No. 885,661. PATENTED APR. 21, 1908.

F. S. BARNES.

BOTTLE.

APPLICATION FILED JUNE 5, 1907.

Fig. 1

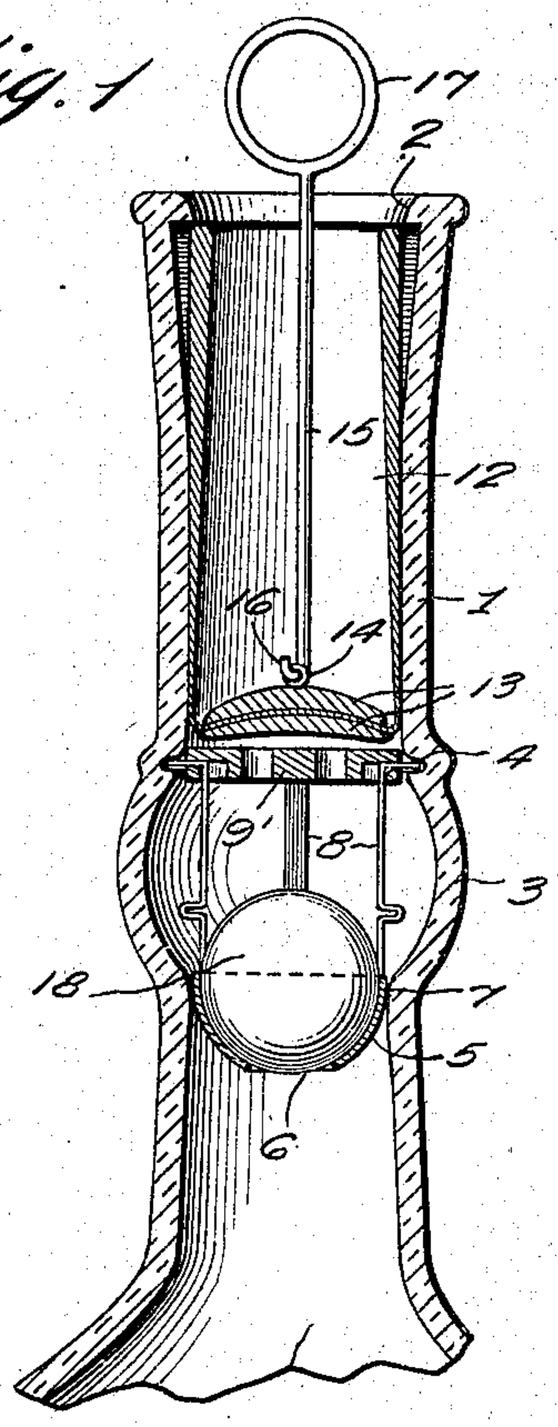


Fig. 2.

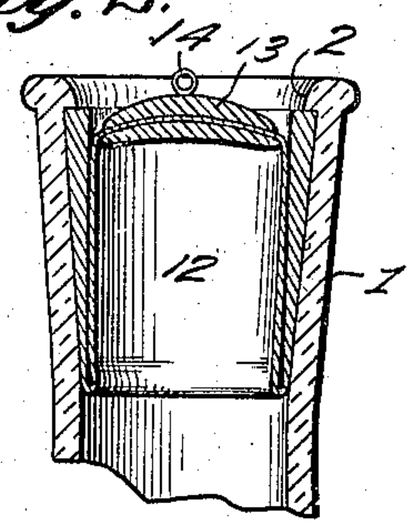
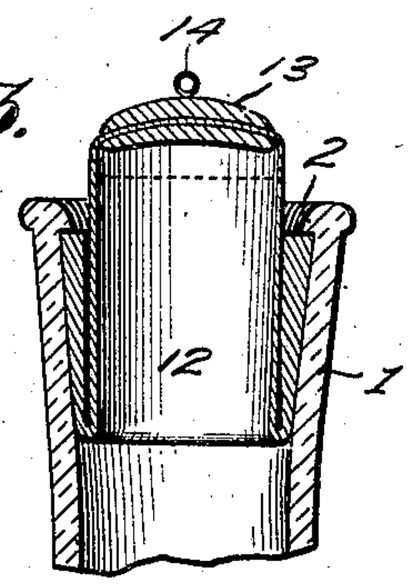


Fig. 3.



Witnesses

R. C. Claflin

C. Bradway.

Inventor

Frank S. Barnes

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

FRANK S. BARNES, OF SUFFERN, NEW YORK.

BOTTLE.

No. 885,661. Specification of Letters Patent. Patented April 21, 1908.

Application filed June 5, 1907. Serial No. 377,393.

To all whom it may concern:

Be it known that I, FRANK S. BARNES, a citizen of the United States, residing at Suffern, in the county of Rockland and State of New York, have invented new and useful Improvements in Bottles, of which the following is a specification.

This invention relates to a non-refillable bottle having a special form of neck for receiving the valve and its supporting means, and a stopper for sealing the bottle.

The invention has for one of its objects to improve and simplify the construction of devices of this character so as to be comparatively easy and inexpensive to manufacture and to permit the parts to be readily inserted, after the filling operation, for sealing the bottle and preventing refilling after the contents has been emptied.

A further object of the invention is the employment of a metallic shell-like stopper for sealing the bottle, and provided with means whereby the inner closed end of the stopper can be drawn outwardly through itself so that the closed end can be cut open for permitting the contents to be drawn off.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawing, which illustrates one of the embodiments of the invention, Figure 1 is a central vertical section of the neck portion of the bottle with the non-refillable device applied thereto. Fig. 2 is a detail sectional view showing the metallic stopper in sealed position. Fig. 3 is a similar view showing the stopper drawn out far enough to have the end cut open to permit the contents to be emptied.

