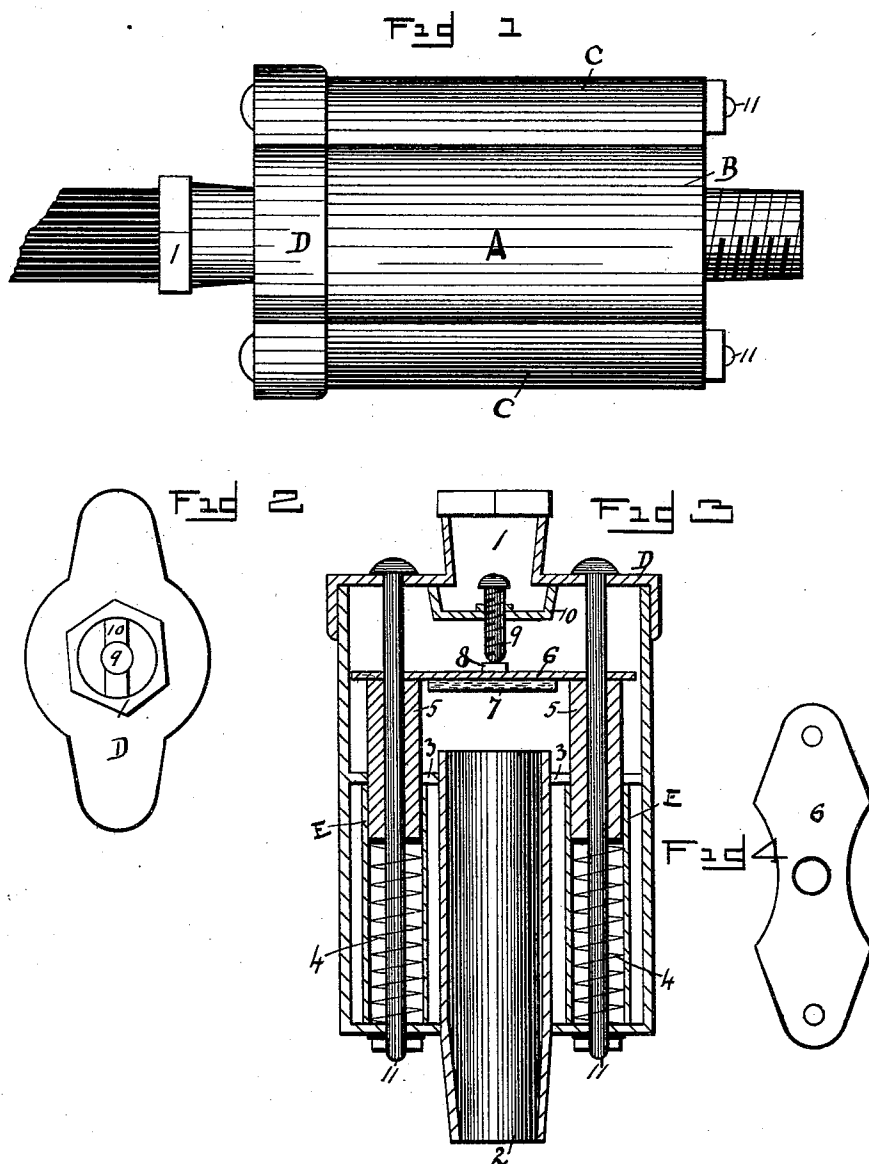


(No Model.)

R. A. TWISS.
PRESSURE REGULATOR.

No. 543,911.

Patented Aug. 6, 1895.



WITNESSES:

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ROBERT A. TWISS, OF FREMONT, NEBRASKA.

PRESSURE-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 543,911, dated August 6, 1895.

Application filed June 19, 1893. Serial No. 478,207. (No model.)

To all whom it may concern:

Be it known that I, ROBERT A. TWISS, a citizen of the United States, residing at Fremont, in the county of Dodge and State of Nebraska, have invented certain new and useful Improvements in Pressure-Regulators, of which the following is a specification.

My improvements are especially designed to be used in a water-distribution system, but may be used with other fluids.

My object is to provide a regulator which will permit the passage of the water from the main to the service-pipe when the pressure in the main is normal, but which will close, or partially close, when the pressure in the main is increased either to keep the pressure in the service-pipes uniform or to entirely close the connection between the service-pipe and the main when a particularly high pressure is on the main, as is the case where high-pressure pumps are used during a fire.

