July 24, 1923. 1,462,937

B. E. HOLTON

PRESSURE REGULATING VALVE

Filed April 15, 1922

Fig. 1.

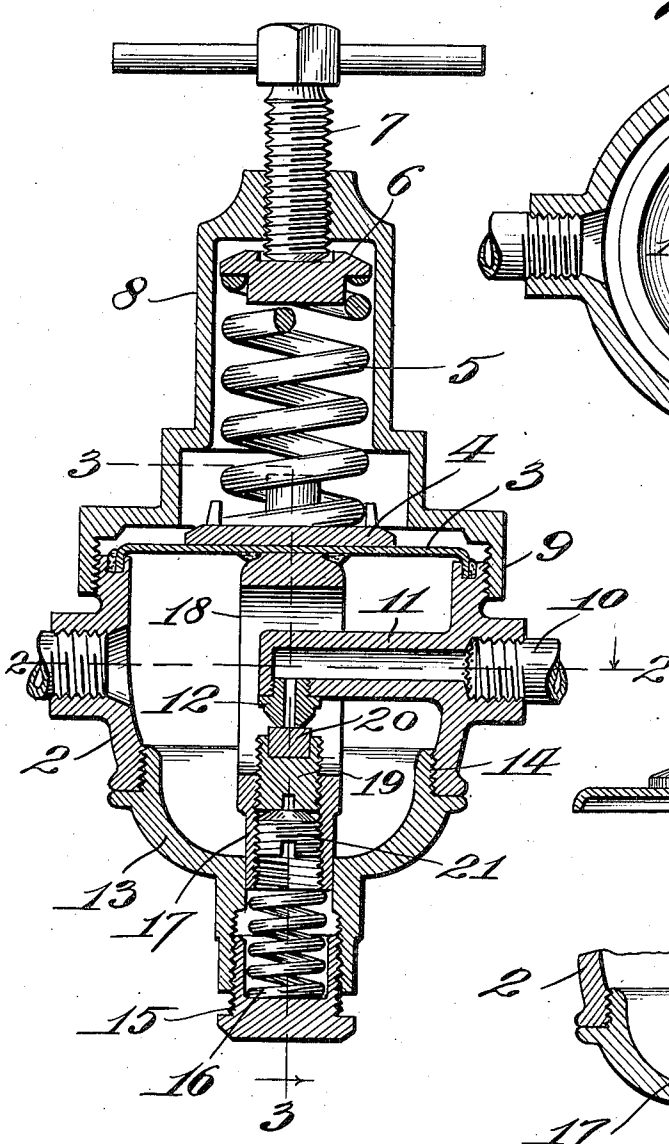


Fig. 2.

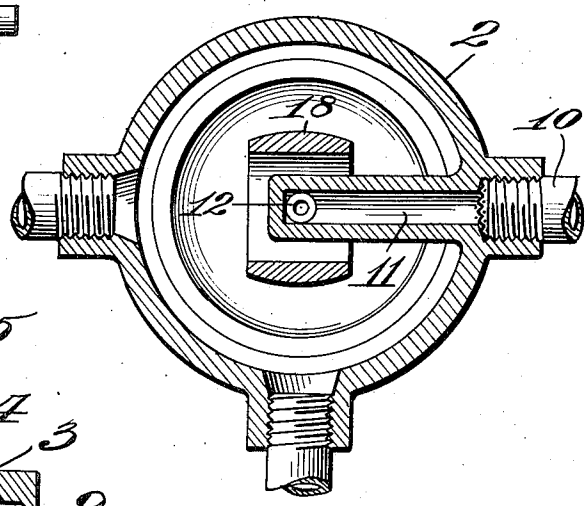
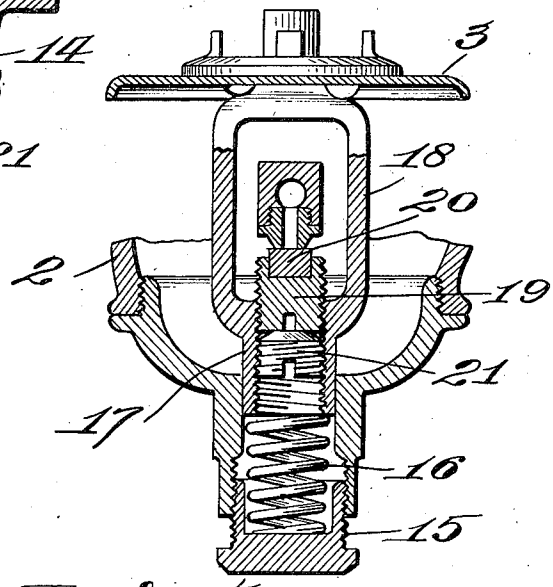


Fig. 3.



