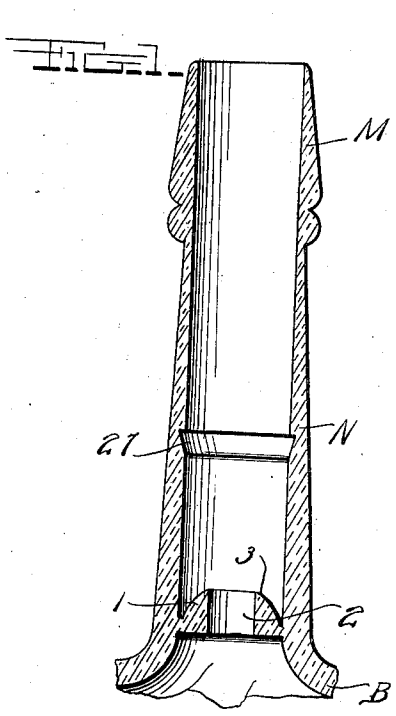
C. E. LANING.

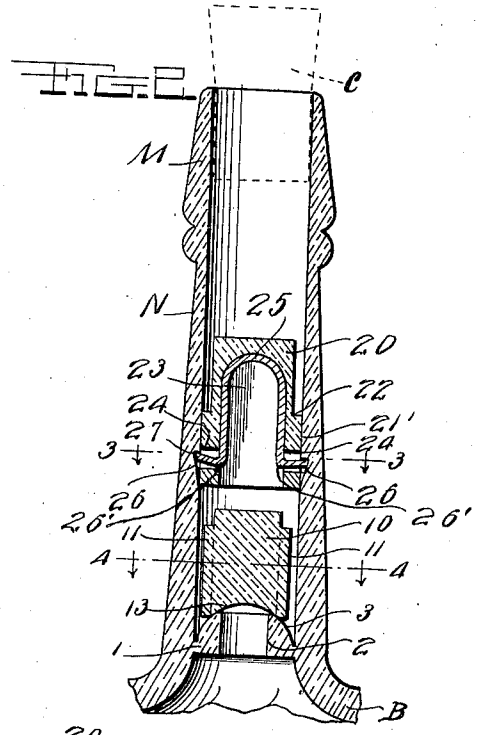
NON-REFILLABLE BOTTLE.

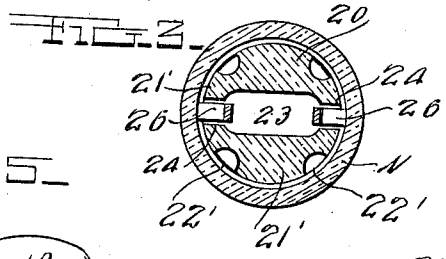
APPLICATION FILED JULY 10, 1911.

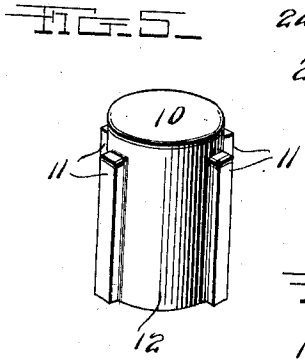
1,039,146.

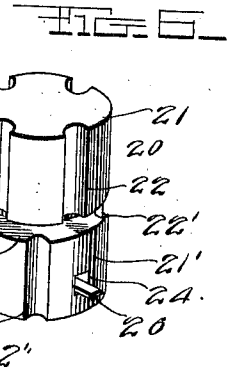
Patented Sept. 24, 1912.

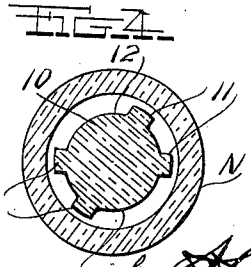












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UNITED STATES PATENT OFFICE.

CARL E. LANING, OF GLOVERSVILLE, NEW YORK, ASSIGNOR OF ONE-HALF TO EDWARD THURBER, OF GLOVERSVILLE, NEW YORK.

NON-REFILLABLE BOTTLE.

1,039,146. Specification of Letters Patent. **Patented Sept. 24, 1912.**

Application filed July 10, 1911. Serial No. 637,764.

To all whom it may concern:

Be it known that I, CARL E. LANING, a citizen of the United States, residing at Gloversville, in the county of Fulton and State of New York, have invented certain new and useful Improvements in Non-Refillable Bottles; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to bottles, and more especially to the stoppers thereof; and the object of the same is to produce an improved internal stopper of the plug type and of such construction that the bottle may be used as an ordinary bottle as long as desired and then this stopper can be inserted and the bottle becomes non-refillable thereafter. This object is accomplished by the construction hereinafter more fully described and claimed, and as shown in the drawings wherein—

Figure 1 is a central vertical sectional view of the neck of this improved bottle as it is first formed, showing its mouth as closed by an ordinary cork; Fig. 2 is a similar section showing the two plugs which constitute the non-refillable feature of my invention; the plugs themselves being also in section; Figs. 3 and 4 are sections on the lines 3—3 and 4—4 of Fig. 2 respectively; Figs. 5 and 6 are perspective details of the lower and upper members respectively.

