

P. D. HIBNER.
VALVE.
APPLICATION FILED NOV. 25, 1918.

1,361,581.

Patented Dec. 7, 1920.

Fig. 1.

Fig. 2.

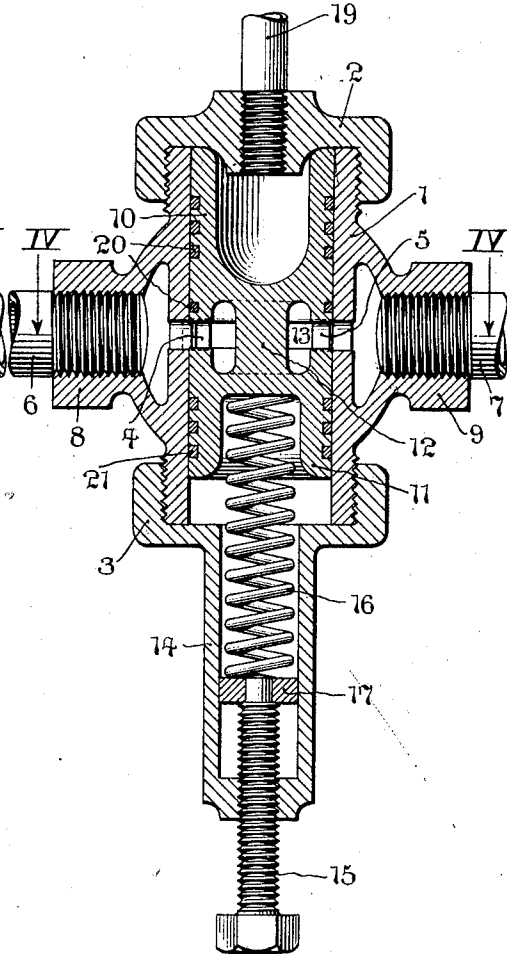
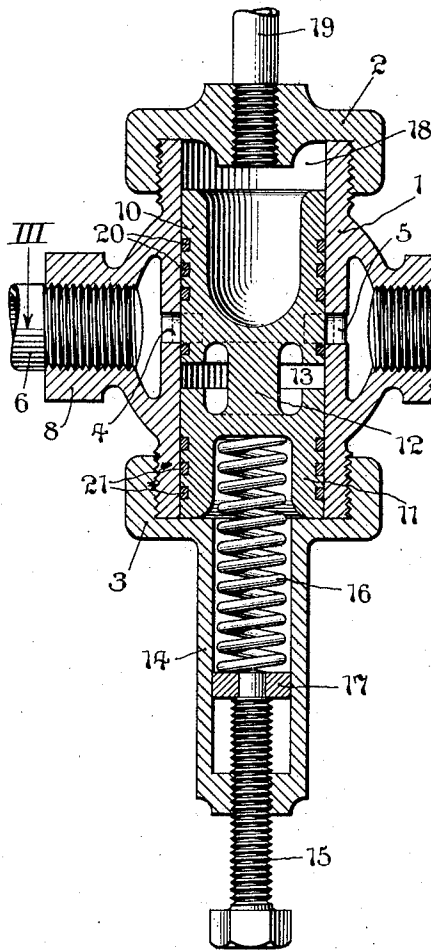
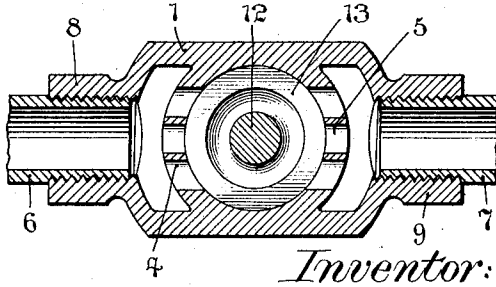
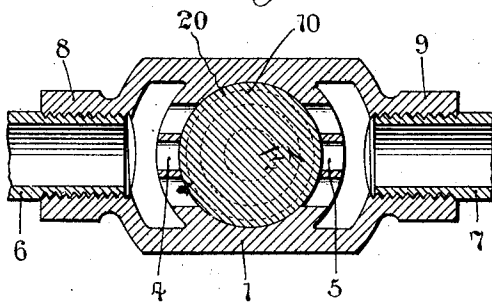


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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VALVE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PHILIP D. HIBNER, a citizen of the United States, and resident of the county of King, city of Seattle, and State of Washington, have invented a new and useful Improvement in Valves, of which the following is a specification.