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UNITED STATES PATENT OFFICE.

BIRCHARD E. HOLTON, OF LOS ANGELES, CALIFORNIA.

PRESSURE-REGULATING VALVE.

Application filed April 15, 1922. Serial No. 552,952.

To all whom it may concern:

Be it known that I, BIRCHARD E. HOLTON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Pressure-Regulating Valves, of which the following is a specification.

This invention relates to valves and more particularly to automatically operative, pressure regulating valves, and has for its object to provide improved valve closing means of extremely simple, substantial and efficient acting construction. A further object is to provide for the thorough setting of operative parts of the valve closure and for the ready adjustment of the closure, and to provide parts of an inexpensive construction.

One embodiment of the invention is herein described and illustrated in the accompanying drawings, in which—

Figure 1 is an axial section through the valve.

Fig. 2 is a section on the plane indicated by line 2—2 of Fig. 1.

Fig. 3 is a section at right angles to the section of Fig. 1.

The present invention is embodied in a valve having a shell 2 with an annular top portion to which is hermetically secured a suitable diaphragm 3 upon the top of which is provided a spring seat 4 supporting a strong suitable spring 5 freely removable from its seat 4. The upper end of the spring is engaged by a button 6 pressed downwardly, for varying the compression of the spring, by a screw 7 which is threaded in the head of a bonnet 8 having an internally threaded flange 9 engaging the rim of the shell 2 on which is seated the diaphragm 3.

High pressure is introduced into the shell 2 from a source of supply, as by a pipe 10. The shell is provided with a goose neck port or conduit 11 leading inwardly from the supply connection 10 and having an axially arranged discharge nipple 12.

The lower end of the shell 2 is provided with a plug 13 threading at 14 into the shell. The plug 13 has an internally threaded lower end receiving a hollow plug or bushing 15 in which is seated a spring 16. The upper end of the spring is engaged by the contiguous stem 17 of a frame 18. The stem 17 slidably fits in the bore of the plug 13, while the upper end of the frame 18 is soldered or otherwise rigidly secured to the lower surface of the diaphragm 3. It will be seen, therefore, that in the assembly of the parts, the frame 18 is yieldably pressed upwardly against the diaphragm 3.

The stem 17 of the frame 18 is internally threaded from end to end, and in its upper portion is arranged an adjustably threaded plug or valve seat 19, the upper end of which is recessed to receive a valve closure or disc 20 designed to move into engagement with the end of the nipple and thus cut off the flow of fluid under pressure through the goose neck 11. After the seat member 19 has been adjusted to the requisite position with the desired pressure against the nipple 12, then it is locked in position by a follower or lock nut 21.

From the above it will be seen that when pressure is admitted through the goose neck 11 into the chamber of the shell 2, the degree of pressure in the chamber is determined by the pressure of the main spring 5 tending to push the diaphragm with its attached frame 18 downwardly as the pressure in the valve chamber falls below a predetermined degree. As the valve closure 20 is forced away from its seat on the nipple 12, fluid under pressure enters from the goose neck 11, and as the pressure in the chamber of the valve shell 2 returns to the predetermined degree it overcomes the pressure of the spring 5 by the differential action of the diaphragm 3, and the valve closure 20 is again restored to its cutting off position.

The degree of compression of the spring 16 is regulated by adjustment of the bushing 15 upon which the spring is mounted.

Various changes and modifications may be made without departing from the spirit of the invention as claimed.

What is claimed is:

An automatic pressure regulating device including a shell, a spring pressed diaphragm therein, a frame secured to the dia-

phragm, said shell having an end portion forming an elongated bearing part, said frame having a hollow stem operatively fitting said bearing and being prevented thereby from having side play; a bushing plug adjustably mounted in the said bearing part, a spring engaging the near end of said stem and the bushing, a valve plug adjustably threaded in said stem, and a lock plug in the stem, and a port member engaged by the valve plug.

In testimony whereof I have signed my name to this specification.

B. E. HOLTON.