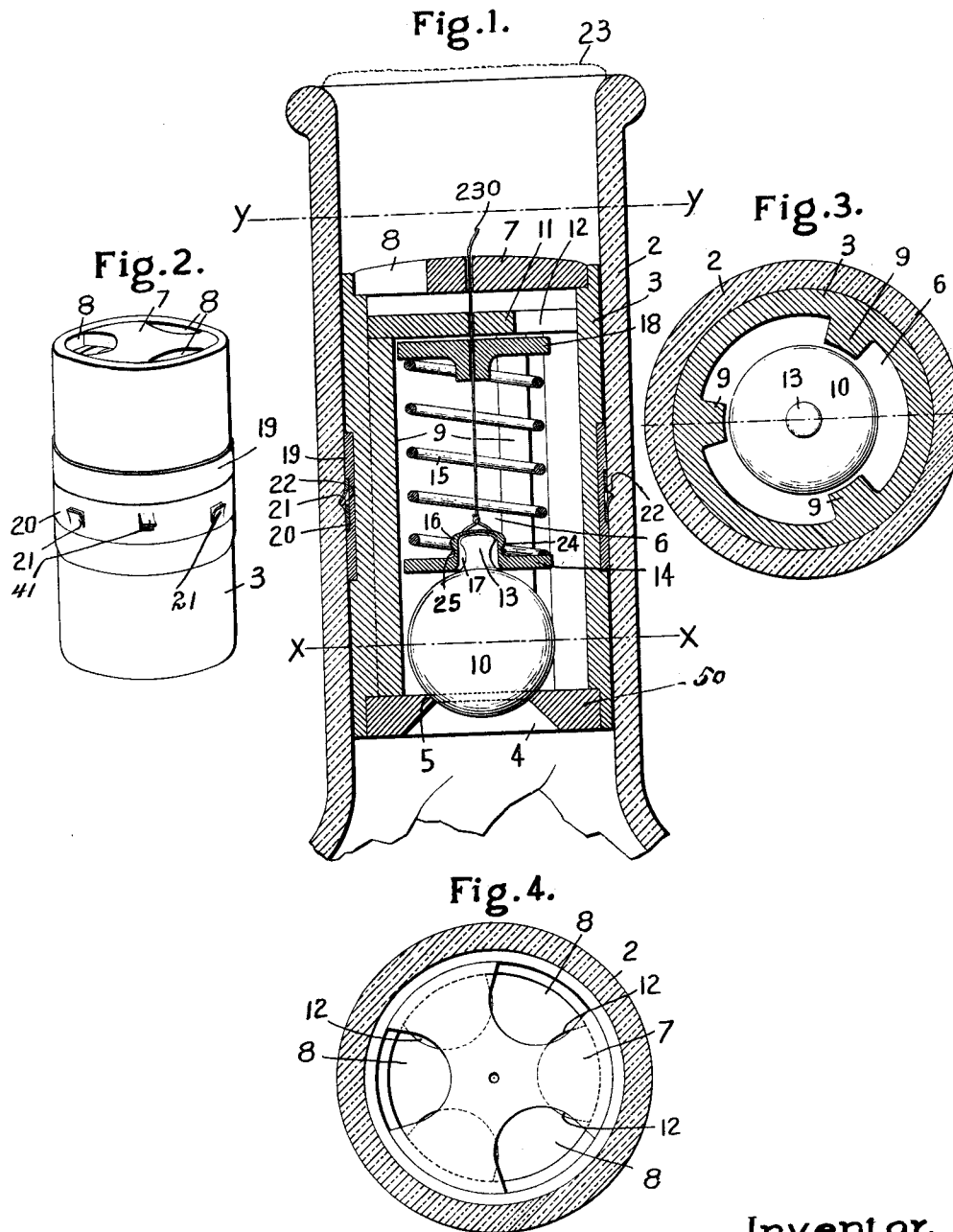


F. LENZI.
NON-REFILLABLE BOTTLE.
APPLICATION FILED MAR. 21, 1913.

Patented July 21, 1914.

