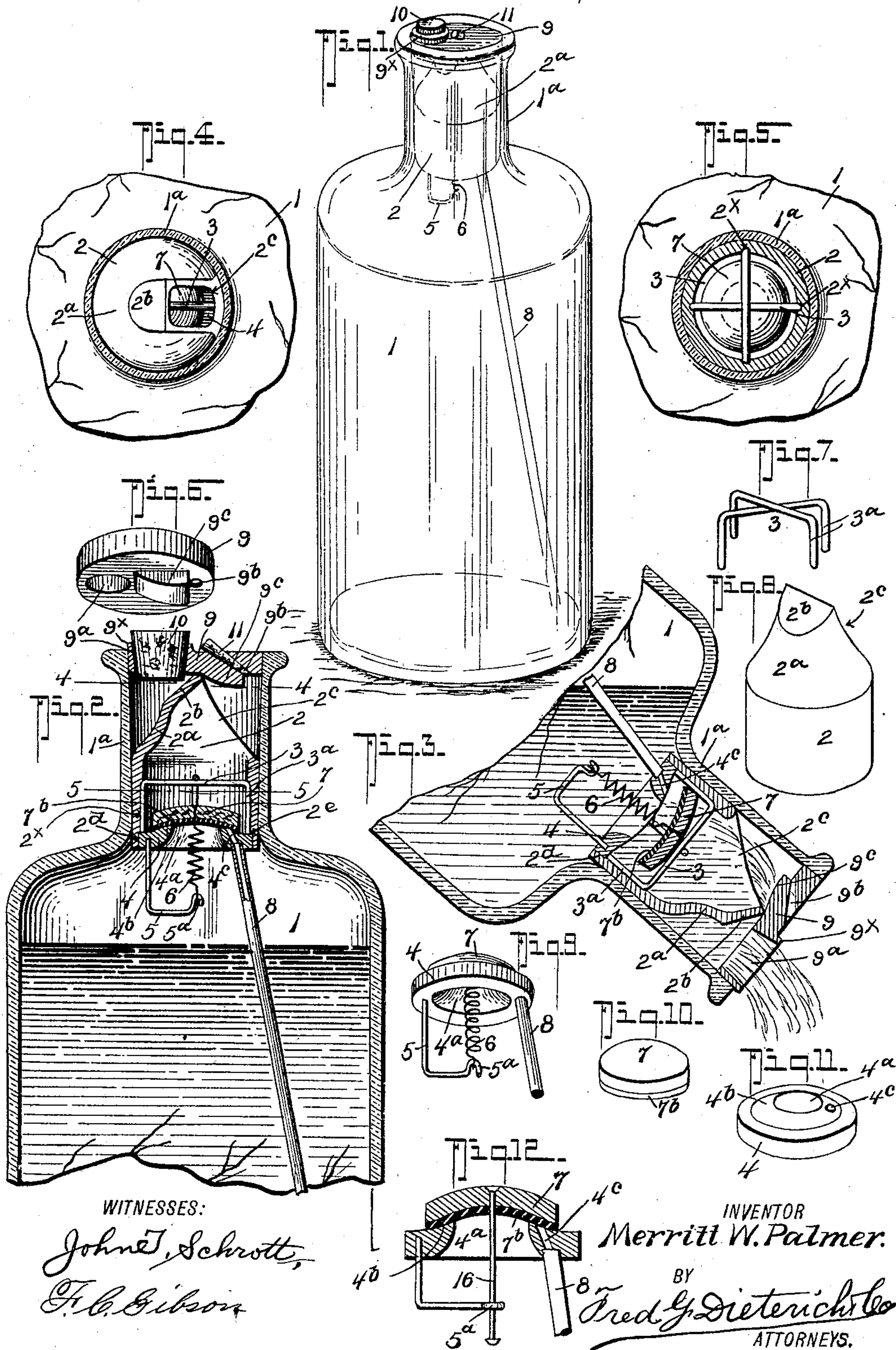


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M. W. PALMER.
NON-REFILLABLE BOTTLE.
APPLICATION FILED JUNE 16, 1905.



WITNESSES:

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NON-REFILLABLE BOTTLE.

No. 814,619.

Specification of Letters Patent.

Patented March 6, 1906.

