Sept. 4, 1934. H. F. TEICHMANN 1,972,542

BOTTLE CLOSURE

Filed Feb. 7, 1933

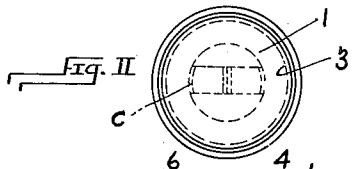


Fig. II

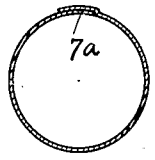


Fig. III

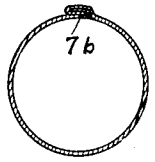


Fig. IV

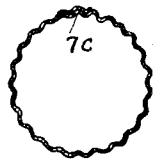


Fig. V

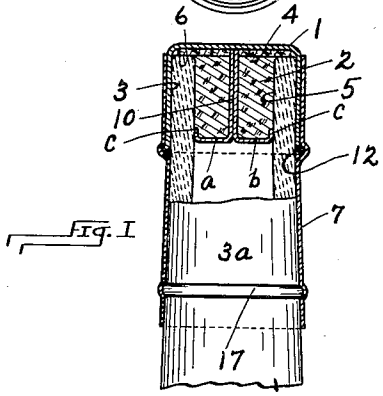


Fig. I

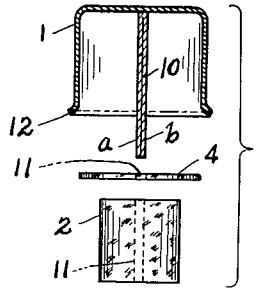


Fig. VI

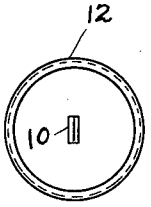


Fig. VII

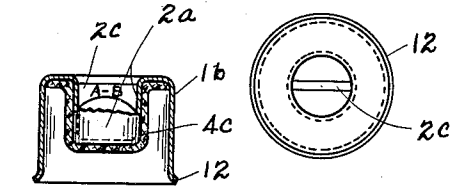


Fig. VIII

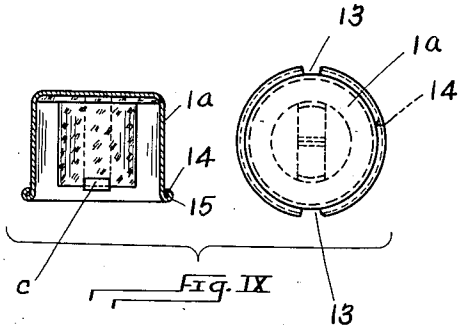


Fig. IX

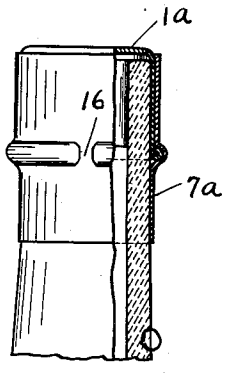


Fig. X

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BOTTLE CLOSURE

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Application February 7, 1933, Serial No. 655,545

4 Claims. (Cl. 215—55)

The invention relates to a closure for bottles, particularly bottles in which ginger ale and other beverages are sold. A bottle of the type to which I refer includes a long neck, terminating in a mouth from which the beverage or other contained liquid is discharged, and my object is to provide a bottle closure which may be secured in place, without the aid of grooves, ridges, or lugs at or adjacent the mouth of the bottle. In accordance with my invention the upper neck portion of the bottle may be absolutely smooth, presenting none of the usual grooves or other surface irregularities in which dust and other impurities may collect. Thus, the bottle is more sanitary in service.

It is further the object of my invention to provide a bottle closure which may be removed by hand, that is, without the need of a bottle opener. Additionally, I aim to provide a closure that may be removed and replaced at will, so that, after the bottle has been initially opened and partly emptied, the remaining contents of the bottle may at all times be effectively sealed, and the mouth of the bottle kept clean.

