(No Model.)

W. A. MILLER.

SELF SEALING BOTTLE.

No. 537,843. Patented Apr. 23, 1895.

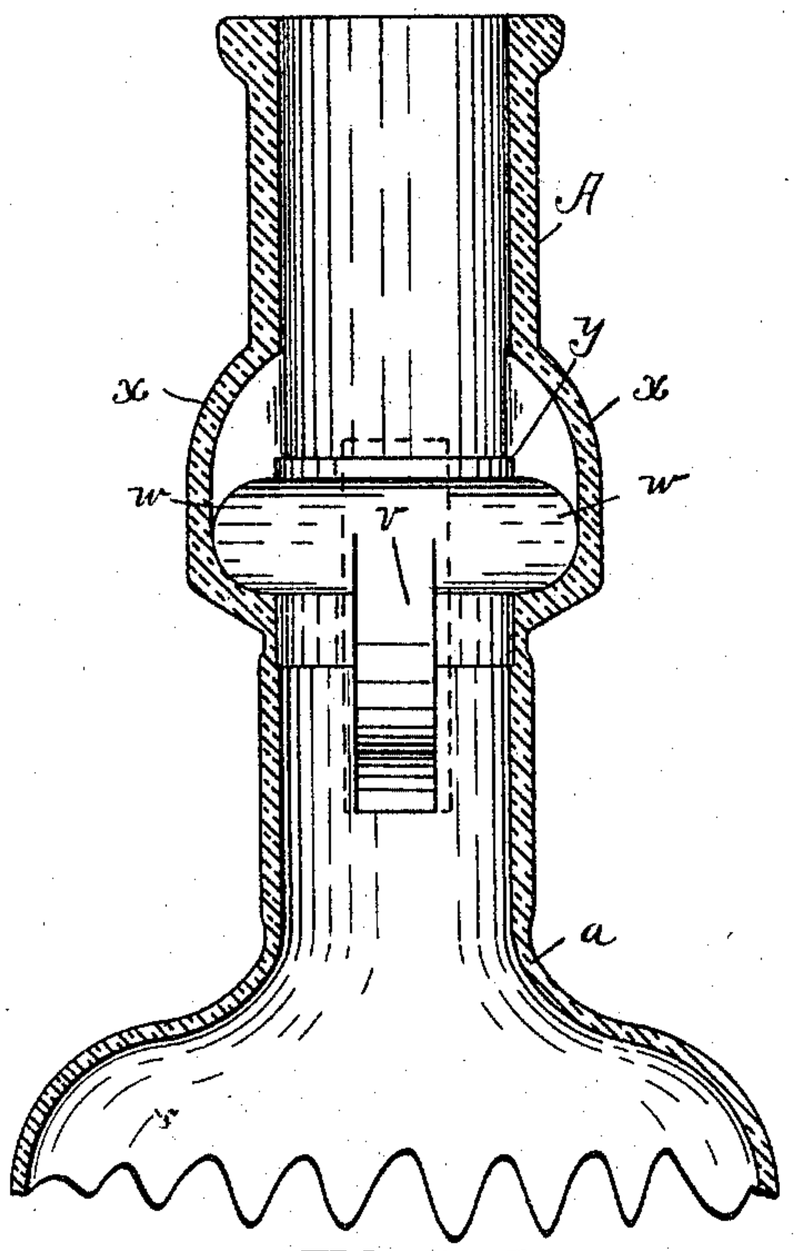

Fig. 1

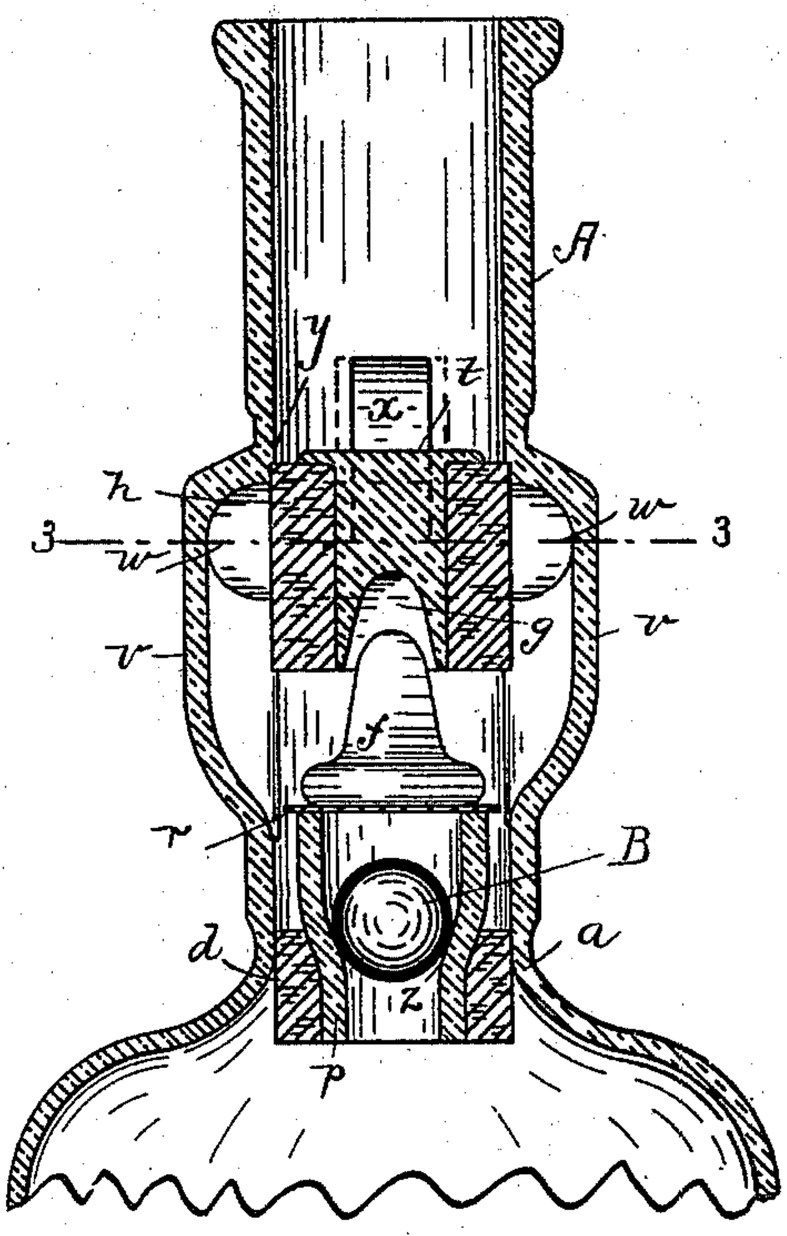

Fig. 2.

Fig. 3.

