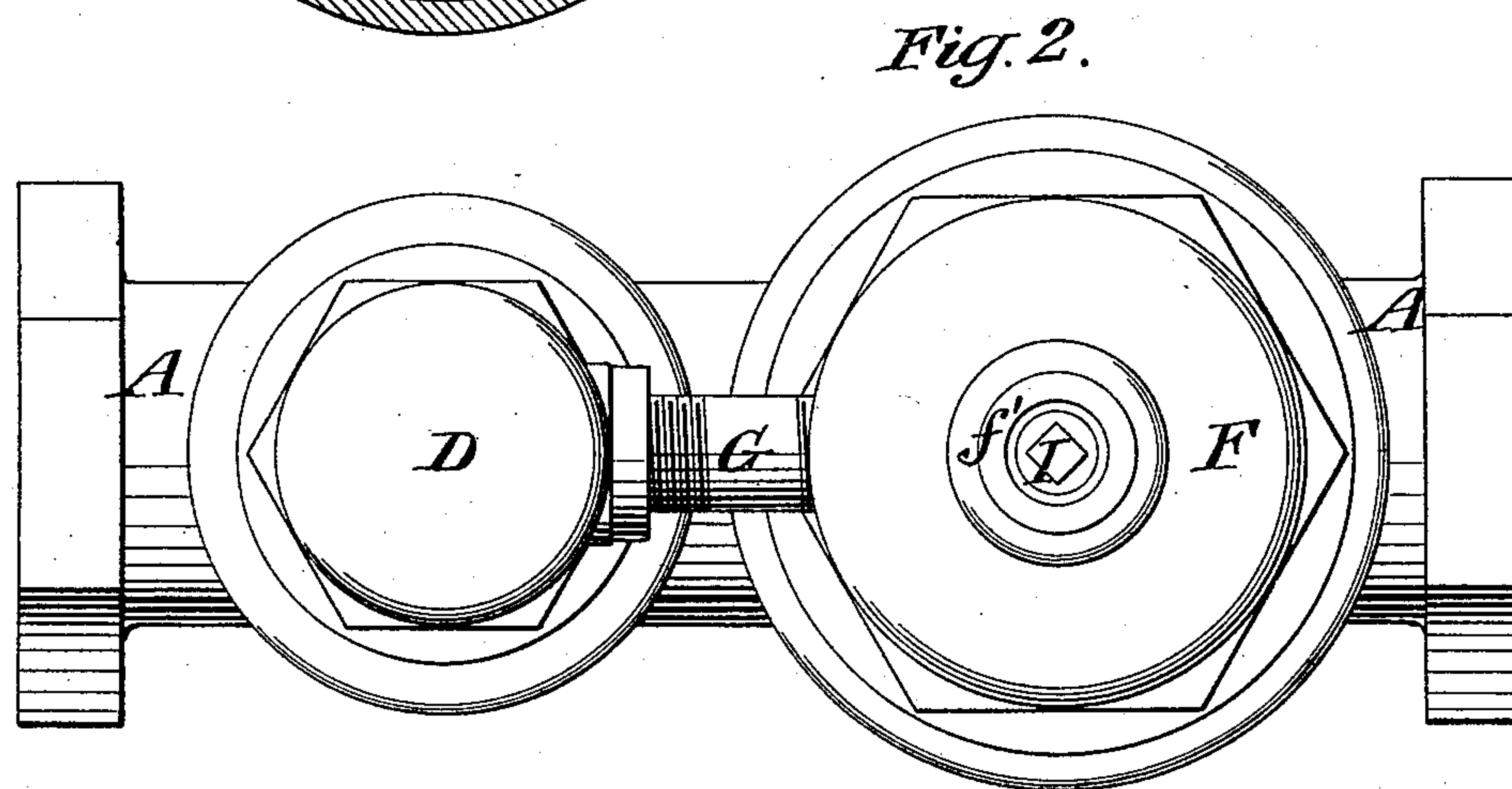
