No. 835,553. PATENTED NOV. 13, 1906.

G. B. McC. PIKE.

NON-REFILLABLE BOTTLE.

APPLICATION FILED APR. 2, 1906.

Fig. 1.

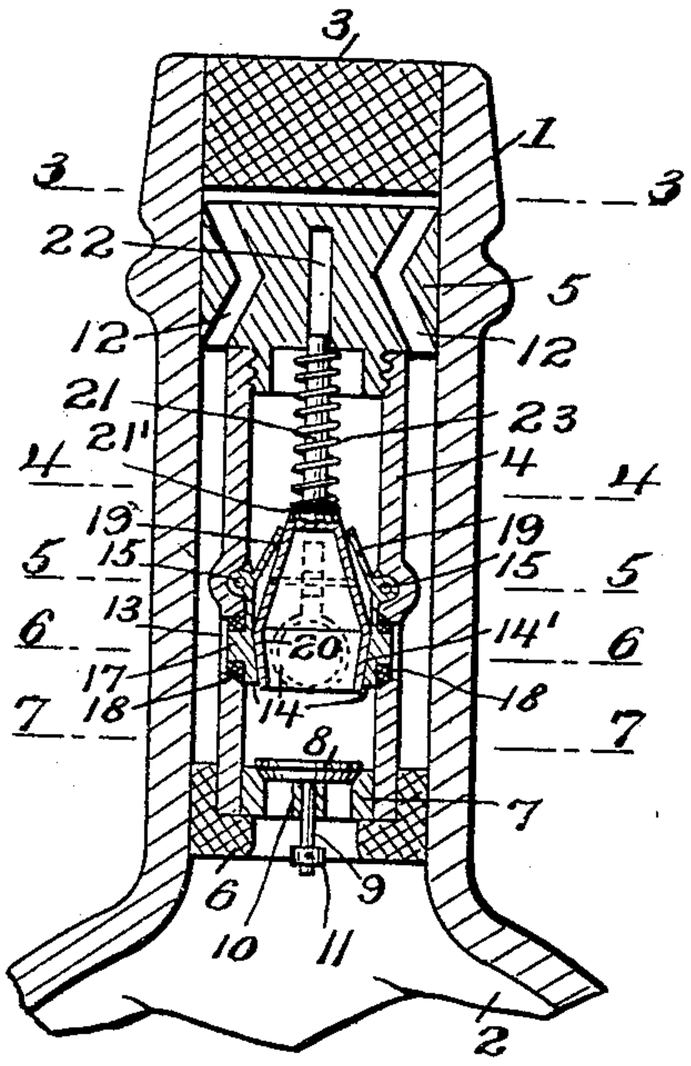


Fig. 2.