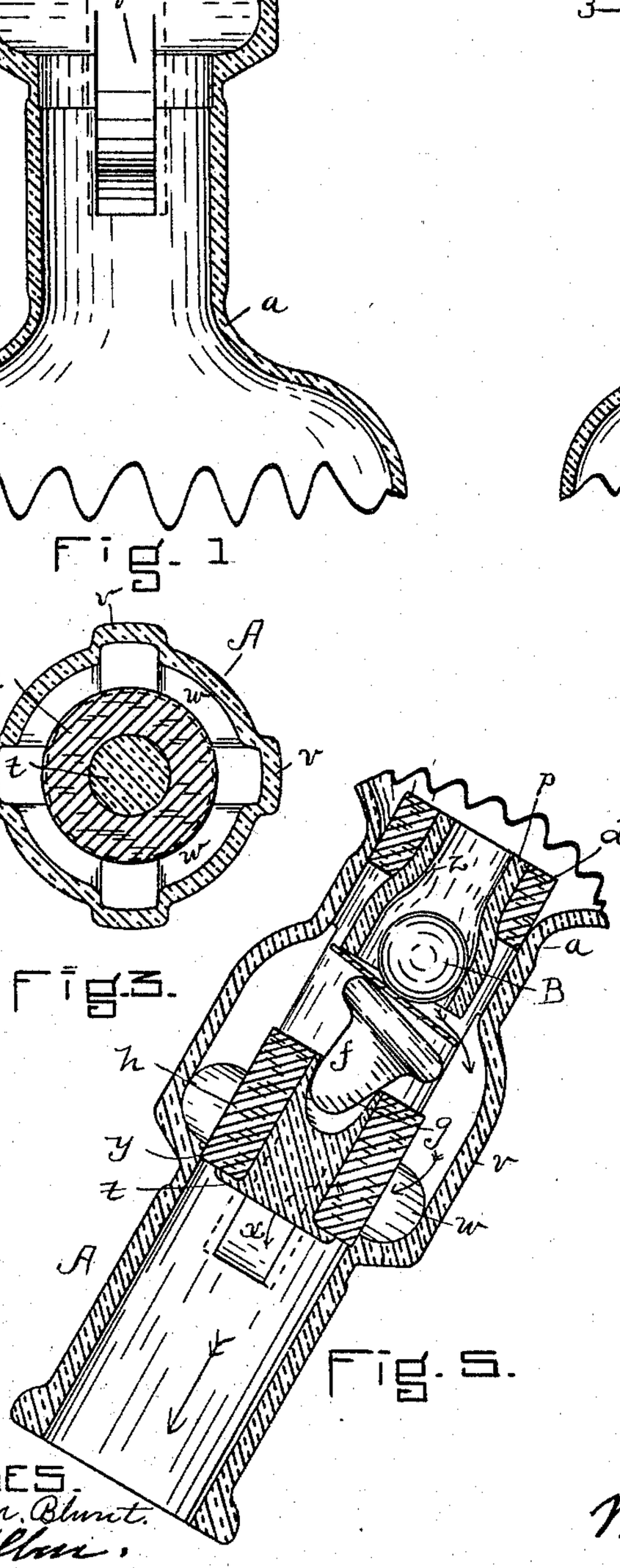

Fig. 5.

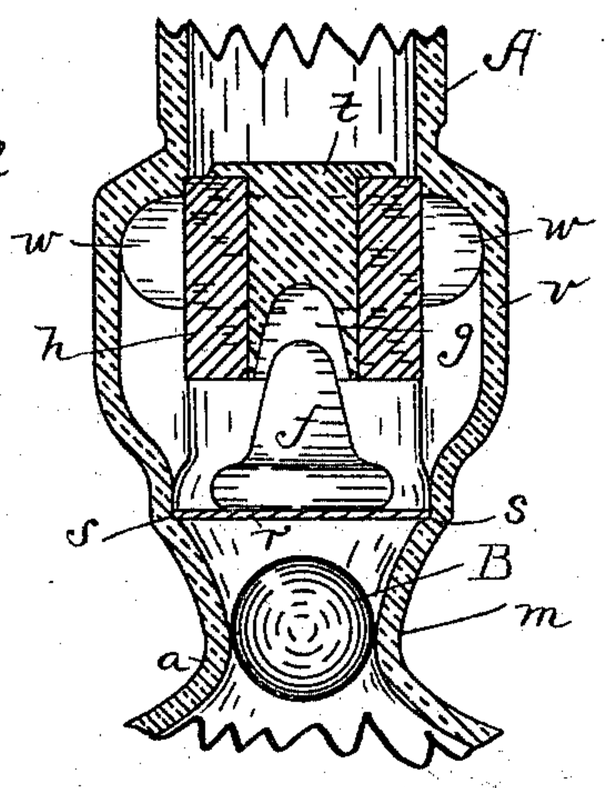

Fig. 4.

WITNESSES.
Matthew M. Blunt.
C. M. Wilson.

INVENTOR.
William A. Miller
By O. M. Shaw ATT'Y

UNITED STATES PATENT OFFICE.

WILLIAM A. MILLER, OF BOSTON, MASSACHUSETTS.

SELF-SEALING BOTTLE.

SPECIFICATION forming part of Letters Patent No. 537,843, dated April 23, 1895.

Application filed February 11, 1895. Serial No. 537,862. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. MILLER, of Boston, in the county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Self-Sealing Bottles, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical transverse section of the neck of my improved bottle, the body of the bottle being broken off and the valve and casing removed; Fig. 2, a like view showing the valves in position; Fig. 3, a horizontal section taken on line 3—3 in Fig. 2; Fig. 4, a view similar to that shown in Fig. 2 illustrating a modification; and Fig. 5 a sectional view showing the bottle inverted and the valve unseated.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to a device for closing the neck of a liquor bottle so that, after having been filled and emptied of its original contents, it cannot be refilled without breaking the bottle or so displacing the parts that it could be readily detected.

