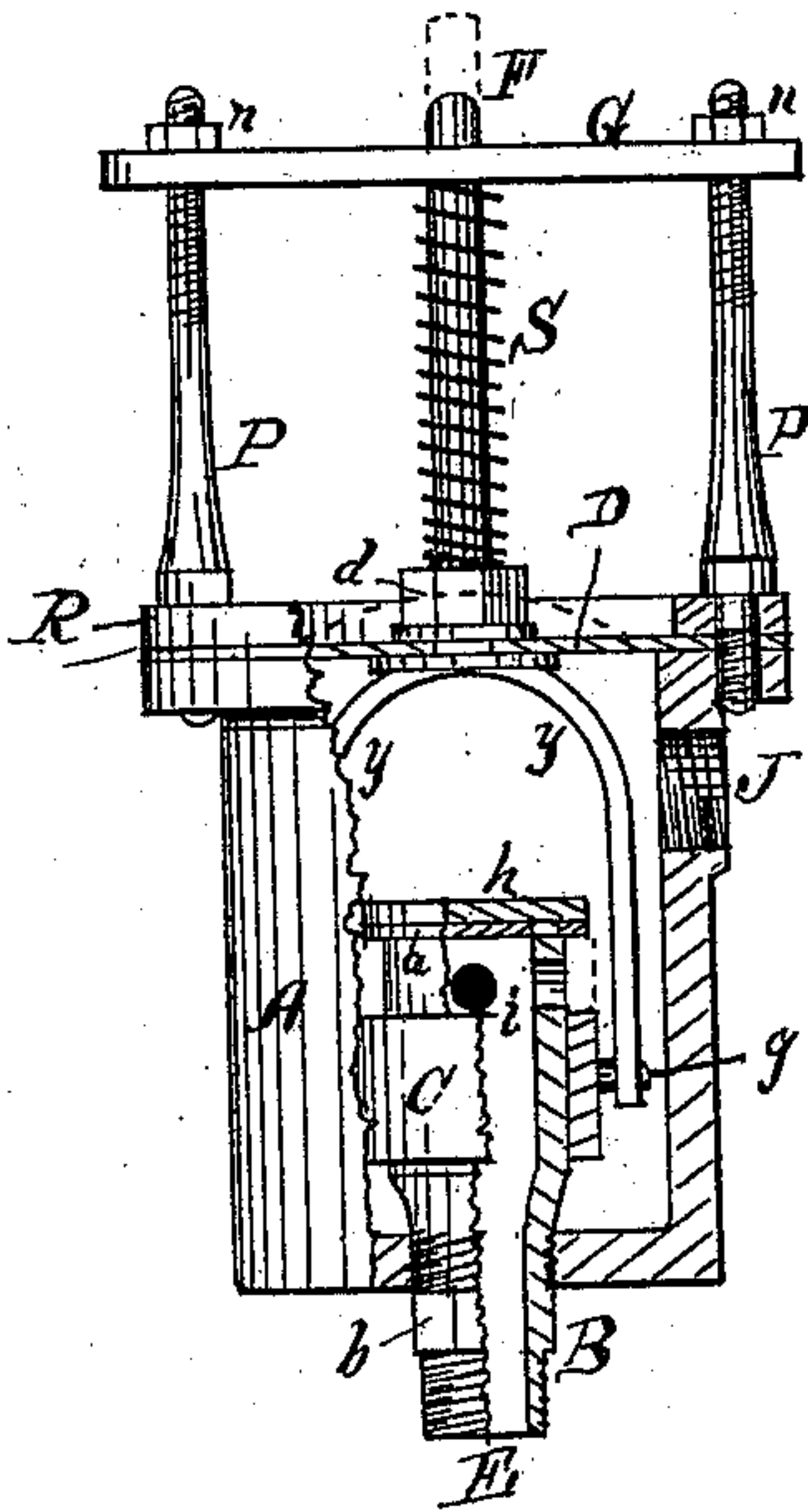


H. T. KING.

WATER-PRESSURE REGULATOR.

