(No Model.)

F. E. MORRILL.

VALVE FOR SIPHON BOTTLES.

No. 565,173. Patented Aug. 4, 1896.

Fig. 1.

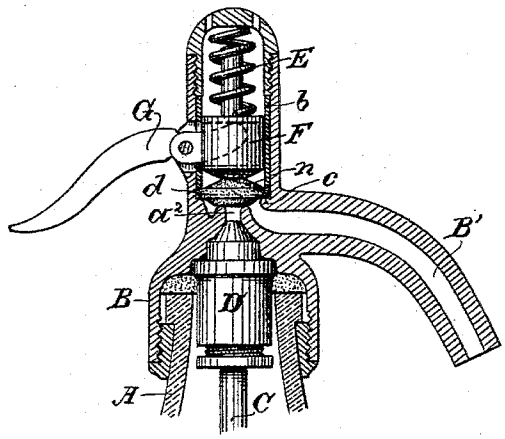


Fig. 2.

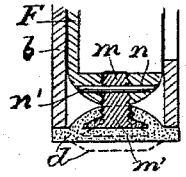
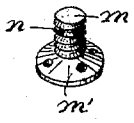


Fig. 3.



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VALVE FOR SIPHON-BOTTLES.

SPECIFICATION forming part of Letters Patent No. 565,173, dated August 4, 1896.

Application filed April 9, 1896. Serial No. 586,781. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. MORRILL, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Valves for Siphon-Bottles; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in valves for that class of bottles which are adapted to contain effervescent liquids under pressure and which are known as "siphon-bottles."

It consists in certain details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of the neck and head of the bottle, showing the valve closed. Fig. 2 shows the valve open. Fig. 3 is an enlarged view of the metallic valve-center.

Various forms of valves have been employed in this class of bottle, some being in the form of valve-pistons and subject to friction, which soon wears them, so as to require renewal, and others in the form of a diaphragm which is kept closed by a spring-pressure and is opened when this pressure is relieved by the opposite pressure of the effervescing liquid within. This valve is objectionable because after having been used for a certain length of time the valve-seat becomes indented into it, and it loses its diaphragm form and often becomes stuck upon the seat by reason of the indentation, so that the pressure from within the bottle is not sufficient to open it, and a quantity of liquid will be lost because it cannot be discharged.

In my invention I so connect my valve with the movable actuating-piston that the valve is opened by direct pull of the piston, thus preventing the valve from becoming so seated that it cannot be opened to allow the escape of the liquid.

A is the neck of the bottle, B a head which is attached in the usual or any suitable way, and B′ is the discharge-nozzle.

C is the delivery-tube, secured in a socket D, which is held in place on the neck of the bottle, so that the tube extends down to the bottom and the pressure of the gas within the bottle will act to force the liquid up through the tube whenever the mouth of it is opened.

Above the upper end of the tube a, within the head B, is a seat a^2, upon which the valve closes in a downward direction.

The valve d is made of rubber or other sort of flexible material, and is here shown in the form of a disk which fits into the space in the head B above the nozzle so closely as to prevent any escape of liquid above and around its edges.

Above the valve is a plunger F, which is forced downwardly by a spring E, so that the lower end of the plunger, normally pressing upon the valve, closes it upon the seat a.

My invention consists in connecting the center of this flexible valve d with the plunger, so that when the latter is raised by the action of the thumb-lever G the valve will be raised by direct pull of the plunger upon its center instead of depending upon the pressure of the gas from below, the edges of this valve being clamped or held so as to prevent any escape of liquid around it.

In the formation of my valve I first make a center core, which is preferably cast of metal, having a central shank m and an enlarged head m', through which head perforations are made around the periphery. This center piece is then placed in the mold in which the valve d is to be manufactured, and the soft rubber is molded around the stem and head, so that the central portion of the rubber incloses the head, and the rubber flowing up through the perforations will form a bond which holds the valve firmly to the head. Through the stem, above the line of the rubber, a small hole is made transversely, as shown at n. The piston is next cast by means of a mold of proper shape, into which the stem of the valve is inserted, so that the hole n lies within the mold over the piston. A transverse wire n' is inserted in this hole, and when the metal for the piston is cast into the mold it flows around this wire and thus unites the piston and valve, so that they form a single structure.

The exterior edges of the valve are retained in place by the pressure of the cylindrical socket b, the lower edge of which clamps the edge of the valve against the seat a, formed in the head B.

The operation will then be as follows: The action of the spring E upon the piston F forces it down, and with it the central portion of the valve, so that the latter is seated upon the valve-seat *a*, and this keeps the bottle closed against the escape of liquid. Whenever it is desired to use the liquid within the bottle, the lever G is pressed and this acts to raise the plunger F, and as the plunger F is permanently connected with the central portion of the valve *d* it withdraws the latter, raising it so as to expose the valve-seat and allow the liquid to be discharged, while at the same time preventing any escape around the edges of the valve into the upper part of the head.

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

1. In a siphon-bottle, the combination of a head having a discharge-nozzle, a central pipe extending down into the bottom of the bottle with a valve-seat above the upper end, a valve in the form of a flexible disk having its edges clamped upon a seat above the discharge-nozzle, a spring-actuated plunger by which the central portion of the valve is normally held in contact with the seat to form a closure for the pipe, and a connection between the valve-center and the plunger, said connection comprising a metal central head confined within the body of the valve and having a projecting stem and a means for immovably connecting the stem with the plunger whereby the latter acts by a direct pull when raised, to lift the valve from its seat.

2. In a siphon-bottle, a valve adapted to close against the pressure of the liquid within the bottle, said valve comprising a metallic perforated head having a projecting stem and a rubber diaphragm cast about and inclosing said head, and filling the perforations thereof to form a bond, a plunger and a means for permanently connecting it with the projecting stem whereby the movements of the plunger are conveyed directly to move the central portion of the diaphragm.

In witness whereof I have hereunto set my hand.

FRANK E. MORRILL.

Witnesses:
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