

(No Model.)

2 Sheets—Sheet 1.

J. H. BLESSING.

PUMP REGULATOR.

No. 282,042.

Patented July 31, 1883.

Fig. 1.

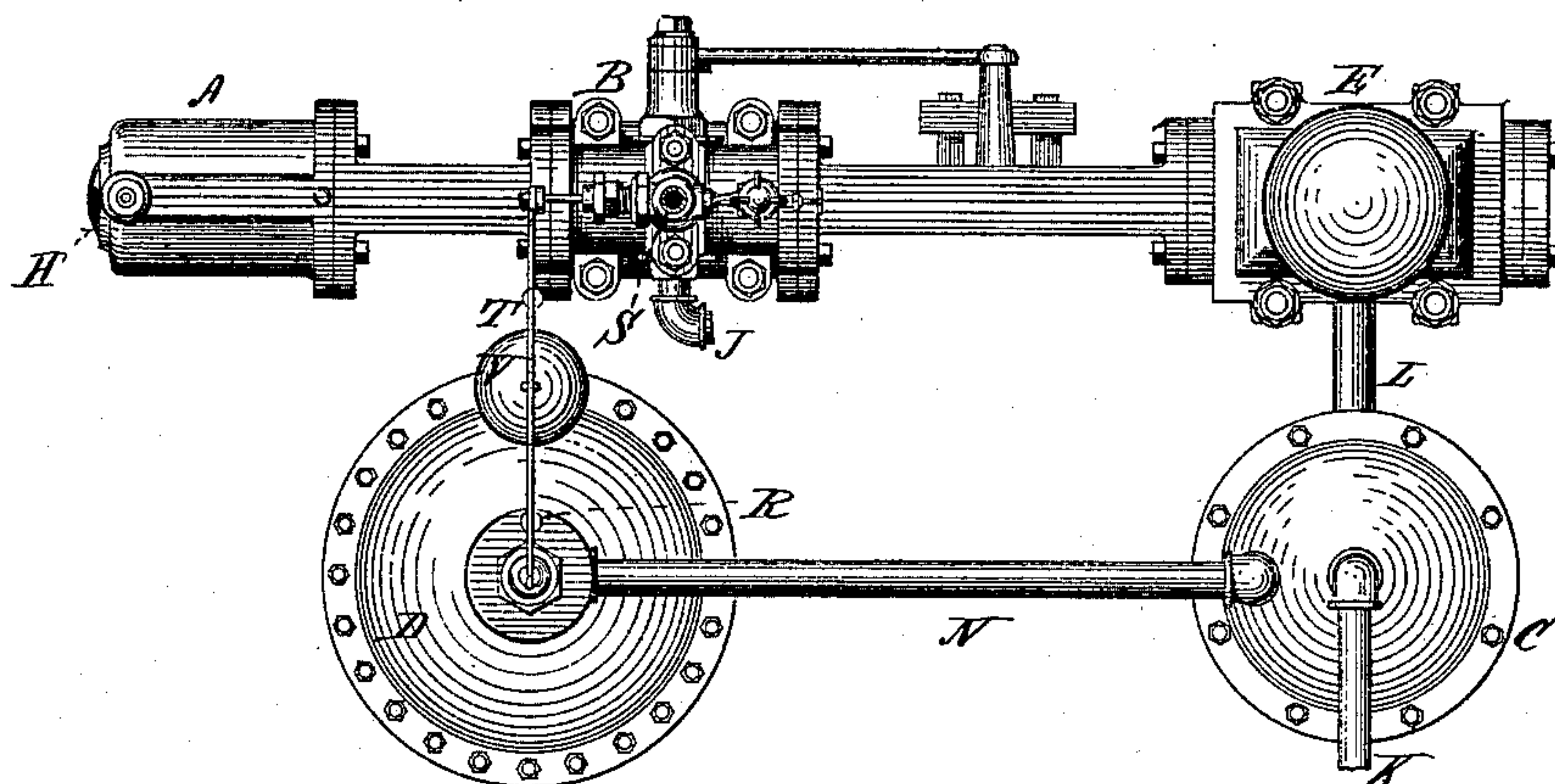
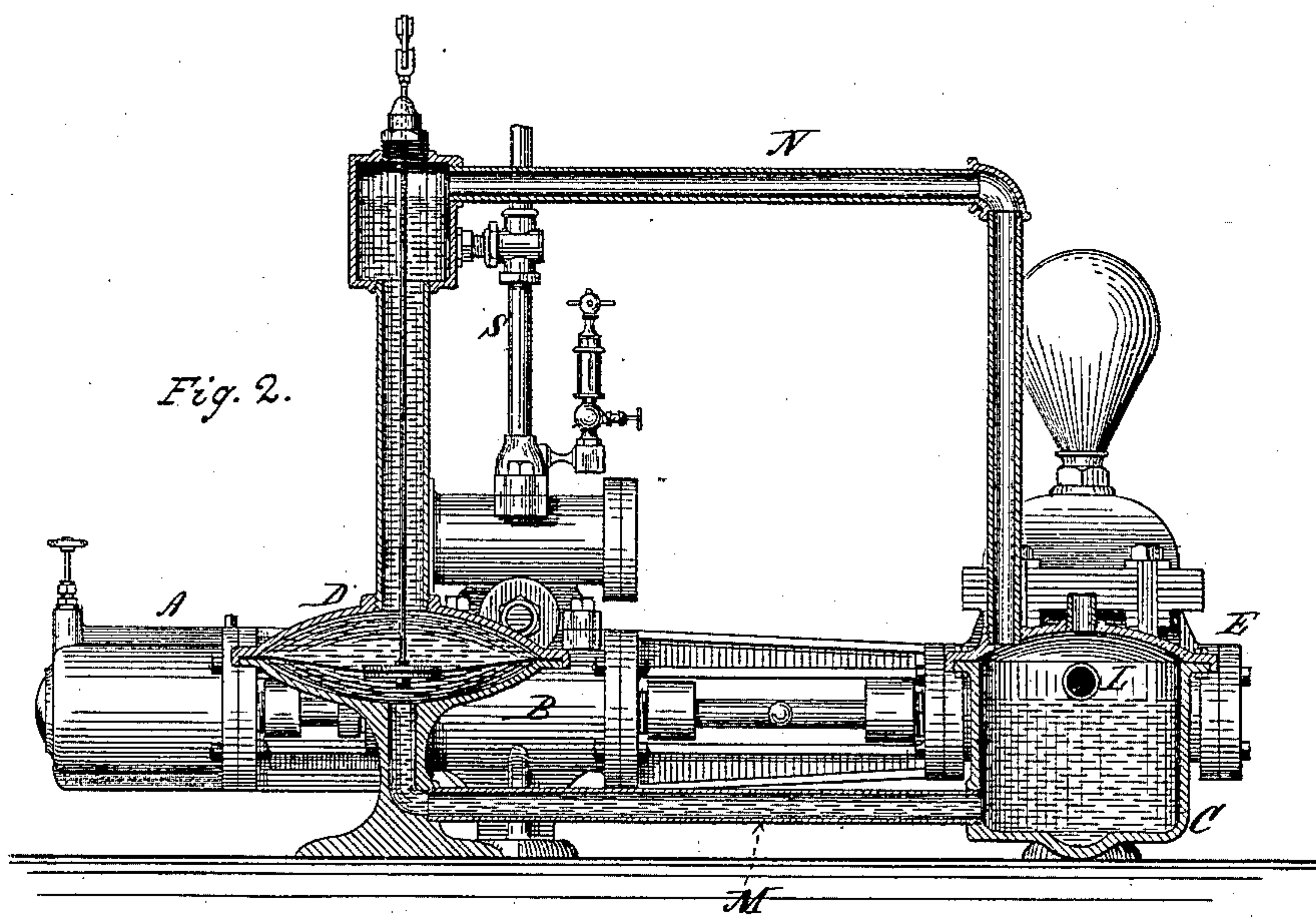