The object of my invention is to provide automatic means for closing a high pressure fluid supply line such for instance as a compressed air supply line when a low pressure fluid, such as a combustible gas, rises to a predetermined point, the operation of said means being under the control of said low fluid pressure.

My invention more specifically comprises a low pressure fluid controlled valve located in a high pressure fluid supply line, the valve cylinder having oppositely arranged high pressure fluid inlet and outlet ports and the double headed valve piston which works in said cylinder having an adjustable spring exerting its pressure on one end of the piston in a direction for moving the piston to hold the high pressure fluid supply line open when the low fluid pressure is below a predetermined point, the said cylinder having a low pressure fluid supply port by which pressure may be exerted on the other end of the piston to move the same against its spring pressure for closing the high pressure fluid supply line when the low fluid pressure rises to a predetermined point, the said high fluid pressure exerting its pressure equally toward both ends of the piston when passing through the piston.

In the accompanying drawings:

Figure 1 represents my improved valve in longitudinal central section with the parts in the positions they assume when the low fluid pressure is raised sufficiently to move the valve piston to shut off the high pressure fluid supply line.

Fig. 2 represents a similar view with the parts in the position they assume when the low fluid pressure is dropped to a point which will permit the piston to be moved by the spring to open the high pressure fluid supply line.

Fig. 3 represents a section taken in the plane of the line III—III of Fig. 1 and

Fig. 4 represents a section taken in the plane of the line IV—IV of Fig. 2.

The valve casing includes a cylinder 1 having the removable heads 2 and 3. The opposite side walls of the cylinder 1 have

inlet and outlet ports 4 and 5 therethrough in open communication with their respective tubes 6 and 7 of the high pressure fluid supply line. These tubes are shown as screwed into hollow bosses 8 and 9 of the valve casing in alinement with said inlet and outlet ports.

The valve piston which works in the cylinder 1 for opening and closing the high pressure fluid inlet and outlet ports 4 and 5 has two ends 10 and 11 connected by a neck 12 forming a circumferential port 13.

The cylinder head 3 of the valve casing is shown as having a hollow axial extension 14 through the end of which passes an adjusting screw 15. An expansion spring 16 is located between the piston head 11 and a disk 17 on the inner end of the adjusting screw 15.

The space 18 between the piston end 10 and the cylinder head 2 is at all times in open communication with low fluid pressure through a tube 19 herein shown as screwed into the cylinder head 2.

If desired the piston ends 10 and 11 may be provided with piston rings 20, 21 to prevent leakage of the high pressure fluid and to reduce the friction between the piston and the cylinder.

In operation; the spring 16 serves to hold the piston in position to bring its port 13 opposite the high pressure fluid inlet and outlet ports 4 and 5 to open the high pressure fluid supply line. When the low fluid pressure rises to a predetermined point it will move the piston against the pressure of the spring 16 sufficiently to close the inlet and outlet ports 4 and 5 of the high pressure fluid supply line. This result may be accomplished at different low pressures by adjusting the tension of the spring 16 by turning the screw 15.

It will be seen that I have provided a very simple and effective valve in which the opening and closing of the high pressure fluid supply line may be controlled by a low fluid pressure, the arrangement of the parts being such that the low fluid pressure does not have to work against the high fluid pressure for the reason that the high pressure fluid as it passes through the piston port exerts its pressure equally toward both ends of the piston, thus permitting the piston to be moved in either direction easily by the overbalancing of the spring or low fluid pressures.

It is evident that various changes may be made in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention. 5 hence I do not wish to limit myself to the particular construction herein set forth, but

What I claim is:

1. A valve casing including a cylinder 10 having high fluid pressure inlet and outlet ports through its side walls, and a double ended piston valve working in said cylinder. spring means exerting pressure on one end of said piston to move it to open said ports, 15 and means for admitting low pressure fluid into said cylinder to exert pressure on the other end of said piston, said piston being moved to close said ports when the low fluid pressure rises to a predetermined point. 20

2. A valve casing including a cylinder

having high fluid pressure inlet and outlet ports through its side walls, a double ended piston valve working in said cylinder, heads for the opposite ends of the cylinder, one head having a low fluid pressure port opening into the cylinder chamber to admit low fluid pressure to one end of the piston, tending to move it to close the high fluid pressure ports, the other head having a hollow axial extension opening into the cylinder 30 chamber, and a spring located partly in said extension and partly in the cylinder chamber, bearing against the opposite end of the piston and tending to move it to open the high fluid pressure ports. 35

In testimony, that I claim the foregoing as my invention, I have signed my name this 21st day of November, 1918.

PHILIP D. HIBNER.