1,104,201.



Witnesses.

Fred. S. Grunkef.
Joseph D. Ashe.

Inventor.
Frank Lenzi.
by *Edwards Hand & Smith*
Attys.

UNITED STATES PATENT OFFICE.

FRANK LENZI, OF BOSTON, MASSACHUSETTS.

NON-REFILLABLE BOTTLE.

1,104,201.

Specification of Letters Patent.

Patented July 21, 1914.

Application filed March 21, 1913. Serial No. 755,847.

To all whom it may concern:

Be it known that I, FRANK LENZI, a citizen of the United States, residing at Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Non-Refillable Bottles, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to non-refillable bottles and has for its object to provide a stopper which can be inserted into the neck of a bottle and which contains within it valve mechanism for preventing the bottle from being refilled, while permitting the contents of the bottle to be readily discharged.

The features wherein my invention resides will first be described in connection with the accompanying drawings and then pointed out in the appended claim.

Referring to the drawings, Figure 1 is a vertical sectional view through the neck of a bottle showing my improvements applied thereto; Fig. 2 is a perspective view of the stopper which is inserted into the neck of the bottle; Fig. 3 is a transverse section on the line $x-x$, Fig. 1. Fig. 4 is a section on the line $y-y$, Fig. 1.

1 designates a bottle having the usual neck. My improved valve mechanism which prevents re-filling of the bottle is in the form of a stopper which can be inserted into the bottle neck after the bottle is filled. This stopper comprises an outer shell 3 preferably made of porcelain which is formed at its lower end with an opening 4 and a valve seat 5, and is also formed with a valve chamber 6. The valve seat 5 is formed in a valve seat member 50 which may be integral with the casing or a separate member, as shown. The stopper is provided with a top 7 which is preferably rounded, as shown in Fig. 1, and which is provided with a plurality of openings 8. On the inside of the chamber 6 are a plurality of ribs 9 which extend longitudinally of the valve chamber and form guides for a ball valve 10 which is adapted to seat against the valve seat 5. The ribs 9 terminate below the top 7.

11 is a disk or partition which extends across the casing beneath the top 7, and which has openings 12 therein that are out of line with the openings 8 thereby making it impossible for a person to insert a wire or

other tool into the valve chamber through the openings 8 and 12. These openings, however, permit the free discharge of liquid. The top 7 and partition 11 may be integral with the casing or may be made as separate pieces as shown in the drawings. When they are made as separate pieces I propose to make the ribs 9 of such a length that they will engage the under face of the disk 11 and thus form a support therefor. The disk 11 and top 7 may be cemented in place or held in any other suitable way. The ribs 9 are of sufficient length to engage the valve seat member 50 and they thus give support to and stiffen both said valve seat member and the disk 11. The valve 10 is made of porcelain or any other suitable material.

14 is a disk which rests on the valve and forms a bearing for one end of the spring 15, which acts to yieldingly hold the valve seated. This disk may be made integral with the valve; but is preferably separate therefrom and is provided with a hub 16 and is also provided with a recess 17 in which is received an extension or projection 13 formed on the valve 10, said extension and recess serving to keep the disk 14 properly positioned. The upper end of the spring 16 has bearing against a follower 18 which is in the form of a disk and acts as a weight to augment the action of the spring. This disk or weight 18 also operates in conjunction with the spring 15 to prevent the valve from being shaken off from its seat, as will be presently described. Under normal conditions the follower 18 is slightly separated from the disk 11, as shown in Fig. 1.

In assembling the parts the disks 7 and 11 are removed and the valve 10, disk 14, spring 15 and follower 18 may then be inserted into the valve chamber 6. The disk 11 is then dropped in on top of the ribs 9 and secured by cement or otherwise, and the top 7 is then inserted and cemented into place. The stopper is then complete ready for insertion into the bottle.