In the drawings the letter B designates a portion of the body of a bottle, and N is its neck, the upper extremity or mouth M of which may sometimes be closed by an ordinary cork C. In the formation of this bottle the lower end of the neck where it joins the body is preferably blown so as to contain a ring 1 whose bore 2 is smaller than that of the neck and therefore restricts the passage through the same, and whose upper end is dome-shaped as at 3 around said bore. The passage through this ring is, however, of sufficient size to admit the liquid with which the bottle is to be filled and to permit the same to run out of the bottle when the latter is to be used in the ordinary manner.

When it is desired to use this bottle as a non-refillable bottle, the cork C is withdrawn and in its place I substitute the two members or plugs best seen in Figs. 5 and 6. The lowermost of these, numbered 10, has a solid body with ribs 11 struck up from its exterior and extending lengthwise thereof and with longitudinal grooves 12 between its ends, and the lower end of the body has a recess 13 made cup-shaped so as to fit upon the dome-shaped upper end of the ring within the bottle neck. That is to say, the curvature of the recess 13 is about the same as the curvature of the upper end of the ring, and the purpose of this construction is to permit the side walls of said recess to make constant contact with the side walls of the dome-shaped upper end of the ring, whether this member 10 stands strictly along the axial line of the neck N or is inclined a little, as will be the case when the whole bottle is tipped a little to one side. Thus it will be impossible to unseat the member 10 (which constitutes the valve) from the ring (which constitutes the seat) by inclining the bottle one way or the other; in fact the bottle must be tipped over to a point practically to or beyond a horizontal line before this member will unseat by gravity. The other member of this non-refillable attachment comprises a plug 20 also having ribs 21 along the upper portion of its body and grooves 22 between them, and ribs 21′ along its lower portion with grooves 22′ between them, and an annular groove 20′ between and communicating with both said sets of longitudinal grooves. Through all these grooves the liquid flows, but the grooves 22′ at the lower end of this member are out of alinement with the grooves 22 at the upper end thereof to prevent the passage through them of a wire or other instrument for lifting the first member or valve off its seat. Also by preference the body of this plug is made of sufficient size to have its ribs fit within the neck N rather closely, as it is not intended that it shall be removed after once it is inserted. To the latter end the plug is provided internally with a deep recess 23 opening out its lower end and through its side walls with two lateral eyes 24, neither the eyes nor the recesses communicating with said grooves. In the recess is inserted the bent body of a substantially U-shaped expansion spring 25 whose feet 26 project through said eyes 24 and are adapted to engage a weakening groove 27 formed within the neck N at a point just above the valve member first above described. When this plug is pushed down into the neck the feet at the lower end

of the U-spring are pressed inward a little, and when it reaches the proper position they fly outward into engagement with the shoulder 27 so that the member becomes in effect a stopper or plug standing fixedly within the neck above the other member or valve which rests by gravity upon its seat.

As clearly shown in Fig. 2 the openings or eyes 24 in the plug 20 are considerably larger than the upwardly inclined feet 26, of the U-shaped spring 25, and by closely confining the latter within the recess 23 of the plug the bent portions 26′ will contact with the lower walls of the eyes 24 should an attempt be made to withdraw the plug, thus forcing the ends of the feet in binding contact with the upper portion of the shoulder 27 formed in the neck of the bottle. Thus when it is desired to convert this improved bottle into a non-refillable bottle, first the valve member or plug is dropped into place and then the stopper member or plug is inserted into place and its springs hold it irremovably within the neck. The construction of these members is such that, while the liquid may flow out of the neck it cannot flow in, and no instrument can be inserted through the various grooves between the ribs to lift the valve member off its seat. The materials and proportions of parts are not essential to the successful operation of this invention. Even after this improved bottle has been converted into a non-refillable bottle, it can be reconverted into an ordinary bottle by breaking off the neck at the weakening groove 27 and removing the plug, after which the valve falls out of place and the bottle can be again used as usual. But it is clear that the thus mutilated bottle cannot be mistaken for the original.

What is claimed as new is:

The combination with a bottle neck having an internal annular weakening groove and a valve movable below the latter, said groove having a flat abutting wall, and an inclined portion leading thereto; of a plug of a size to snugly fit within the neck and provided with longitudinally disposed peripheral grooves for the passage of the liquid contained in the bottle, a U-shaped spring closely confined within a correspondingly shaped recess in the plug, yielding and angularly disposed feet forming the ends of the spring by bending the latter, said feet passing through eyes in the lower end of the plug, the bent portions of the feet being normally adjacent to the lower walls of the eyes in the plug with the ends thereof directed upwardly by the inclined wall of the groove and bindingly confined in the weakening recess of the neck of the bottle against the upper flat continuous wall of the same, for preventing the removal of the plug.

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

CARL E. LANING.

Witnesses:
N. M. BANKER,
J. W. FITENUT.