Fig. 2.



Witnesses:

William Raton

H. E. Hansmann.

Inventor.

James H. Blessing

By his attorney

Charles E. Mott

(No Model.)

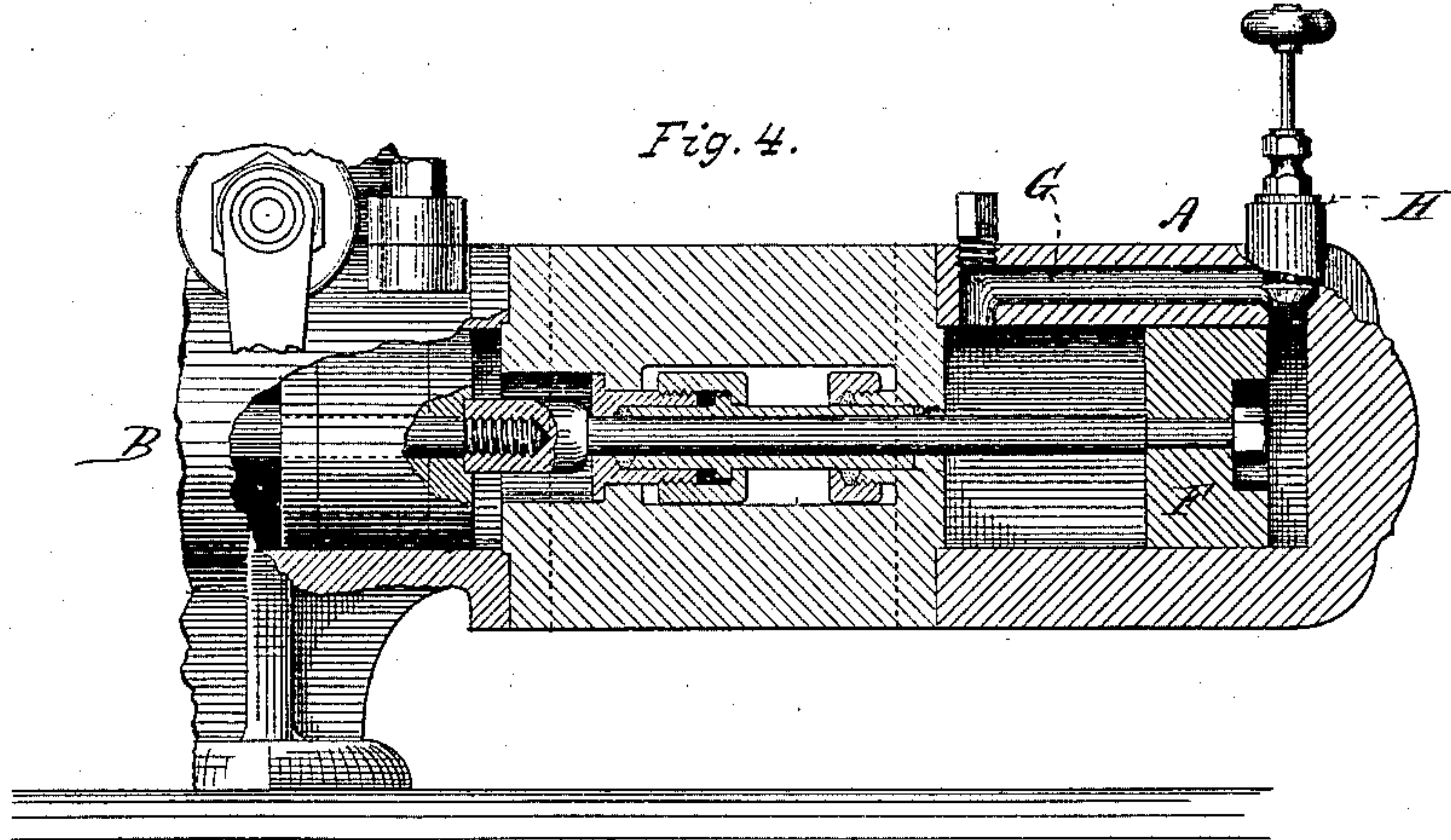
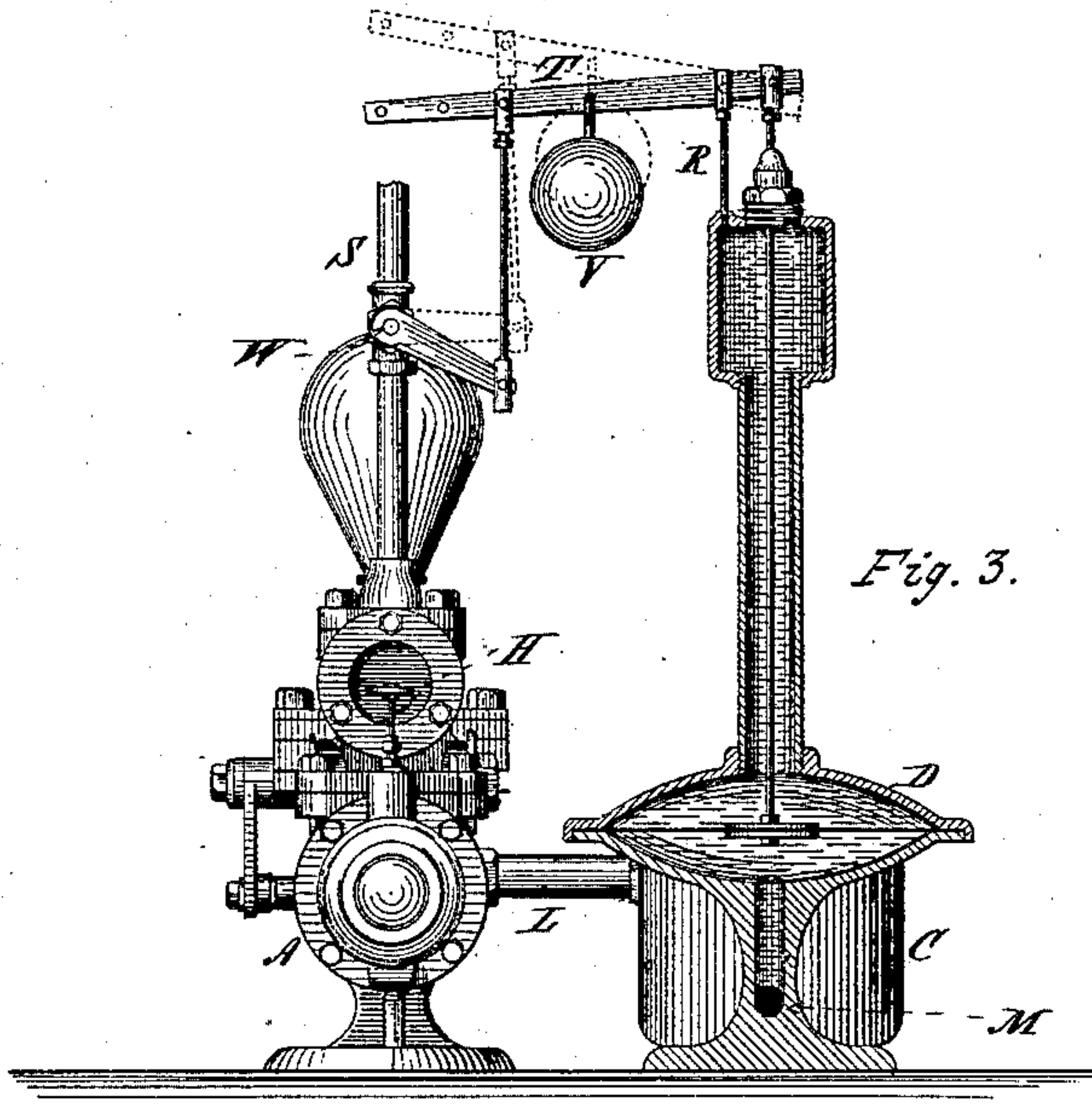
2 Sheets—Sheet 2.

