No. 747,402. PATENTED DEC. 22, 1903.

W. E. FORSTER.

SELF SEALING BOTTLE.

APPLICATION FILED APR. 14, 1897. RENEWED MAY 23, 1903.

NO MODEL.

FIG_1_

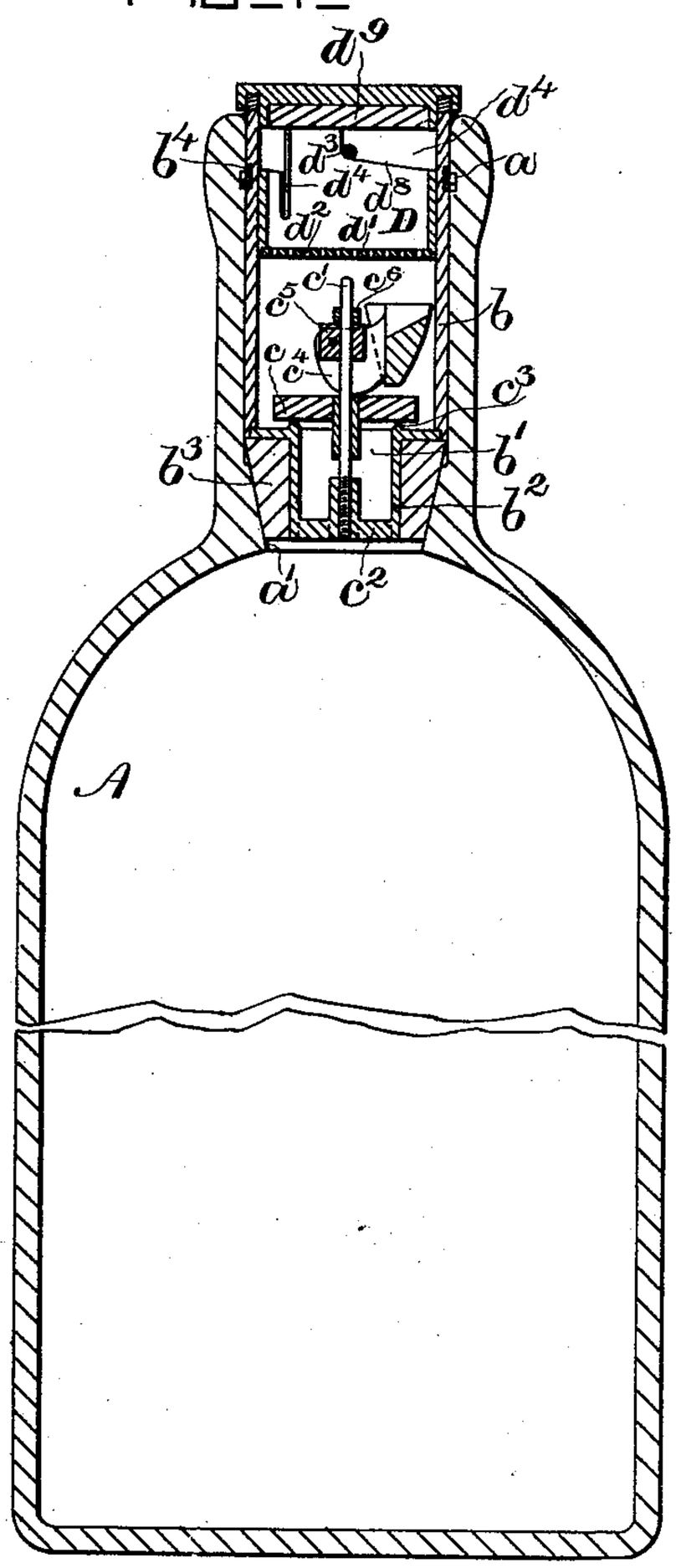
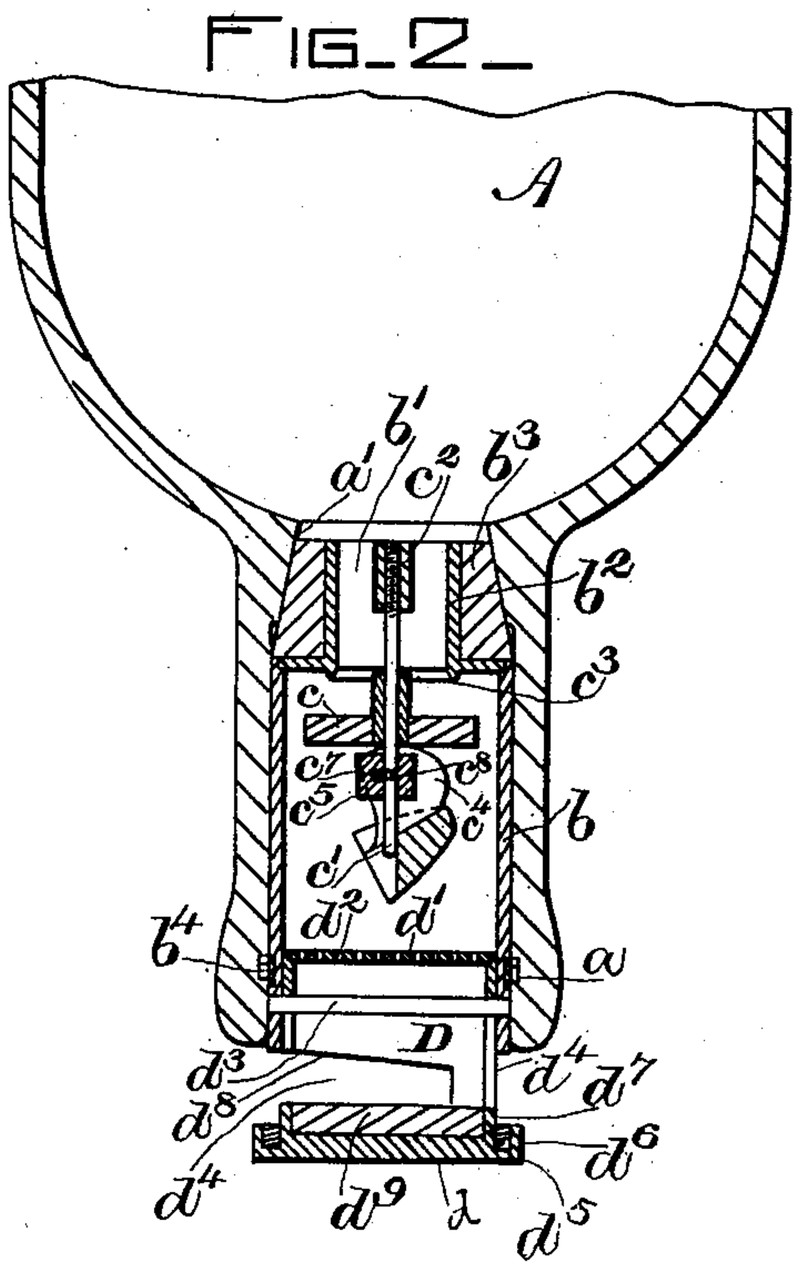


