July 11, 1939. B. VON BÜLTZINGSLÖWEN 2,165,825

CONTAINER AND CLOSURE FOR SAME

Filed Jan. 23, 1935

Fig. 1

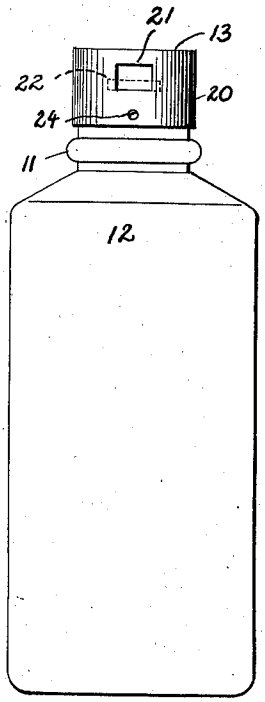


Fig. 2

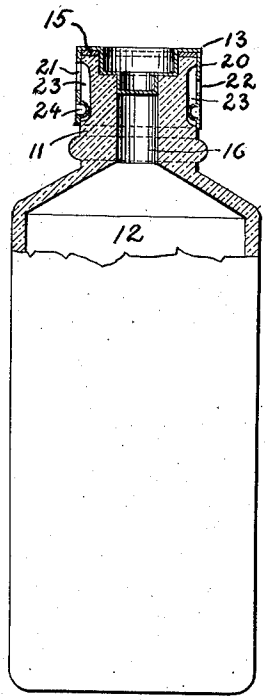


Fig. 3

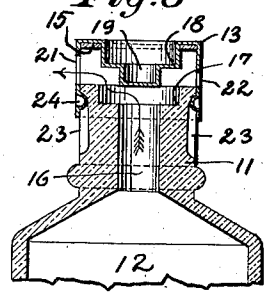


Fig. 4

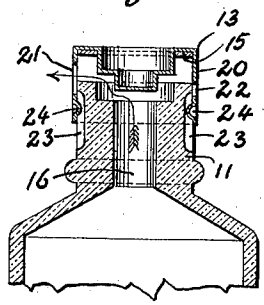


Fig. 5

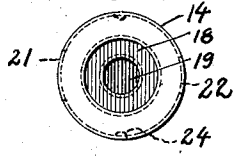


Fig. 6

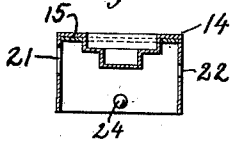


Fig. 7

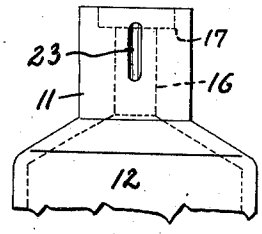


Fig. 8

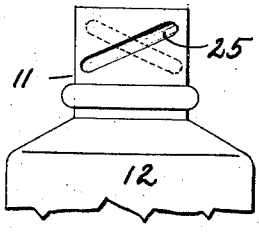
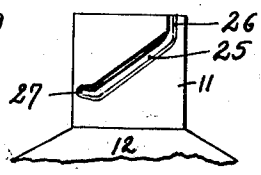


Fig. 9



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UNITED STATES PATENT OFFICE

2,165,825

CONTAINER AND CLOSURE FOR SAME

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Application January 23, 1935, Serial No. 3,049

11 Claims. (Cl. 221—60)

This invention concerns a closure for containers, more particularly a closure or cap which directly engages upon the neck of a bottle or collapsible tube or upon special means provided for in connection with any container.

The principal object of this invention is to provide for a closing cap which is opened by lifting it,—straight or along an irregular path; said cap remaining however on the container, whether in an open or closed position.

Further, and very important objects of this invention are directed to the extremely simple construction of the cap itself, as well as of the neck or the neck parts upon which it is engaged.

In respect to the last mentioned object, I have succeeded in developing a very simple cap, which ordinarily closes upon two or more non-aligned faces of the neck of a container or part thereof, thus securing a tight closing, and providing a plurality of seals. All these seals are broken by simply shifting the cap.

Another important feature is that the closure or cap is manufactured in a simple operation which is eminently adapted for quantity protection. This cap of my invention may be shaped out of sheet material by a simple punching, pressing and/or drawing operation.

This invention is closely related to the subject matter of a prior patent application filed by me on September 24, 1934, under Serial No. 745,274, Patent No. 2,112,125, entitled "Closure" and is a continuation in part of the said patent application.

While to some extent the subject matter of said prior application overlaps with the present application, the article of the said invention is improved upon by the departure therein described, e. g., a closure struck-up from a single piece of sheet material.

The invention will be explained by way of illustrative examples, which readily lend themselves to elaboration and modification within the knowledge of the art.

In the accompanying drawing:

Fig. 1 shows a front elevation of a container and closure of my invention.

