F. H. SILVERTHORNE.

BOTTLE VALVE MOUNTING.

APPLICATION FILED NOV. 4, 1919.

1,346,137. Patented July 13, 1920.

Fig. 1.

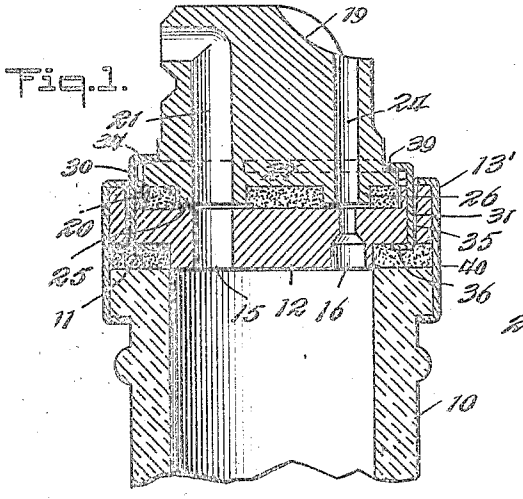
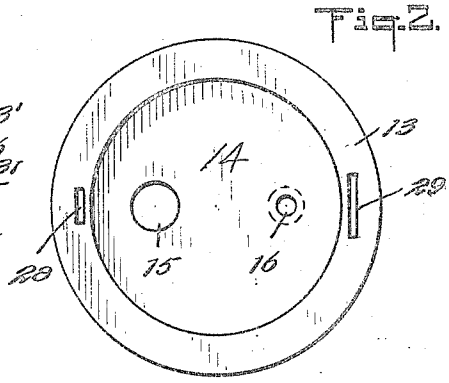


Fig. 2.



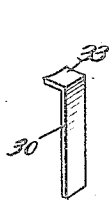


Fig. 3.

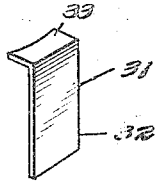
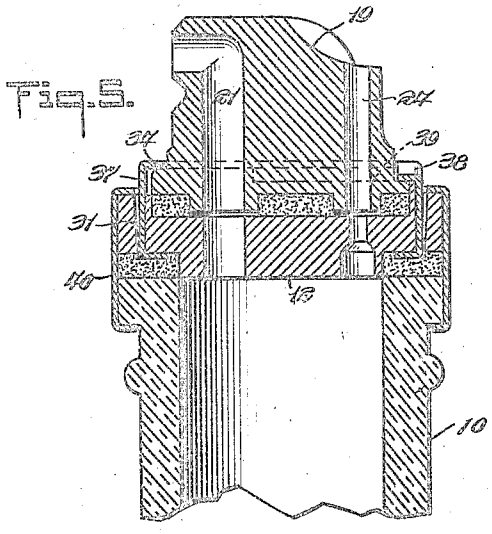


Fig. 4.

Fig. 5.



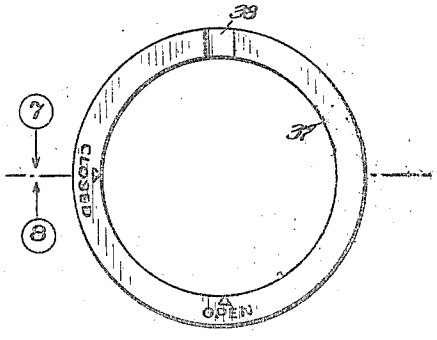


Fig. 6.

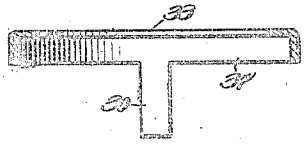


Fig. 7.

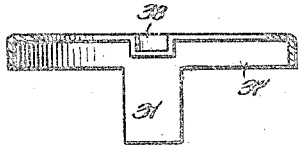


Fig. 8.

WITNESSES:

INVENTOR

Frank H. Silverthorne

BY

Harris & Orton.

ATTORNEYS

UNITED STATES PATENT OFFICE.

FRANK H. SILVERTHORNE, OF NEW YORK, N. Y.

BOTTLE-VALVE MOUNTING.

1,346,137. Specification of Letters Patent. Patented July 13, 1920.

Application filed November 4, 1919. Serial No. 335,735.

To all whom it may concern:

Be it known that I, FRANK H. SILVERTHORNE, a citizen of the United States, and resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Bottle-Valve Mountings, of which the following is a specification.

