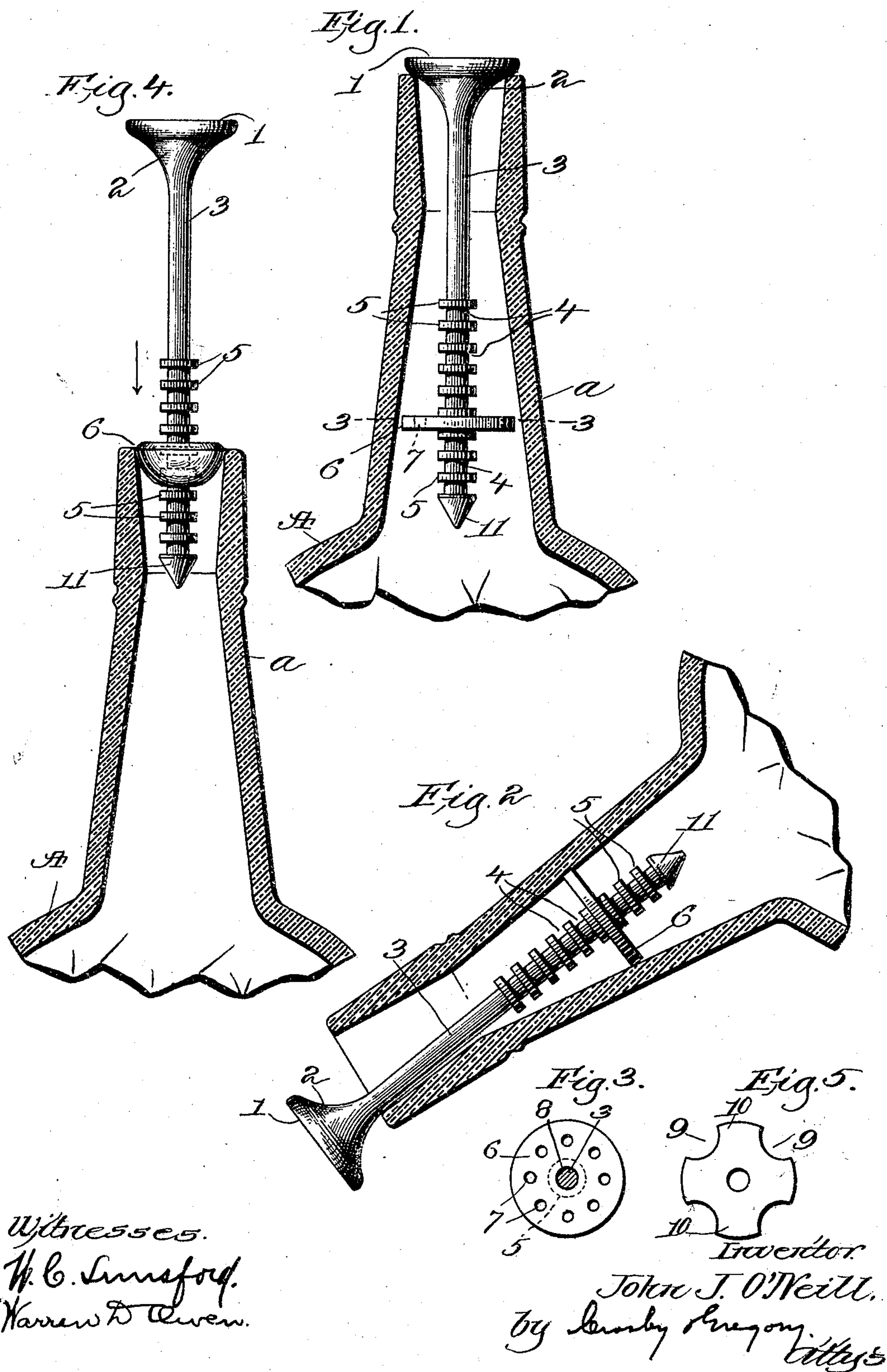


No. 788,369.

PATENTED APR. 25, 1905.

J. J. O'NEILL.  
RETAINING DEVICE FOR BOTTLE STOPPERS.  
APPLICATION FILED JULY 29, 1904.





# UNITED STATES PATENT OFFICE.

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## RETAINING DEVICE FOR BOTTLE-STOPPERS.

SPECIFICATION forming part of Letters Patent No. 788,369, dated April 25, 1905.

Application filed July 29, 1904. Serial No. 218,605.

*To all whom it may concern:*

Be it known that I, JOHN J. O'NEILL, a citizen of the United States, and a resident of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Retaining Devices for Bottle-Stoppers, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention has for its object the production of a stopper for bottles so constructed and arranged that, while the withdrawal of the contents of the bottle is not interfered with, the stopper cannot under normal circumstances be removed from the bottle. The righting of the bottle on its bottom serves to automatically close the stopper, while tilting of the bottle to decant the contents, all or a part, serves to automatically open the stopper.

The construction is simple, effective, and cheap to manufacture, the novel features of my invention being fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a vertical sectional view of a bottle in upright position with my invention applied thereto. Fig. 2 is a similar view of the neck portion of the bottle in position to discharge its contents, showing the relative position of the stopper and detent therefor. Fig. 3 is a cross-sectional detail on the line 3-3, Fig. 1, looking down. Fig. 4 is a view of the bottle-neck similar to Fig. 1, showing the manner of inserting the detent into the neck when applying my invention to a bottle; and Fig. 5 is a plan view of another form of detent, to be referred to.

