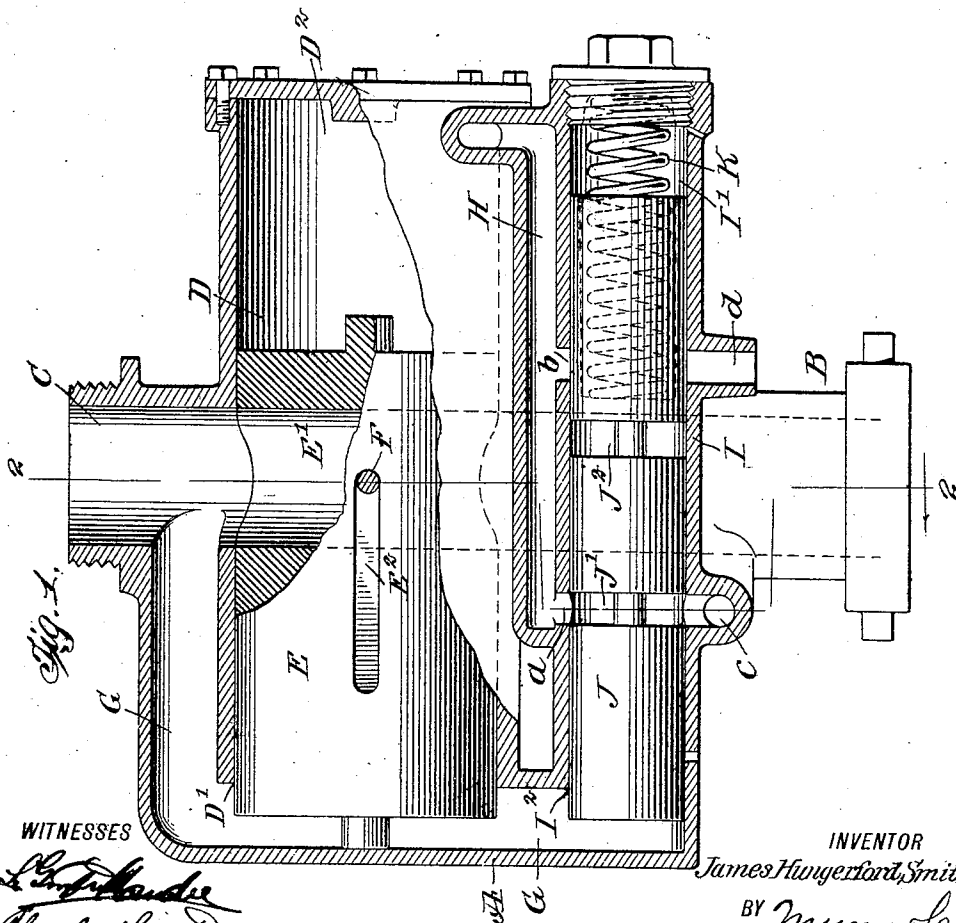
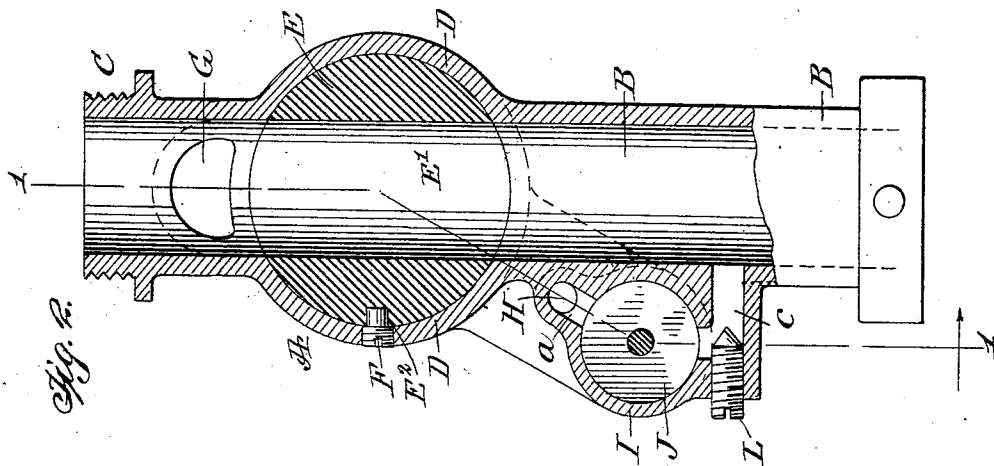


J. H. SMITH.
 AUTOMATIC PRESSURE CONTROL.
 APPLICATION FILED JAN. 15, 1909.

939,752.

Patented Nov. 9, 1909.



WITNESSES

L. E. F. F. F.
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JAMES HUNGERFORD SMITH, OF ROCHESTER, NEW YORK.

AUTOMATIC PRESSURE CONTROL.

939,752.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed January 15, 1909. Serial No. 472,442.

To all whom it may concern:

Be it known that I, JAMES HUNGERFORD SMITH, a citizen of the United States, and a resident of Rochester, in the county of Monroe and State of New York, have invented a new and improved Automatic Pressure Control, of which the following is a full, clear, and exact description.