FIG_2_



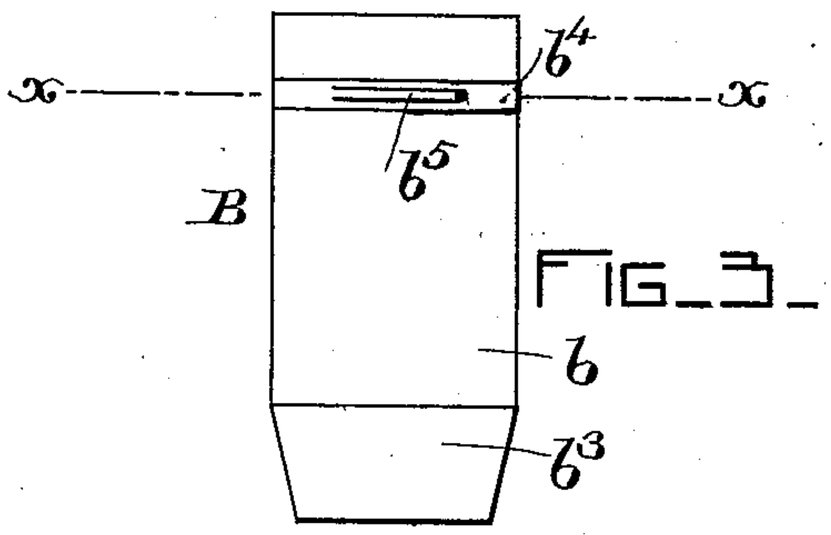


FIG_3_

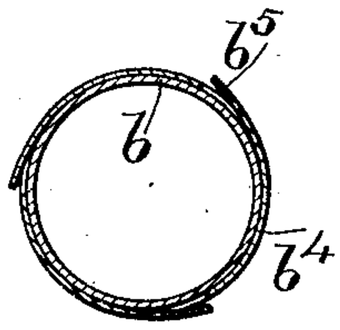


FIG_4_

WITNESSES

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No. 747,402. Patented December 22, 1903.

UNITED STATES PATENT OFFICE.

WILLIAM E. FORSTER, OF LYNN, MASSACHUSETTS.

SELF-SEALING BOTTLE.

SPECIFICATION forming part of Letters Patent No. 747,402, dated December 22, 1903.

Application filed April 14, 1897. Renewed May 23, 1903. Serial No. 158,547. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. FORSTER, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Self-Sealing Bottles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to an improved self-sealing bottle, and more particularly to an improved valve and valve-guard which may be quickly and readily fitted in the neck of the bottle and when so fitted will be permanently secured in position therein.

The objects of the invention are to provide improved means for locking the valve in the bottle-neck and to provide a guard which will effectually protect the valve from being tampered with or manipulated to admit liquid into the bottle, the said guard being arranged to open and close for the purpose of permitting the liquid to flow from the bottle and when closed taking the place of the usual cork or stopper usually employed in bottles of this type.

To the above end the present invention consists of the devices and combination of devices which will be hereinafter described and claimed.

The present invention is illustrated in the accompanying drawings, in which—

Figure 1 represents a broken longitudinal section of a bottle embodying the same with the guard and valve closed. Fig. 2 represents a fragmentary longitudinal section like that shown in Fig. 1, the bottle being inverted, the valve and guard open, and showing a modification of the valve device. Fig. 3 is a side elevation of the device removed from the bottle; and Fig. 4 is a transverse section upon line $x\,x$, Fig. 3.

Similar letters of reference represent similar parts throughout the several views.

In the drawings, A represents the bottle, which may be made of any suitable material and of any desired shape or construction.

B represents the valve-cage, which comprises a substantially cylindrical tube b, of any suitable material, open at the top and having at its lower end an aperture b' for the passage of the liquid from the bottle.

At its lower end the tube b has a short tube b^2, which is surrounded by a packing of cork or other suitable material b^3 for a purpose which will be described.

The tube b is provided with a ring b^4, which is preferably fixed into a groove cut into the outer surface of the tube b, and said ring b^4 has outwardly-projecting spring-fingers b^5, which are preferably cut from the body of the ring. These fingers b^5 are arranged to engage a groove a, formed in the neck of the bottle A, and effectually lock the valve-cage B within the neck of the bottle. When the valve-cage B is thus locked within the bottle-neck, the cork packing b^3 engages the contracted portion a' of the bottle-neck and prevents the passage of liquid between the outer surface of the valve-cage B and the bottle-neck.

Within the tube b and acting to automatically close the opening b' is a valve c, which may be of any suitable form and arrangement, that shown in the drawings being in its general form and arrangement like that shown in my United States Patent No. 580,521, of April 13, 1897. The valve c is arranged to slide upon a rod c', which is supported upon a cross-bar c^2, spanning the short tube b^2, and is arranged to engage a valve-seat c^3, surrounding the opening b' in the tube b. The valve c is forced into contact with the valve-seat c^3 by a weighted cam c^4, which is pivotally secured upon a block c^5, mounted upon the rod c'.

