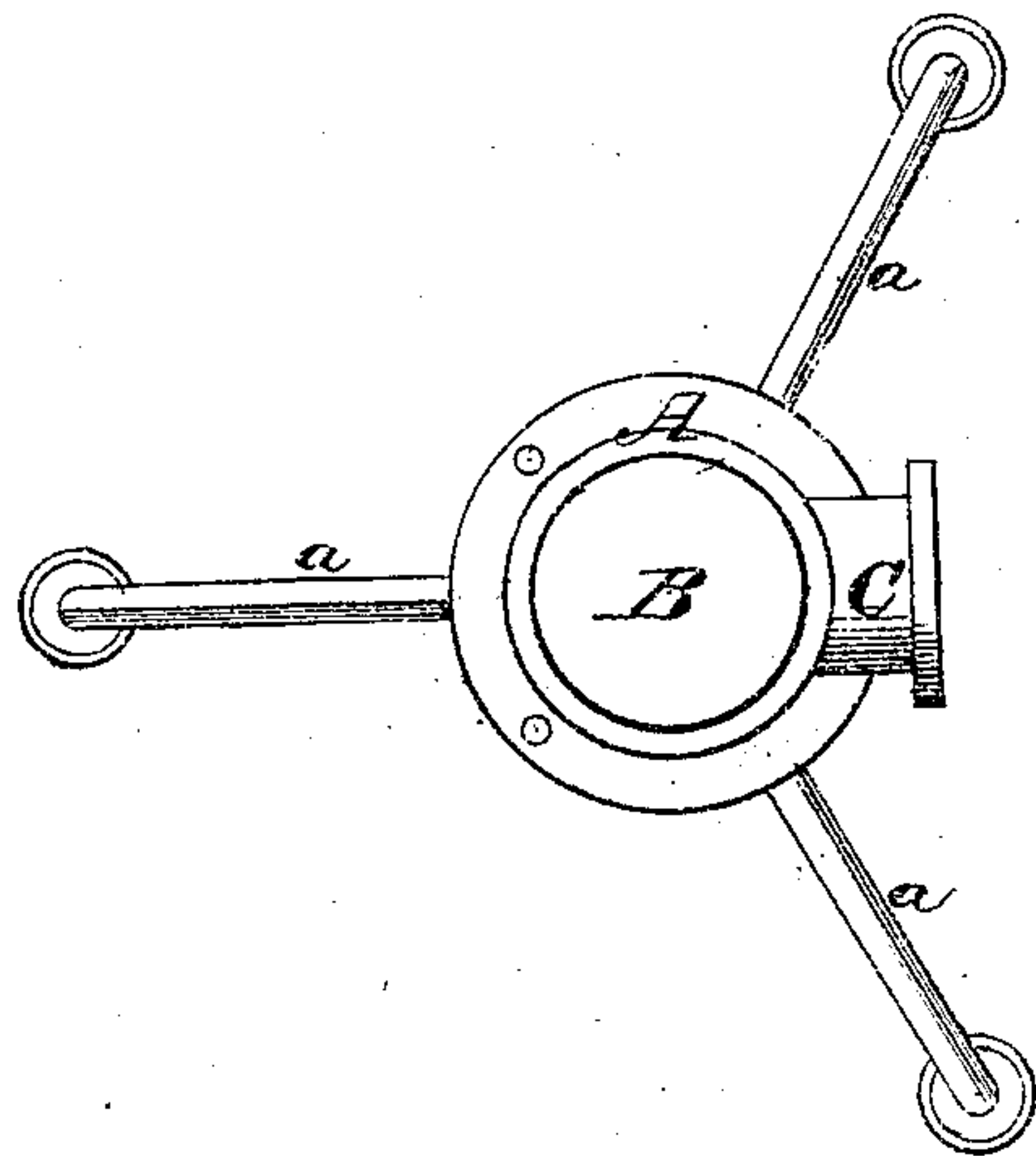