Fig. 2 shows a corresponding side view, partly in section.

In Figs. 1 and 2 the closure is fully closed.

The fully sectioned views of Figs. 3 and 4 correspond to the view of Fig. 2; but in these views the closures are fully and partly open, respectively.

Fig. 5 shows a top view of a closure of my invention.

Fig. 6 shows a corresponding cross-sectioned side view.

The closures of Figs. 5 and 6 are slightly modified as compared with the closures of the preceding figures, inasmuch as in these figures the openings or perforations are angularly displaced from the guide means to the extent of 90°. In the preceding figures the openings and the guide means were in alignment.

Fig. 7 shows the elevation of the neck part of a container of my invention.

Fig. 8 shows a corresponding view of a modification of my invention in which the guide groove is helically disposed.

Fig. 9 is a similar view of another modification.

Similar numerals refer to similar parts throughout the various views:

Whereas in the views of the drawing I show in all instances a bottle to which the closure of my invention is supplied, it is understood that the container may assume various shapes, e. g., of a collapsible tube. A neck suited to receive the closure of my invention may be attached to any container. But in the drawing the neck 11 is shown to form an integral part of the container 12.

The container and closure may be made out of any kind of preferred material. In the light of the introduction I prefer to use a ductile, yieldable elastic sheet material for the closure. Thus the closure 13 of Figs. 1, 2, 3 and 4, and closure 14 of Figs. 5 and 6 may be stamped, pressed and/or drawn out of sheet metal.

I provide a washer 15, made for instance out of cork or rubber, at the bottom of the closure, which is sealed against the top of the neck 11 when the closure is closed. The washer may be frictionally retained in the closure, or may be fastened by an adhesive at the bottom of the closure. A cylindrical outer part of the closure slidably fits over the outer circumference of the neck 11 of the container.

The central part of the closure is depressed into the bore of the neck and slidably fits into the bore 16. The entrance of the bore is shown to be countersunk in the drawing. Thus I provide a concentric recess 17 in the neck, and the central, depressed part of the closure is shaped to fit not only into the bore but also into the recess 17. The first step 18 of the depressed part of the closure fits against the side and bottom of the recess 17, and the second, central depressed step, the part 19 slidably depends into and fits the bore 16.

Thus, when the bottle is closed, I provide a

multiple seal: The cylindrical outer part of the closure seals against the outer circumference of the neck 11; the top of the closure, by way of the washer 15, seals upon the top of the neck 11; the sides and the bottom of the outer depressed part of the closure, the first step 18, seal against the vertical part and the horizontal part of the angular recess or counterbore 17, respectively; finally, the vertical, shank part of the second step 19 abuts upon the bore 16 of the neck.

The closure is raised or lowered for the purpose of opening or closing the bottle. When the closure is raised from the positions of Figs. 1 and 2, into the position of Fig. 4, the various seals, which were just mentioned in the preceding paragraph are broken, until finally an opening 21 in the cylindrical outer wall of the closure, 20, which is shown in the drawing as a rectangular perforation, rises above the top level of the neck so that the liquid contained in the bottle may be poured out of the bottle through the said opening, the dispensing speed being controlled by the extent to which said opening clears the top of the neck, i. e., it depends on the amount for which the closure has been raised.

Another perforation or opening, a slot 22, is disposed upon the opposite side of the closure. The opening 22 is narrower than the opening 21 and it registers only with the lower part of the opening 21. Whereas slot 22 is closed by the outer circumference of the neck 11 in the view of Fig. 4, the said slot will open when the closure is raised more, into the position of Fig. 3. When the contents of the bottle or container 12 are being poured forth through the opening 21, air will be allowed to enter the closure and into the bottle or container through the slot 22. Thus the partial vacuum created upon the inside of the bottle by dispensation of the fluid through the opening 21, will be overcome by the air entering through the slot 22, so that the fluid flows more freely and faster. Thus the dispensation of a liquid from the container or bottle cannot only be controlled by increasing the opening 21 when raising the closure at the beginning of the operation, but the dispensation is further facilitated, when the slot 22 emerges above the top of neck 11 and admits air.

It is one particular advantage of this invention, that the closure does not have to be fully removed from the bottle or container in order to allow dispensation. I also go further, and provide a catch upon the closure which engages upon a protruding or receded part of the neck, and which prevents the closure from being completely removed. I may for instance provide a pin protruding from the closure into a longitudinal groove in the outside of the neck 11. Thus I provide grooves 23 upon opposite sides of neck 11. Near the lower end of the outer cylindrical part 20 of the closure I provide a depression 24, which extends into the said groove 23. The depressed part 24, slides up and down in the groove 23, when the closure is raised or lowered. This facilitates the dispensing motion from the positions of Figs. 1 and 2 through an intermediate position of Fig. 4 into the position of Fig. 3. But, since the groove does not extend all the way up to the top of the neck 11, the closure cannot completely be removed from the container or bottle.

