

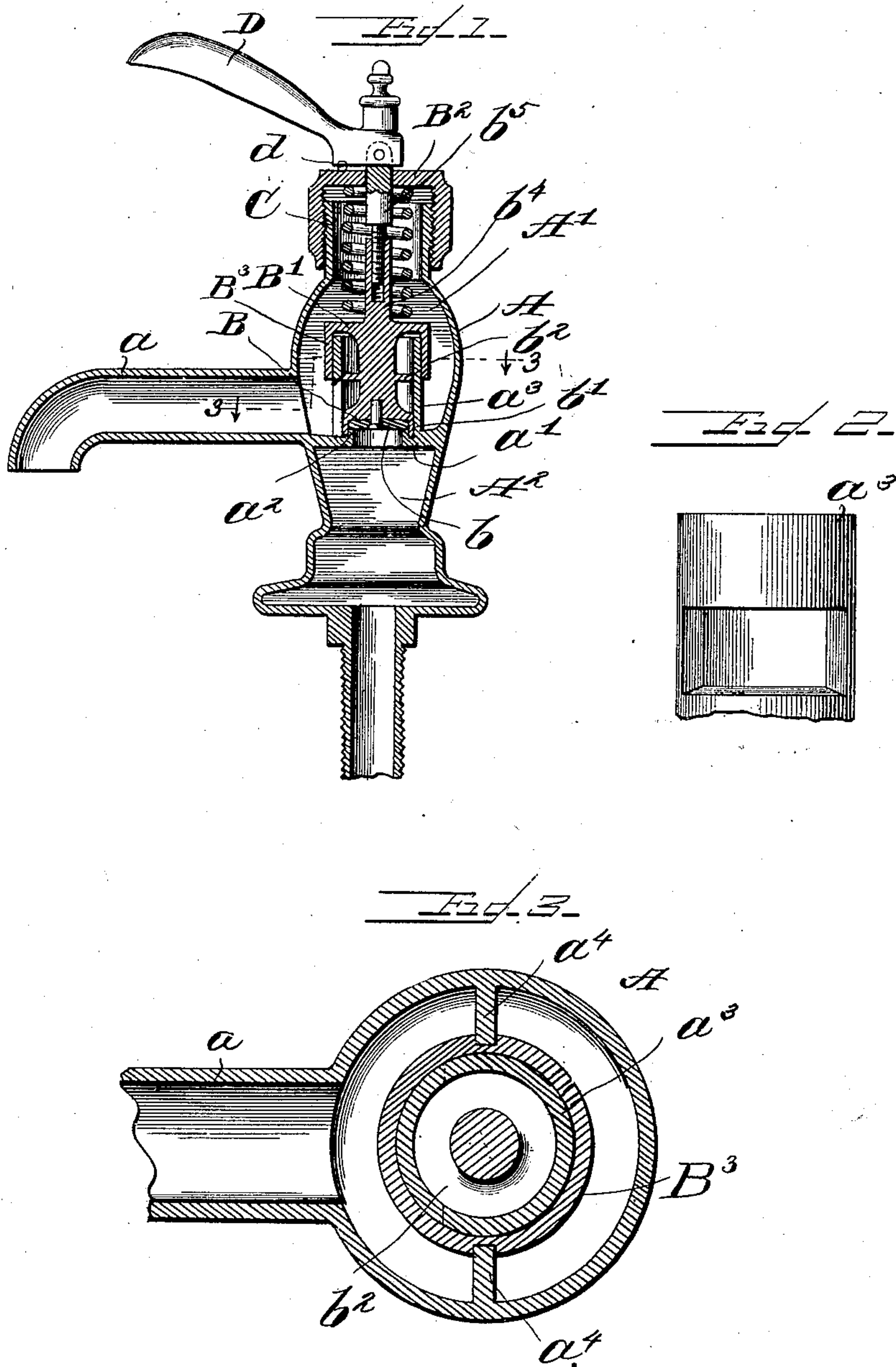
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PATENTED MAR. 22, 1904.

A. O'BRIEN.
AUTOMATIC SIPHON VALVE.

APPLICATION FILED JAN. 23, 1902.

NO MODEL.



WITNESSES

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AUTOMATIC SIPHON-VALVE.

SPECIFICATION forming part of Letters Patent No. 755,036, dated March 22, 1904.