The invention is illustrated in the accompanying drawing, in which Fig. I is a fragmentary view of a long-necked bottle, showing in vertical section the closure of my invention secured in position of service over the mouth of the bottle. Fig. II is a view in plan from above of the closure. The bottle closure comprises two principal parts—a cap and a sleeve—, and Figs. III, IV, and V are views in cross-section, illustrating the various forms in which the sleeve may be made. Fig. VI is a view in vertical section of the cap; Fig. VI additionally shows (in side elevation) a gasket member and stopper which normally are assembled with and form a part of the cap in service. Fig. VII is a view in bottom plan of the cap without the gasket and stopper. Fig. VIII is a view in plan from above, and a view partly in side elevation and partly in vertical section, of a cap of modified structure. Fig. IX shows two similar views of a cap embodying still other modifications. And Fig. X is a fragmentary view of a bottle, showing (partly in side elevation and partly in vertical section) the cap structure of Fig. IX in position of service upon the mouth of the bottle.

The bottle closure comprises a cup-shaped cap 1 which ordinarily will be fashioned from sheet steel, or other sheet metal. Secured within the cap is a stopper 2, and in service when the cap has been applied to the bottle the stopper projects within the mouth of the bottle, while the side wall of the cap overlies and snugly engages the outer surface 3 of the bottle neck. The stopper 2 may be made of cork, rubber, or other suitable yielding material, depending upon the nature of the liquid to be stored within the bottle, and a disk or gasket 4, conveniently of such material, is secured in position against the top of the cap. As will be observed in Fig. I, the stopper plugs the mouth and snugly engages the throat surface (5) of the bottle; the gasket 4 rests snugly against the rim or lip 6 of the bottle; and, as mentioned, the side wall of the cap snugly engages the outer surface 3 of the neck. Thus, substantially all of the terminal surfaces of the bottle neck are engaged by the cap, and a hermetic sealing of the bottle is insured. In accordance with my aim, all of such terminal surfaces are smooth, affording no indentations in which liquid from within or impurities from without the bottle may accumulate, as in the hands of the consumer the cap is removed from and replaced in position of closure upon the bottle.

I provide particularly effective means for securing the stopper and gasket in assembly with the cap 1. Such means comprise an elongate clip 10. Advantageously, the clip 10 is formed of a strip of sheet metal bent double, providing a two-legged stem which is rectangular in cross-section, cf. Fig. VII. Manifestly, the two legs *a* and *b* are united at one end of the clip and separable at its other end. The clip at the bend is spot-welded or otherwise secured at the top of the cap. The gasket and stopper are each provided with a passage 11 corresponding in cross-section with the clip; the gasket and stopper are fitted upon the clip, and the ends of the legs *a* and *b* are bent outward, underlying the bottom of the stopper, and effectively securing the parts in assembly (cf. Fig. I).

A sleeve 7 is pressed into snug surface-to-surface engagement with the cap 1 and the outer surface 3*a* of the bottle neck immediately below the cap. The sleeve 7 constitutes an outer or secondary seal for the mouth of the bottle. The sleeve ordinarily is a preformed tube which is pressed and crimped into position of service upon the bottle neck. It is a sleeve of substantial material, as distinguished from the metal foil covers commonly placed over the capped ends of beverage bottles; indeed, the sleeve is made of sheet steel or sheet aluminum of from Nos. 28 to 34 U. S. Standard gauge. Such sheet metal is fashioned into a tube, having the meeting edges of the sheet united in a lap joint 7*a*, as shown in Fig. III. Alternatively, the meeting edges of

the sheet may be united in a "ship-joint" 7*b*, as indicated in Fig. IV. For reasons presently to be described the sleeve may be fashioned of the corrugated sheet shown in Fig. V, and the meeting edges of the sheet may be lapped, so that several corrugations are nested together, as shown at 7*c*. Additionally, I contemplate that the sleeve may be cut to required length from extruded metal tubing whose wall thickness corresponds to the sheet gauges mentioned.

