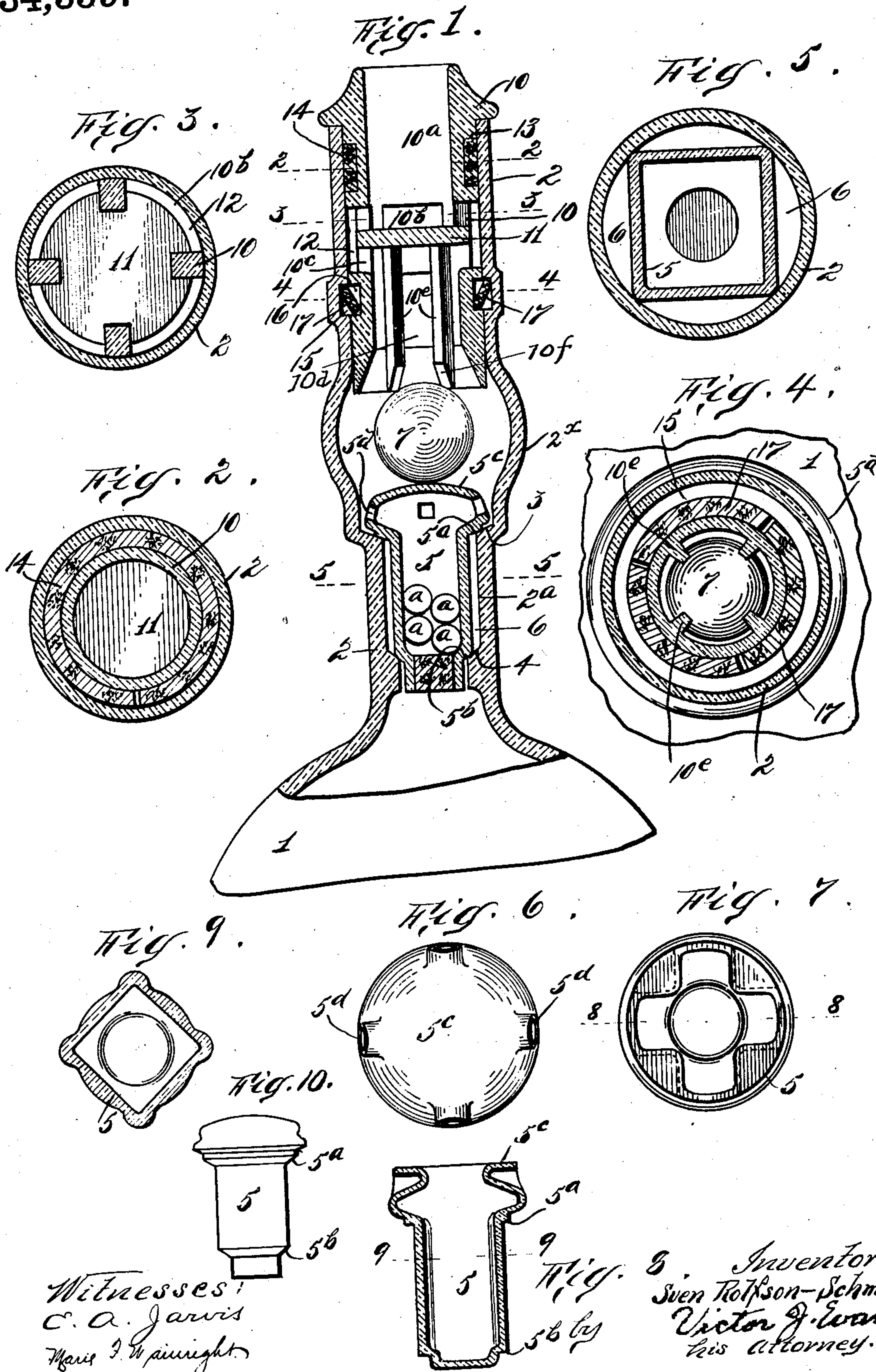


S. ROLFSON-SCHMIDT.
BOTTLE.
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934,359.



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UNITED STATES PATENT OFFICE.

SVEN ROLFSON-SCHMIDT, OF HUNTINGTON, NEW YORK.

BOTTLE.

934,359.

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To all whom it may concern:

Be it known that I, SVEN ROLFSON-SCHMIDT, a subject of the King of Sweden, and resident of Huntington, in the county of Suffolk and State of New York, have invented certain new and useful Improvements in Bottles, of which the following is a specification.

The object of my invention is to provide improved means adapted to prevent the refilling of a bottle after its original contents have been emptied, and also to provide improved means to prevent tampering with the valve or its weight while at the same time permitting the ready outflow of liquid from the bottle.

