

Feb. 7, 1961

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2,970,711

BOTTLE CLOSURE WITH PROJECTIONS FOR SEVERING SEAL

Filed May 20, 1958

5 Sheets-Sheet 1

Fig. 1.

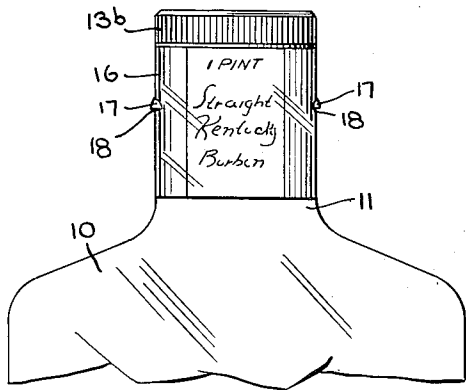


Fig. 2.

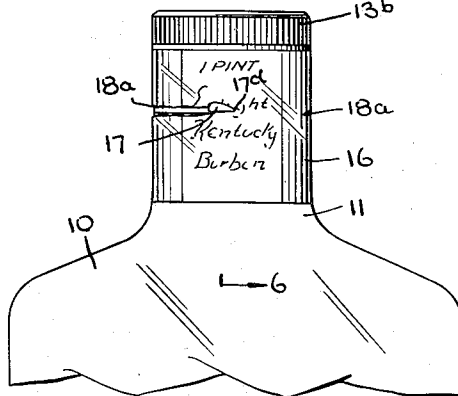


Fig. 7.

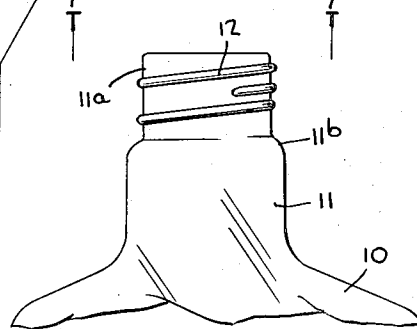
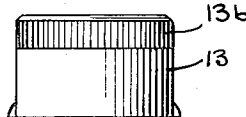
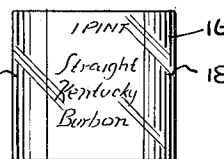
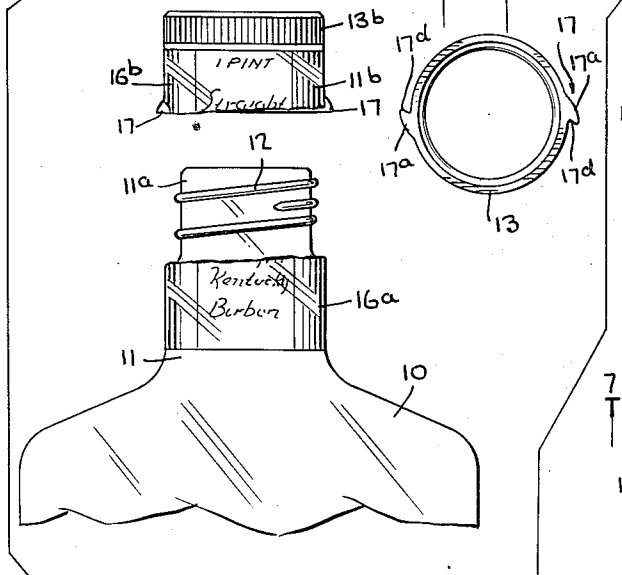


Fig. 3.

Fig. 7A.

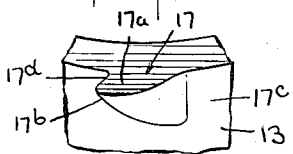


Fig. 4.

