

UNITED STATES PATENT OFFICE

JOHN L. CARD, OF SYRACUSE, NEW YORK

DISPENSING CLOSURE

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This invention pertains to an improved dispensing closure. The structure is designed primarily to be employed in conjunction with containers filled with a gas charged liquid though it is applicable for use in dispensing any liquid.

The main object of the invention is to provide a dispensing closure of few parts, the main body whereof may be readily placed within and over the mouth of a bottle or container and held in place by reason of its own structure and inherent elasticity, and as readily removed. The closure also embodies a self seating valve directly associated with a dispensing nozzle, through the tilting of which latter the valve may be unseated.

I am aware that various dispensing closures have heretofore been constructed and several of them form the subject matter of patents. However, in most of those which have come to my attention springs, dispensing tubes or nozzles having a special support, or special guiding means aside from the closure proper, and special securing means for the closure body, as such, have been employed.

With the structure which forms the basis of the present invention there are but two separate or distinct elements employed, each however effecting certain cooperative functions with relation to the other and the two, to a certain extent, bringing about a binding and sealing reaction between the body of the closure and the mouth of the container.

The invention in the broader aspect is subject to slight modifications and two embodiments are shown in the annexed drawing wherein:

Figure 1 is a vertical sectional view of the upper portion of the mouth of a bottle with the combined closure and dispensing nozzle mounted therein, the valve upon the nozzle being shown in its closed or seated position;

Figure 2, a vertical sectional elevation of the main body of the closure;

Figure 3, a similar view of the dispensing nozzle;

Figure 4, a longitudinal sectional view similar to that of Figure 1 showing the nozzle as being slightly deflected and the valve un-

seated, permitting the contents of the bottle to pass to and through the nozzle; and

Figure 5, a view similar to Figure 1 showing a slight modification of the nozzle.

Having reference to Figures 1 to 4, 1 denotes the neck of a bottle having the usual bead or rim 2 formed about its upper end. The closure body is formed of rubber, and, prior to its being positioned with reference to the mouth of the bottle, has the form shown in Figure 2. It may be said to comprise a lower plug-like section 3 surmounted by a body portion 4 and an upstanding rim or lip 5, the latter, when the closure is positioned within the mouth of the bottle, being turned downwardly and over the bead or rim 2 embracing the same as shown in Figures 1 and 4.

Preferably the lower plug-like section 3 will be formed with external annular ribs 6 which assist in holding the plug within the bottle neck or mouth and forms a gas-tight joint therewith.

The lower end of the plug-like section 3 is formed with a valve seat 7 opening into a chamber 8 which in turn is in communication with an opening 9 extending through the body portion 4.

Preferably the dispensing nozzle will be of the form shown in Figures 1, 3 and 4 and may be said to comprise a tubular member 10 having a reduced portion 11 formed thereabout and above openings, as 12, extending laterally through the wall of the nozzle and into the bore thereof. Said openings 12 are located above a valve-like element 13 formed upon the lower end of the nozzle and so contoured as to make a close fit with the seat 7 formed upon the closure element.

When the nozzle is positioned with reference to the yielding closure elements the body portion 4 is seated within the reduced section 11 and closely embraces the same. The parts are so proportioned that when the closure and nozzle are positioned within the bottle mouth or neck, as in Figures 1 and 4, the valve 13 will be drawn to its seat 7;—this due to the proportioning of the parts and the resiliency of the plug. Furthermore, if the liquid within the bottle or container is charged with gas, the gas, acting upon the lower face of the

valve 13, will tend to force the same upwardly into close sealing relation with the seat 7.

With the parts shown in the position in Figure 1 the bottle or container will be absolutely closed. If it is desired to dispense the liquid one need only to press the nozzle laterally, as shown in Figure 4, whereupon the valve will compress the lower end of the plug-like section 3 at one side and be removed from the seat at the other side, allowing the liquid to pass into the chamber 8 through the openings 12 and outwardly through the bore of the nozzle. It is to be noted that the chamber 8 is of a diameter somewhat in excess of the outside diameter of the body of the nozzle so that the action just mentioned may inhere. Immediately one removes his finger from the nozzle the valve will be automatically moved back through the resilient action of the body of the closure into sealing relation therewith.

