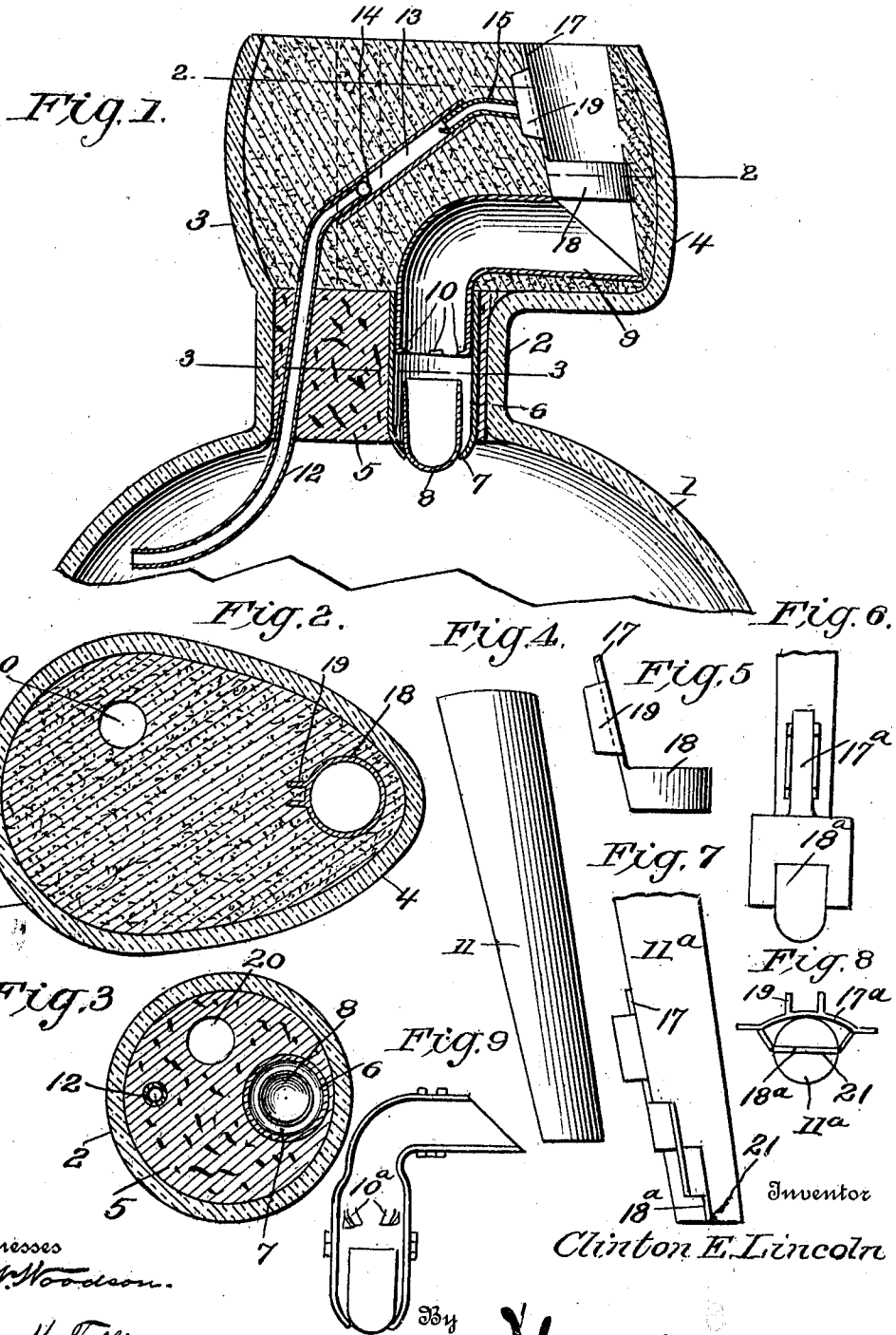


C. E. LINCOLN.
NON-REFILLABLE BOTTLE.
APPLICATION FILED AUG. 19, 1910.

980,300.

Patented Jan. 3, 1911.



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CLINTON E. LINCOLN, OF GREENSBORO, NORTH CAROLINA.

NON-REFILLABLE BOTTLE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CLINTON E. LINCOLN, citizen of the United States, residing at Greensboro, in the county of Guilford and State of North Carolina, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

The primary object of this invention is a simple, and efficient construction of non-refillable bottle which will be capable of withstanding all of the tests which are ordinarily employed in attempts to fill bottles of this character, which will in no wise interfere with the operation of pouring out the contents of the bottle as desired and which may be easily constructed and the parts assembled and sealed in such a manner that access can not be had to the valves for the purpose of tampering with the same.