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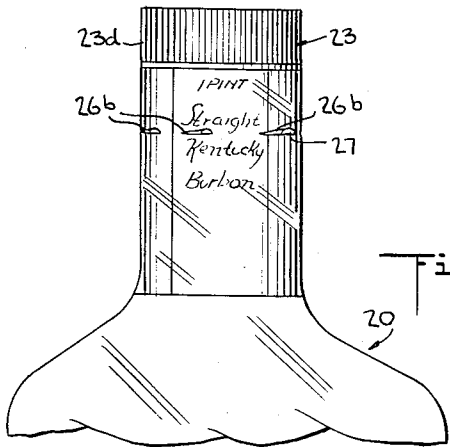
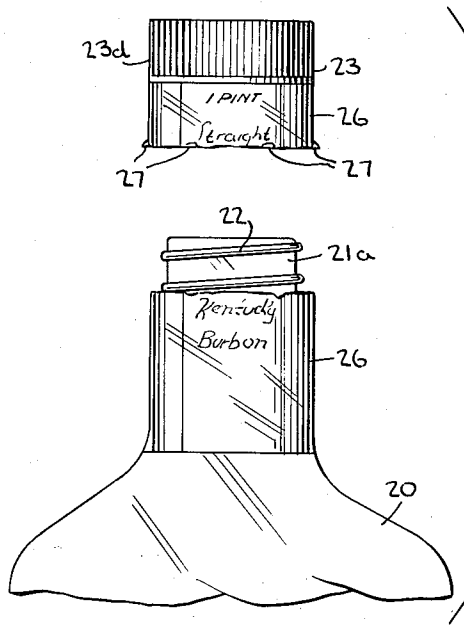
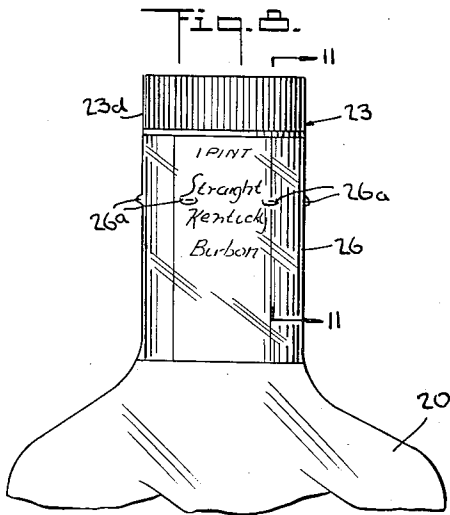
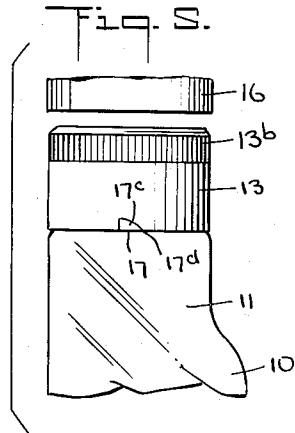
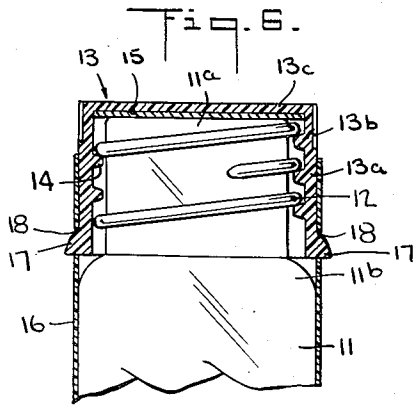


Fig. 10.

Fig. 9.

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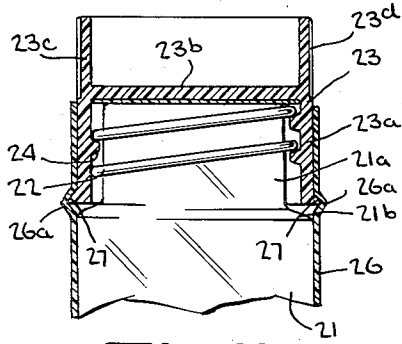


Fig. 11.

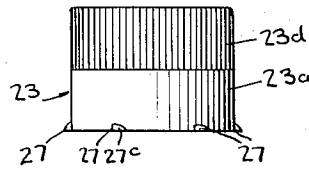


Fig. 12.

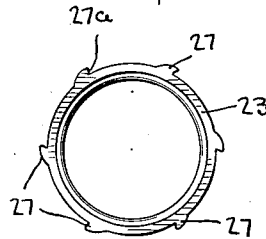


Fig. 13.

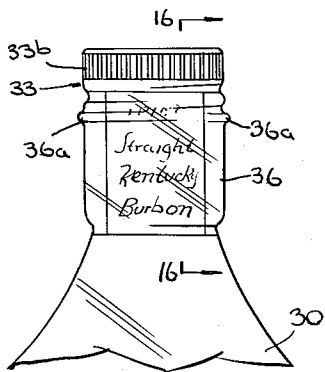


Fig. 14.

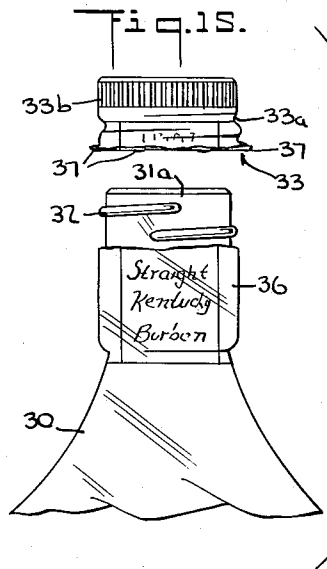


Fig. 15.

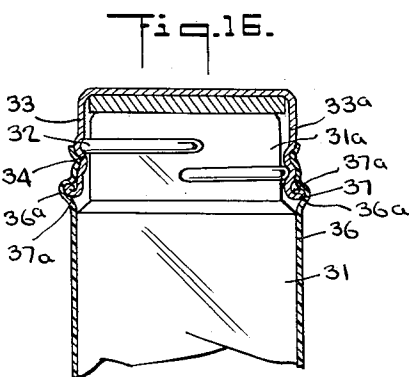


Fig. 16.

