

F. A. CRAMER.
PRESSURE-VALVE.

No. 172,977.

Patented Feb. 1, 1876.

Fig. 1.

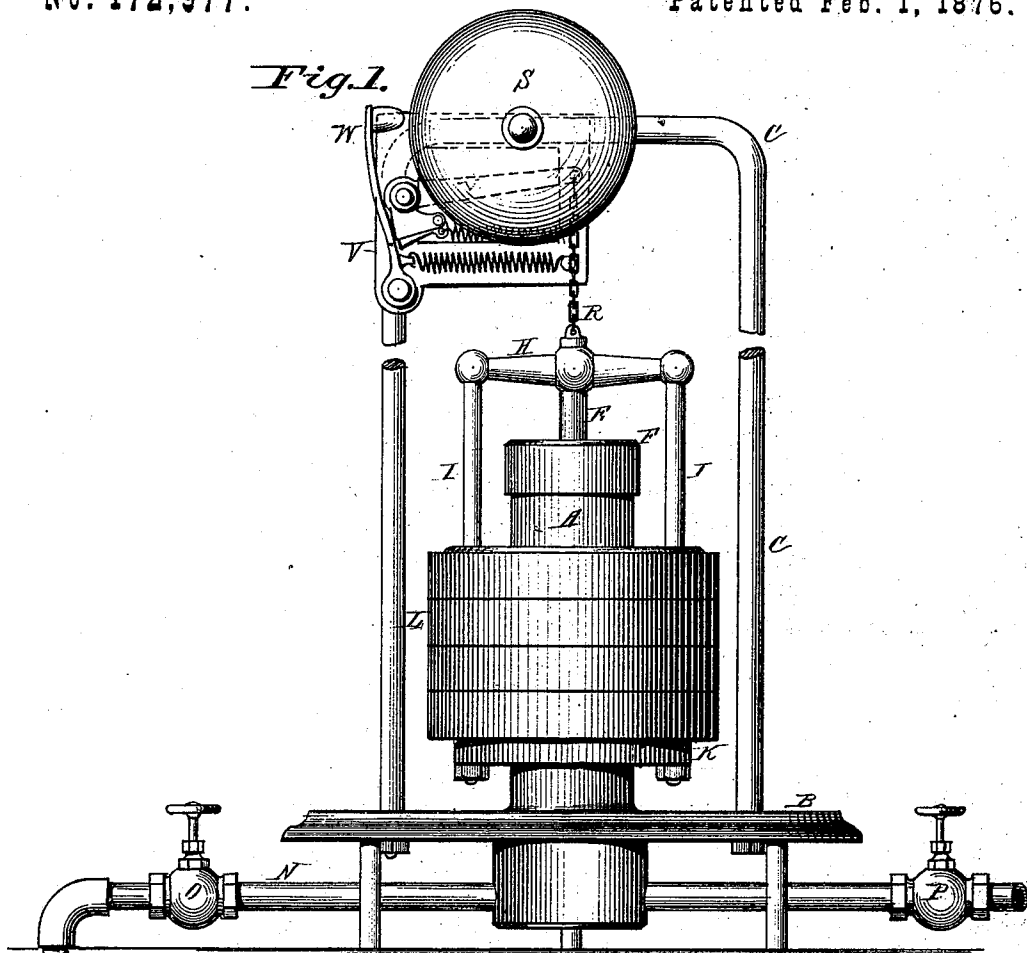
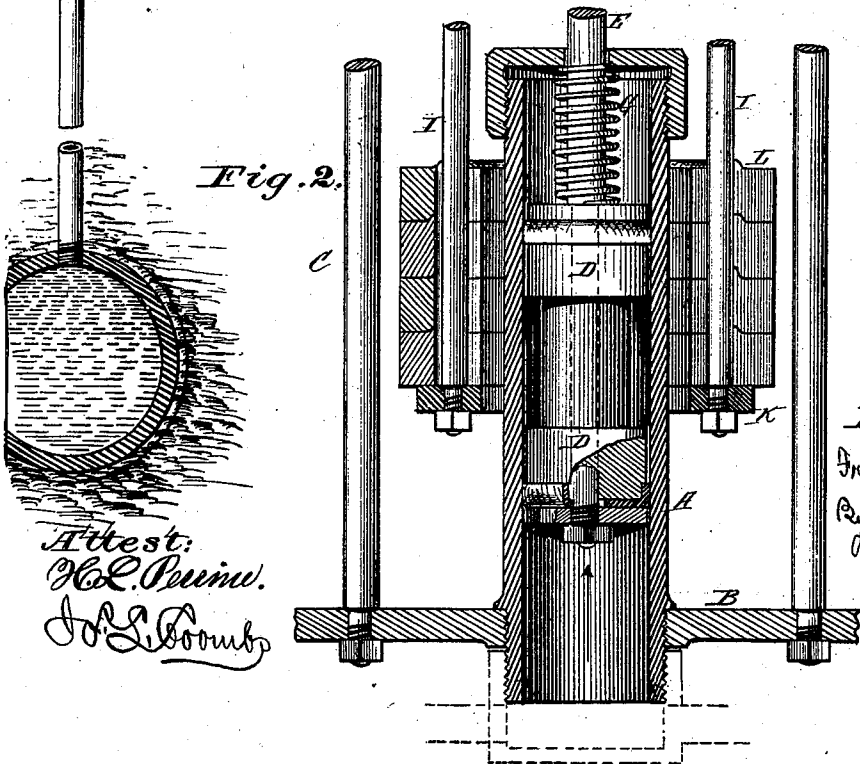


Fig. 2.