The side wall of the cap 1 is provided with a raised portion which in assembly is snugly engaged by the outer sleeve 7. In effect the cap and sleeve are interlocked, so that the consumer may grasp the outer sleeve and "work" the closure free from the bottle. I show the raised portion in the cap wall as comprising an annular or circumferential bead 12, and advantageously such bead is provided by flaring the peripheral rim of the cap 1, as shown in Fig. VI. In Fig. I it will be perceived how in assembly the outer sleeve 7 interlocks with the bead 12; it will be observed that the outer sleeve 7 is elongate, and it will be understood that in position upon the bottle the closure device constitutes in effect a sturdy cylinder which the consumer may readily grasp. To open the bottle, the bottle is held in the left hand and the closure tightly grasped in the right hand, and the required force is applied to withdraw the cap and sleeve together from the bottle. The external shape of the closure, together with its sturdiness, readily admits of the application of the force required to open the bottle, so that in the hands of the user the bottle may be opened without the aid of a bottle-opening-tool. The removal is more readily effected if the device is rotated slowly, before and while it is being pulled from the bottle.

It is desirable that the several elements of the closure be secured one to another against relative rotation, so that rotation of the sleeve will be accompanied by the rotation of all the closure elements. Thus, the usual adhesion existing between the stopper and bottle may be broken, and the removal of the device facilitated. To this end I form the clip 10 rectangular in cross-section, and the flat sides of the clip, in lying within the correspondingly shaped passages 11 in the stopper 2 and the washer 4, insure that the cap, stopper, and washer are secure against relative rotation. The legs *a*, *b* of the clip 10 may, as in Fig. I they are shown, be turned up at their tips *c*, and pressed laterally into the body material of the stopper, to provide additional means for preventing rotary movement of the stopper within the cap. In making a provision for union of the cap and sleeve, I advantageously interrupt the peripheral bead on the cap at one or more points 13 (cf. Fig. IX). The bead of interrupted continuity may be formed by rolling the metal bordering the rim of the cap (1*a*) over and upon small wire 14, which wire, too, may be interrupted in its extent at the points 13, 13. Thus, the cap structure is rendered more sturdy for the service to which it is put. When the outer sleeve—note the sleeve 7*a* in Fig. X—is pressed into position over the cap and neck of the bottle, the body metal of the sleeve closely engages the bead 15 and nests in the intervals or points 13 of interruption, as may be noted at 16. Accordingly, the outer sleeve is united with the cap for both rotation and axial movement. Manifestly, it is a simple matter to provide a machine that will press the outer sleeve into such position of assembly upon the bottle neck.

As indicated in Fig. V, the outer sleeve may be corrugated lengthwise, to render the device in service more secure in the hands of a person opening the bottle. It is contemplated that the corrugations shall in most cases extend only part way of the length of the sleeve, the opposite end regions of the sleeve being smooth for snug engagement with the cap 1 and bottle neck, respectively, while the medial portion of the sleeve is corrugated in the manner mentioned.

When the bottle is opened and only part of its contents are withdrawn, the closure device may be replaced in position of service, thus constituting a temporary stopper after its prime function as a bottle seal has been completed. In such use as a temporary stopper, the outer sleeve of the device may be removed and the cap structure (1, 2, 4) used alone, or the sleeve and cap structure may be used together as a temporary stopper upon the bottle.

In Fig. VIII, I show a modified cap structure 1*b*, in which the stopper is provided by shaping in the top wall of the cap a hollow cylindrical stud 2*a*. Conveniently, a lining 4*c* of compressible material, such as cork, is applied to the top wall and stud within the cap. Manifestly, the cap 1*b* may be used exactly as the cap structure 1, 2, 4 is used in combination with the outer sealing sleeve 7, to provide the closure of my invention. Within the boss 2*a* I secure a member 2*c*, and (as may be perceived in Fig. VIII) the member may bear numbers, letters, or other data for designating the bottled liquid. It will be further observed in Fig. VIII that the boss 2*a* and its cork covering 4*c* lie within the rim of the cap; indeed, the stopper 2 of the first-described structure terminates within or above the rim, so that, when the cap is placed aside, the stopper does not come in contact with dust or other impurities.