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PUMP REGULATOR.

No. 282,042.

Patented July 31, 1883.



Witnesses:

William Barton
A. E. Hansmann

Inventor.
James H. Blessing
By his Attorney,
Charles E. Foster

UNITED STATES PATENT OFFICE.

JAMES H. BLESSING, OF ALBANY, NEW YORK.

PUMP-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 282,042, dated July 31, 1883.

Application filed April 7, 1883. (No model.)

To all whom it may concern:

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

My invention relates to an improvement upon the apparatus patented to me on the 27th day of August, 1878, No. 207,485, for pump-regulating valve. By the apparatus described in that patent the water returned from a closed system of heating and passing through a steam-pump to be returned to the boiler regulated the operation of the pump; but it has been found in practice that under certain circumstances, owing to the irregular supply of the condensed water, the pump was liable to fly for a few strokes, especially when the condensed water was returning to the boiler at a high temperature—for instance, considerably above the boiling-point. In order to avoid such flying or irregular motion of the pump I have devised an additional regulator to be attached directly to the pump-piston, whereby the pump is prevented from moving at any speed greater than one determined by a suitable regulating-valve. The form of regulator which I prefer to attach to such pump is a cylinder and piston containing water, oil, or other suitable liquid, the said cylinder having a direct connection between its two ends, the opening of which can be regulated by a valve.

My invention will be readily understood from the accompanying drawings, of which Figure 1 represents a plan; Fig. 2, an elevation partly in section; Fig. 3, an end view, showing my valve-regulator, also the water-regulator; and Fig. 4, a detailed view of the water-regulator connected with the pump-piston.

B represents a steam-cylinder connected with the pump E. Connected in any suitable way, but preferably in line with the steam and water cylinders, is the regulating-cylinder A, containing piston F. A passage, G, connects the two ends of this cylinder, and the aperture in this passage can be controlled by the valve H. The throttle-valve of the pump is shown at W in the steam-pipe S. This valve is controlled by the lever T, provided with

counter-weight V, which is supported upon standard R and operated by a stem connected with the diaphragm in the pump-regulator D.

In practice I connect this pump-regulator with the water-chamber C, delivering by pipe L to the pump-cylinder, both above and below the diaphragm. The lower pipe is represented by M and the upper by N. The pipe N should either be provided with an air-valve at its highest point, or a slight escape should be allowed around the stem connected with the diaphragm. Water, preferably from a closed system of coils, passes to the chamber C by the pipe K. The delivery-pipe L, connecting with the pump-cylinder E, is placed in the upper part of this chamber, and above the pipe M. When the pipes M and N are both full of water, the counter-balance V depresses the lever T, as shown in Fig. 3, thereby opening the throttle-valve W in pipe S, and causing the steam-cylinder to operate. As soon as the water is drawn down by the operation of the steam-pump, so as to empty the pipe N, the water-column in the pump-regulator D not being counterbalanced by the water-column in the pipe N, the diaphragm in pump-regulator is depressed by the weight of the column of water above it raising the counter-balance V, as shown by dotted lines in Fig. 3. This arrangement accomplishes the same result as the one previously patented to me, but is slightly different in detail. The motion of the steam-piston is therefore governed by two agencies—namely, the supply of the water being delivered to the pump and the amount to which the valve H is opened. By this arrangement the pump only operates as water is supplied to the pump-chamber, and under no circumstances can pounding occur by reason of the flying of the pump, which sometimes happened in the system previously patented to me.

It is obvious that many other forms of regulator besides that shown at D might be used without affecting the nature of my invention.

I am aware that cataracts have been used with pumps in some cases, and that regulators have been employed in others; but the use of the cataract alone would merely control the speed of the pump; the use of the regulator alone would merely start and stop the pump, it would not prevent the pump from running

away with itself when there is much steam with the water. By the combination described both these influences are brought to bear upon the steam-piston.

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

1. The combination of a steam-cylinder, a pumping-cylinder, a regulator connected with the water-supply and regulating the steam-
10 supply to the steam-cylinder, and the cataract-regulator connected with the piston of the pumping-cylinder, whereby the motion of the piston is governed both by the supply of water and by the cataract-regulator, as set forth.

2. The combination of the steam-cylinder 15 B, pump-regulator D, pumping-cylinder E, and the pipes N and M, connecting with the water-supply to the pumping-cylinder above and below the delivery to said pumping-cylinder, substantially as described. 20

3. The combination of the steam-cylinder B, speed-regulator A, pumping-cylinder E, receiver C, and steam-regulator D, substantially as described.

JAMES H. BLESSING.

Witnesses:

ANTHONY GREF,
GEO. H. EVANS.