

(No Model.)

W. T. FOX.
PRESSURE REGULATOR.

No. 319,896.

Patented June 9, 1885.

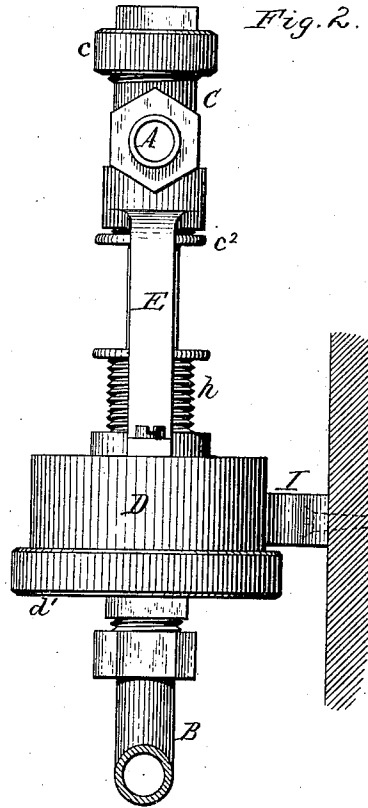
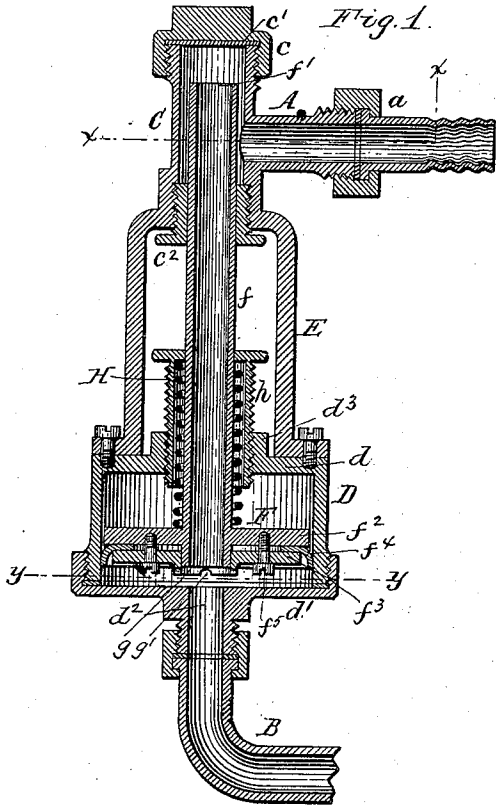


Fig. 3.

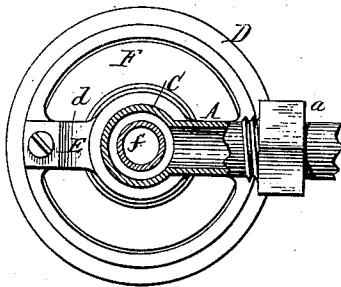
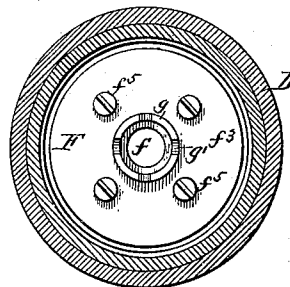


Fig. 4.



Witnesses:

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Theo. L. Popp.

W. T. Fox

Inventor.

By Wilhelm Bonner,
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UNITED STATES PATENT OFFICE.

WILLIAM T. FOX, OF ROCHESTER, NEW YORK, ASSIGNOR TO THE STEAM GAUGE AND LANTERN COMPANY, OF SAME PLACE.

PRESSURE-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 319,896, dated June 9, 1885.

Application filed July 30, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. FOX, of the city of Rochester, in the county of Monroe and State of New York, have invented new and useful Improvements in Pressure-Regulators, of which the following is a specification.

This invention relates more particularly to an improvement in that class of pressure-regulators which are employed in connection with air-compressors and similar apparatus for regulating the pressure of the water from the mains or other supply to the air-compressor or other apparatus in which the water is to be used.

The object of my invention is to provide a regulator which is simple in construction and reliable in its operation, and in which the pressure of the water from the mains can be reduced and maintained at a steady and uniform pressure.

My invention consists, to these ends, of the improvements in the construction of the regulator which will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of my improved regulator. Fig. 2 is an elevation of the same at right angles to Fig. 1. Fig. 3 is a horizontal section in line *xx*, Fig. 1. Fig. 4 is a cross-section in line *yy*, Fig. 1, looking upward.

Like letters of reference refer to like parts in the several figures.

A represents the inlet-pipe of the regulator, which is connected with the water-mains or other source of supply by a suitable coupling, *a*, and B is the discharge-pipe, which conducts the water to the air-compressor or other apparatus in which it is to be used.