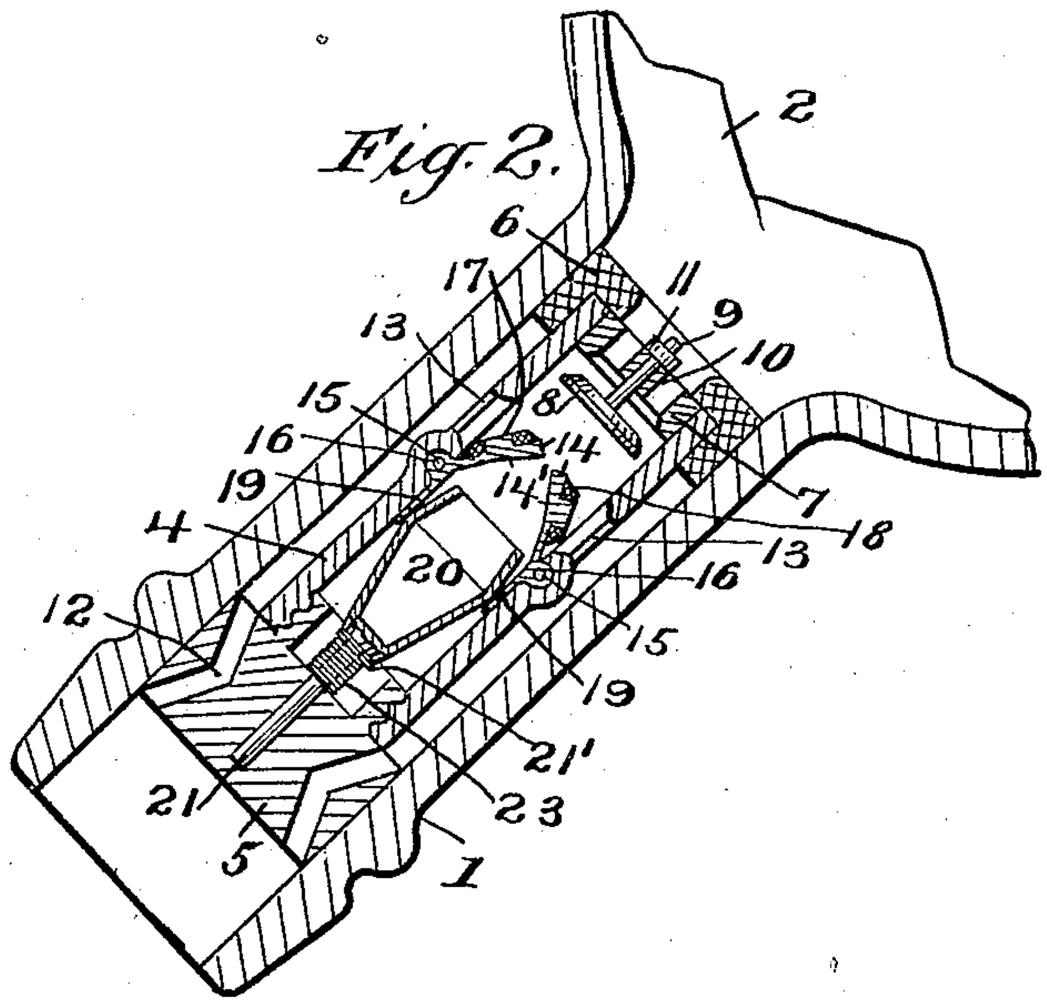


Fig. 3.

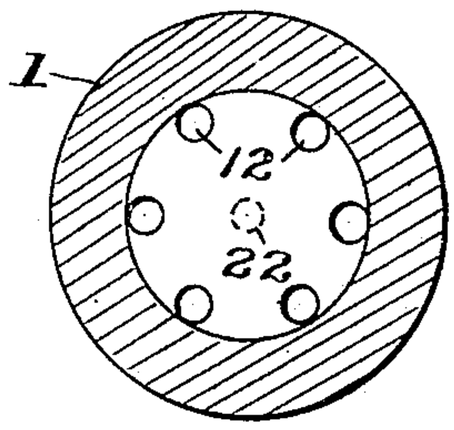


Fig. 4.

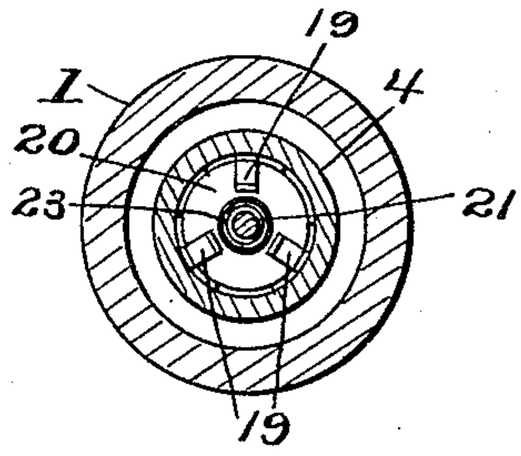


Fig. 5.

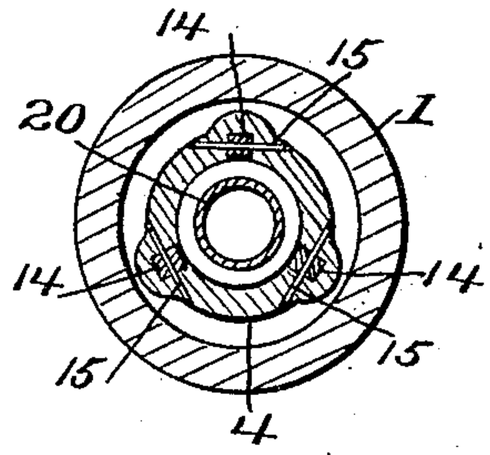


Fig. 6.