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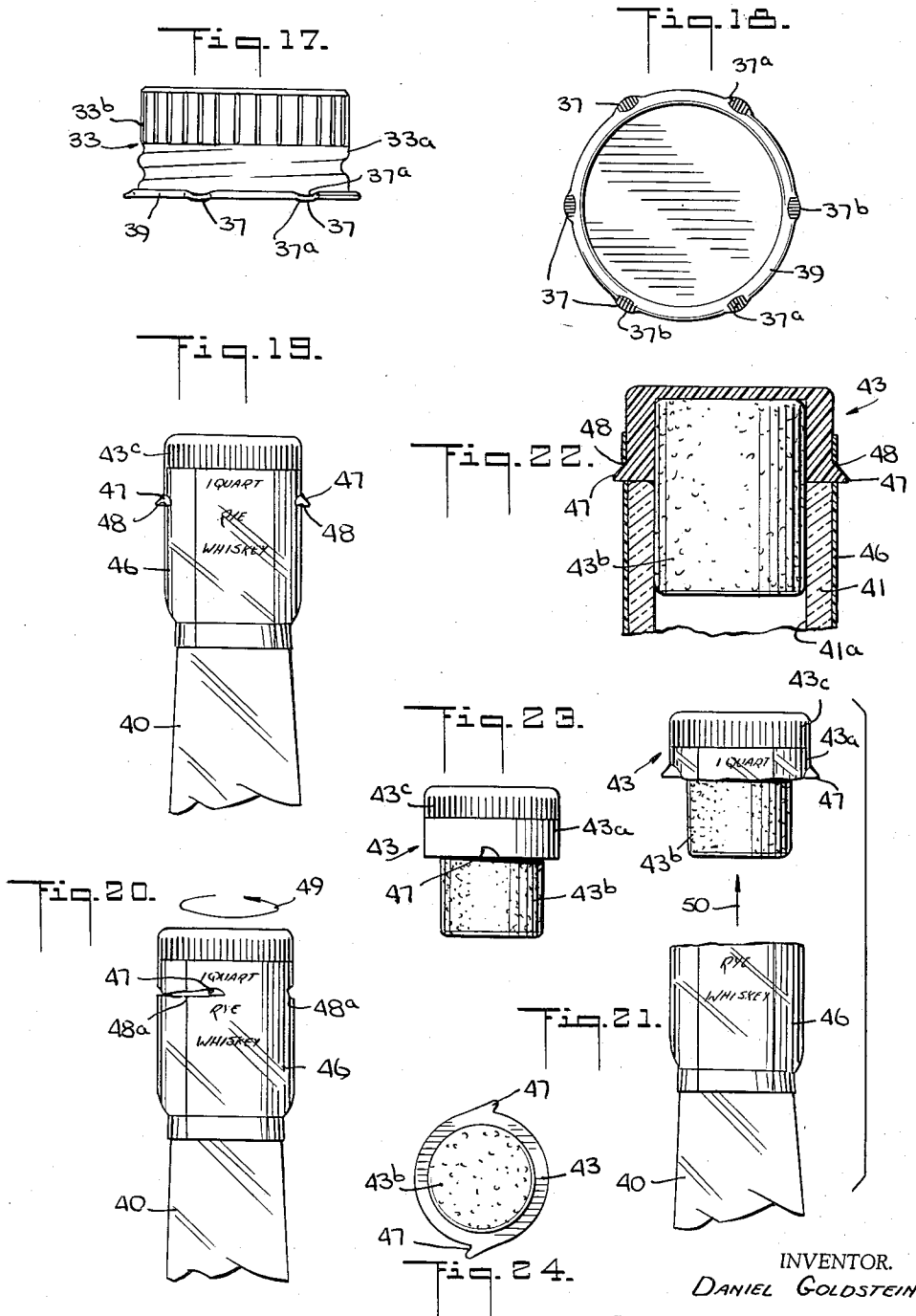
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BOTTLE CLOSURE WITH PROJECTIONS FOR SEVERING SEAL

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Fig. 7B.

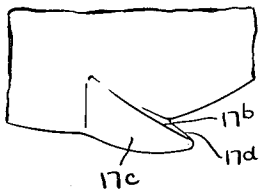


Fig. 25.

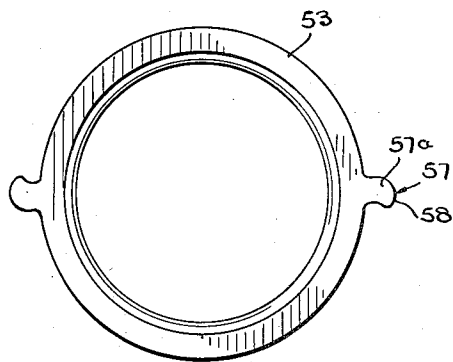


Fig. 26.

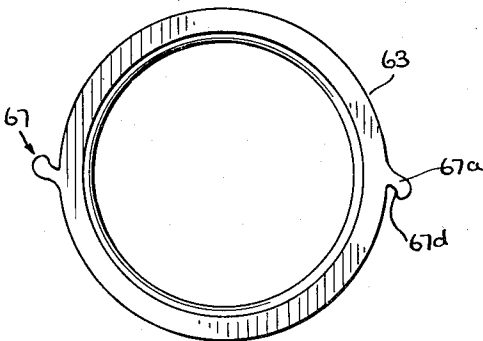


Fig. 28.

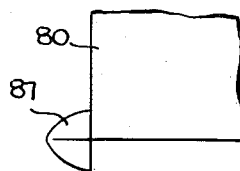


Fig. 27.

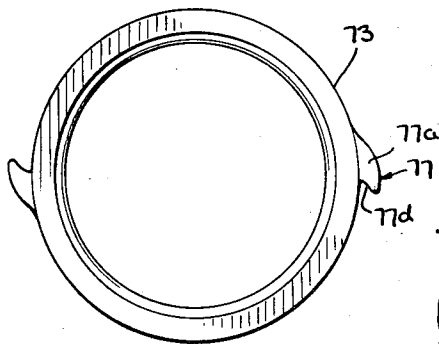


Fig. 30.