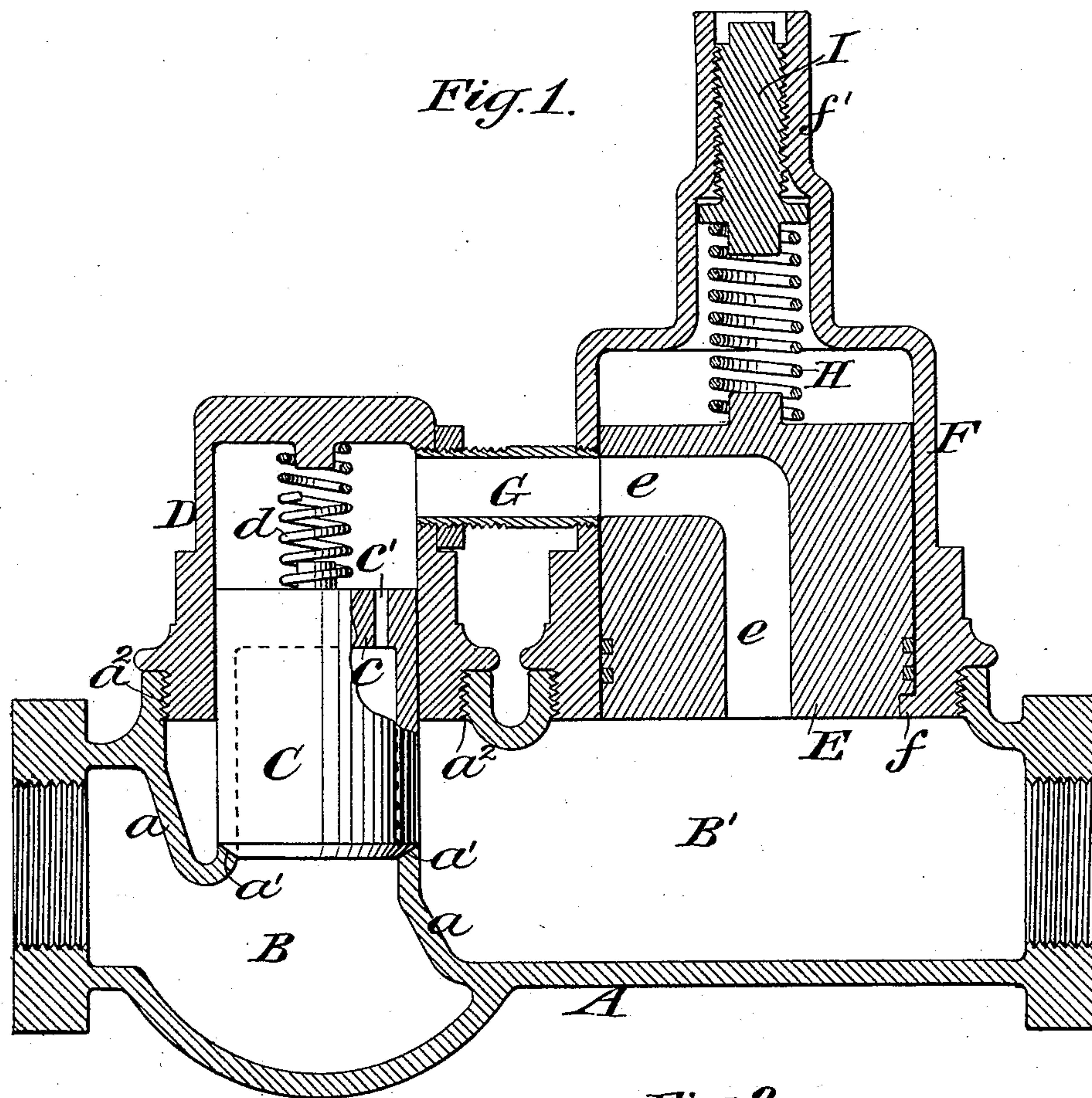