Instead of fixing the block c^5 upon the rod c' by collars fixed to said rod upon each side of the block c^5, as in my former construction, said block in the form of my invention shown in Fig. 1 of the accompanying drawings is permitted to have a limited movement along said rod c', the movement in one direction being limited by a stop c^6.

In Fig. 2 of the present drawings the block c^5 is fixed to the rod c' by a pin c^7, which is driven into said block c^5 and engages a groove c^8, cut into said rod. The pin c^7 also acts as the pivot-pin of the weighted cam c^4. By this arrangement the construction is very much simplified and cheapened without affecting its

efficiency. In all cases the block c^5 is free to revolve upon the rod c', so that the weighted cam c^4 may freely swing thereon to prevent it being centered upon the rod c' when the bottle is held upon its side in an attempt to hold the valve c open to admit liquid to the bottle A. When such an attempt is made, the weighted cam c^4 will immediately swing to such a position as to act upon the valve c and close the same against the valve-seat c^3.

D represents the guard, which comprises a hollow cylinder which is of such a size in diameter as to fit closely the bore of the tube b, in which it is adapted to freely slide.

The guard D has a cap d and a bottom plate d', which is provided with apertures d^2 to permit the flow of liquid from the bottle A, but which prevents the insertion of a wire or other instrument into the tube b for the purpose of tampering with the valve c.

The guard D is secured within the tube b by a bar d^3, which extends diametrically across the tube b through the slots d^4 in the guard D. In order to permit the guard D to be drawn out from the tube b for the purpose of permitting liquid to flow from the bottle A and to hold said guard in its inward position, the slots d^4 therein are made, as shown clearly in Figs. 1 and 2, with branches, which extend at right angles to each other, the vertical branches permitting the guard to be drawn out and the horizontal branches permitting the guard to be rotated for the purpose of locking the guard D in its retracted position. When thus locked in its retracted position, the guard D closes the opening in the outer end of the tube b and obviates the use of a cork or stopper. In order to tightly close the opening in the outer end of the tube b, the cap d of the guard D has an extended flange d^5, which is provided with a groove d^6, in which is placed a suitable packing d^7 of cork or other suitable material, and the lower edges of the horizontal slots in the guard D are inclined as shown at d^8, in order to exert a cam action upon rod d^3 to draw the guard D inward and bring the packing d^7 in close contact with the top of the tube b, thus tightly closing the bottle.

In the end of the guard D under the cap d is placed a filling d^9, which fills up the space above the horizontal slots in the guard and prevents the retention of any liquid therein when pouring from the bottle.

The operation has been sufficiently set forth in the foregoing description of the construction, and further explanation is deemed unnecessary.

Having fully described my invention and its mode of operation, I claim as new and desire to protect by Letters Patent of the United States—

1. A self-sealing bottle, having, in combination, a valve, a weighted cam arranged to have a moving contact with the valve to close the same, and a sliding carrier for the cam, substantially as described.

2. A self-sealing bottle, having, in combination, a tube provided with a valve and inserted in the neck of the bottle, a guard having a perforated bottom and arranged to close the outer end of the tube, and connections between the guard and the tube arranged to permit sliding movement of the guard within the tube but to prevent the removal of the guard from the tube, substantially as described.

3. A self-sealing bottle, having, in combination, a tube inserted in the neck of the bottle and provided with a valve-seat, a rod supported by the tube, a valve guided by the rod, a weighted cam arranged to have a moving contact with the valve to close the same and a sliding carrier upon the rod for the cam, substantially as described.

4. A self-sealing bottle, having, in combination, a valve, a weighted cam arranged to have a moving contact with the valve to close the same, a rod, a sliding carrier for the cam mounted upon the rod, and means carried by the rod for limiting the movement of the carrier when the cam closes the valve, substantially as described.

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

WILLIAM E. FORSTER.

Witnesses:
A. O. ORNE,
A. E. WHYTE.