The invention relates to a valvular bottle pourout closure of a type which serves not only as a means for sealing the bottle when not in use but also serves to constitute a means for delivering a stream of liquid, such as ink, from the bottle while permitting a free flow of air into the bottle to take the place of the displaced liquid and the present disclosure constitutes an improvement in devices of the character disclosed in my Patent No. 1,314,489, patented August 26, 1919.

In the patented device there was disclosed a valve seat and a nozzle valve rotatably mounted thereon and the parts of which were formed of a composition capable of being readily molded. In this disclosure the nozzle was held in rotatable relation to its seat by means of a retaining ring having the same composition as the nozzle. A high degree of care has to be exercised in capping the bottles with this device to insure against a binding action between the retaining composition ring and the composition nozzle. It is understood that in devices of the character disclosed, it is necessary to insure not only against leakage between the movable parts of the valve but at the same time, to permit a freedom of movement of the movable parts. It is further understood that the commercial forms of bottles possess slight variation in sizes and it is physically impossible to provide the cork washers of uniform size and compressibility. When the retaining ferrule is positioned on the commercially imperfect forms of the devices, such as is disclosed in my prior patent, above identified, the ferrule is very apt to exert an abnormal pressure on the nozzle with the result that the nozzle is either difficultly movable or, on the contrary, it develops a looseness of play which is decidedly objectionable. Accordingly, the primary object of this invention is to provide a mounting for retaining the nozzle in engagement with its seat and which will permit of the preformation of a pressure between the movable parts which can be accurately controlled and which will be independent of any effect which might otherwise be imposed thereon by the mounting of the device on the bottle.

Incidental to the desideratum of freedom of rotary movement between the nozzle and its means for holding it to its valve seat, the invention contemplates the utilization of a metallic retaining means in distinction from the composition retaining means disclosed in the above identified patent, so as to insure a sliding contacting surface of metal on composition, rather than the relatively high coefficient of friction provided by the interengagement of composition on composition.

There is a market requirement in connection with devices of this character that they must be cheaply constructed; a small fraction of a cent saved in manufacturing cost is vital from a commercial standpoint, and accordingly the present invention features a metallic retaining clip or ring construction which can be cheaply manufactured by a stamping operation and in which the valve nozzle and its seat can be quickly and accurately fastened together to provide a complete article of manufacture. It is the intention that this article be stored and sent to the bottle capping machine without any necessity on the part of the capping operator to see that the valve parts are in correct position.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of mechanism embodying my invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawings:—

Figure 1 is a vertical sectional view taken axially through a preferred embodiment of my invention shown attached to the upper portion of a bottle neck;

Fig. 2 is a plan view of the valve seat shown in Fig. 1 detached from the bottle and with the nozzle element removed;

Figs. 3 and 4 are detailed views of the retaining clip prior to being bent into position, shown in Fig. 1;

Fig. 5 is a view similar to Fig. 1 showing a slightly modified form of retaining means:

Fig. 6 is a plan view of the ring shown Fig. 5;

Fig. 7 is a vertical sectional view of the ring shown in Fig. 6, taken on the line 7—7 of this figure and looking in the direction indicated by the arrow; and

Fig. 8 is a similar view looking in the opposite direction.

The closure constituting the subject-matter of this invention is designed of an article of manufacture for attachment to any kind of a bottle or other receptacle of suitable size, and it is arranged to be placed on top of the bottle and fastened thereto by any conventional ferrule fastening device. The upper portion of such a bottle is shown at 10 in Fig. 1, positioned on top of which is a cork ring washer 11, constituting a cushioning device. Between the attachment and the bottle to prevent breakage when the bottles are assembled is a capping machine. The washer is designed to be placed under sufficient pressure to form a tight seal between the attachment and the bottle. A flat relatively thin disk 12 hereinafter indentified as a nozzle seat is fitted within the ring washer 11 and is provided with an upstanding rim 13 positioned on top of the washer to form an angle joint with the washer. The nozzle seat is outlined by a free peripheral edge 13′ adapted to be engaged by the ferrule for securing the device to the bottle as hereinafter described. The top of the nozzle seat within the inclosing rim is flat so as to provide a smooth bearing surface 14. The nozzle seat is provided with a circular liquid outlet opening 15 adjacent one side thereof and with a relatively small air inlet opening 16 positioned diametrically across the surface from the opening 15.