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To all whom it may concern:

Be it known that I, MERRITT WESLEY PALMER, residing at Hamilton, in the county of Allegan and State of Michigan, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

My invention relates to certain new and useful improvements in non-refillable bottles, and it more particularly relates to that type of non-refillable bottles having valve devices in the bottle-neck and guard devices for preventing tampering with the bottle-valve; and the invention primarily has for its object to provide a bottle of this character of a very simple but effective construction which can be easily and cheaply manufactured and which will positively and effectively serve its intended purposes.

Generally, the invention comprises a tubular shell having a tapering upper end formed with a bevel-face and a side outlet, in which shell a wire guard is held to limit the movement of the valve, the lower end of the shell being closed by a valve-seat which forms a plug for the shell and which is centrally apertured and formed with a convexed face, against which a valve is adapted to seat.

The invention also includes certain novel means for holding the valve on its seat and a vent-pipe cooperating with the valve and its seat and extending to the bottom of the bottle to permit ready ingress of the air as the contents of the bottle are being poured out.

Again, the invention includes a cap or closure member for the bottle-neck, which cap cooperates with the shell to prevent the insertion of a wire or other tool for tampering with the valve. Said cap is provided with a plugged outlet for the liquid and a plugged air-hole, which plugged outlet and air-hole when the bottle is to be emptied are arranged to be unplugged and opened.

In its more specific nature the invention comprises certain novel construction, combination, and arrangement of parts, all of which will be first described in detail and then specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a bottle with my invention applied. Fig. 2 is a vertical longitudinal section of the bottle with my invention applied and in its non-pouring po-

sition. Fig. 3 is a view similar to Fig. 2 with the bottle in its pouring position. Fig. 4 is a horizontal section on the line 4 4 of Fig. 2. Fig. 5 is a horizontal section on the line 5 5 of Fig. 2. Fig. 6 is a detail perspective view of the cap. Fig. 7 is a detail perspective view of the wire guard that fits within the shell over the valve. Fig. 8 is a detail perspective view of the shell. Fig. 9 is a detail perspective view of the valve-seat and its attached parts. Fig. 10 is a perspective view of the valve detached. Fig. 11 is a similar view of the valve-seat with the valve detached. Fig. 12 shows a detail sectional view of a slightly-modified form of valve and valve-seat device hereinafter specifically referred to.

Referring now to the accompanying drawings, in which like numerals of reference indicate like parts in all of the figures, 1 designates the bottle, which is provided with the usual neck 1^a, which is preferably made slightly tapering toward the outlet end thereof, the larger diameter being at the outlet end of the neck.

2 designates a tubular shell adapted to be inserted in the bottle-neck and forced down therein to the position shown in the drawings, where it is held by its own frictional engagement or it may be held by cement, if desired. The shell 2 comprises a tapering upper end 2^a, having a beveled top 2^b and an elongated outlet 2^c, as shown. At its lower end the shell 2 is formed with a countersunk portion 2^d to form a seat 2^e, in which portion 2^d and against the seat 2^e the valve-seat 4 is adapted to be fitted.

4 represents the valve-seat, which is in the form of a plug to fit in the lower end of the shell 2, as shown, where it may be secured by cement or otherwise, if desired. The valve-seat 4 is provided with a central aperture 4^a and a convexed top 4^b, which serves as the valve-seat proper, against which the valve 7 is held.

4^c designates an air-aperture passing through the valve-seat 4 adjacent the central aperture 4^a and in communication with the air-pipe 8, which projects downwardly to the bottom of the bottle, as shown.

5 designates a hanger or bracket member having a portion 5^a, on which the light coil-spring 6 is secured, and the said spring 6 is secured at its other end centrally to the valve 7, which valve 7 is preferably constructed of

cork or other light floating material and is provided on its valve-seat-engaging face with a non-porous facing 7^b, of rubber or other suitable material, to make a tight contact with the valve-seat.

3 designates a wire guard formed in a pair of crossed U-shaped wire members, which is slipped up into the shell 2 and has its legs 3^a held in grooves 2^x in the inner walls of the member 2.

9 designates the cap, which consists of a closure-disk having a pouring-aperture 9^a at one side of its center, which is surrounded by a beading 9^x, as shown, and which is adapted to receive the closing-stopper 10, of the usual material. The cap 9 is inserted in the bottle-neck until it engages the shell 2 with its pouring-aperture 9^a in alinement with the closure portion of the shell, and the said cap is also provided with an air-aperture 9^b, which passes through the cap at an angle to its longitudinal axis, and the aperture 9^b is adapted to be closed by a plug 11, as shown. To prevent the insertion of a wire through the aperture 9^b and the breaking or chipping off of the aperture and enlarging the same so that a wire can be passed down through the opening 2^c in the shell 2 and permit tampering with the valve, I provide the cap 9 with an enlargement 9^c adjacent the inner end of the aperture 9^b to form a thickened portion and to prevent the cap being broken by an attempted insertion of a wire or other tool through the aperture 9^b.