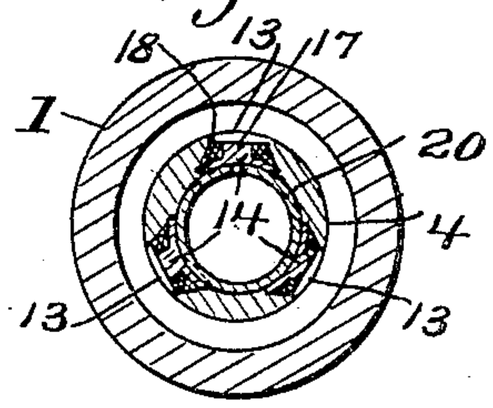
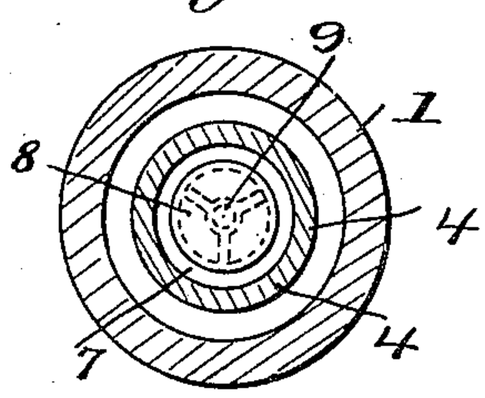


Fig. 7.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE B. McCLELLAN PIKE, OF NEW YORK, N. Y.

NON-REFILLABLE BOTTLE.

No. 835,553. Specification of Letters Patent. Patented Nov. 13, 1906.

Application filed April 2, 1906. Serial No. 309,270.

To all whom it may concern:

Be it known that I, GEORGE B. McCLELLAN PIKE, a citizen of the United States, residing at New York city, county of New York, and State of New York, have invented certain new and useful Improvements in Non-Refillable Bottles, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to that class of bottles commonly known as "non-refillable" bottles.

The invention consists in means whereby the liquid in the bottle is allowed to flow outwardly through the neck of the bottle when the bottle is inverted for this purpose, but is constructed so as to prevent the inward flow of liquids through said neck into the body of the bottle for the purpose of adulteration.

The means by which the foregoing is accomplished will now be described, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional view of the upper part or neck of a bottle containing the invention. Fig. 2 is a similar view showing the bottle tipped or inverted, the parts being in the position they would assume when liquid is passing through the neck of the bottle. Figs. 3, 4, 5, 6, and 7 are sectional views on the lines 3 3, 4 4, 5 5, 6 6, and 7 7 of Fig. 1.

In the drawings, 1 indicates the neck, and 2 a portion of the body, of a bottle, while 3 indicates the ordinary cork or stopper for the neck.

4 is a cylinder or tube, which may be of glass or any suitable material, the tube 4 being closed at its top by a permanent stopper 5 of similar material screwed thereon and fitted tightly in the neck of the bottle, said tube being also provided at its lower end with a cork tip or gasket 6, fitting closely to the inner surface of the neck 1 of the bottle to prevent the liquid from leaking into the neck of the bottle outside the tube 4. The tube 4 also has secured to its lower inner surface a ring 7, of glass or similar material, which, as shown, forms a seat for a check-valve 8, opening outwardly and having a stem 9, passing through a grid 10, formed on the ring 7, so as to allow passage of the liquid into the tube 4 when the valve 8 leaves its seat. The stem 9 has secured to it a collar 11 to prevent the stem 9 from leaving its guideway in the grid 10. The stopper 5 of the tube 4 is provided with a number of tortuous openings 12, six being shown in the drawings, although the said openings may be of any suitable number.