The stopper 1, of a suitable diameter to close the mouth of the bottle A, Fig. 1, is provided with a conical base or extension 2, from which extends an elongated stem 3, herein shown as shaped to present a series of annular grooves 4 between circular enlargements 5. The conical base 2 insures a close seating of the stopper when the bottle is in upright position and also adapts it readily to bottles having mouths of different sizes.

The stopper and stem, preferably made integral, may be made of rubber, wood, glass, china, non-corrodible metal, or any other suitable material, and so far as concerns my invention it will be manifest that the stopper may be made cork-shaped, if desired, to tightly fit into the mouth of the bottle. The stem 3 is made long enough to enter and extend within the neck *a* of the bottle and well down toward its wide part, the interior of a bottle-neck usually being made tapering, as shown in the drawings. Upon the stem I mount a detent so constructed and arranged that it can be pushed down into the neck below its contracted portion and then to automatically position itself so that the stopper will be limited in its outward movement when the bottle is tipped, so that its contents may be withdrawn in whole or in part. In the present embodiment of my invention the detent is made of resilient compressible material, such as rubber, as that fulfils satisfactorily the required conditions, and in Fig. 3 the detent is shown as a disk 6, preferably provided with openings 7 and a central opening 8. This disk is drawn over the stem from its lower end to such a position as will secure its proper operation and then held in one of the grooves 4 between two adjacent enlargements 5, the thickness of the detent being preferably equal to the width of the groove. The position of the detent on the stem is determined by the length of the bottle-neck and the distance the stopper is to move outward when the bottle is tipped, the adjustability of the detent on the stem providing for changes in both of the conditions named.

In order to apply the device, the lower end of the stem is inserted in the neck, Fig. 4, and it is pushed inward until the mouth of the bottle engages and compresses the detent, distorting it more or less from its normal position with relation to the stem until the parts assume the position shown in Fig. 1. As soon as the detent is free to resume its normal shape and position it does so by virtue of its resiliency, as will be manifest. Care is taken that when so positioned the de-



tent will not touch the walls of the neck until the bottle is tipped, as in Fig. 2. Then the stopper and detent will move outward until the detent engages the contracted part of the neck and limits further outward movement of the stopper, while permitting the contents of the bottle to flow out. Return of the bottle to upright position automatically seats the stopper, as in Fig. 1. The openings permit the flow of the liquid past the detent.

Instead of making the detent as shown in Fig. 3 it may be made as in Fig. 5, when it is notched or cut out along its periphery, as at 9, leaving a series of radial arm-like portions 10, which engage the neck when the bottle is tipped. To facilitate the application of the detent to the stem, the tip of the latter may be pointed, as at 11. If the stopper is to be removed, it is firmly grasped by the fingers and pulled out, the detent being compressed and distorted sufficiently for the purpose as it is drawn through the contracted part of the bottle-neck, the operation being the reverse of that illustrated in Fig. 3.

My invention is not restricted to the precise construction herein shown and described, as the same may be varied or changed in different particulars without departing from the spirit and scope of my invention.

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

1. A stopper to normally close the bottle, an elongated stem connected with the stopper and adapted to enter and extend within the bottle-neck, and a flexible detent carried by the stem and adapted to frictionally engage the walls of the neck and limit outward movement of the stopper when the bottle is tipped.

2. A stopper to normally close the bottle, an elongated stem connected with the stopper and adapted to enter and extend within the bottle-neck, and a compressible, resilient, circular detent carried by the stem and adapted to be pushed into the neck beyond its contracted portion, the resumption of its normal shape by the detent preventing re-

moval of the stopper when the bottle is tipped while permitting limited outward movement of said stopper.

3. A stopper to normally close the bottle, an elongated stem connected with the stopper and adapted to enter and extend within the bottle-neck, a flexible detent mounted on the stem and adapted to be pushed into the neck beyond its contracted portion, to limit outward movement of the stopper, and means to adjust the detent on the stem.

4. A stopper to normally close the bottle, an elongated annularly-grooved stem connected with the stopper and adapted to enter and extend within the bottle-neck, and a resilient detent adapted to embrace the stem and be positioned thereon in one of the annular grooves, the detent when pushed into the neck beyond its contracted portion limiting outward movement of the stopper when the bottle is tipped.

5. A bottle-stopper having an elongated, rigid stem connected therewith and adapted to enter and extend within the bottle-neck, a self-positioning detent carried by the stem and adapted to pass beyond the contracted portion of the neck and automatically position itself to prevent removal of the stopper while permitting limited outward movement thereof, and means to adjustably hold the detent on the stem.

6. A bottle-stopper having a conical base to enter the mouth of the bottle, a rigidly-connected, elongated stem projecting from the base and adapted to enter and extend within the bottle-neck, and a perforated, resilient and disk-like detent mounted on the stem and adapted to engage the walls of the neck below its contracted portion, to limit outward movement of the stopper when the bottle is tipped.

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

JOHN J. O'NEILL.

Witnesses:

LOUIS C. SMITH,  
JOHN C. EDWARDS.