For holding the stopper in the bottle neck and also to provide a tight joint between the stopper and bottle neck, I provide a band 19 of cork which encircles the casing 3 and which is bound in position on the casing by a metal hoop or band 20. This band 20 is provided with a plurality of resilient locking fingers 21, 41 which are adapted to have

locking engagement with a recess 22 formed on the inside of the bottle neck. The band 20 has the proper diameter so that it has a contracting effect upon the cork band 19, and the elasticity and resiliency of the cork tend to cause it to swell out beyond the metal band, the latter being embedded in the cork. This band thus firmly holds the cork to the casing 3, but does not interfere with the insertion of the casing into the bottle neck.

In using my improved device the bottle will first be filled, as usual, and then the stopper with its cork jacket is inserted into the bottle neck. The fingers 21 are resilient and naturally project outwardly, as seen in Fig. 2, and as the stopper is inserted into the neck of the bottle the fingers 21 and 41 will snap out into the recess 22, as shown in Fig. 1. Since the band 20 holds the cork lining 19 firmly to the casing 3, it will readily be seen that the action of the fingers against the rib 20 will lock the stopper in place. The stopper sets into the neck of the bottle far enough so that an ordinary cork 23 can be used at the mouth of the bottle neck.

When the bottle is tipped up the valve 10 will open sufficiently to allow the contents of the bottle to be discharged in usual manner, but said valve prevents the re-filling of the bottle.

The purpose of providing a movable backing 18 for the spring is to prevent the valve 10 from being unseated by holding the bottle in a horizontal position and shaking it. If this is done such shaking movement will throw the disk 18 back and forth, but the valve 10 will remain against the seat 5.

Under some circumstances it will be desirable to insert the stopper in the neck of the bottle before the latter is filled and where this procedure is to be followed, I propose to attach a wire connection 230 to the hub or boss 16, which wire connection passes up through apertures in the movable follower 18, disk 11 and top 7. The hub 16 is preferably necked slightly, as shown at 24, and the wire connection 230 has a loop 25 encircling the neck. The connection between this wire and the neck is sufficient to enable the valve to be lifted from its seat by drawing on the portion of the wire which extends through the top 7 whenever the bottle is to be filled. As soon as the bottle is filled the operator gives a quick jerk to the wire 230 which withdraws it from the projection 16, thus allowing the valve to close under the

influence of the spring 15. The wire may then be entirely withdrawn through the apertures in the follower 18, disk 11 and top 7.

The object in making the top 7 rounded, as shown, is to give it added strength so that there will be no danger of the top being crushed by the application of the force necessary to insert the stopper into the bottle neck. With this construction it is possible to use the ordinary machine by which corks are inserted into a bottle for inserting the stopper.

It will be noted that the fingers 21 point upwardly, while the fingers 41 point downwardly. The object in having these fingers oppositely disposed is so that means will be provided for locking the stopper from movement in either direction. In the drawings I have shown said fingers so disposed relative to each other that they will all enter the same recess 22.

If desired I may make the exterior of the casing 3 and the interior of the bottle neck 2 with ground surfaces so as to provide a true fit between these parts. Where this construction is employed the cork lining may be dispensed with as a tight joint can be made because of the fit between the ground surfaces.

The follower or weight 18 may be made of any suitable material and will have a sufficient specific gravity or weight to properly operate the valve and spring under all conditions as above described.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

A non-refillable stopper for a bottle comprising a casing having a valve chamber and a valve seat and provided with a convex top having openings therethrough, of a ball valve in the valve chamber and provided with an extension, a disk resting on said valve and having a recess to receive said extension, a spring engaging said disk, a freely-movable follower sustained by the upper end of the spring within the valve chamber, and means for locking the casing within a bottle neck.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

FRANK LENZI.

Witnesses:

LOUIS C. SMITH,
THOMAS J. DRUMMOND.