No. 176,791

Patented May 2, 1876.



Witnesses.

J. M. Howe
Peter Dix

Inventor.

Hiram T. King
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UNITED STATES PATENT OFFICE.

HIRAM T. KING, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN WATER-PRESSURE REGULATORS.

Specification forming part of Letters Patent No. **176,791**, dated May 2, 1876; application filed March 3, 1876.

To all whom it may concern:

Be it known that I, HIRAM T. KING, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Water-Pressure Regulators; 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 the figure is a vertical sectional elevation of my invention.

The object of this invention is to provide a cheap and compact device for reducing and regulating the pressure of the water in service-pipes. It consists in the employment of an adjustable spring in connection with a flexible diaphragm, which is connected to the governing-valve, and of a peculiar construction of such valve.

The valve case or shell A is threaded through the bottom to receive the stem B of the valve-stock. The lower or outer end of this stock is somewhat reduced in diameter, and threaded to receive the pipe from the main. It may be provided with an octagonal section, as shown at *b*, upon which to apply a wrench. Its upper end is formed with a flanged cap or head, *h*, through which there is no vertical opening. The stock is screwed into the case from the open end before the diaphragm is applied. There are several small lateral openings, *i*, near the head *h* through the stock. The enlarged portion or section below the head is provided with an annular vertically-sliding valve, C, which is nicely fitted thereto. There may be a slight groove turned next to the head *h*, into which is sprung a rubber or other cushion, *a*. The valve C is connected on two opposite sides at *g*, by trunnions or otherwise, to the yoke *y* of the stem F. This stem passes through the diaphragm D, to which it is secured by a suitable collar above and below, and the clamping-nut *d*. The diaphragm is attached to the open or upper end of the case A by means of the ring R and several clamping-screws. The lower ends of the posts P answer for two such bolts or screws. The upper portion of these posts is threaded, as

shown, and the cross-bar G is fitted loosely upon them, and secured thereto by the set-nuts *n*. Before the bar is placed in position the spring S is applied to the stem F, the lower end against or upon the nut *d*, and its upper end against the bar, as shown. The tension of the spring, or its force upon the diaphragm and valve, may be regulated to any desired extent, and with the greatest nicety, by the nuts *n*.

The openings *i* may be oval-shaped or oblong squares, if desired, the narrow way being vertical, which would effect a greater change in the flow through the stock with a given movement of the valve. The diaphragm may be composed of any suitable material.

The inlet-pipe is attached at E, and the outlet or service pipe at J. It will be seen that when no cock on the service-pipes is open the pressure against the diaphragm will force it upward, so as to close, or partially so, the valve, which reduces the pressure in the pipes within the building. The relative pressure in the service-pipes with relation to that in the main may be increased by increasing the tension of the spring, which is done by turning the nuts *n* farther down upon the posts, and vice versa.

To avoid mechanical fitting between the stock B and the annular valve C the lower end of the latter may be provided with a rim projecting inward, and the former have a corresponding shoulder for this rim to strike against. Such rim should be cushioned, the same as the upper end now is, against the head *h*. This would prevent the possibility of leakage when the valve is forced up to cut off the passage of the water. It will be seen that the pressure of the water upon the valve, being lateral, can have no tendency whatever to move the valve vertically.

What I claim as my invention is—

1. As an improvement in water-pressure regulators, the valve C and inlet and outlet water-passages, in combination with an adjustable spring, S, and flexible diaphragm, the valve and diaphragm being connected together, whereby the slightest movement of

the latter shall produce a corresponding movement of the valve, as and for the purposes set forth.

2. In combination with a hollow cylindrical valve-seat, having its upper end closed by a head, *h*, and provided with lateral openings *i*, the annular balance-valve C, arranged upon

the outside of the seat, and constructed to be operated substantially in the manner and for the purposes set forth.

H. T. KING.

Witnesses:

WM. S. LOUGHBOROUGH,
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