With this and other objects in view as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a vertical longitudinal section of the upper portion of a bottle constructed in accordance with my invention; Fig. 2 is a horizontal sectional view through the mouth of the bottle, the section being taken substantially on the line 2—2 of Fig. 1; Fig. 3 is a similar view on the line 3—3 of Fig. 1; Fig. 4 is a detail view of a core that may be employed; Fig. 5 is a detail side view of one form of spring hereinafter specifically described; Figs. 6, 7 and 8 are detail views of another form of spring; and, Fig. 9 illustrates a modification of the main valve casing.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawing, the numeral 1 designates the body portion of a bottle, and 2 the neck thereof, said neck being preferably cylindrical, as shown at its base and being substantially of ovoid shape in horizontal section above the base portion, as indicated at 3. In other words, in the pre-

ferred construction of the neck, it is laterally enlarged at one side, as indicated at 4.

In the operation of assembling the parts, a plug 5 of cork or the like is inserted in the cylindrical base portion of the neck 2, said plug being formed with an opening in which a lower valve tube 6 is fitted. This valve tube preferably extends a slight distance below the plug, as best illustrated in Fig. 1, and is formed with a contracted lower end 7 designed to constitute the seat for a cup-shaped valve 8. This valve is preferably hollow, as shown, and is disposed with its rounded portion lowermost and with its opening facing upwardly, whereby it will effectually prevent the filling of the bottle by pouring the liquid in through the lower tube 6 and at the same time jerking the valve upward. Manifestly, a ball valve would not possess this advantageous feature.

An angular upper valve tube 9 has one end fitted down within the upper end of the lower tube 6, the lower edge of the tube 9 terminating any predetermined distance above the upper edge of the valve 8 in the normally closed position of the latter and being formed with any desired number of inwardly turned lugs or projections 10 designed to engage the valve 8 so as to limit the opening movement thereof and prevent the withdrawal of the valve.

After the plug 5 and lower and upper tubes 6 and 9, together with the valve 8, have been inserted in place, the upper laterally elongated mouth portion of the neck 2 is filled with cement or the like, with the exception of parts in which the outlet passages and air inlet and filling passages are formed, and the outlet passage (the lower end of which is formed by the tubes 6 and 9) is produced in the cement by a core 11 which is inserted down into the mouth of the neck and into the outer horizontally disposed and beveled end of the tube 9. As a part which is preferably inserted with the core 11 coacts primarily with an air inlet tube, I deem it advisable at this time to describe said air inlet tube or passage. This air inlet tube includes a lower section 12 which is inserted in the plug 5, extending both above and below the latter, the lower end of said air inlet tube 12 being curved toward the wall of the body portion of the bottle, as clearly illustrated in the drawing. The upper end of the tube 12 is deflected in an opposite

direction to its lower end and is designed to have slipped over it a tubular valve casing 13, whereby the upper end of the tube 12 will form a valve seat for a relatively small ball valve 14 mounted for a longitudinal movement in the tubular casing 13. The upper end of the air inlet tube is formed by a tube section 15 which is slipped into the upper end of the tubular valve casing 13 and which has its outer end downwardly deflected, so that a wire can not be inserted therein for the purpose of obtaining access to the small valve 14 and holding the same off of its seat in an attempt to fill the bottle. This tube section 15 is provided at its inner end with a lip 16 against which the ball valve 14 is designed to abut when the bottle is inverted to pour out the contents, this lip preventing the ball valve from closing the air inlet tube in the operation of pouring out the contents of the bottle.

Returning now to the core 11, I insert with said core a spring 17 which is designed to close the outer end of the tube section 15 when the bottle is corked, and which is designed to spring slightly away from said tube section when the bottle is uncorked so as to permit air to enter the air inlet tube while at the same time preventing the liquid from backing into the tube when the contents are being poured out. In one form of this spring, illustrated in detail in Fig. 5, the same embodies a clip or band 18 which is designed to partially encircle the core and be held thereto by frictional engagement as the core is inserted into the mouth of the bottle, said spring also including side flanges 19 adapted to extend on opposite sides of the outer end of the tube section 15, whereby to keep the liquid back from the air inlet end of said tube section when the contents of the bottle are being poured out. After this spring 17, which is preferably composed of steel, has been inserted down into the mouth of the bottle with the core 11, the cement is poured around the core and tube 9 as well as the tubes 12 and 15 and their intermediate and connecting valve casing 13, another core (not shown) being used to leave open at this time a relatively small passage 20 which extends down on through the plug 5 so as to provide an opening through which to fill the bottle. When the bottle is completely formed, ready for filling, the contents may be poured in through the opening 20 and the bottler will then only have this relatively small opening to fill in order to completely seal the bottle and render it proof as against refilling. After the cement has set, the core 11 is withdrawn, thereby forming an outlet passage which continues to the mouth edge of the bottle from the outer end of the upper tube 9. Manifestly, the spring 17 will be embedded in the cement and its upper end