My invention comprises the novel details of improvement and combinations of parts that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming part hereof, wherein,

Figure 1 is a vertical section of a portion of a bottle provided with my improvements; Fig. 2 is a section on the line 2, 2, in Fig. 1; Fig. 3 is a section on the line 3, 3, in Fig. 1; Fig. 4 is a section on the line 4, 4, in Fig. 1; Fig. 5 is a section on the line 5, 5, in Fig. 1; Fig. 6 is a plan view of the valve shown in Fig. 1; Fig. 7 is a plan view of a modified form of the valve; Fig. 8 is a section on the line 8, 8 in Fig. 7; and Fig. 9 is a section on line 9—9 of Fig. 8. Fig. 10 is a side view of a further modified form of valve.

Similar numerals of reference indicate corresponding parts in the several views.

The bottle 1 has a suitable neck 2 provided with seats or annular shoulders 3, 4 suitably spaced apart, seat 4 being shown of less diameter than the seat 3. The valve is indicated at 5 and is of suitable shape to fit and slide within the bottle neck. Said valve is shown provided with a seat 5^a near the upper portion and a seat 5^b near the lower portion adapted respectively to fit seats 3 and 4, and the portion of the valve body between seats 5^a, 5^b, is of less area than the corresponding portion 2^a of the bottle neck providing space or spaces 6 between the valve body and the neck and between the seats to permit the flow of fluid outwardly from the bottle when the latter is inverted. The part of the valve between seats 5^a, 5^b, may be substantially rectangular in cross section so as to be guided in the bottle neck and provide the spaces 6 (see Fig. 5).

In Figs. 1, 5 and 6 valve 5 is shown hollow and closed at its bottom, the upper portion of the valve being provided above seat 5^a with a wall or rest 5^c upon which a weight 7 may rest. In the form shown in Figs. 1, 5 and 6 the valve 5 is provided with openings 5^d above seat 5^a whereby a hollow valve opening outwardly in the bottle neck is provided.

In Figs. 7, 8 and 9 valve 5 is shown open on top, closed at the bottom having a hollow interior and provided with the top portion 5^c upon which weight 7 may rest, the seats 5^a, 5^b being arranged to fit seats 3 and 4 of the bottle neck in manner before described.

The valve may be made hollow without any openings to admit air or made solid as indicated in Fig. 10, and provided with the seats 5^a, 5^b, spaced apart as before described, to provide the spaces 6 between the valve and the bottle neck.

With the arrangements described, the valve will prevent the bottle from being refilled by reason of the weight holding the valve to its seat when the bottle is in an upright or horizontal position, and if the bottle is inverted and liquid forced into the neck the valve will be seated by the flow of the liquid, as the liquid will press against the top of the valve or may enter the same and thus serve to push the valve to its seats. Furthermore, if a vacuum is formed in the bottle the valve will close as soon as the vacuum is broken or liquid admitted into the neck, and the arrangement of the space or spaces 6 between seats 3 and 4 and the corresponding seats of the valve is such that if a vacuum is applied to the bottle neck and liquid then enters the neck and forces the valve to its seats the vacuum in the space or spaces 6 will serve in holding the valve to its seat in addition to the partial vacuum that may be within the bottle. The valve may contain one or more weights or balls *a* to assist in opening the valve when the bottle is inverted.

To retain weight or ball 7 in proper position to permit the ready outflow of liquid from the bottle and prevent tampering with the weight and valve I provide the following arrangement. At 10 is a shell, frame or the like in suitable cylindrical form to fit within the bottle neck and provided with an outlet passage 10^a adapted to receive a cork or stopper, and said shell is provided with a transversely disposed wall or shelf 11 above

which are one or more outlets or openings 10^b in the wall of the shell, the wall or shelf 11 being of less diameter or area than the diameter or area of the bore of neck 2, providing passageway 12 between the edge of said wall or shelf and the bottle neck. Below wall or shelf 11 the shell or frame 10 is provided with outlets or openings 10^c communicating with passage 12 from the bore 10^a of shell or frame 10, whereby liquid from the bottle may flow into bore 10^a, thence through outlets 10^c into passage 12, thence inwardly through openings 10^b above wall or shelf 11 and through bore 10^a. The shell or frame 10 is provided with ribs 10^e shown extending along its wall, the lower edges of said ribs being beveled or inclined upwardly and inwardly at 10^f to engage weight or ball 7 when the bottle is inverted. The valve is shown provided with a curved or convex top surface, causing the ball to lie between such surface and the inner end of frame or shell 10 to keep the valve closed. The inclined ends 10^f of ribs 10^e serve to permit the ball to move outwardly to enable the valve to unseat and to permit the flow of liquid past the ball when the bottle is inverted. Shell or frame 10 is shown provided with an annular recess 13 within which a cork or other suitable material 14 is placed to prevent leakage between the neck and shell or frame 10, which material 14 may be placed in recess 13 before frame or shell 10 is pushed into the bottle neck. To permanently secure frame or shell 10 to the bottle neck I have shown the bottle neck provided with an annular recess 15 registering with a corresponding recess 16 in the outer surface of frame or shell 10, and in said recesses one or more strips of cork or other suitable material 17 are placed to act as an obstruction to the withdrawal of frame or shell 10. By providing several pieces of cork of suitable size adapted to fit closely within recess 16 the shell 10 with the pieces of cork in recess 16 may be pushed into the bottle neck and then when recess 16 registers with recess 15 the piece of cork will move outwardly, and extend partly within recess 15 as well as within recess 16, in substantially the manner shown in Fig. 1, whereby frame or shell 10 will be permanently secured in the bottle neck as the pieces of cork 17 act in the nature of wedges to prevent withdrawal of frame or stopper 10.