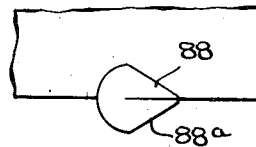
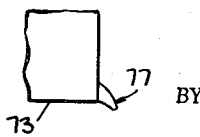


Fig. 28B.



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BOTTLE CLOSURE WITH PROJECTIONS FOR SEVERING SEAL

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Filed May 20, 1953, Ser. No. 736,480

14 Claims. (Cl. 215-46)

This invention relates to improvements in bottle caps, and in particular relates to improved caps designed for convenient severing of protective seals placed around the caps and the necks of the bottles.

It is common practice to package a liquid or other material in a bottle having a bottle neck with a top opening and having a cap which seals said top opening.

It is also common practice to place a seal over both the peripheral wall of the cap and the peripheral wall of the neck, for a number of purposes, including but not limited to enhancing the attractiveness of the package, protecting against tampering with the contents of or refilling the bottle, protecting the strip revenue stamp in the case of a liquor bottle, helping to prevent evaporation of liquid contents of the bottle, making it more difficult for the cap to open during shipment of the package. Such seal is often in the form of a tube or seal of flexible material which is placed loosely over the periphery of the cap and the periphery of the bottle neck while wet, and which is adapted, upon drying, to shrink and reduce in diameter, so that the dry sleeve fits tightly around the cap and the bottle neck. In some instances, the seal is made of other appropriate material, such as paper or metal foil.

In order to remove the cap from the bottle, it is necessary to sever the sleeve, preferably at the bottom edge of the cap, so that the cap may then be readily removed.

An important object of this invention is to provide an improved bottle cap which can be made with at most little increase in cost, which can be applied to bottles with existing machines and with no extra cost, to which the aforesaid seal can be applied without increase in labor, and which makes it possible for the ordinary consumer to sever the seal at the lower edge of the seal merely by turning the cap.

In accordance with preferred embodiments of the invention, the severing means are integral with the cap.

An important object of this invention is to provide an improved bottle cap such that it is possible for the average person to sever the protective sleeve at the lower edge of the cap, merely by turning the cap. This makes it unnecessary to use a knife or the finger nail to sever the protective sleeve. As an important feature of the invention, the severing means are optionally and preferably integral with the cap.

As an important feature of the invention, the severing means are designed so that they will not cut the hand of the user after the protective sleeve has been removed. As another important feature of the invention, the improved cap is shaped so as not to interfere in any material way with the original placement of the sleeve over the cap and the neck of the bottle. As another important feature of the invention, the severing means are inactive until sufficient force has been exerted upon the cap so as to turn it relative to the sleeve, and the amount of force thus required is sufficiently great so that the cap cannot be turned accidentally and thereby sever the protective seal accidentally.

Other objects and advantages of the invention will be-

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come apparent from the following description, in conjunction with the annexed drawings, in which a preferred embodiment of the invention is disclosed.

In the drawings,

5 A first embodiment of the invention is shown in Figs. 1-7.

Fig. 1 is a front elevation of a bottle (broken away), showing my improved cap mounted thereon and with the protective sleeve in place.

10 Fig. 2 is a view similar to Fig. 1, showing the protective sleeve partially severed as the result of the partial turning of the cap.

Fig. 3 is an exploded view similar to Fig. 1, showing the cap completely removed from the bottle.

15 Fig. 4 is an exploded view similar to Fig. 1, but showing the cap and the sleeve prior to assembly thereof with the neck of the bottle.

Fig. 5 is an exploded side view of the bottle (partly broken away) showing the cap mounted thereon and showing the sleeve (partly broken away) prior to assembly thereof with the bottle.

Fig. 6 is a section on line 6-6 of Fig. 2.

Fig. 7 is a bottom view of the cap, as viewed on line 7-7 of Fig. 4.

25 Fig. 7A is an inverted fragmentary perspective view of the cap, drawn to an enlarged scale.

Fig. 7B is a view similar to Fig. 7A, showing the cap in erect position.

A second embodiment of the invention is shown in 30 Figs. 8-13.

Fig. 8 is a front elevation, corresponding to Fig. 1, of this embodiment.

Fig. 9 is a view similar to Fig. 8, showing the cap partially turned to initiate the severing of the protective 35 sleeve.

Fig. 10 is an exploded view similar to Fig. 8, showing the cap removed.

Fig. 11 is a section on line 11-11 of Fig. 8.

Fig. 12 is an elevation of the cap in accordance with 40 the second embodiment.

Fig. 13 is a bottom view of the cap.

A third embodiment of the invention is shown in 45 Figs. 14-18.

Fig. 14 is a front elevation corresponding to Fig. 1, of this embodiment.

Fig. 15 is an exploded view similar to Fig. 14, but showing the cap removed.

Fig. 16 is a section on line 16-16 of Fig. 14.

Fig. 17 is an elevation of the cap of this embodiment.

Fig. 18 is a bottom view of the cap.

A fourth embodiment of the invention is shown in 50 Figs. 19-24.

Fig. 19 is a front elevation, corresponding to Fig. 1, of the assembly in accordance with the fourth embodi- 55 ment.

Fig. 20 is a view similar to Fig. 19, showing the cap partially turned to initiate the severing of the protective sleeve.

Fig. 21 is an exploded view similar to Fig. 19, showing 60 the cap removed.