will be held in proper relation to the outer end of the tube section 15, and then when the bottle is corked, the cork or other stopper inserted in the upper end of the outlet opening, will press the upper end of the spring 17 back against the adjacent end of the tube section 15. As soon as the cork has been removed, when it is desired to pour out some or all of the contents of the bottle, the spring 17 will move slightly away from the adjacent end of the tube section 15 so as to permit air to flow freely in through the air inlet tube while the bottle is inverted, while at the same time keeping the liquid back from the air inlet passage. So long as the bottle is upright, it is clear that no liquid can be poured in through the air inlet tube, as the same is sealed by the ball valve 14.

For a modification of the spring, reference is to be had to Fig. 6, wherein the spring, designated 17^a, is illustrated as formed with side lugs 18^a designed to enter slots 21 in the core 11^a, instead of clasping the core as in that form of the spring illustrated in Fig. 5.

As a modification of the main valve casing formed by the lower and upper tube before described, reference may be had to Fig. 9, which illustrates that if desired these tubes may be made in halves divided longitudinally, each being provided with lugs 10^a designed to limit the outer movement of the ball valve. It will be understood that in this modification, the two halves of the tubes may be secured together in any desired way and that the lower tube half preferably forms an integral part of the upper tube half. In other words, in this modification of the tubes they are made up of two longitudinally divided sections instead of upper and lower sections connected together by a slip joint, as in that form of the invention herein first described.

From the foregoing description in connection with the accompanying drawing, the operation of forming and using my improved non-refillable bottle will be apparent, as I have described the operating steps along with a recital of the detail construction and arrangement of the parts. It might be added, however, that when the bottle is completed and filled and the opening 20 sealed, a cork is inserted in the upper end of the outlet opening so as to press the upper end of the spring 17 or 17^a back against the adjacent end of the air inlet tube 15, thereby closing the latter and the contents of the bottle being kept from deterioration, as they are not exposed to the atmosphere. In order to pour out any or all of the contents of the bottle, it is only necessary to remove the cork or stopper and by thus inverting or tilting the bottle, with the outlet opening lowermost, the liquid may easily flow out past the valve 8, while at the same time the ball valve 14

will drop against the lip 16, permitting air to flow into the bottle back of the spring 17 and in through the downwardly deflected end of the tube section 15. This ball valve 14 will obviously close the air tube so that the filling of the bottle can not be accomplished by establishing a partial vacuum in the bottle.

Having thus described the invention, what is claimed as new is:

1. A non-refillable bottle, provided with a dispensing mouth, and an outlet opening therein, and an air inlet opening arranged to admit air into the body of the bottle as the contents thereof are poured therefrom, a valve adapted to close said outlet opening and a spring in the outlet opening arranged to close the air inlet opening upon the insertion of a stopper in the outlet opening, said spring being adapted to automatically uncover the air inlet opening upon the retraction of the stopper.

2. A non-refillable bottle, provided with a dispensing mouth, and an outlet opening, and an air inlet passage opening at one end in the body of the bottle and at its other end in the outlet opening, a valve adapted to close said outlet opening and a spring mounted in said outlet opening and arranged to cover the outer end of the air inlet passage upon the insertion of a stopper in the outlet opening and to uncover the outlet end of the air inlet passage upon the extraction of the stopper.

3. A non-refillable bottle, provided with a dispensing mouth, and an outlet opening

therein and an air inlet passage opening at one end, the body of the bottle and at its outer end in the outlet opening, a valve adapted to close said outlet opening and a spring mounted in the outlet opening and arranged to cover and uncover the outer end of the air inlet passage, said spring being formed with side flanges designed to extend along opposite sides of the air inlet passage at the outer end of the latter, whereby to keep the liquid back from said end of the air inlet passage when the bottle is tilted to pour out its contents.

4. A non-refillable bottle, provided with a dispensing mouth and an outlet opening and an air inlet passage extending there-through from and to the mouth rim of the bottle and the interior of the body portion thereof, a valve adapted to close said outlet opening, cement in the mouth of the bottle and filling the space around the walls of said outlet opening, and a spring having an attaching portion embedded in the cement in the outlet opening and provided with a plate adapted to close against the outer end of the air inlet passage upon the insertion of a stopper in the outlet opening, the plate being arranged to automatically move away from and uncover the outer end of the air passage upon the extraction of the stopper.

In testimony whereof I affix my signature in presence of two witnesses.

CLINTON E. LINCOLN. [L. s.]

Witnesses:

J. H. CAMDEN,

CLARA E. LINCOLN.