(No Model.)

E. J. WOOD.  
REDUCING PRESSURE VALVE.

No. 489,515.

Patented Jan. 10, 1893.



*Witnesses:*

*C. Sundgren*  
*R. H. Haywood*

*Inventor:*  
*Edgar J. Wood*  
*by attorneys.*

*Frederick Lewis*



# UNITED STATES PATENT OFFICE.

EDGAR J. WOOD, OF BROOKLYN, NEW YORK.

## REDUCING-PRESSURE VALVE.

SPECIFICATION forming part of Letters Patent No. 489,515, dated January 10, 1893.

Application filed June 14, 1892. Serial No. 436,654. (No model.)

*To all whom it may concern:*

Be it known that I, EDGAR J. WOOD, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful  
5 Improvement in Reducing-Pressure Valves, of which the following is a specification.

My invention relates to an improvement in reducing pressure valves in which the increase of pressure on the low pressure side of  
10 the valve beyond a predetermined degree operates a cut off, producing a tendency to equalize the pressure upon the opposite sides of the main valve and thereby permits the valve to approach its seat and reduce the  
15 pressure on the low pressure side.

A practical embodiment of my invention is represented in the accompanying drawings in which,

20 Figure 1 represents the valve in longitudinal section, and Fig. 2 represents a top plan view.

A represents a coupling section provided with a diaphragm *a* across its interior, dividing it into the high pressure chamber B and  
25 the low pressure chamber B'. The diaphragm *a* has an opening therein around the margin of which is a valve seat *a'*.

The valve C is of the piston type and is preferably formed hollow, its end toward the  
30 seat being open and its opposite end closed by a head *c*. The valve C is arranged to slide up and down within a socket piece or barrel D tapped into an opening *a*<sup>2</sup> in the side of the coupling section A opposite the valve  
35 seat *a'*. The valve C is held normally toward its seat either by gravity or by a spring *d* between its head and the top of the barrel D, or by both, according to the position which the coupling section A may occupy. A small  
40 opening *c'* through the head of the valve C permits a gradual escape of the fluid from the high pressure side of the valve to the opposite side of the valve.

A piston valve E is seated within a barrel  
45 or casing F tapped into the side of the coupling section A. The piston valve E is provided with a port *e* which normally communicates at one end with the low pressure chamber B' and at its opposite end with a  
50 passage way G leading to the interior of the barrel D at the back or low pressure side of the valve C. The piston valve E is limited

in its movement toward the low pressure chamber B' by a shoulder *f* or other suitable stop on the casing F and is under tension  
55 tending to hold it in contact with said stop *f*, either by its own weight or by a spring H or by both, according to the position which the coupling section may occupy. The spring H is engaged at one end with the back of the valve  
60 E and at its opposite end with the inner end of a screw threaded plug I, which latter is engaged with the interior thread formed in the hollow stem *f'* of the casing F. By screwing  
65 the plug I in or out and hence increasing or diminishing the tension of the spring H, the pressure upon the piston valve E may be increased or diminished, as may be desired.

In operation, the fluid under pressure having been admitted to the high pressure chamber B, will lift the valve C and pass through  
70 into the low pressure chamber B' and thence to the point where it is to do its work. So long as the pressure in the low pressure chamber B' remains at a degree equal to or lower  
75 than the predetermined limit, the piston valve E will remain seated against the stop *f* and such of the fluid as may escape through the small opening *c'* in the head of the valve C will pass through the passage way G and port  
80 *e* into the low pressure chamber B'. When, however, the pressure in the low pressure chamber B' rises above the predetermined degree, it will lift or press outwardly the piston valve E and will thereby cut off the free communication between the passage way G and  
85 the port *e* and this in turn will cause the fluid escaping through the small opening *c'* in the head of the valve C to accumulate on the opposite side of the valve C and thereby tend  
90 to equalize the pressure upon the opposite sides of said valve C, which will cause the valve C to approach its seat under the pressure of its spring *d* or weight or both. As the valve C approaches its seat it cuts off or reduces the supply of fluid to the low pressure  
95 chamber B' which, as it becomes reduced, will again permit the piston valve E to slide toward the stop *f* thereby opening communication between the passage way G and the port  
100 *e* and again place the valve C under the control of the fluid in the high pressure chamber B. From the above it will be observed that the valve C is under the control of the piston

valve E which in turn is under the control of the pressure of the fluid in the low pressure chamber B' to keep the pressure therein below a predetermined degree.

5 It is obvious that the particular arrangement of the valves C and E with respect to each other and to the coupling section is a matter of no great importance so that communication between the two be opened and cut  
10 off under the varying pressures within the low pressure chamber B'.

What I claim is:

15 In combination, a high pressure chamber, a low pressure chamber, a main valve under the control of the fluid in the high pressure chamber to open communication for the passage of the fluid, a piston valve independent

of the aforesaid main valve and permanently exposed directly to the pressure of the fluid in the low pressure chamber, pressure regulating means in connection with the piston valve for determining the pressure under which it shall operate, a chamber at the back of said main valve in permanent communication with the high pressure chamber and a passage 25 way from the said chamber at the back of the main valve through the wall of the piston valve casing and through the piston valve itself to the low pressure chamber, substantially as set forth.

EDGAR J. WOOD.

Witnesses:

FREDK. HAYNES,  
I. B. DECKER.