Fig. 22 is a vertical section of the assembly.

Fig. 23 is an elevation of the cap in accordance with the fourth embodiment.

Fig. 24 is a bottom view of the cap.

Fig. 25 is a bottom plan view of a cap in accordance 65 with a fifth embodiment of the invention.

Fig. 26 is a bottom plan view of a cap in accordance with a sixth embodiment of the invention.

A seventh embodiment of the invention is shown in 70 Figs. 27 and 28.

Fig. 27 is a bottom plan view of a cap in accordance with the seventh embodiment.

Fig. 28 is a front elevation of the cap.

An eighth embodiment of the invention is shown in Figs. 29 and 30.

Fig. 29 is a fragmentary elevation of a cap in accordance with the eighth embodiment.

Fig. 30 is an elevation similar to Fig. 29, but showing the cap turned ninety degrees.

The drawings are substantially to scale of working models of the invention, and reference is made to the drawings to complete the disclosure herein.

First embodiment (Figs. 1-7)

In this embodiment, I provide a bottle 10 having a neck 11. The upper portion 11a of neck 11 is of reduced diameter, to provide a shoulder 11b at the junction of said upper neck portion 11a and the main portion of neck 11. Said upper neck portion 11a is provided with an external screw thread 12.

Cap 13 is substantially cylindrical in shape and has a peripheral side wall 13a and a top closure wall 13c. The upper portion 13b of peripheral cap wall 13a is optionally knurled. The inner surface of the peripheral wall 13a of cap 13 is provided with a screw thread 14 such that cap 13 may be screwed on to neck portion 11a in the usual manner. Optionally, the usual protective liner disk 15 is mounted upon the lower face of cap end wall 13 so as to rest upon the lip of neck 11 in the closed position of the cap. In this position, the lower end of cap 13 is optionally just above shoulder 11b. The outer diameter of cap 13 is optionally approximately the same as, and optionally may be slightly greater than, the outer diameter of the main portion of neck 11.

Cap 13 may be made of any suitable material. Optionally it is made of a rigid plastic.

Protective sleeve 16 is optionally a tube or band of a flexible material which shrinks upon drying. Said sleeve 16 is optionally made of a shrinkable, non-fibrous material and may include a substantial portion of regenerated cellulose, the shrinkage being controllable by varying the pigmentation of the sleeve or by varying any other appropriate ingredient thereof.

Said sleeve 16, in its initial wet condition, is of slightly greater diameter than the diameter of either cap 13 or neck 11. Sleeve 16 may be placed over both cap 13 and neck 11, with the lower end of sleeve 16 extending almost to the bottom of neck 11 and with the upper end of sleeve 16 extending above the lower edge of cap 13. In accordance with my invention, the knurled portion 13b of cap 13 is located above the upper edge of sleeve 16. Upon drying in air, said sleeve 16 shrinks so as to fit extremely tightly around the periphery of cap 13 and neck 11. Optionally, sleeve 16 may be made of paper, metal foil or other appropriate material.

As an important feature of the invention, cap 13 is provided with means for severing sleeve 16 by turning cap 13. Once sleeve 16 is completely severed, it is a simple matter to continue turning the cap so as to remove it completely from the bottle.

In accordance with this embodiment of the invention, the severing means takes the form of prongs or projections 17 which extend outwardly from cap 13 at the lower edge thereof. Optionally, but without limitation thereto, I provide two such prongs or projections 17 which are diametrically opposed. Said projections 17 are unitary with cap 13 and are optionally and preferably integral with cap 13. Cap 13 and projections 17 are optionally of integrally molded rigid plastic material.

Each said projection 17 has a leading end and a trailing end as taken in the direction of turning of cap 13 when it is being unscrewed. Said direction is counter-clockwise as viewed looking down upon the erect bottle. Said projection 17 is of generally three-sided triangular shape and has a bottom face or surface 17a, a leading face or surface 17b and a trailing face or surface 17c.

Surface 17a is preferably located no higher than the

lower face of cap 13. Optionally, surface 17a is coplanar with the lower face of cap 13. Said surface 17a has a leading or cutting edge 17d which optionally extends generally radially with respect to cap 13. Preferably, said edge 17d is slightly at an angle to the radial direction, so as to meet the cap wall 13a at an acute angle to the tangent in the leading direction at the meeting point. Said surface 17a also has a convex outer edge which curves inwardly to meet cap wall 13a at the trailing end of projection 17.

Surface 17b is co-extensive at its bottom edge with edge 17d. Surface 17b is inclined upwardly and toward the trailing end of projection 17. The outer edge of surface 17b is convex and curves toward wall 13a and meets it at the top of surface 17b and approximately at the trailing end of projection 17.

Surface 17c is optionally convex and is generally triangular in shape. The upper edge of surface 17c is co-extensive with the outer edge of surface 17b. The bottom edge of surface 17c is co-extensive with the outer edge of surface 17a. The trailing edge of surface 17c is co-extensive with cap 13a and extends generally vertically.

At the outer end of edge 17d, projection is optionally slightly rounded so as to prevent accidental cutting of the user by the edge 17d. Optionally, only the inner part of edge 17b is sharpened. The construction of projection 17 minimizes the risk of accidentally cutting the hand of the user.