Revolubly positioned on a nozzle seat is a nozzle unit comprising a nozzle 19 and a flat disk gasket 20 positioned between the under side of the nozzle and the bearing surface 14 of the nozzle seat. The nozzle is provided with an inverted L-shaped liquid passageway 21 designed in one position of the nozzle to aline with the opening 15, to provide a liquid conduit from the interior to the exterior of the bottle. The nozzle is also provided with a straight, air inlet passageway 24 designed, when the passageway 21 is alined with the opening 15, to aline with the air inlet opening 16. In this way when the nozzle is in position permitting the discharge of the opening conduit, an open air intake is provided by the passageway 24 alining with the opening 16.

The lower ends of the passageways 21 and 24 are contained in lugs 25 and 26 which project below the bottom of the lower enlarged body portion of the nozzle and are snugly fitted within the openings in the gasket 20. This construction holds the gasket to the nozzle so that the gasket rotates with the nozzle about the bearing surface 14 of the nozzle seat.

The rim 13′ is provided at diametrically opposite points with a pair of relatively long recesses or slots 28 and 29 of which the slot 29 is of greater width than the slot 28 (as shown in Fig. 2) so as to defeat any possibility of erroneously assembling the parts in manufacturing the article. The slots are spaced inwardly from the edge 13′ slightly outward from the body portion 27. The nozzle is held to its seat by a pair of metal clips 30 and 31 fitted respectively in the slots 28 and 29. These clips are L-shaped, as shown in Figs. 3 and 4, with a shank portion 32 fitted in their respective slots and a broad head flange 33 designed to fit on a shoulder 34 formed on the body portion 27. In order to facilitate the insertion of clips in place, especially where the ring-form of Fig. 5 is used, the slots have a greater extent of opening at the top than at the bottom and this is provided by sloping the outer wall 35 of the slots inwardly and downwardly. However, whenever a tight fit of the clips is desired the slots are designed to minimize loose play of the clips. When assembled in position the lower ends 36 of the clips are bent inwardly under the rim 13 thus securing the nozzle to the seat.

It is suggested that instead of the separate retaining clips hereinbefore described in connection with the preferred form of the invention, it may be economical and save in the cost of assembling the nozzle on its seat, to connect the two clips, or rather connect the shoulder engaging flanges 33 of the two clips, so as to form a one-piece structure capable of being stamped to shape.

Accordingly, in the disclosure shown in Figs. 5 to 8, the clips are formed integrally with a ring 37 which has the additional advantage of providing a more extensive surface for engaging the shoulder on the nozzle than is provided by the flanges of the retaining clips as shown in the preferred embodiment of the invention. In the act of stamping the ring thus formed there is provided an offset depressed portion 38 designed to engage in the arcuate slot 39 formed in the shoulder 34 for the purpose of limiting the extent of rotary movement of the valve nozzle relative to the seat.

It will be understood as thus far described the device constitutes a completely assembled article of manufacture in which the clips, either in the separate form shown in Figs. 1, 3 and 4, or in the ring form shown in Figs. 5, 6, 7 and 8, constitute the means for holding the nozzle mounted in position on its seat and free for rotary movement. In the process of underlapping the end of the clips under the seat, the gasket 20 between the seat and the nozzle is compressed to that extent which is found in practice to be neces-

sary to prevent any leakage past the relatively movable parts of the valve and which at the same time will not bind the bottle or impose any abnormal resistance to the desirable free rotation of the nozzle to or from its opened position. When the units have been thus assembled it will retain its present resistance to rotary movement and will not be effected by any capping or other succeeding operation for positioning the article on the bottle.

The article of manufacture thus defined is fastened to the bottle by any suitable means, such for instance, as by means of the usual metal ferrule 40 which is in overlapping engagement with the seat rather than in overlapping engagement with the retaining ring as shown in my patent, above identified. As the retaining ferrule is thus spaced from the means which holds the nozzle to the seat, it is appreciated that any abnormal pressure exerted by the capping machine will simply compress the washer 11 more or less and any such pressure, or, on the contrary, lack of pressure, will have no effect whatsoever upon the present compression of the gasket 20.

