRELL.