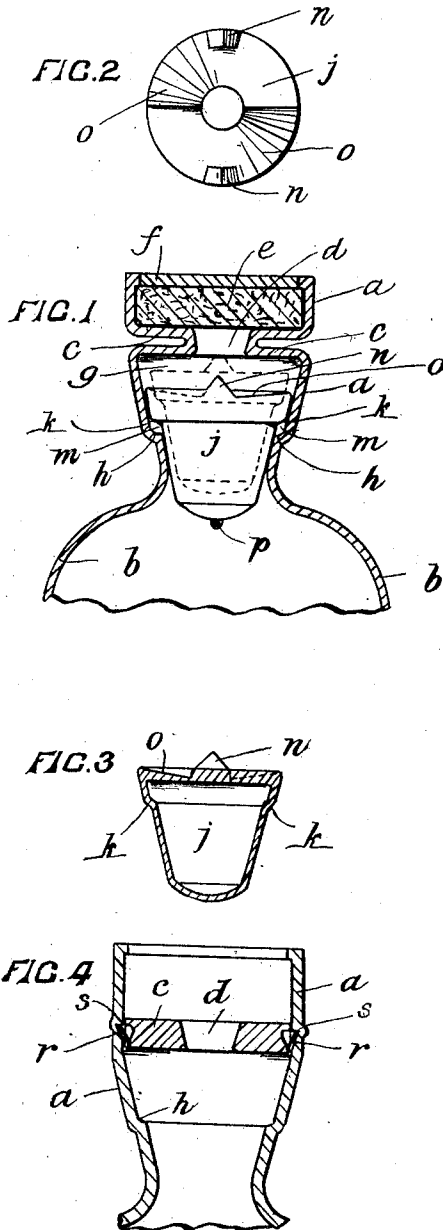


G. J. WELCH.
 NON-REFILLABLE BOTTLE.
 APPLICATION FILED MAR. 26, 1913.

1,114,083.

Patented Oct. 20, 1914.



Witnesses:
 W. H. Rose
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UNITED STATES PATENT OFFICE.

GEORGE JAMES WELCH, OF WANGANUI, NEW ZEALAND.

NON-REFILLABLE BOTTLE.

1,114,083.

Specification of Letters Patent.

Patented Oct. 20, 1914.

Application filed March 26, 1913. Serial No. 756,862.

To all whom it may concern:

Be it known that I, GEORGE JAMES WELCH, subject of the King of Great Britain, residing at Wanganui, in the Dominion of New Zealand, have invented a new and useful Improvement in Non-Refillable Bottles; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to that class of bottle in which provision is made against the re-filling of the bottle in order thus to prevent the fraudulent use of an empty bottle.

The invention consists in a special form of neck and of a special type of stopper inclosed within the neck and by the use of which freedom is obtained for the pouring out of the bottle's contents while a block is afforded against the entry of liquid through the neck into the bottle. This stopper is shaped to fit into and seal a tapering portion of the bottle's neck and is inclosed within a chamber formed in the neck and adapted to allow of a limited amount of vertical movement to the stopper. The stopper is also formed with a top surface such as to concentrate any inflowing liquid on to it so as to force it back on to its seat in the neck. This top surface is also preferably so formed that when an attempt is made to force liquid through the neck a whirling motion will be communicated to the stopper that will cause it to more tightly jam on to its seat in the bottle neck.

In fully describing the invention reference will be made to the accompanying sheet of drawings, in which:—

Figure 1 is a sectional elevation of the bottle neck with the stopper in position therein and shown in elevation. Fig. 2 is a plan of the stopper. Fig. 3 is a sectional elevation thereof. Fig. 4 is a sectional elevation of an alternative construction of the bottle neck.

The bottle neck *a* is formed as shown in Fig. 1 with sides tapering upward and outward from the body *b* and then carried sharply inward to form a ledge *c* having a constricted outlet opening *d* therein. The neck is then widened again to receive a sealing cork *e* that may be covered by a layer of sealing wax or the like *f*. A chamber *g* is thus formed in the neck such chamber having sides tapering inward toward

the bottom. The inside wall of the chamber *g* is made with its lower portion constricted to a lesser diameter than its upper portion so as thereby to form a slight ledge *h* all around it. The stopper *j* is also made of the shape shown in the drawings and is formed hollow so that it will be capable of floating in a liquid. The outer diameter of the stopper is tapered to correspond with the tapering in the wall of the chamber *g* and it, too is formed with its upper portion of enlarged diameter to its lower portion so as to constitute a shoulder *k* thereon. The upper portion of the stopper is adapted to fit into the upper portion of the chamber and its lower portion into the lower portion of the chamber and the shoulder *k* is so situated that when the stopper is right down, a space *m* will be inclosed between the shoulder and the ledge *h* in the chamber. This space will serve to form an air seal against any liability of liquid trickling through between the stopper and the chamber sides.

The stopper is made of such a length with regard to the height of the chamber *g* as to be capable of up and down movement therein for a limited amount. This upward movement is sufficient to permit of a space being left between the stopper and the chamber wall through which the liquid may pass from the bottle when the neck is inverted and the stopper drops. The top of the stopper is formed with upwardly projecting lugs *n* which engage with the ledge *c* in the neck and thereby provide the necessary passage for the liquid to escape around the side of the stopper along between the ledge *c* and the stopper top and out through the orifice *d*.

The upper surface of the stopper is made in the shape shown in the drawings, that is with a pair of inclined faces *o* extending around it from radially opposite points and inclining downward in opposite circumferential directions. These surfaces also dip toward the center of the stopper. Each inclined surface at the bottom of its incline joins with the surface of one of the projections *n* which is then given an upward inclination in the manner shown. The forcing of liquid into the neck will thereby engage with these inclined faces and cause the stopper to turn around and jam itself into its seat in the chamber to close the neck passage. To aid this action, the orifice *d* is preferably made with the inward taper

at its bottom shown in Fig. 1. Any attempt to refill the bottle by allowing liquid to flow in will cause the stopper to be carried back on to its seat and the passage thereby becomes sealed.

The stopper will be inclosed in the chamber *g* during the blowing of the bottle in the well known manner and for the initial filling of the bottle it will be held up in the chamber by means of a fine wire passed through a small eye *p* made in the bottom of the stopper and carried out through the neck. When the bottle has been filled, the wire is withdrawn thereby permitting the stopper freedom to act in the manner required for the purpose of the invention.

Instead of the ledge *c* being made integrally with the bottle neck *a* as shown in Fig. 1, it may be made as a disk that fits into the neck as shown in Fig. 4. It is then held in place therein against any withdrawal by means of the spring catches *r* which engage with the groove *s* in the internal periphery of the neck in a manner already well known. This manner of constructing the apparatus will permit of the stopper *j*

being placed in the bottle after filling and for the disk then being inserted to lock the stopper in the neck in the required manner.

What I do claim as my invention, and desire to secure by Letters Patent is:—

In non-refillable bottles, a neck for the bottle formed with a constricted portion and a chamber beneath such portion having sides inclining inward toward the bottom end and formed with a ledge part way down its inclined side, and a stopper inclosed within the chamber and capable of limited vertical movement therein such stopper being formed with tapering sides having a shoulder thereon part way down and being adapted to fit the chamber above and below the ledge therein and to inclose a space between the ledge and the shoulder substantially as and for the purposes specified.

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

GEORGE JAMES WELCH.

Witnesses:

WALTER ALEXANDER,
M. E. BROWN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."