

No. 818,411.

PATENTED APR. 24, 1906.

C. A. BUSH.
BACK PRESSURE VALVE.
APPLICATION FILED DEC. 24, 1904.

Fig. 2.

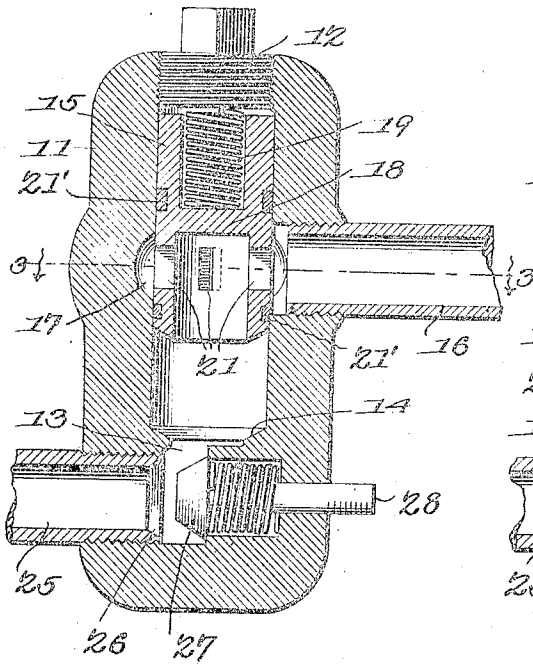


Fig. 1.

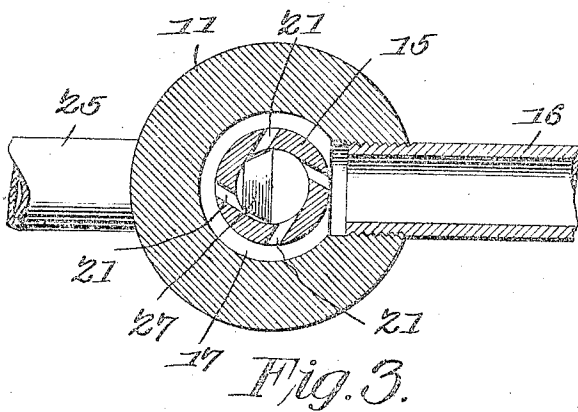
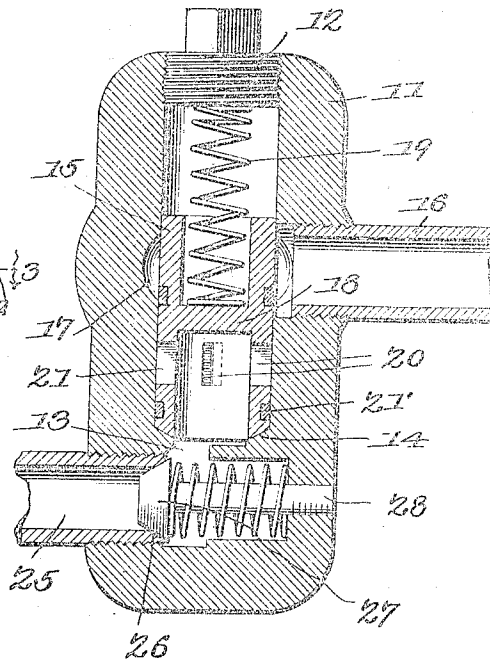


Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES ADAMS BUSH, OF NORTH EAST, PENNSYLVANIA.

BACK-PRESSURE VALVE.

No. 818,411.

Specification of Letters Patent.

Patented April 24, 1906.

Application filed December 24, 1904. Serial No. 238,233.

To all whom it may concern:

Be it known that I, CHARLES ADAMS BUSH, a citizen of the United States, residing at North East, in the county of Erie and State of Pennsylvania, have invented a new and useful Back-Pressure Valve, of which the following is a specification.

This invention relates to valves of that type which open under the pressure of fluid in one direction and which are movable to closed position when the pressure ceases or falls below a predetermined point.

The principal object of the invention is to provide a novel form of valve in which friction is reduced to a minimum and in which the parts are so arranged that the valve will be slightly turned each time it is opened in order to form a tight joint between the valve and its seat.

A still further object of the invention is to provide a valve of this type in which the back pressure cannot tend to move the valve from open to closed position.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claim, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a sectional elevation of a valve constructed in accordance with the invention. Fig. 2 is a similar view of the same, showing the valve in open position. Fig. 3 is a sectional plan view of the valve on the line 3-3 of Fig. 2.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The valve is arranged within a casing 11, that is bored to form a cylinder, the upper end of which is closed by an adjustable plug 12. In the lower portion of the casing is an opening 13, through which fluid under pressure is admitted to the cylinder, and between the circular wall of this opening and the bore of the cylinder is an inclined valve-seat 14, on which rests the correspondingly-shaped lower end of an approximately cup-shaped valve 15. From one side of the cylinder

leads an outlet-pipe 16 for the passage of the fluid from the casing, and at a point in alignment with said pipe the diameter of the cylinder is enlarged, forming a continuous annular groove 17, that will permit the free passage of said fluid.

The valve 15 has a transverse partition 18, against the upper side of which bears a helical compression-spring 19, the stress of which may be adjusted by the plug 12. In the circular wall of the valve at a point below the partition 18 are arranged a number of ports or passages 21, which extend on lines non-radial of the valve, thus presenting inclined walls which are acted upon by the steam or other fluid each time the valve is opened, and said valve is thus rotated, and the same parts of the valve and seat will not come into contact at any two consecutive closings of the valve. By this means the wear is rendered more uniform and neither the valve nor its seat will require frequent regrinding.

On the exterior of the valve are packing-strips 21', which may be set in suitable annular grooves formed in the valve, the number of packing-rings being increased or diminished in accordance with the pressure and character of the fluid being controlled.

In operation the fluid under pressure acts on the partition 18 and moves the valve up to the position shown in Fig. 2, so that the fluid can pass through the ports 21 to the channel 17 and thence to the outlet 16. When the pressure is cut off or is reduced beyond a predetermined point, the valve will be moved to closed position partly by gravity and partly by the stress of the spring 19.

In the lower portion of the casing is an inlet 25 for the fluid under pressure, and this inlet is provided with a seat 26 for a spring-closed valve 27, that opens under pressure. The stem 28 of this valve is extended out through a suitable opening in the side of the casing and constitutes an indicating device for determining the pressure of the fluid, said stem being provided with graduations, if necessary.

Having thus described the invention, what is claimed is—

In combination, a cylindrical valve-casing having at one end an entrance-port, and at one side a discharge-port, the inner wall of the casing having an annular groove in communication with said discharge-port, and the lower portion of said casing being reduced in diameter to form an annular valve-seat, a

cylindrical valve arranged within said casing, said valve being provided with end recesses separated by a solid imperforate partition, the wall of the valve below the partition being provided with discharge-ports arranged on lines tangential with respect to the valve, and the upper recess being arranged to receive one end of a valve-closing spring, that portion of the valve above the tangential ports serving to entirely close the annular groove and the discharge-port when the

valve is on its seat, a valve-closing spring, and means for adjusting the stress of said spring.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES ADAMS BUSH.

Witnesses:

SAML. G. SWEET,
A. L. BUSH.