The invention relates to pressure reducing valves, and its object is to provide a new and improved automatic pressure control, more specially designed for use in connection with fire hose and fire hydrants, and arranged to permit the fireman to control the pressure to any desired degree by opening or closing the nozzle correspondingly. For the purpose mentioned, use is made of a cut-off valve located at the hydrant and having its outlet connected with the hose, so that on closing the nozzle gradually or abruptly a corresponding automatic closing of the cut-off valve takes place, and on opening the nozzle a corresponding opening of the valve is had.

A practical embodiment of the invention is represented in the accompanying drawings forming part of this specification, and in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a sectional side elevation of the improvement on the line 1—1 of Fig. 2; and Fig. 2 is a transverse section of the same on the line 2—2 of Fig. 1.

The valve casing A is provided with an inlet B and an outlet C, of which the inlet B is arranged for connection with a hydrant and the outlet C is arranged for connection with a fire hose having the usual nozzle for controlling and directing the stream of water. A main cylinder D intersects the aligned inlet B and the outlet C, and in the said main cylinder D reciprocates a main piston valve E, having a diametrical or transverse bore E', adapted to connect or disconnect the said inlet B and the said outlet C, and in the peripheral face of the said main piston valve E is arranged a longitudinal groove E², into which projects a pin F, screwed or otherwise secured to the casing A to hold the main piston valve E from turning.

The open end D' of the cylinder D opens into a chamber G connected with the outlet C, and the other closed end D² of the cylinder D connects with a channel H, from

which lead ports a and b into an auxiliary cylinder I, arranged on the valve casing A and preferably parallel to the main cylinder D. The auxiliary cylinder I connects by a port c with the inlet B, and from the said auxiliary cylinder I leads an exhaust port d to the outside. The port c is in transverse alinement with the port a and the exhaust port d is in similar alinement with the port b.

In the auxiliary cylinder I reciprocates an auxiliary piston valve J, pressed on at its right hand end by a spring K, held in the closed end I' of the said auxiliary cylinder I, the other end I² of which opens into the chamber G previously mentioned. The auxiliary piston valve J is provided with the grooves J', J², of which the groove J' serves to connect the ports a and c with each other, while the groove J² serves to connect the ports b and d with each other; the grooves J' and J² being, however, so arranged that when the groove J' connects the ports a and c with each other, the other groove J² is disconnected from the ports b and d.

A screw L screws in the casing A and extends into the port c to restrict the latter to any desired degree.

The operation is as follows: When the nozzle in the fire hose is open to its full extent, the several parts are in the position shown in the drawings, that is, the bore E' is in full register with the inlet B and the outlet C, so that the water flows under hydrant pressure to the bore and out of the nozzle. Now when the fireman in charge of the hose gradually closes the nozzle, then a back pressure is produced in the hose and in the chamber G, so that the pistons E and J are moved to the right to disconnect the closed end D² of the main cylinder D from the inlet B and to connect the said closed end D² with the outside by way of the channel H and ports b and d. The movement of the main piston valve E to the right causes a corresponding closing of the connection between the inlet B and the outlet C, and a consequent reduction of pressure in the bore and nozzle takes place. When the nozzle is opened, a reduction of pressure takes place in the hose and chamber G, and the spring K now returns the auxiliary piston valve J to its former position, so that the closed end D² of the main cylinder D is again connected with the inlet B, and consequently the high

pressure from the hydrant causes the main piston valve E to move to the left back to its former position.

It is evident that on gradually closing or opening the nozzle, a corresponding gradual closing or opening of the main piston valve E takes place, and if the nozzle is suddenly closed, then the main piston valve E and the auxiliary piston valve J respond correspondingly.

By restricting the port *c* more or less by the use of the pin L, the return movement of the main piston E is rendered comparatively slow, and at the same time the left end of the said main piston E is prevented from striking the casing with a severe blow.

From the foregoing it will be seen that an automatic cut-off valve is provided which depends on its action on the opening and closing of the nozzle by the fireman in charge of the hose, and the cut-off valve is rendered exceedingly sensitive and relieves the hose of all undue pressure, recoil or hammering. It is understood that the main piston valve E closes completely without resistance, when the nozzle is closed sufficiently to increase the hose pressure to whatever predetermined degree the automatic cut-off valve is set and at which point the closing action is desired. It is also understood that the main piston valve E opens under pressure from the high pressure or hydrant side of the valve, but as this pressure is controlled by the throttling pin L the

opening of the said main piston valve E is gradual.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

In a device of the class described, a cut-off valve comprising a casing provided with an inlet having means whereby it may be connected with the hydrant and with an outlet having means whereby it may be connected with a fire hose, a main piston valve movable transversely of the casing and provided with an opening for placing the inlet in communication with the outlet, a connection between the hydrant side of the casing and one end of the piston valve for moving the same in one direction, a connection between the fire hose side and the other end of said valve for moving it in the opposite direction, a controlling piston valve beyond the main piston valve, and provided with means controlling the last named connection, a connection between the hydrant side of the casing and one end of said controlling valve for moving it in one direction, and a spring at the other end for moving it in the opposite direction.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES HUNGERFORD SMITH.

Witnesses:

IDA A. ZIMMER,
C. P. DOWNS.