From the above, it will be apparent that the leading portion of projection 17 is wedge-shaped, the height thereof increasing from the leading end thereof toward the trailing end thereof. This facilitates the cutting action of projection 17 upon protective sleeve 16. As viewed in horizontal section, projection 17 is tapered from its leading end toward its trailing end; and projection 17 is inclined downwardly outwardly from wall 13a thereby facilitating the mounting of sleeve 16 over projection 17 in a manner to be described shortly.

Said sleeve 16 optionally and preferably has a pair of diametrically opposed slits 18. These slits 18 are located in a common plane and extend circumferentially. In the assembled package, each projection 17 is at least partially located within a respective slit 18.

The number of slits 18 optionally corresponds to the number of projections 17, which number may be varied.

In making the assembly, after cap 13 has been screwed onto the bottle, the wet sleeve 16 is lowered over the cap and over projections 17 and over the bottle neck. The downwardly outwardly tapered shape of projections 17 facilitates the frictional sliding movement of sleeve 16 over projections 17. Said wet sleeve 16 is lowered and turned until each projection 17 extends partially into a respective slit 18, as shown in Fig. 1. The tapered horizontal cross-sectional shape of projection 17 facilitates its partial entry into slit 18. Preferably, a substantial portion of bottom surface 17a extends through slit 18 with a portion of sleeve 16 just above slit 18 and resting against the inclined outer surface 17c of projection 17. The upper edge of sleeve 16 is preferably located at the lower end of cap wall knurled portion 13b, and sleeve 16 extends a substantial distance below cap 13.

When sleeve 16 dries, it contracts in the usual manner so that it fits extremely tightly around cap 13 and neck 11. The presence of projection 17 causes sleeve 16 to bulge outwardly at those places, and projections 17 still extend through slits 18.

When it is desired to remove cap 13 from the bottle, the knurled portion 13b of the cap is grasped and force is exerted on the cap, against the friction between the sleeve and smooth part of the cap, so as to turn the cap in the usual counter-clockwise direction, as viewed looking down upon the bottle. As shown in Fig. 2, the cutting edge 17d of projection 17 moves against the end of slit 18 and commences to form a cut 18a in sleeve 16.

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The cutting action is aided by the wedge-like shape of projection 17.

Said cuts 18a are substantially aligned with the bottom edge of cap 13. Upon completion of one half revolution of cap 13, the cuts 18a together extend completely around sleeve 16, thereby severing it into a lower portion 16a still mounted upon bottle neck 11 and an upper portion 11b still mounted upon cap 13 and extending substantially to the bottom edge thereof. Accordingly, it is then a simple matter to continue to unscrew and remove the cap, as shown in the exploded view of Fig. 3.

Second embodiment (Figs. 8-13)

In this embodiment, bottle 20 has a neck 21 with an upper portion 21a of reduced diameter, to provide a shoulder 21b at the junction of said upper neck portion 21a and the main portion of neck 21. Said upper neck portion 21a is provided with an external screw thread 22.

Cap 23, which is optionally made of the same material as cap 13, is preferably cylindrical in shape and has a peripheral side wall 23a and an intermediate closure wall 23b. The inner surface of the peripheral wall 23a of cap 23, below wall 23b, is provided with a screw thread 24 such that cap 23 may be screwed onto neck portion 21a in the usual manner. Said intermediate closure wall 23b rests upon the lip of neck portion 11a, with the upper portion 23c of cap 23, above wall 23b, extending above the bottle. The outer surface 23d of cap portion 23a is preferably knurled.

While the cap of this embodiment thus varies slightly in overall shape from the cap of the first embodiment, either form of overall cap shape may be used in either embodiment.

The protective sleeve 26 is similar to sleeve 16 of the first embodiment, except for the optional omission of slits therein, and accordingly will not be described in detail.

In accordance with this embodiment, the severing means mounted upon cap 23 takes the form of a plurality of prongs or projections 27 which extend outwardly from cap 23 at the lower edge thereof. By way of illustration, and without limitation thereto, the drawing shows six such projections 27 evenly spaced around the periphery of cap 23.

Said projections 27 may be of any appropriate shape. By way of illustration, and without limitation thereto, said projections 27 are shown as each having a generally radially extending trailing surface 27a and as being vertically tapered from trailing end to leading end thereof, as well as horizontally tapered from trailing end to leading end thereof. Accordingly, projection 27a may be considered as being generally wedge-shaped. The lower faces of projections 27a are preferably substantially coplanar with the lower end of cap 23.

An advantage of this embodiment is that the protective sleeve does not have to be oriented as carefully as in the first embodiment. It is unnecessary for projections to extend through slits in the protective sleeve, in the second embodiment, and it is only necessary to lower the sleeve to the proper level.

After the protective sleeve is placed over cap 23 and bottle neck 21, below the level of wall 23b, and upon the shrinkage of cap 23, in the manner described in connection with the first embodiment, said protective sleeve 26 has outward bulges 26a formed by the projections 27. Intermediate the projections 27, sleeve 26 conforms closely to the general cylindrical shape of the periphery of cap 23.

After assembly, in order to remove the cap from the bottle, the knurled surface 23d is grasped and the cap is turned in a counter-clockwise direction, as viewed looking downwardly upon the bottle. As each projection 27 is turned, it forces the protective sleeve outwardly, breaking or rupturing same and causing the break or

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slit 26b to be formed therein. This is shown in Fig. 9. These beginning slits 26b are circumferentially aligned with each other and are located substantially at the bottom end of cap 23. Upon further turning of cap 23, each projection 27 cuts the sleeve so as to continue the slit 26b, until the ends of the successive slits 26b meet and sleeve 26 is completely severed. If there are six projections 27, as shown in the drawing, the cap need be turned approximately one sixth of a revolution in order to sever sleeve 26 completely. It is then a simple matter to unscrew the cap as shown in the exploded view of Fig. 10.