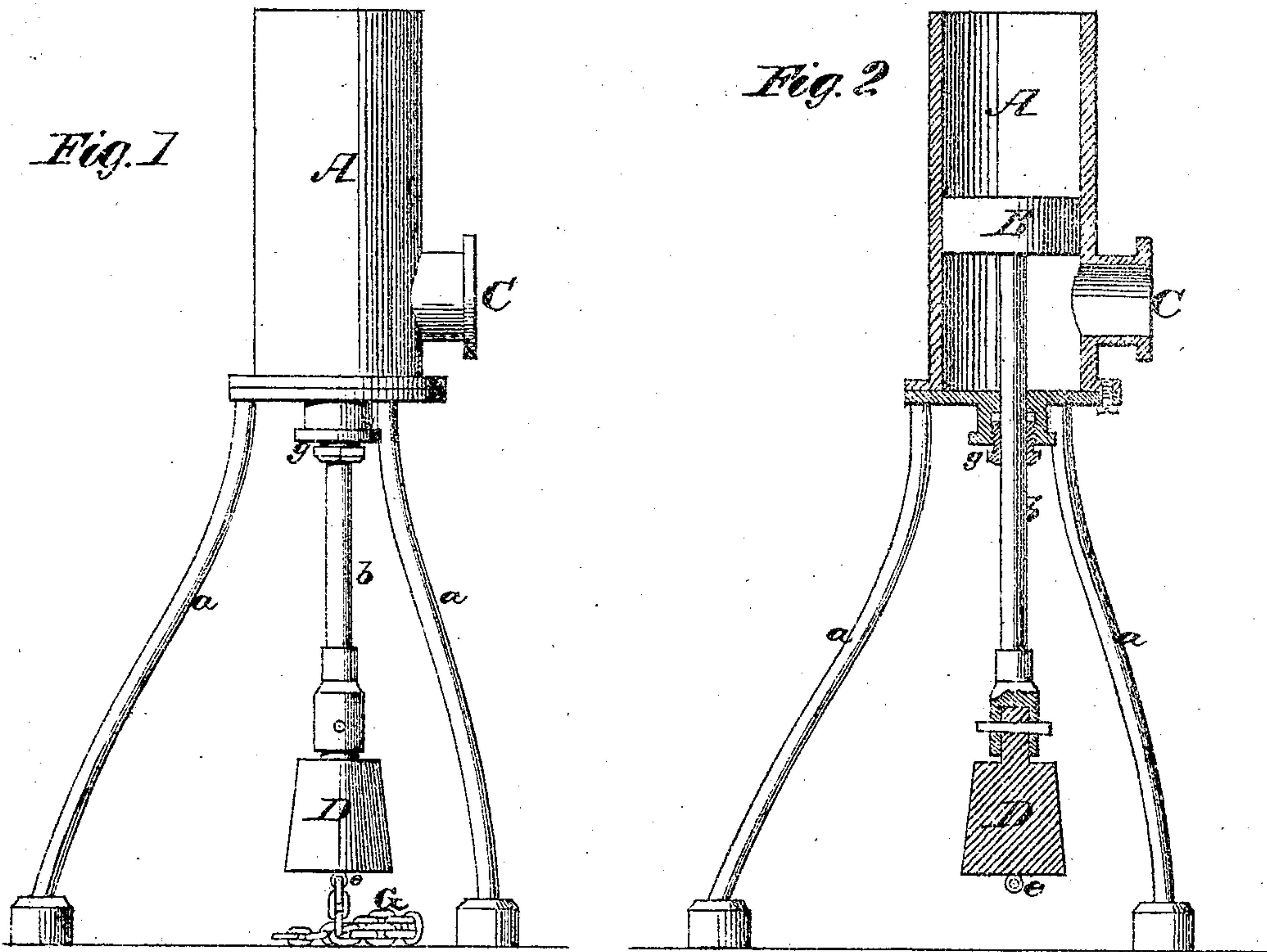