In the accompanying drawings, illustrating my invention, Figure 1 is a side elevation of a pressure-regulator embodying my improvements. Fig. 2 is a detail view of one end of the regulator. Fig. 3 shows a central longitudinal section thereof. Fig. 4 is a detail view of the valve-carrying plate.

The casing A is shown as composed of a central cylindrical body portion B and wings C on opposite sides of the central portion. The lower end of the casing, as viewed in Fig. 3, is closed. The upper end is provided with a removable cap D, and this may be held in place in any suitable well-known way. As shown, it is held to the bottom by through-bolts 11. The pipe which connects the regulator to the main is attached at 1 to the cap D. The pipe 2 connects with the service pipes of the building. It projects through the bottom of the casing and extends up into the central portion B of the casing, somewhat above the center thereof. Just below its upper edge there is a partition 3, which extends entirely across the casing-sections B and C, forming a tight connection with the pipe 2 and with the walls of the casing.

Between the partition 3 and the bottom of the casing there are cylindrical sockets E, within which are spiral springs 4. These sockets make a tight connection with the partition 3, and the partition 3 is perforated di-

rectly above the sockets within the wings C on opposite sides of the pipe 2. Plungers 5 extend through these openings or perforations into the sockets E and make a water-tight connection with the partition 3. As shown, the through-bolts 11 extend through perforations in the sockets and also through perforations in the valve-carrying plate 6, which connects together the plungers 5. The plate 6 carries a valve 7, which may be made of felt, rubber, or other suitable material, and of sufficient size and of correct shape to close the inner end of the pipe 2. A set-screw 9, mounted in a bracket 10 below the opening 1, is adapted to bear against a block 8, carried on the upper side of the plate 6, to limit its upward movement. By adjusting this screw 9 the tension of the springs 4 may be regulated—that is, the plungers may be moved downwardly against the force of the springs, putting them under greater tension. It is obvious that the tension of the springs may be relaxed by turning the screw in an opposite direction.

As shown in Fig. 2, there are openings on opposite sides of the bracket 10 to permit the fluid to pass through from the opening 1 into the casing and onto the plate 6. This plate is provided with recesses *x*, as shown in Fig. 4, on opposite sides between the ends carrying the plungers 5.

Water from the main enters at the opening 1 and passes through the openings *x* and into and through the pipe 2. Should the pressure increase, it will act upon the plate 6 to move the valve 7 toward the inner end of the pipe 2 and diminish the space or opening between the valve and its seat on the end of the pipe, thus decreasing the amount of fluid entering the pipe. Should the pressure become very great, as where high-pressure pumps are applied to the main, the valve 7 will be forced against the end of the pipe 2, closing entirely the connection between the main and the service-pipe.

Many cities require the water to be shut off from dwellings when an alarm of fire is sounded. This is generally done by hand. My device does it automatically. It will be observed that I employ a plate 6 of large area, and I use two springs for supporting this plate, the valve being located between the springs, while

the water passing the plate goes through openings x on opposite sides of the plate and between the springs. In this way the plate is nicely balanced and the pressure thereon is uniform, permitting me to use a valve of ordinary and economical construction.

I claim as my invention—

1. The combination of the casing having a central portion and wings on opposite sides, springs mounted in sockets in the wings on opposite sides of the central part of the casing, a pipe or passage extending into the central part of the casing between the springs, a partition extending transversely across the casing near the inner end of the central pipe or passage, a valve-carrying plate between the end of the central passage and the entrance port, plungers on opposite ends of this plate extending into the spring sockets and a valve carried by this plate between openings x , x , located between the plungers.

2. The combination of the casing having an entrance port at one end for connection with

the main, a pipe for connection with the service pipes of the building extending through the opposite end of the casing, and having at its inner end a valve seat opposite the entrance port, a valve-carrying plate of large area within the casing opposite the entrance port, springs on opposite sides of the central pipe and in the lower portion of the casing, plungers carried by the valve-carrying plate and normally pressed toward the entrance port by the springs to hold the valve open, and an adjusting screw bearing on the valve-carrying plate to force it toward the inner end of the central pipe to vary the amount of fluid passing from the entrance port to the service pipe.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT A. TWISS.

Witnesses:

J. M. SHIVELY,
JNO. L. SCHURMAN.