For purposes of illustration, the openings or perforations 21 and 22 and the groove and depression are all shown in alignment in the first figures. Such alignment is not necessary. Instead of a straight groove I may also provide a helical groove 25 as shown in Fig. 8. This arrangement may be used, when a twisting motion is preferred to an up and down motion during the operation of opening the bottle or of closing it. If the helix is sufficiently inclined, the closure is locked by wedge action in the closed position.

At the upper end of the helical groove 25, I may provide a straight upward extension 26 which allows the removal of the closure from the bottle or container. An oppositely or horizontally tilted extension 27 may be provided for at the lower end of groove 25 or of groove 23, the tilted extensions permitting the locking of the closure in the closed position, in analogy to a bayonet lock (Fig. 9).

Although I have shown and described one form of embodiment of my invention in detail, yet I do not wish to be limited thereby, except as the state of the art and the appended claims may require, for it is obvious that various modifications and changes may be made in the form of embodiment of my invention, without departing from the spirit and scope thereof.

What I claim is:

1. In combination with the neck of a container, and a bore extending through said neck, a sheet metal closure slidably extending over the outer circumference of said neck and in said bore and slidable in the axial direction upon the inside and outside of the neck in slide valve fashion.

2. In combination with the neck of a container, and a bore extending through said neck, a sheet metal closure slidably extending over the outer circumference of said neck and in said bore and slidable in the axial direction upon the inside and outside of the neck in slide valve fashion, and a washer accommodated in said closure and abutting upon the top of said neck.

3. A doubly closing dispensing closure, comprising in combination with the neck of a container, and a bore extending through said neck, a sheet metal closure slidably extending over the outer circumference of said neck and in said bore, means non-rotatively guiding said closure upon said neck, and a dispensing perforation in the part of said closure slidably extending over the outer circumference of said neck, said perforation opening from said container by way of said neck and serving for dispensing the contents of said container when said closure is slid up on said container.

4. In combination with the neck of a container, and a bore extending through said neck, a sheet metal closure slidably extending over the outer circumference of said neck and in said bore, a dispensing perforation in the part of said closure slidably extending over the outer circumference of said neck and extending up to a certain distance from the top of said closure, said perforation opening from said container by way of said neck and serving for dispensing the contents of said container when said closure is slid up on said container, and a second perforation in said closure angularly spaced relatively to said first perforation and serving as a vent during dispensing.

5. In combination with the neck of a container, and a bore extending through said neck, a sheet metal closure slidably extending over the outer circumference of said neck and in said bore, a dispensing perforation in the part of said closure slidably extending over the outer circumference of said neck and extending up to a certain distance from the top of said closure, said perforation opening from said container by way of said

neck and serving for dispensing the contents of said container when said closure is slid up on said container, and a second perforation in said closure angularly spaced relatively to said first perforation but spaced further from the top of said closure than said first perforation, and serving as a vent during dispensing.

6. In combination with the neck of a container, and a bore extending through said neck, a recess in said bore, and a sheet metal closure longitudinally slidably extending over the outer circumference of said neck, into said recess and slidable upon and in said bore.

7. In combination with the perforated neck of a container, and a bore extending through said neck, an annularly recessed step extending concentrically with said bore into said neck, and a sheet metal closure longitudinally slidably extending over the outer circumference of said neck and into the cylindrical part of said recess and slidable upon and in said bore, said closure being slidable between positions in which it lays free or closes perforations extending through said neck.

8. In combination with the perforated neck of a container, and a bore extending through said neck, an annularly recessed step extending concentrically with said bore into said neck, a sheet metal closure longitudinally slidably extending over the outer circumference of said neck and into the cylindrical part of said recess and slidable upon and in said bore, and a washer accommodated in said closure and abutting upon the top of said neck when said closure rests upon the bottom of said recess, said closure being slidable between positions in which it lays free or closes perforations extending through said neck.

9. In combination with the neck of a container, and a bore extending through said neck, a sheet metal closure longitudinally slidably extending over the outer circumference of said neck and slidable upon and in said bore, and means nonrotatively guiding said closure upon said neck along a straight path between a closed and an open position but limiting the outward movement of said closure along said straight path.

10. In combination with the neck of a container, and a bore extending through said neck, a sheet metal closure longitudinally slidably extending over the outer circumference of said neck and slidable upon and in said bore, and means guiding said closure upon said neck along a helical path between a closed and an open position, but limiting the outward movement of said closure along said helical path.

11. In combination with the neck of a container, and a bore extending through said neck, a sheet metal closure longitudinally slidably extending over the outer circumference of said neck and in said bore, means guiding said closure upon said neck along a helical path between a closed and an open position, and means releasing said closure along a straight path from a position at the upper end of said helical path.

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