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Improvement in Pressure-Regulators for Water-Works.

No. 114,683

Patented May 9, 1871.



Witnesses.
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UNITED STATES PATENT OFFICE.

BIRDSILL HOLLY, OF LOCKPORT, NEW YORK.

IMPROVEMENT IN PRESSURE-REGULATORS FOR WATER-WORKS.

Specification forming part of Letters Patent No. 114,683, dated May 9, 1871.

To all whom it may concern:

Be it known that I, BIRDSILL HOLLY, of Lockport, in the county of Niagara and State of New York, have invented a new and Improved Pressure-Regulator for Water-Works; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a side elevation of the improved regulator. Fig. 2 is a diametrical section through the regulator. Fig. 3 is a top view.

Similar letters of reference indicate corresponding parts in the several figures.

The chief object of this invention is to produce, with a short stand-pipe, or its equivalent, the same effect as would in ordinary cases follow from the use of a long one. This is effected by a piston working in an upright cylinder, and having its rod loaded by means of a chain or its equivalent, so arranged that when the piston is at the lowest point it is intended to reach, the chain should rest principally or entirely upon a platform, and as the piston is forced upward by the pressure of the water beneath the weight of the chain will operate on the piston to draw it downward or to retard its rising.

If, for example, for every foot that the piston rises the increased weight of the chain attached to the piston-rod and raised thereby from the platform, added to one lineal foot of water in the cylinder, should be equal to the weight of thirty feet in altitude of water in that cylinder, without a piston being placed therein, then a pressure that would force the piston upward three feet in its cylinder would be sufficient to raise water in an ordinary stand-pipe to the height of ninety feet, and all the consequences will result in the one case that would have been witnessed in the other.

Among these is the proximately continuous and equable flow of water, which may be drawn from any or all pipes connected with the mains to which the cylinder is attached, in which the piston operates, and also the elevation of water in those pipes to the same

height as though a stand-pipe ninety feet in height had been used instead of the short cylinder and loaded piston.

It is manifest that a contrivance can readily be attached to the weight D or some other appendage of the weighted piston B, by which the opening in the steam-valve, by which the steam is supplied to the engine, may be regulated at pleasure; and different degrees of pressure may be provided for by changing the weight of chain attached to the piston B.

To enable others skilled in the art to understand my invention, I will explain its construction and operation.

In the accompanying drawing, A represents an upright cylinder, having a branch, C, near its lower end, to which a pipe leading from a main is connected, so that there will be a communication between the mains and said cylinder. The upper end of cylinder A is open, and its lower end is closed by a head, through which latter the rod *b* of a piston, B, passes, and is suitably packed at *g*. The lower end of the piston-rod *b* has a weight, D, secured to it, and in addition to this weight D a chain, G, is employed, which is attached to an eye, *e*, secured centrally to the bottom of the said weight. The cylinder A is mounted on standards *a*, so that when the piston B is down as far as it will go, the chain G is supported wholly upon the floor, and the piston is thus relieved of its weight.

It will be seen from the above description that the weight, which is suspended from the piston B, will operate constantly upon the water below this piston, and maintain a regular pressure in the mains and a nearly-uniform flow of water therein.

If the pressure in the pipe C is never intended to be less than a certain amount—say, thirty pounds per square inch—then a permanent weight, D, with or without the chain G or its equivalent, may be attached to the lower end of the piston-rod *b* just sufficient to counter-balance the proposed minimum pressure. This will be equivalent to stand-pipe of more than sixty feet in height that should be kept constantly full.

The apparatus above described is compact, simple, easily managed, is entirely automatic

in its operation, and will pretty effectually equalize the intermittent action of pumping-engines on the water in the pipes.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The upright cylinder A, connected with the water-mains by the pipe, and having a

piston, B loaded with a chain, G, augmenting the weight in the ascent, substantially as and for the purpose above specified and shown.

BIRDSILL HOLLY.

Witnesses:

CHAS. N. LEE,
JOHN R. ELDER.