Application filed January 23, 1902. Serial No. 90,911. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR O'BRIEN, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Automatic Siphon-Valves; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in automatic siphon-valves, and is shown for convenience embodied in a basin cock or faucet so constructed as to close automatically against the pressure of the fluid to be controlled and provided with means for regulating its operation to any desired pressure. Heretofore many different self-closing valves have been constructed, some of which are objectionable owing to the difficulty in satisfactorily packing the same to insure successful operation.

The object of this invention is to provide an automatic and perfectly-regulable valve so constructed as to entirely avoid the necessity for packing of any kind whatsoever.

This invention consists in matters more fully described, and pointed out in the appended claims.

As shown in the drawings, Figure 1 is a vertical section of a device embodying my invention, showing the same embodied in a basin-cock. Fig. 2 is an enlarged front elevation of a valve-cylinder within which the valve seats. Fig. 3 is a section taken on line 3 3 of Fig. 1.

As shown in said drawings, A indicates the faucet-body provided with the nozzle a and divided horizontally into an upper and a lower chamber A' and A'' , respectively, by an apertured partition a' , and an upwardly-extending relatively short sleeve a^2 registers with said aperture. Concentric with the sleeve a^2 is the upwardly-extending valve-cylinder a^3 , of greater length, which is apertured on the side adjacent to the nozzle, as shown in Figs. 1 and 2, the upper wall of said aperture being downwardly and outwardly inclined.

B indicates the valve-closure, as shown,

countersunk on its lower end to receive the washer b and providing a flange b' , which extends below said washer and when the valve is closed fitting closely outside of the sleeve a^2 . A valve-stem rigidly secured on the closure extends upwardly within the valve-cylinder a^3 and is provided with a peripheral flange b^2 , integral therewith, which fits closely within said valve-cylinder a^3 and is so located that when the valve-closure is in position to close the valve said flange lies slightly above the top of the opening to the valve-cylinder. Above the valve-cylinder a^3 is provided the deflecting-guide B' , also integral with the stem and provided with a downwardly-extending peripheral flange B^3 , which for a part of its circumference fits closely around the valve-cylinder a^3 . The upper ends of the stem (indicated by b^4) is screw-threaded.

The upper end of the valve-casing is open to permit the insertion therethrough of the valve-stem and parts thereon and is provided with screw-threads, as shown in Fig. 1, adapted to engage the complementary interior screw-threads of the cap B^2 . A central angular aperture is provided in said cap adapted to receive the adjusting-shaft b^5 , which is screw-threaded at its lower end complementally with and to engage the screw-threaded end of the stem b^4 .

C indicates a strong coil-spring which engages on the inner side of the cap and on the top of the deflecting-guide B' and acts to hold firmly the valve seated in its closed position against the pressure of the fluid.

D indicates an operating-lever pivoted on the adjusting-shaft b^5 above the cap and provided with a ball, roller, or other antifriction device permanently secured thereto, which affords a fulcrum for the operation of said lever in lifting the valve-closure.

The operation is as follows: The valve being adjusted to withstand the desired pressure against the tension of the spring C, when the valve-closure is lifted by the lever the fluid jets outwardly through the aperture in the valve-cylinder a^3 into the nozzle. If the valve-closure is lifted but slightly, the downwardly-depending flange b' on said closure acts to de-

flect the fluid downwardly toward the orifice, preventing any portion thereof finding its way upwardly in the chamber A'. Obviously the same effect is produced at any position of the valve-closure less than the vertical height of the aperture in the valve-cylinder a^3 . When the valve-closure is elevated to its greatest height, or, in other words, to the maximum capacity of the valve, the downwardly-inclined upper wall of the aperture serves to deflect the fluid, as before described, and by causing a downwardly-directed current concentrates the flow in the direction of the orifice, or, in other words, in the line of least resistance. The flange b^2 , fitting closely within the valve-cylinder a^3 , serves as a deflector and provides an annular chamber in the top of the casing, in which, as well as in the upper part of the chamber A', a partial vacuum is produced, causing an inflow of air from above and preventing upflow of the water or other fluid passing through the valve. Said flange also serves as a guide. The deflecting-guide B' also acts to direct any fluid finding its way past the flange b^2 downwardly to the spout-orifice and acts to hold the valve-stem from unscrewing from the adjusting-shaft by means, as shown, of vertical guides a^4 , integral with the casing, engaging in complementary grooves in the flange B³ of said deflector.