Between the stopper 5 and check-valve 8 the tube 4 is provided with a number of openings or ports 13, which may be of any suitable number, but preferably three, as shown, these ports 13 being arranged in line and circumferentially of the tube 4, the said ports being normally closed to the passage of the liquid into the neck of the bottle (when the bottle stands as shown in Fig. 1) by hinged valves 14, pivoted at 15 in recesses 16, formed in the tube 4. The valves 14 are provided with bosses 17, to which are secured cork washers 18, resting on beveled seats formed in the ports 13 of the tube 4, for the purpose of securing a tight closure of the ports 13 when the valves 14 are closed, as shown in Fig. 1. The lower inner surface of the valves is also provided with an inclined surface, as shown at 14′, for a purpose hereinafter referred to.

The valves 14 have upper portions or extensions 19, which bear against a cup-shaped plunger 20, provided with a stem 21, entering an opening 22, formed in the stopper 5. The stem 21 is surrounded by a spiral spring 23, the upper end of which bears against the lower surface of the stopper 5, and the lower end of which rests on the upper surface of the plunger 20. For the purpose of adjusting the tension of the spring 21 thin disks of metal 21′ are interposed between the lower end of the spring 21 and the plunger 20, the number varying according to the desired tension of said spring. The plunger 20 is so formed as to press against the inclined portions 14′ of the valves to positively close them and at the same time act to limit the downward movement of the plunger 20.

The operation of the mechanisms just described is as follows: When the bottle is tipped, as shown in Fig. 2, the valve 8 will open and the liquid will pass through the ring 7, entering and filling the plunger 20, forcing it outward and compressing the spring 21. The plunger 20 in this position, as shown in Fig. 2, forces the upper portions 19 of the valves 14 outward and the lower portions inward correspondingly, thus opening the valves 14 and allowing the liquid to pass through the ports 13 into the space between the outer surface of the tube 4 and inner sur-

face of the neck 1 of the bottle 2. The liquid then passes freely through the openings 12 in the stopper 5 and thence out of the neck 1. The pressure of the spring 21 is such that the receptacle 20 will remain in the position to close the valves 14, except when the bottle is tipped to pour out the liquid, the weight or pressure of the liquid added to the weight of the plunger 20 being such as to overcome the pressure of the spring 21 and force the plunger 20 outward and open the valves 14. If there is no pressure on the plunger 20 from the liquid in the bottle, the spring 21, being of sufficient strength, will always operate to close the valves 14, no matter what the position of the bottle.

While the construction shown is the preferred one, it will be understood that the construction may be altered within wide limits without departing from the invention.

What I claim is—

1. In a non-refillable bottle, a tube secured in the neck of the bottle, said tube having ports formed therein for the passage of liquid from the body of the bottle to the neck thereof, valves secured to said tube and controlling the passage of the liquid through said ports, and means for moving said valves to open and close said ports, substantially as described.

2. In a non-refillable bottle, the combination of a tube secured in the neck of the bottle and having ports formed therein, valves for controlling the passage of the liquid through said ports, a cup-shaped plunger actuated to close said valves by spring-pressure, and to open said valves against the spring-pressure by liquid-pressure, substantially as described.

3. In a non-refillabel bottle, the combination of a tube secured in the neck of the bottle and having ports formed therein, valves for controlling the passage of the liquid through said ports, a cup-shaped plunger actuated to close said valves by spring-pressure and to open said valves against the spring-pressure by liquid-pressure, and a check-valve in the tube controlling the passage of the liquid from the body of the bottle into the tube, substantially as described.

4. In a non-refillable bottle, the combination of a tube secured in the neck of the bottle having a perforated stopper threaded into the upper portion thereof and a gasket secured to its lower portion, of ports formed in said tube, valves for controlling the passage of liquid through said ports, a cup-shaped plunger for actuating said valves, said valves having inclined bearing-surfaces for the said plunger, a spring for moving the plunger in one direction, and a check-valve for preventing the passage of liquid from the tube into the body of the bottle, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE B. McCLELLAN PIKE.

Witnesses:
GEO. H. BOTTS,
J. A. GRAVES.