H. MUELLER & J. GROSS.

Water-Regulator.

No. 200,871. Patented March 5, 1878.

Fig. 1.

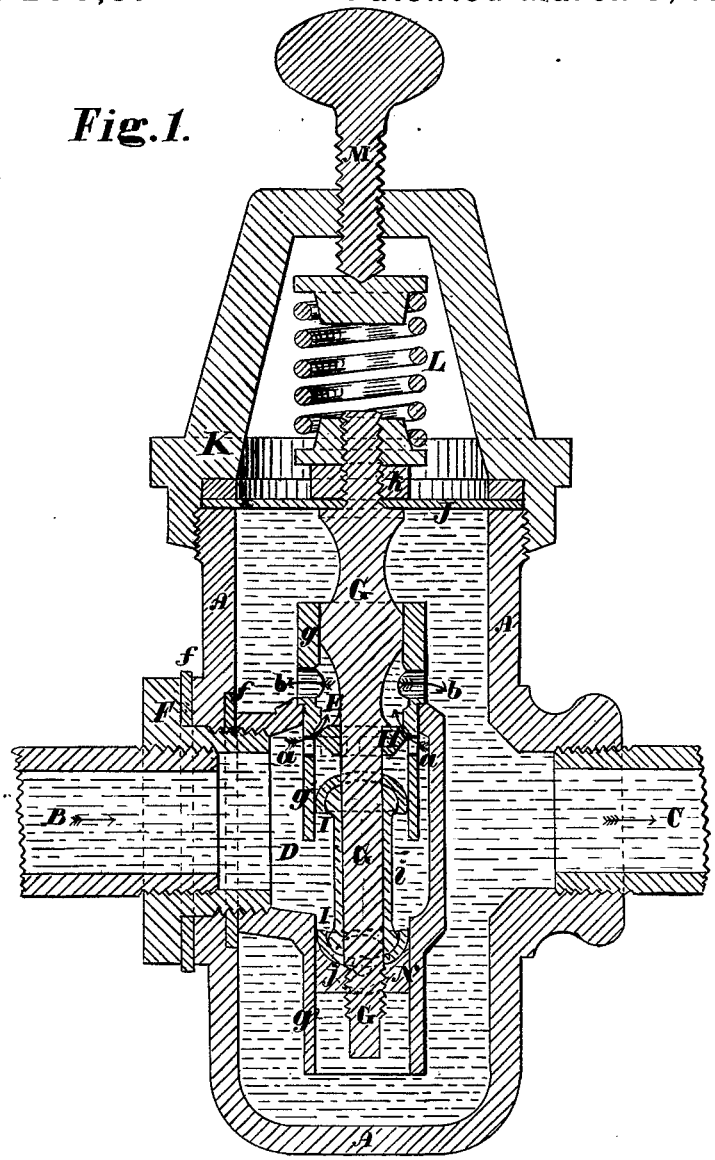
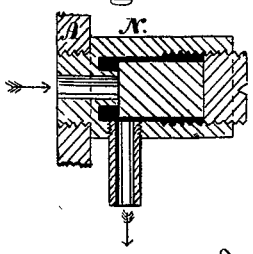


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HIERONYMUS MUELLER AND JOHN GROSS, OF DECATUR, ILL., ASSIGNORS OF ONE-THIRD THEIR RIGHT TO FRIEDERICK A. KORSMEYER, OF SAME PLACE.

IMPROVEMENT IN WATER-REGULATORS.

Specification forming part of Letters Patent No. **200,871**, dated March 5, 1878; application filed November 21, 1877.

To all whom it may concern:

Be it known that we, HIERONYMUS MUELLER and JOHN GROSS, of Decatur, in the county of Macon and State of Illinois, have invented a new and useful Improvement in Water-Regulators, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a transverse vertical section of a water-regulator embodying our invention; and Fig. 2 is a transverse vertical section of the escape-valve.

The object of our invention is to so construct a water-regulator that a regular amount of pressure is maintained in the supply-pipes in the building, irrespective of the pressure in the water-mains; and consists in the construction of a receiving-chamber and escaping-chamber inside of the case; also, in the construction of the plunger with two (2) cup-shaped and balanced disks, so that the pressure is received equally on the concavity of the disks from the water in the mains, and on the convexity of the disks from the supply-pipes of the building, these balanced disks causing the regulator to work smoothly and noiselessly, and without jar to the supply-pipes when the water-cocks are closed or opened, by creating a friction between said disks and the guides for the same.

A is the casing; B, the inlet, and C the outlet; D, the receiving-chamber, and E the upper or escaping-chamber, the chamber E having the inlets *a a* and outlets *b b*. The valve-chambers are secured in the casing with the nut F, having packing at *f f*. G is the plunger, working in guides $g\,g^1\,g^2$ in the chambers. H is a valve between the inlets *a a* and outlets *b b*. I I are the cup-shaped balanced disks, secured to the plunger by the thimble *i* and nut *j*. J is a diaphragm, secured to the plunger by the nut *k* and to the casing by the cap K. L is a spiral spring on the plunger, the amount of pressure being regulated with the thumb-screw M, operating on the plunger through the spring. N is an escape-valve, (shown by dotted lines in Fig. 1 and by a sectional drawing in Fig. 2,) the valve being regulated with a set-screw operating on a rubber valve.

The regulator operates as follows, viz: Water is admitted into the receiving-chamber, and passes through the inlets *a a* into the upper chamber, and from thence through the outlets *b b* into the casing, and through the supply-pipes of the building. Loosening the thumb-screw causes the spring to raise the plunger, closing the valve H, and decreasing the supply, while tightening the thumb-screw depresses the plunger, and increases the throw of the plunger and the opening of the valve H. When water is drawn from the supply-pipes the pressure is decreased in them and in the casing, causing the spring to depress the diaphragm, plunger, and valve H, and allowing the water to pass from the receiving-chamber into the upper chamber and casing until the pressure is sufficient to raise the diaphragm, spring, and plunger, and close the valve.

The two cup-shaped balanced disks in the chambers being opposite to each other, and receiving the pressure of the water equally from the main, prevent the too quick working of the plunger, and avoid the thumping and jarring of the pipes, as if a single disk were used. The bottom of the receiving-chamber, as well as the top of the upper chamber, being open, an equal pressure is had from the water in the casing and supply-pipes on the opposing sides of these two disks. A friction is created between the disks and the guides that greatly assists in retarding the motion of the plunger.

When a boiler for heating water is used in the building, and full of cold water, the water, when heated, expands and causes too great a pressure in the supply-pipes. This pressure is relieved by the escape-valve N, which should be set to greater pressure than that of the spring L.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A water-regulator constructed so that an equal water-pressure is received from the main or inlet B on the concavity of the cup-shaped disks I I, and from the outlet C, or supply-pipes of the building, on the convexity of the

disks, substantially as and for the purpose set forth.

2. The receiving-chamber D, upper chamber E, balanced cup-shaped valves I I, inlets *a a*, and outlets *b b*, in combination with the valve H, substantially as shown and described.

3. The combination of the spring L, thumb-screw M, casing A, plunger G, chambers D E, valve H, and balanced valves I I, substantially as shown and described.

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Witnesses:
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