It is characteristic of the invention that, whereas the usual bottle cap is constructed of rigid metal, so that the cap may be locked in position over an annular protuberance which is provided adjacent the mouth of the bottle, my cap 1 is made of relatively soft metal. In service the cap readily adapts itself to the surface of the bottle neck, and provides an extended surface of frictional engagement with the bottle. The outer sleeve, in engaging the bottle neck below the cap, provides additional surface of frictional engagement between the bottle and the closure device; and the stopper projecting within the mouth of the bottle provides still another extended surface of frictional engagement. These extended surfaces of frictional engagement extend on the line of separation of the closure from the bottle, and serve to secure the closure in position of service.

In bottles whose contents are under high pressure, such as bottled carbonated beverages, I provide a positive interlocking between my closure device and the bottle neck. Advantageously, such interlocking is effected by providing a ridge—say an annular ridge 17 upon the neck of the bottle, cf. Fig. I. The ridge 17 is located a substantial interval below the bead 12 of the cap in place upon the bottle, whereby, when the outer sleeve 7 is pressed into position of service, it positively engages the bead 12 and the ridge 17, thus providing a positive securing of the cap upon the bottle. The sleeve 7 in such organization is adapted to secure the closure in place against the pressure existing within the bottle. In the hands of the consumer, however, the closure may

be turned and pulled free of engagement with the ridge 17, and so the bottle may be opened in the manner described.

I claim as my invention:

1. In combination with a long-necked bottle, a bottle closure comprising a cup-shaped cap seated over the mouth of the bottle, and a stopper secured in said cap against axial displacement and rotation and projecting into the throat of the bottle, together with an elongate outer sleeve engaging the side wall of said cap and extending downward therefrom and engaging the outer surface of the bottle neck, and means for securing the sleeve and cap against relative rotary and axial movements, said sleeve being formed of relatively sturdy material, whereby to provide a handle by which the closure may be removed from the bottle.

2. In combination with a long-necked bottle, a bottle closure comprising a cup-shaped cap seating over the mouth of the bottle and a stopper projected into the throat of the bottle, mechanical means for uniting said stopper and cap and securing them together against relative rotary and axial movements, an elongate outer sleeve engaging the side wall of said cap and extending downward therefrom into engagement with the outer surface of the bottle neck, and means for securing the sleeve and cap against relative rotary and axial movements, said sleeve being formed of relatively sturdy material, whereby to provide a handle by which the closure may be removed from the bottle.

3. In combination with a long-necked bottle, a bottle closure comprising a cup-shaped cap whose side wall includes an annular bead, and a stopper secured in said cap against relative axial displacement and rotation, said stopper projecting into and frictionally engaging the throat of the bottle neck, and the side wall of said cap overlying and frictionally engaging the outer surface of the bottle neck, and an elongate outer sleeve securely engaging said bead to prevent rotation and axial displacement of the sleeve relatively to said cap, said sleeve extending downward from said bead into frictional engagement with outer surface of said bottle neck, and said sleeve being sufficiently rigid to form a handle by which the closure may be removed from the bottle.

4. In combination with a long-necked bottle, a bottle closure comprising a cup-shaped cap, a stopper and an elongate outer sleeve, means for positively securing said stopper in said cap against relative rotation and axial displacement, said stopper frictionally engaging the inner surface of the bottle neck, and the side wall of said cap frictionally engaging the outer surface of said neck, said sleeve overlapping the side wall of said cap and extending downward therefrom into engagement with outer surface of the bottle neck, and means for uniting the cap and sleeve for common rotary or axial movement, and said sleeve being sufficiently rigid to form a handle by which the closure may be removed from the bottle.

HENRY F. TEICHMANN.