Third embodiment (Figs. 14-18)

This embodiment is somewhat similar in principle to the second embodiment, except that in this embodiment, the cap is optionally made of metal, rather than of plastic as is optionally the case in the first two embodiments.

In the third embodiment, the bottle 30 has a neck 31 with upper portion 31a of reduced diameter, said neck portion 31a having an external screw thread 32, all similarly to the first two embodiments. The cap 33 is substantially cylindrical in shape and has a peripheral side wall 33a and top closure wall 33c. The upper portion 33b of peripheral cap wall 33 is optionally knurled. The inner surface of the peripheral wall of the cap is provided with screw thread 34, and the cap may be screwed onto the bottle neck portion 31a in the usual manner. The outer diameter of the cap is preferably approximately the same as the outer diameter of the main portion of the neck.

The protective sleeve 36 of this embodiment is optionally and preferably substantially the same as the sleeve of the second embodiment.

In accordance with this embodiment, the lower end of the peripheral wall 33a of cap 33 is turned outwardly to form a circumferential bead 39. This bead 39 actually projects only slightly beyond the screw threads of the cap and has a smooth outer edge and would not by itself provide any severing action upon the protective sleeve. However, at selected intervals, the bead 39 is formed with outwardly extending projections 37. Optionally and by way of illustration only, said bead 39 is shown as formed with six equally spaced projections 37. In order to form projection 37, bead 39 may optionally be flattened by appropriate pressure, thereby forcing a portion of the metal outwardly so as to form the projection 37. Optionally, the upper and lower surfaces or projections 37 have radially extending serrations 37a. Projection 37 is relatively flat and has a convex outer edge 37b which is preferably dull rather than sharp.

While in actual practice, it is preferred to form the projections 37 automatically, it will be understood that by way of illustration, a satisfactory projection 37 may be formed by squeezing bead 39 between the serrated jaws of an ordinary pliers.

It will be apparent that the third embodiment operates quite similarly to the second embodiment, and extended description of the mode of operation of the third embodiment is believed unnecessary. It is sufficient to point out that after protective sleeve 36 is placed into position, the projections 37 form outward bulges 36a in sleeve 36.

Upon turning the cap, the projections 37 rupture the sleeve, and form circumferentially extending slits in the sleeve. Upon continued turning of the cap, the projections cut the sleeve so as to continue the slits, until the slits meet for complete severing of the sleeve.

Fourth embodiment (Figs. 19-24)

In this embodiment, instead of a screw cap, a cork type of closure is utilized. The bottle 40 has a neck 41 with a cylindrical inner bore 41a. The cap 43 has a cylindrical head 43a of approximately the same diam-

eter as the upper portion of neck 41. A cork 43b, sized to fit frictionally within bore 41a, depends from head 43a and is secured thereto by any appropriate means (not shown). The upper portion of the periphery of head 43a is optionally knurled, as indicated by the reference numeral 43c.

In this embodiment, said head 43a is optionally made of plastic and is provided with peripheral projections 47 at the lower edge thereof.

It will be apparent that the projections 47 on head 43a may be similar to the projections of any of the previous embodiments. Optionally, and without limitation thereto, head 43a is shown as having two projections 47 corresponding to the projections 17 of the first embodiment.

In the assembly, cork 43b is first inserted into bore 41a so that head 43a rests upon the lip of the bottle neck. The sleeve 46, corresponding to sleeve 16 of the first embodiment, is then applied, with projections 47 extending into the optional slits 48 of sleeve 46. The knurled portion 43c of the cap is located above the upper end of sleeve 46, and sleeve 46 extends downwardly below cap head 43a and around the upper portion of the bottle neck.

The removal of the cork is accomplished in the same manner as in the first embodiment, for all practical purposes. The cork is first turned in the direction of arrow 49, as shown in Fig. 20, so as to form the cuts 48a corresponding to the cuts 18a of the first embodiment.

The cork is further turned until the sleeve is completely severed, and the cap may then be withdrawn in the usual manner by moving it upwardly in the direction of arrow 50.

The construction, assembly, mode and operation, if projections corresponding to the second embodiment are employed, will be obvious without extended description.

Fifth embodiment (Fig. 25)

Only a bottom plan view is shown, since except for the projections 57, the cap 53 and other elements may be the same as in other embodiments; for example, the first embodiment. Projections 57 are similar to projections 17, except to the extent indicated in Fig. 25.

As shown in Fig. 25, projection 57 is somewhat in the shape of a button. Thus, the outer edge 58 of the bottom face 57a of projection 57 is quite rounded, in contrast to the relatively flat shape of the corresponding edge of projection 17 (see Fig. 7).

The relatively blunt shape of projection 57 tends to cause the sleeve to bulge to the maximum extent around the projection.

Sixth embodiment (Fig. 26)

Projections 67 of cap 63 are somewhat hook-shaped. Thus, the bottom face 67a of projection 67 is not as thick as face 57a (Fig. 25). The angle of leading projection edge 67d with the tangent to the cap is much smaller than in the other embodiments.