The relative arrangement of the parts is such that weight or ball 7 will rest upon the valve when the bottle is upright, and said weight or ball is of such dimensions that when the bottle is horizontal the weight or ball will simultaneously bear against the valve and the inner edge of frame or shell 10 and thus hold the valve to its seat, and to accommodate the ball 7 in such position the neck may be provided with an enlarged

portion 2* between the inner edge of frame or shell 10 and valve seat 3, within which enlarged portion the ball will have free movement, and to permit the outflow of liquid from the bottle the same must be tilted in such position as to extend in the direction of the neck downwardly at an angle to the horizontal to enable the ball to ride up upon the inclined ends 10^f to allow the valve sufficient freedom of movement to open to permit the outflow of liquid from the bottle through the bore of shell 10 around the ball. When the position of the bottle is reversed the weight will ride back against the valve and close the same. The effect of this arrangement is that when the bottle is held in a horizontal position the ball will maintain the valve upon its seat to prevent the inflow of liquid, and when the bottle is in a position with the neck inclined downwardly with respect to the horizontal, the inflow of liquid into the neck will cause the valve to be seated to prevent liquid entering the bottle. When an attempt is made to pass liquid into the neck of the bottle the hollow valve will rise to its seat. The arrangement of frame or shell 10 is such as to prevent a wire or other instrument from being pushed into the bottle neck to dislodge the valve from its seat or keep the valve off of its seat.

The arrangement of the valve, the weight or ball and the frame or shell 10 may be used with a single seat on the valve and a corresponding seat on the neck if preferred.

Having now described my invention what I claim is:—

1. A bottle having a neck provided with a plurality of seats spaced apart, and a hollow valve having a plurality of seats spaced apart to co-act with the seats of the neck, the body of the valve intermediate the seats being of greater diameter than the similar dimension of the lower seat.

2. A bottle having a neck provided with a plurality of seats spaced apart, and a hollow valve having a plurality of seats spaced apart to co-act with the seats of the neck, the body of the valve intermediate the seats being of greater diameter than the similar dimension of the lower seat, said valve being closed against the admission of fluid below the upper seat.

3. A bottle having a neck provided with a plurality of spaced seats, a hollow valve having a plurality of spaced seats to co-act with the seats of the neck, said valve being circumferentially enlarged above the upper seat and closed to form a head, and a weight to coöperate with the head in seating the valve.

4. A bottle having a neck provided with a plurality of spaced seats, a hollow valve having a plurality of spaced seats to co-act with the seats of the neck, said valve being circumferentially enlarged above the upper

seat and closed to form a head, a weight to cooperate with the head in seating the valve, and means secured in the bottle neck above the weight to limit movement of the latter lengthwise the neck in cooperation with the valve.

5 5. A bottle having a neck provided with a plurality of seats, a hollow valve having a plurality of seats to co-act with the seats of the neck, said valve above the upper seat being circumferentially enlarged and formed with an opening communicating with the interior of the valve, said opening being arranged outwardly beyond the upper seat of the valve.

10 6. A valve for use in non-refillable bottles including a hollow body formed near the upper end to provide a seat, said body being additionally formed near the lower end to provide a second seat, the body being closed against the admission of fluid below the up-

per seat and formed with an opening communicating with the interior of the body above the upper seat.

7. A bottle having a neck provided with 25 a plurality of seats spaced apart, a hollow valve having a plurality of seats spaced apart to co-act with the seats of the neck, the body of the valve intermediate the seats being of greater diameter than the similar 30 dimension of the lower seat, the valve body above the upper seat being circumferentially enlarged to form a head, and a weight to cooperate with the head in seating the valve.

Signed at New York city, in the county of 35 New York, and State of New York, this ninth day of July, A. D. 1909.

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Witnesses:

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