C represents a chamber with which the inlet-pipe A is connected. The chamber C is closed at its top by a screw-cap, *c*, a disk of rubber or other suitable packing material, *c'*, being interposed between the cap *c* and the chamber C. The latter is closed at its bottom by a screw-plug or stuffing-box, *c''*.

D represents a cylinder or chamber arranged below the chamber C and in line therewith. The chamber D is of larger diameter than the chamber C, and is connected to the latter by a bifurcated frame, E. The frame E is pref-

erably cast with the chamber C, and secured by suitable bolts to a bridge-piece, *d*, cast with or secured to the top of the chamber D. The bottom of the chamber D is closed by a screw-threaded cap, *d'*, which is provided with a central discharge-opening, *d''*, communicating with the pipe B.

F is a water-tight piston arranged in the chamber D, and provided with a tubular stem, *f*, which extends upwardly through an annular ring, *d''*, formed in the bridge-piece *d*, through the stuffing-box *c''*, and into the chamber C. The upper end of the tubular stem *f* extends beyond the mouth of the inlet-pipe A in the chamber C, and terminates a short distance from the top of the chamber C, leaving a space between the opening *f'* of the tubular stem and the top of the chamber C when the piston F is in its lowest position in the chamber D. The piston F is composed of a disk, *f''*, preferably cast with the tubular stem *f*, a disk, *f'''*, and a cup-shaped packing-ring, *f''''*, of rubber or other suitable material, interposed between the disks *f''* *f'''*, the parts being secured together by screw-bolts *f''''*. The lower end of the tubular stem *f* extends through the piston F, and the latter is provided on its under side with an annular flange or rim, *g*, which rests upon the bottom of the cylinder D when the piston is in its lowest position. The flange or rim *g* is provided with radial passages *g'*, through which the water escapes from the tubular stem *f* into the chamber D below the piston.

H represents a spiral spring, which surrounds the tubular stem *f* and bears with its lower end against the piston F, and tends to hold the same in its lowest position. The upper end of the spring H is seated in a hollow screw-nut or thimble, *h*, which works in an internal screw-thread formed in the annular ring or collar *d''* of the bridge-piece *d*. By turning the screw-nut *h* in the proper direction the tension of the spring H can be regulated. The water from the mains or other source of supply under pressure enters the chamber C through the inlet-pipe A. From the chamber C it then passes down through the tubular stem *f* and through the openings *g'* into the chamber D below the piston F, and from the chamber D it escapes through the discharge-opening *d''*

into the discharge-pipe B. When the pressure of the water in the chamber D exceeds the pressure of the spring H upon the piston, the latter is forced upward and the spring compressed. The tubular stem *f*, taking part in this movement, causes its upper end to rise in the chamber C and bear against the packing *c'*, thereby diminishing or shutting off the supply of water to the chamber D. When the pressure of the water in the chamber D has diminished, the reaction of the spring H forces the piston and tubular stem downward, thereby regulating the supply of water to the chamber D, and maintaining a uniform pressure through the discharge-pipe B. The amount of pressure required to accomplish this result may be readily varied by regulating the tension of the spring H by means of the screw-nut *h*.

The apparatus is preferably provided with a bracket or support, I, whereby the regulator can be readily secured to the wall or other support.

I claim as my invention—

1. The combination, in a pressure-regulator, of an inlet-chamber, C, a chamber, D, having a discharge-opening, *d'*, in its end, a piston, F, arranged in the chamber D above the discharge *d'*, and tubular stem *f*, secured to said piston and extending into the chamber C and through the piston, and forming a water-passage between the chamber C and the chamber D below said piston, substantially as set forth.

2. In a pressure-regulator, the combination, with an inlet-chamber, C, and outlet-chamber D, of the piston F, arranged in the chamber D, tubular stem *f*, secured to said piston and forming a communication between the chamber C and the chamber D below the piston, spring H, and an adjusting device whereby the tension of the spring can be regulated, substantially as set forth.

3. In a pressure-regulator, the combination, with an inlet-chamber, C, and outlet-chamber D, of the piston F, arranged in the chamber D, tubular stem *f*, secured to the piston F, and forming a communication between the chamber C and the bottom of the chamber D, spring H, bearing against the piston F, and screw-nut *h*, substantially as set forth.

4. The combination, with the inlet-chamber C and outlet-chamber D, connected by a bifurcated frame, E, of the piston F, arranged in the chamber D, and provided with an annular flange or rim, *g*, having openings *g'*, the tubular stem *f*, spring H, and screw-nut *h*, substantially as set forth.

Witness my hand this 30th day of June, 1884.

WILLIAM T. FOX.

Witnesses:

WM. E. SLOAN,
G. R. ADAMS.