It is noted that in the disclosure in Fig. 1, the right hand clip is of less height than the left hand clip, so that in this instance the smaller clip with its upper flange positioned on the groove 39 constitutes a means for limiting the rotary movement of the nozzle on its seat. This simple metal clip arrangement provides a cheap construction for effecting this limitation to rotary movement of the nozzle and in the form of the retaining means disclosed in Fig. 5, this same effect is produced by the depression 38 in the ring. Another way of regarding this structure is to consider that the depressed portion 38 and the shank portion 32 immediately therebelow is the equivalent of the single clip shown in Fig. 4 and the rest of the ring is simply an enlargement of the left hand clip of Fig. 1.

While I have shown and described, and have pointed out in the annexed claims, certain novel features of my invention, it will be understood that various omissions, substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

Having thus described my invention, I claim:

1. A closure for a bottle including a rotary valvular construction for controlling the flow from the bottle said construction including a nozzle seat provided with an opening extending therethrough, a pouring nozzle rotatably mounted on said seat and provided with an opening adapted to register with the opening in the seat when the nozzle is rotated into its open position, a retaining ring encircling said nozzle and constituting the sole means for holding the same in rotatable relation to the seat, means constituting an extension from the ring for securing the same to the seat and a ferrule distinct from the retaining ring and engaging the seat to fasten the closure to the bottle, said ferrule adapted to be spaced from the rotatable nozzle whereby the binding of the ferrule on the bottle will have no effect on the case of rotation of the nozzle.

2. An article of manufacture adapted to be affixed to a bottle for controlling the flow therefrom, said article including a nozzle seat having a free peripheral outlining edge adapted to be engaged by the ferrule usually employed for fastening such articles to the bottle, a nozzle rotatably mounted on said seat, and having an annular shoulder spaced inwardly from the free periphery of the seat, and means fixed to the seat within its outlining edge and engaging said shoulder at a plurality of points to hold the nozzle to the seat and thus provide an external bearing to mount the nozzle in rotatable relation to said seat.

3. A closure for a bottle including a nozzle seat provided with an opening therethrough and also provided with a clip retaining recess, a clip located in said recess to prevent relative rotary movement between the clip and seat, a nozzle rotatably mounted on said seat and provided with a passageway adapted to coact with the opening in the nozzle seat to provide a conduit through the closure, said clip provided with means engaging the nozzle and provided with means engaging the nozzle seat for preventing movement of the nozzle off its seat while permitting free rotary movement of the nozzle relative to its seat.

4. A closure for a bottle constituting an article of manufacture distinct from the bottle and including a nozzle seat, a gasket of compressible material positioned on the seat, a nozzle positioned on the gasket and at all times spaced thereby from the seat, said nozzle provided with an external peripheral shoulder, retaining means overlapping said shoulder and underlapping said seat to hold the nozzle mounted in rotatable relation to its seat and for holding the gasket compressed between the nozzle and its seat.

5. A closure for a bottle including a nozzle seat, a gasket of compressible material positioned on the seat, a nozzle positioned on the gasket and at all times spaced thereby from the seat, said nozzle provided with an external peripheral shoulder, retaining means engaging said shoulder and seat to hold the nozzle mounted in rotatable relation to its seat and for holding the gasket compressed between the nozzle and its seat, and independent means for securing the

closure to the bottle without affecting the rotational freedom of the nozzle relative to its seat.

6. A closure for a bottle including a nozzle seat provided with a ferrule receiving edge and with a clip-retaining means, a nozzle of molded composition rotatably mounted on said seat and having a shoulder with a clip engaging face formed of the composition, a metallic clip coacting with said retaining means to prevent relative movement, said clip provided with a flange engaging the face of said shoulder to prevent movement of the nozzle off its seat, said face and clip flange coacting to provide the sliding engagemeent of metal on composition during the rotary movement of the nozzle.

7. An article of manufacture constituting a closure for a bottle including a nozzle seat, a nozzle rotatably mounted on said seat and having a shoulder provided with an arcuate slot, means engaging the shoulder for securing the nozzle against movement off its seat while permitting relative rotary movement, said means including a part disposed in said slot for limiting the rotary movement of the nozzle on its seat.

8. The combination with an article of manufacture constituting a closure for a bottle and including a nozzle seat, a nozzle rotatably mounted on said seat and provided with an arcuate slot, means for securing the nozzle against movement off its seat while permitting relative rotary movement, said means including a part disposed in said slot for limiting the rotary movement of the nozzle on its seat, of means distinct from said nozzle securing means for securing the closure to the bottle.

Signed at New York city, in the county of New York and State of New York, this 1st day of November, A. D. 1919.

FRANK H. SILVERTHORNE.