In Fig. 12 I have shown a slightly-modified form of my invention in which the spring 6 is eliminated and instead the valve 7 is provided with a central rod or stem 16, which passes through a horizontal loop instead of the hook 5^a of the preferred form of my invention, the loop 5^a in the modified form shown in Fig. 12 serving merely as a guide for the valve-stem.

So far as described, the manner in which my invention operates will be best explained as follows: After the bottle has been filled with the desired material the shell 2, with the valve devices attached, is inserted into the bottle-neck and secured in place in any desired manner, after which the cap 9 is placed in position and secured in the bottle-neck by cement or otherwise, the air-aperture 2^b and the pouring-aperture 9^a being closed by the plugs 11 and 10, respectively. To pour out the contents of a bottle with my invention applied, it is only necessary to remove the plugs 11 and 10 and invert the bottle into the position shown in Fig. 3, when the contents will readily flow out.

From the foregoing it will be seen that by constructing a bottle in the manners shown and described a very simple and effective means is provided for preventing the refilling of a bottle after the contents have been emptied out. Should it be attempted to refill the bot-

tle by pouring material into the aperture 9^a while the bottle is in a vertical position, the same will be prevented from passing into the bottle by the valve 7 being held onto its seat. Should it be attempted to fill the bottle by forcing liquid into the same when in an inverted position, the liquid will force valve 7 to its seat even though the spring 6 should not be provided to perform this function, as the valve 7 is constructed of light floating material.

By constructing the shell 2 with the bevel top 2^b any attempt to insert a wire or other tool through the aperture 9^b in an attempt to reach the valve 7 will be frustrated, as the tool will slip down the top face 2^b and will be prevented from passing between the cap 9 and the face 2^b to the open side of the shell 2. Again, by constructing a bottle in the manner shown and described when the contents are being poured out of the bottle the air will then have ready and easy access into the interior of the bottle through the aperture 9^b and through the vent-pipe 8, as shown, the vent-pipe 8 being closed off from communication with the atmosphere by the valve 7 when it is upon its seat, the valve-seat aperture and the aperture 4^c being covered by the valve 7 when it is upon its seat.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete construction, operation, and many advantages of my invention will be readily understood by those skilled in the art to which it appertains.

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

1. In a non-refillable bottle, the combination with a bottle, of a tubular shell having an upper tapering neck and a pouring-aperture in one side of the neck, said shell adapted to fit in the bottle-neck, a valve-seat at the lower end of the shell, said valve-seat having a central pouring-aperture and a vent-aperture, a valve within the shell to seat on said valve-seat and close the apertures therein, a guard within the shell above the valve, and a cap above the shell, said cap having a pouring-aperture and a vent-aperture.

2. In a non-refillable bottle, the combination with a bottle, of a tubular shell having an upper tapering neck and a pouring-aperture in one side of the neck, said shell adapted to fit in the bottle-neck, a valve-seat at the lower end of the shell, said valve-seat having a central pouring-aperture and a vent-aperture, a valve within the shell to seat on said valve-seat and close the apertures therein, a guard within the shell above the valve, and a cap above the shell, said cap having a pouring-aperture and a vent-aperture, and means for closing said pouring and vent apertures.

3. In a non-refillable bottle, the combination with a bottle, of a tubular shell having

an upper tapering neck and a pouring-aperture in one side of the neck, said shell adapted to fit in the bottle-neck, a valve-seat at the lower end of the shell, said valve-seat having
 5 a central pouring-aperture and a vent-aperture, a valve within the shell to seat on said valve-seat and close the apertures therein, a guard within the shell, a cap having a pouring-aperture and a vent-aperture, and a vent-
 10 pipe connected to the valve-seat and communicating with the vent-aperture therein and extending down into the bottle.

4. In a non-refillable bottle, the combination with a bottle, of a tubular shell having
 15 an upper tapering neck and a pouring-aperture in one side of the neck, said shell adapted to fit in the bottle-neck, a valve-seat at the lower end of the shell, said valve-seat having a central pouring-aperture and a vent-aperture, a valve within the shell to seat on said
 20 valve-seat and close the apertures therein, a guard within the shell above the valve, and a cap above the shell, said cap having a pouring-aperture and a vent-aperture, and means
 25 for positively holding the valve to its seat.