In adjusting the valve to reduce or increase its resistance to pressure the cap B² is screwed up or down on the top of the casing, thereby varying the tension on the spring and at the same time adjusting the adjusting-shaft on the valve-stem, said cap and adjusting-shaft being similarly threaded to insure equal vertical adjustments.

While I have shown the invention embodied in a basin-cock, it is obvious that valves constructed as described may be embodied in many different forms and devices and used for any purpose in which it is desired to employ a pressure-operated valve without packing, and I do not desire to be restricted or limited to the specific embodiment of my invention as herein shown.

Obviously the details of construction may be varied without departing from the principles of my invention.

I claim as my invention—

1. In a valve, the combination with a two-chambered valve-casing, of a valve-seat through which the chambers communicate, a valve-closure seated thereon, a peripheral flange on the valve-closure seating below the same, a valve-cylinder inclosing the valve closure and seat, and apertured adjacent to the discharge-orifice and a deflector movable with the valve-closure and acting to direct fluid toward the discharge-orifice.

2. In a valve, the combination with the casing comprising an inner and an outer chamber, a passage through which the chambers

communicate, a valve-closure seated to close said passage, a valve-cylinder integral with the casing surrounding said valve-closure, and provided with an aperture directed toward the valve-orifice and so formed as to converge the fluid therein and a deflector located above said aperture and acting to deflect the fluid toward the orifice.

3. In a valve, the combination with a valve-casing having an unobstructed delivery, of a valve seated therein and comprising a valve-seat, a valve-closure therefor, a peripheral flange on the valve-closure extending below the valve-seat, a valve-cylinder inclosing the valve seat and closure, a deflecting-guide movable with the valve-closure and engaging over the valve-cylinder, and an aperture in the valve-cylinder directed toward the orifice and formed to converge the flow into the orifice.

4. The combination with a two-chambered valve-casing, of a sleeved passage connecting the chambers, a valve-closure seated thereon, a flange thereon extending below the top of the sleeve, a valve-cylinder inclosing the valve-closure and provided with an aperture opening toward the orifice and formed to converge the fluid thereinto, a deflecting-guide within said valve-cylinder located normally above said aperture and a guide-deflector located normally above the valve-cylinder and held from rotation by parts on the casing.

5. In a valve of the class described, a casing comprising an inner and an outer chamber, a valve-closure therein, deflecting means acting to converge the flow into the discharge-orifice, an upwardly-extending stem on the valve-closure, an adjustable cap on the casing, an adjusting-shaft adjustably engaged on the stem, a spring engaged in the cap and acting to hold the valve closed, said cap and adjusting-shaft being adapted for simultaneous adjustment, to vary the tension of the spring.

6. In a valve, the combination in a casing comprising inner and outer communicating chambers, the outer having an unobstructed delivery-orifice, of a valve-closure in the passage between the chambers, deflecting means adjacent thereto acting to converge the flow into the discharge-orifice, a stem on said closure, a cap adjustably secured on the casing and forming the top of the outer chamber, an adjusting-shaft passing through the cap and adjustably engaging the stem, a spring engaging against the cap and acting to close the valve, means on the adjusting-rod for lifting the valve-closure, and means for adjusting the cap and adjusting-shaft simultaneously to vary the tension of the spring.

7. In a valve, the combination with the valve-casing, of a reciprocating valve-closure thereon, deflecting means acting to converge the flow into the spout-orifice, an adjustable cap forming the top of the casing, a spring engaged in the cap and acting to hold the valve closed, an adjusting-shaft passing through the

cap and adjustably connected with the valve-closure, means for adjusting the cap and adjusting the shaft simultaneously to vary the tension of the spring, and a lever pivoted on the outer end of the adjusting-shaft and adapted to actuate the valve.

8. In a valve of the class described, the combination with the valve-casing, of a cap thereon, an adjusting-shaft extending through and positively engaged in the cap and connected with the valve-closure, a spring engaged in the cap and acting to hold the valve closed, said cap and adjusting-shaft being similarly screw-threaded with the casing and valve-clo-

sure whereby rotation of the cap serves to adjust the tension of the spring and vary the adjustment of the adjusting-shaft, and a lever engaged on the adjusting-shaft and bearing at all times upon the cap by means affording an antifriction-bearing.

In witness whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

ARTHUR O'BRIEN.

In presence of—

C. W. HILLS,

W. F. SARGENT.