While it is preferred to provide the reduced portion 11, or in other words to shoulder the nozzle so that it will embrace the upper and lower faces of the body element 4, such construction is not necessary. In Figure 5 the nozzle is shown as of the same diameter throughout and is held in its position through the resiliency of the closure body.

In dispensing carbonated liquids the bottle or container would naturally be turned over, as in Figure 4, and as a consequence the gas which is liberated from the liquid remains behind the liquid within the container or bottle and forces the liquid outwardly. Hence there is no direct escape for the gas. Use has proven that carbonated beverages may be retained in the bottle with this closure in place for considerable periods of time without deterioration, even after a portion of the contents of the bottle have been removed.

What is claimed is:

1. A dispensing closure for liquid container comprising in combination a resilient body adapted to engage the mouth of the container and to be held thereto by reason of its resiliency, said body having a bore extending longitudinally thereof and likewise having an enlarged chamber at its inner end in line with the bore; and a combined dispensing nozzle and sealing element comprising a tubular member mounted within and extending through the bore and chamber aforesaid and a valve carried by the inner end of said tubular member, said valve seating against the inner end of the resilient body and normally closing the chamber aforesaid, there being an opening extending into the tubular member at a point in line with the enlarged chamber.

2. A dispensing closure as set forth in claim 1, wherein the nozzle has a reduced portion formed exteriorly thereof designed to receive a portion of the resilient body.

3. A dispensing closure for liquid contain-

ers comprising in combination a resilient body adapted by reason of its resiliency to be held in the mouth of the container, and said body having a transverse portion with a bore extending therethrough, and a dispensing nozzle mounted in and extending through the bore and normally held against endwise movement with reference to the transverse portion, said nozzle terminating at its inner end in a valve underlying the inner end of the resilient body and normally closing the nozzle from communication with the interior of the container, there being at least one opening formed in the nozzle adjacent the valve whereby by tilting the nozzle the valve will be unseated and the interior of the container brought into communication with the nozzle.

4. A dispensing closure for liquid containers comprising in combination a body portion formed of resilient rubber, said body having a bore extending longitudinally through the upper portion thereof and terminating at its inner end in a chamber, said chamber being open at its lower end and being of a diameter in excess of that of the bore; and a combined nozzle and valve element, comprising a tubular member mounted in and extending through said bore and normally held against longitudinal movement with reference to the body portion, the inner end of said member being formed as a valve, said valve normally seating against the inner end of the body thereby closing the chamber aforesaid from communication with the interior of the container, there being at least one lateral opening formed in the nozzle and communicating at all times with the chamber, whereby by simply canting the nozzle the valve will be displaced, in part at least, from its seat and the nozzle brought into communication with the interior of the container.

5. A valved bottle closure comprising in combination a main body element of flexible material adapted for tight insertion in the mouth of a bottle, and having a longitudinally disposed bore terminating at its inner end in an enlarged chamber; and a combined valve and dispensing element comprising a tube held by friction in the bore of the body element and terminating at its inner end in a head forming a valve seating against the inner end of the body element to normally close the mouth of the enlarged chamber, said tube having an opening adjacent its head for communication with the enlarged chamber of the body element so that upon lateral displacement of the outer end of the tube the valve head will be tilted on its seat to open the interior of the bottle to the passage through the tube.

6. A valved bottle closure comprising in combination a main body element of flexible material adapted for tight insertion in the mouth of a bottle, and having a longitudinal-

ly disposed bore; and a combined valve and dispensing element comprising a tube held by friction in the bore of the body element and terminating at its inner end in a head forming a valve seating against the inner end of the body element, said tube having a plurality of lateral perforations adjacent its head so that upon lateral displacement of the outer end of the tube the valve head will be tilted on its seat to open the interior of the bottle to the passage through the tube.

In testimony whereof I have signed my name to this specification.

JOHN L. CARD.

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