Attest:
H. L. Peunw.
J. L. Boomb

Inventor:
Fred. A. Cramer
By Jas. L. Norris
att'y

UNITED STATES PATENT OFFICE.

FREDERICK A. CRAMER, OF ROCK ISLAND, ILLINOIS.

IMPROVEMENT IN PRESSURE-VALVES.

Specification forming part of Letters Patent No. **172,977**, dated February 1, 1876; application filed December 22, 1875.

To all whom it may concern:

Be it known that I, FREDERICK A. CRAMER, of Rock Island, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Pressure-Valves, of which the following is a specification:

This invention relates to an improved device for transmitting signals from the fire-plugs or hydrants of a water-main to any desired point in the route of said main, and for automatically regulating and controlling the operation of the pumping-engine by the varying pressure in the pipes when a plug or hydrant is opened or closed, in order to automatically increase or diminish the supply of water, as required; and it consists in the combination, with the cylinder communicating with the water-main, of a piston and piston-rod, provided with a cross-bar at the top, to which are attached two depending arms, carrying an annular plate and a series of detachable weights, and connected to an alarm-gong or other signaling device, or to the steam-valve of the pumping-engine, as more fully hereinafter set forth.

In the drawing, Figure 1 represents a view in elevation of my improved device, fitted with an alarm-gong for giving signals; and Fig. 2 represents a sectional view of the same.

The letter A represents a cylinder mounted upon a base or stand, B, which also serves as a support for the frame C, upon which the gong and alarm apparatus are mounted. The said cylinder is constructed of any suitable metal, preferably of brass, however, and is accurately bored and fitted with a piston, D, made in two parts with an intervening space between, said parts being suitably packed to prevent the escape of water. The piston-rod E extends upwardly through a screw cap or head, F. Secured to the upper end of the cylinder A, and surrounding said rod, (the lower end bearing against the upper part of the piston,) is a spiral or other suitable spring, G, which serves as a cushion to the piston, and prevents injury to the same or to the cylinder when the piston is suddenly operated. To the upper end of the piston-rod is secured a cross-bar, H, to the ends of which are attached the downwardly-extending arms

or rods I I, falling upon opposite sides of the cylinder A, and having secured at their lower ends an annular metallic plate, K, which surrounds the cylinder loosely. Said annular plate serves as a slot for the detachable weights L, by which the pressure in the cylinder is counterbalanced, as hereinafter more fully explained. The weights consist of annular blocks of metal, of such size as to fit loosely around the cylinder A, each being slotted at one side in order to be passed over the cross-bar and depending arms, and provided with an annular groove on the under face, and a correspondingly-shaped head upon the upper face, in order to fit together securely when in position. The cylinder A is connected at its bottom with the water-main by means of a pipe, N, which is provided with valves O and P, one for cutting off communication between the main and cylinder when desired, and the other to allow any sediment or sand to be washed out of the apparatus. To the center of the cross-bar H is attached one end of a chain, link, or rod, R, the other end of which is connected with the hammer of an alarm-gong, when the apparatus is to be used for signaling, or to the steam-valve of the pumping-engine when used to automatically regulate the operation of said engine.

In the present instance I have shown the apparatus as provided with an alarm device, consisting of a gong, S, mounted on a frame, V, attached to the upright frame C, and a hammer, W, operated by means of lever Y, connected to the chain or link R, extending from the cross-bar H.

The apparatus is intended principally to be located in the engineer's room, or other convenient point near the pumping-engine, although it will operate as well at any other point along the route of the main, and as many as may be desired may therefore be employed at various points, as occasion may require. Upon opening a hydrant or plug connected with the main, and thus suddenly relieving the pressure therein, the weighted plunger will drop, suddenly striking the gong and making one signal, and upon closing the hydrant or plug any predeterminate number of times, the person at the plug will be enabled to communicate intelligibly with the en-

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gineer, so as to have an increased pressure and flow of water directed to the point of consumption. By connecting the device with the steam-supply valve of the pumping-engine, the rise and fall of the piston, as the pressure of the water is varied in the main, may be made to automatically control the action of the engines, so as to increase or decrease the rapidity with which they work, as more or less supply and pressure of water are desired, thus serving to accurately regulate the pressure in the mains at all times.

The detachable weights employed in connection with the piston enables the device to be arranged or set for any desired pressure in the pipes—for instance, if the pressure of the mains is to be kept at fifty pounds to the square inch, weight sufficient to balance said pressure should be employed.

What I claim, and desire to secure by Letters Patent, is—

1. In combination with the cylinder communicating with the water-main, the piston-rod, cross-bar, depending arms, and detachable weights, and the gong or alarm-bell for automatically signaling the variations of pressure in the main, substantially as described.

2. The combination of the cylinder, the connecting-pipes communicating with the main, the piston and piston-rod, cross-bar and depending arms, and the annular plate attached to said arms, forming a seat for the detachable weights, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

FREDERICK A. CRAMER.

Witnesses:

JAMES HARDIN,
THOMAS J. REDDIG.