5. In a non-refillable bottle, the combination with a bottle, of a tubular shell having an upper tapering neck and a pouring-aperture in one side of the neck, said shell adapted
 30 to fit in the bottle-neck, a valve-seat at the lower end of the shell, said valve-seat having a central pouring-aperture and a vent-aperture, a valve within the shell to seat on said valve-seat and close the apertures therein, a
 35 guard within the shell, said cap having a pouring-aperture and a vent-aperture, and a vent-pipe connected to the valve-seat and communicating with the vent-aperture therein and extending down into the bottle, and
 40 means for positively holding the valve to its seat.

6. In a device of the character stated, the combination with a shell having a pouring-aperture at one end, a valve-seat secured to
 45 the shell at the other end, said valve-seat having a pouring-aperture, a buoyant valve held within said shell for seating on said valve-seat to close the aperture therein, of a cap adapted to be fitted above having a pouring-
 50 aperture and a vent-aperture, substantially as shown and described.

7. In a non-refillable bottle, the combination with a bottle, of a tubular shell having an upper tapering neck terminating in a
 55 beveled face, and having a pouring-aperture in one side of the tapering neck, said shell having a shoulder, and an internal annular groove at one end, a valve-seat forming a closure-plug for said grooved end of the shell
 60 and adapted to abut the shoulder thereof, said valve-seat having a convexed valve-engaging face and a central pouring-aperture, said valve-seat having a vent-aperture, a vent-pipe connected with said valve-seat and
 65 communicating with the vent-aperture there-

in and extending down into the bottle, a valve within the shell and having a concaved valve-seat-engaging face, a wire guard detachably held within the shell above said valve-seat to limit the movement of the valve, a hook mem-
 70 ber secured to said valve-seat, and means connecting with the valve and hook for positively holding the valve to its seat and a cap adapted to be fitted in the bottle-neck above the shell, said cap having a pouring-aperture
 75 and a vent-aperture, substantially as shown and described.

8. In a non-refillable bottle, the combination with a bottle, of a tubular shell having an upper tapering neck terminating in a
 80 beveled face, and having a pouring-aperture in one side of the tapering neck, said shell having a shoulder, and an internal annular groove at one end, a valve-seat forming a closure-plug for said grooved end of the shell
 85 and adapted to abut the shoulder thereof, said valve-seat having a convexed valve-engaging face and a central pouring-aperture, said valve-seat having a vent-aperture, a vent-pipe connected with said valve-seat and
 90 communicating with the vent-aperture therein and extending down into the bottle, a valve within the shell and having a concaved valve-seat-engaging face, a wire guard detachably held within the shell above said valve-seat to
 95 limit the movement of the valve, a hook member secured to said valve-seat and means connecting the hook member and the valve for positively holding the valve to its seat and a cap adapted to be fitted in the bottle-
 100 neck above the shell, said cap having a pouring-aperture and a vent-aperture, said cap having its pouring-aperture arranged in substantial alinement with the beveled face of the shell and having its vent-aperture ex-
 105 tending through the cap at an angle to the plane of the cap, and in a plane with the pouring-aperture of the shell, all being arranged substantially as shown and described.

9. In a non-refillable bottle, the combina-
 110 tion with a bottle, of a tubular shell having an upper tapering neck terminating in a beveled face, and having a pouring-aperture in one side of the tapering neck, said shell having a shoulder, and an internal annular
 115 groove at one end, a valve forming a closure-plug for said grooved end of the shell and adapted to abut the shoulder thereof, said valve-seat having a convexed valve-engaging seat and a central pouring-aperture, said valve-
 120 seat having a vent-aperture, a vent-pipe connected with said valve-seat and communicating with the vent-aperture therein and extending down into the bottle, a valve within the shell and having a concaved valve-seat-
 125 engaging face, a wire guard detachably held within the shell above said valve-seat to limit the movement of the valve, a hook member secured to said valve-seat and means connecting the hook member and the valve for
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positively holding the valve to its seat, and a cap adapted to be fitted in the bottle-neck above the shell, said cap having a pouring-aperture and a vent-aperture, said cap having its pouring-aperture arranged in substantial alinement with the beveled face of the shell and having its vent-aperture extending through the cap at an angle to the plane of the cap and in a plane with the pouring-aper-

ture of the shell, said cap having an enlargement beneath the vent-aperture, and closure-plugs for the cap-apertures, substantially as shown and described. 10

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Witnesses:

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