Similar reference characters are employed to designate corresponding parts throughout the several views.

Referring to the drawing, 1 designates the neck of a bottle which is molded with an internal flange 2 at its upper end from which the neck contracts downwardly to an intermediate point where a swell 3 is provided, there being an internal annular groove 4 formed at the upper end of the swell for the purpose hereinafter to be explained.

Arranged within the neck 1 is a hollow hemi-spherical pocket or seat 5 having a port 6 and snugly fitting at 7, the neck adjacent the lower end of the swell 3, thereby preventing liquid from passing out between the seat and internal surface of the neck. This pocket, which is preferably made of metal, is provided with spring arms 8 extending upwardly therefrom and arranged ninety degrees apart and having their upper ends formed into outwardly extending lugs 9 that are adapted to engage in the annular groove 4.

Arranged above the valve to form a stop therefor is a disk or shield 9′ having suitable perforations 10 through which the liquid can be poured out, there being provided on the under side of the disk pockets 11 through which the lugs 4 project. The pockets 11 are open at the bottom side of the disk 9′ and also at the periphery, the bottom openings being of such size to permit the lugs 4 to be inserted into the pockets and then permitted to spring outwardly and project beyond the periphery of the disk, as shown. For sealing the bottle, a special form of stopper is provided that comprises a metal shell-like body 12, arched at its inner closed end and reinforced by disks of metal 13 arranged on the top and bottom sides of the arched portion. This stopper is thrust into the bottle neck, and its upper end is adapted to engage under the flange 2 so that it is impossible to withdraw the stopper except in a manner that will destroy its shape. The walls of the stopper gradually diminish in thickness from the top to the closed bottom, so that the bottom end can be drawn outwardly through the top of the stopper, the metal being thin enough to readily bend. The top disk 13 which is somewhat smaller than the bottom one, has a ring 14 which can be engaged by a suitable instrument 15 having a hook 16 at one end and a grip 17 at the other end.

In practice, the bottle is filled in any approved manner and the bottler then takes the device 5 and drops a spherical valve or ball 18 into the same, and next compresses the springs 8 inwardly so that the upper ends thereof can be engaged in the pockets 11 of the disk 9′. The unitary structure thus formed, is thrust into the upper end of the bottle neck and pushed downwardly to its normal position by means of the shell-like stopper 12. During the insertion of the device, the lugs 9 engage the internal surface of the neck and are forced inwardly until the annular groove 4 is reached, whereupon the springs 8 move outwardly and cause the lugs

9 to engage in the said groove. After the stopper is thus inserted, the instrument 15 is caught on the ring 14 and the bottom end of the stopper pulled outwardly through the body thereof to the position shown in Fig. 2, the upper end of the stopper being engaged under the flange 2, so as to prevent movement of the stopper. The bottom disk 13 acts as a die to expand the stopper into tight engagement with the internal surface of the bottle neck and this expansion will be readily observed by comparison of the Figs. 1 and 2. After the bottle is thus sealed the instrument 14 is detached and the bottle is ready for shipment. When it is desired to empty the bottle, the extracting instrument is hooked into the ring and the stopper pulled outwardly from the position shown in Fig. 2 to that in Fig. 3, so that the closed end can be cut off or opened to permit the contents to be drawn off.

From the foregoing description, taken in connection with the accompanying drawing, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative and that such changes may be made when desired, as are within the scope of the claims.

Having thus described the invention, what I claim is:—

1. As an article of manufacture, a bottle stopper comprising a hollow body having a closed end adapted to be punctured for removing the contents of a bottle, the wall of the body being bendable to permit the closed end to be drawn backwardly through the hollow of the body.

2. The combination of a bottle neck having an internal undercut portion forming a shoulder, a hollow stopper inserted in the neck and adapted to be expanded under the shoulder, and means on the inner end of the stopper for permitting the same to be drawn outwardly through the top end of the stopper.

3. The combination of a bottle neck having an internal shoulder, a hollow stopper closed at one end and adapted to be inserted into the neck to a point inwardly of the shoulder, and means on the closed end of the stopper for expanding the walls of the open end thereof to engage under the shoulder.

4. The combination of a bottle neck having an internal shoulder, a hollow thimble-like stopper made of metal and having a wall of increasing thickness from the closed end of the stopper to the open end, said closed end being capable of being drawn outwardly through the hollow of the stopper, and a stiff expanding element on the closed end of the stopper for expanding the upper end of the latter for interlocking under the shoulder of the neck.

5. As an article of manufacture, a bottle stopper comprising a thimble-like body of flexible metal, and a stiff metallic disk permanently secured to the closed end of the stopper.

6. As an article of manufacture, a bottle stopper comprising a thimble-shaped body of smaller bore at the open end thereof, and an expanding member secured to the closed end of the stopper for expanding the wall of the stopper at the upper end by drawing the closed end of the stopper outwardly through the hollow of the latter.

7. The combination of a bottle neck, a thimble-shaped metallic stopper, said neck being provided with means for anchoring the upper portion of the stopper in the neck, and means attached to the bottom end of the stopper for drawing the said end outwardly through the upper end.

8. The combination of a bottle neck having an internal shoulder, a thimble-shaped metallic stopper closed at its lower end and having a wall of diminishing thickness from the top to the bottom, and means for permitting a suitable instrument to take hold of the lower end of the stopper and draw it outwardly through the upper end for puncturing.

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

FRANK S. BARNES.

Witnesses:

THOS. KEEGAN,

H. R. PORTER.