The shape of projection 67 is such as to facilitate the bursting of the protective sleeve when the cap is turned. In particular, the protective sleeve upon shrinking tends to fit tightly around the nose of the hook-shaped projection, which ensures that the projection will bite into the sleeve when the cap is turned.

Seventh embodiment (Figs. 27-28)

The bottom face 77a of projection 77 of cap 73 is somewhat similar in shape to projection face 17a (first embodiment). The chief difference is in the more acute angle made by leading edge 77d with the tangent to the cap.

Fig. 28 shows an important feature of this embodiment. Projection 77 is downwardly inclined so as to extend below the lower face of cap 73. Accordingly, the sleeve is severed by projections 77 slightly below the lower face

of cap 73. This can be advantageous, in view of the tendency of the sleeve to shrink into the annular groove (shown in Fig. 6) between the periphery of the cap and the bottle shoulder 11b. As a result, upon shrinkage of the sleeve, it extends in a positive manner under the projection, and a definite bulge of the sleeve around the projection is secured. This ensures excellent bursting action upon the sleeve when the cap is turned.

Eighth embodiment (Figs. 29-30)

In this embodiment, the projections 87 of cap 30 also extend below the lower edge of the cap. As shown in Fig. 30, projection 87 has an upwardly inclined leading face 88 and a downwardly inclined leading face 88a. Said face 88a extends below the lower face of the cap. As shown in the drawings, projection 87 is symmetrical with respect to a horizontal center plane in the same plane as the lower face of cap 30.

While I have disclosed a preferred embodiment of my invention, and have indicated various changes, omissions and additions which may be made therein, it will be apparent that various other changes, omissions and additions may be made therein, without departing from the scope and spirit thereof.

It will be apparent that various features of various embodiments may be interchanged. Thus, while several styles of closure members are shown, the projections may be used interchangeably with the various styles of closure members. In other words, and by way of example, the operation with a given set of projections will be the same whether these projections are mounted upon a plastic screw type closure, a metal screw type closure or a cork type closure. The important thing is that the projections should be at least unitary with, and preferably integral with, the cap and should extend outwardly of the periphery of the cap at a level not substantially higher than the level of the lower face of the cap.

It will also be understood that in each of the embodiments, the protective sleeve can be used with or without slits. Thus, even in the embodiment of Fig. 1, the protective sleeve does not have to have slits, although in that case better results may be obtained by using more projections, as is done in the second embodiment. By way of further example, even in such embodiments as the last two embodiments, the projections may extend through slits and thereby cut the sleeve, rather than rely merely upon the bursting action of the projections upon the sleeve.

I claim:

1. Closure means for a container having a neck with a top opening, said closure means comprising a cap, means rotatably mounting said cap upon said neck so as to close said top opening, and a soft, protective, severable, flexible sleeve extending clingingly and conformingly about the periphery of said cap and about said neck below said cap, said cap being accessible above said sleeve for turning said cap and interrupting the surface of said sleeve, said cap having at least one unitary projection extending radially outwardly of the periphery thereof and extending circumferentially around a minor portion only of the periphery thereof and extending at least to the level of the lower face of said cap, said projection pressing against said sleeve and being sized to rupture and sever said sleeve circumferentially upon rotary movement of said cap.

2. Closure means according to claim 1, said sleeve having slits corresponding in number and in spacing to the projections of said cap, each said projection extending at least partially through a respective slit, said projection having a cutting edge positioned to bear against the end of said slit and cut said sleeve upon turning said cap.

3. Closure means according to claim 2, the lower face of said projection being in the same plane as the lower

face of said cap, said projection having a top face which is upwardly inclined from said cutting edge.

4. Closure means according to claim 3, said cap being a screw cap.

5. Closure means according to claim 3, said cap having a cork-like extension which extends frictionally into the bore of the neck.

6. Closure means according to claim 2, said projection being generally button-shaped in cross-sectional shape.

7. Closure means according to claim 2, said projections being generally hook-shaped and being inclined from the normal direction of the cap in the direction of turning of the cap.

8. Closure means according to claim 2, said projections extending below the level of the lower face of said cap, each said projection having an upper face which is upwardly inclined from its leading edge.

9. Closure means according to claim 2, said projection having its leading edge substantially coplanar with the lower face of said cap and having upper and lower faces respectively inclined upwardly and downwardly from said leading edge.

10. Closure means according to claim 1, said cap being a metal screw cap and having a bottom outwardly extending annular bead, said bead being crimped at spaced points

to flatten it and extend it outwardly, said extensions serving as said projections.

11. A container closure member for use in conjunction with a container having a protective sleeve extending tightly around the closure member and the neck of the container, said closure member having a generally cylindrical outer periphery and having a bottom end, said closure member having at least one projection extending outwardly from the periphery thereof and extending at least to the level of said bottom end.

12. Closure member according to claim 11, the lower face of said projection being in the same plane as said bottom end, said projection having a top face which is upwardly inclined from said lower face.

13. Closure member according to claim 11, said projection being generally button-shaped in cross-sectional shape.

14. Closure member according to claim 11, said projection extending below the level of the lower face of said cap.

References Cited in the file of this patent

UNITED STATES PATENTS

1,908,245	Hogg	May 9, 1933
2,837,233	Kravitz	June 3, 1958