In the drawings, A, represents the neck of the bottle, which at its base, or where it joins the body of the bottle, is slightly contracted, as at *a*.

A glass tube, *p*, has its upper end slightly expanded forming a valve-seat, *z*. This tube is held in a cork ring, *d*, which is crowded into the contracted portion, *a*, of the neck, A. Covering the mouth or upper end of this tube there is a horizontally arranged disk of mica or other slightly flexible material which will not corrode in the liquor. A ball-valve engages the seat, *z*, below said disk.

Above the disk the neck is expanded to form preferably two vertically curved ducts, *v*, at diametrically opposite sides of the neck. Traversing the upper ends of these ducts there is a horizontally arranged annular groove or duct, *w*. Alternating with the ducts, *v*, there are similar vertical ducts, *x*, the lower ends of which enter the horizontal duct, *w*. The inner wall of the duct, *w*, is formed by a cork ring, *h*, dropped into an annular groove, *y*, in the neck.

A glass plug, *t*, is held in the ring, *h*, and has a chamber, *g*, in its lower end. A conical follower, *f*, normally rests on the mica disk, *r*, and has its apex projecting into said chamber.

In the use of my improvement the bottle is filled in the usual manner. The ring, *d*, and tube, *p*, are then inserted and the ball and mica disk and follower are disposed within the neck as shown, the main portion of the neck being closed by the plug. The ring, *h* is preferably first soaked in water and when inserted in the neck, will expand into the groove, *y*, holding the parts in position. The solid plug prevents it being withdrawn by means of a corkscrew or other implement without destroying these parts. The alternating ducts, *v*, *x*, prevent the insertion of a wire for lifting the disk and valve.

To empty the bottle it is inverted in the usual manner or as in Fig. 5. The follower, *f*, is partially projected into the chamber, *g*. The ball, B, leaves it seat, *z*, and disengages the disk, *r*, from the mouth of the tube, *p*, opening said tube for the free flow of the liquid from the body of the bottle which passes around the ball and into a duct, *v*, as indicated by the arrows in the drawings; thence through a horizontal portion of the duct, *w*; thence out the adjacent duct, *x*.

When the bottle is again in vertical position the ball will drop onto its seat and the follower will drive the disk back onto the mouth of the tube, *p*, closing the neck so that liquid cannot be poured into the body of the bottle.

In the modification shown in Fig. 4, the contracted portion, *a*, forms the valve seat, *m*, the ring, *d*, and tube, *p*, being omitted. The ball, B, engages this seat as before. This cheapens the cost of manufacture. The disk, *r*, in this form seats on the shoulder, *s*, formed in the neck of the bottle. Its operation is the same as before described.

It is essential that the disk and plunger or follower be employed in order to render the edvice absolutely effective for the purposes claimed, as I find that when they are omitted it is possible to draw the ball from off its seat by means of suction and permit so much liq-

uid as might be contained in the neck above the valve to slowly trickle into the body. This is an extremely slow and unprofitable process and for many ordinary uses the disk may therefore be omitted. When it is employed, however, this objection is entirely overcome as the greater the pressure applied by exhaustion or suction, the harder the disk will be forced onto its seat.

Having thus described my invention, what I claim is—

1. In a bottle of the class described a loose disk of mica or similar material engaging in the bottle neck whereby said neck is normally closed in combination with a ball-valve in said neck below said disk; an obstruction in the neck above the disk arranged to permit the flow of the bottle contents and prevent the insertion of an implement whereby the valves could be opened and a follower engaging the outer face of said disk substantially as described.

2. In a self-sealing bottle a ball-valve: a disk closing the neck above said valve; a plug closing the neck above said disk; an angular duct in the neck opening above and below said plug; and a follower engaging the upper or outer face of said disk substantially as and for the purpose set forth.

WILLIAM A. MILLER.

Witnesses:
O. M. SHAW,
C. M. WILBUR.