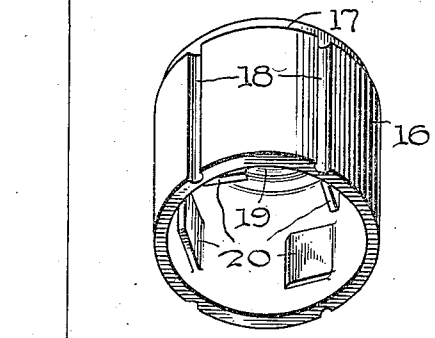
July 8, 1947. P. G. COLEMAN 2,423,582

BOTTLE CAP

Filed Feb. 27, 1945

Fig. 1.



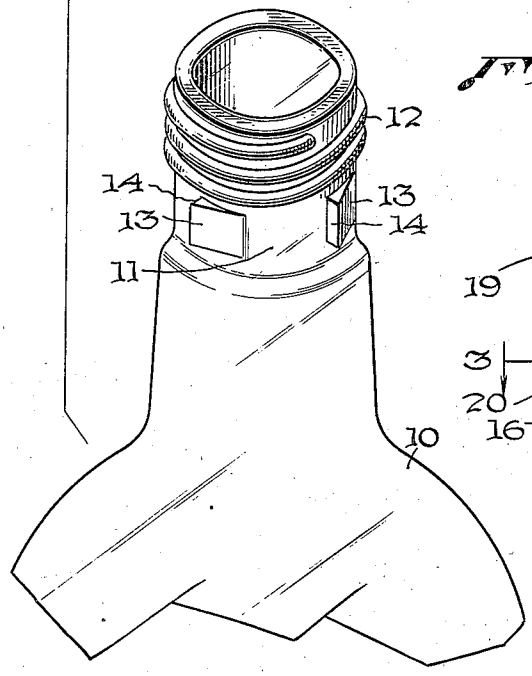


Fig. 3.

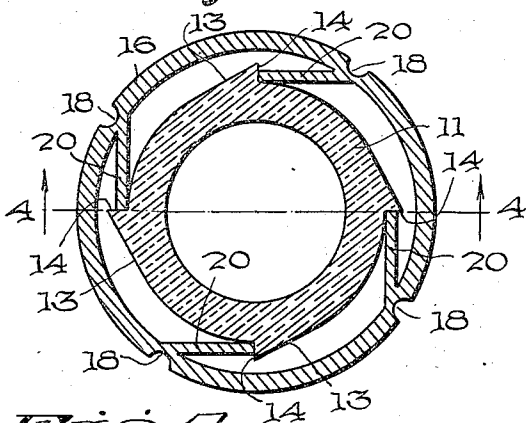


Fig. 4.

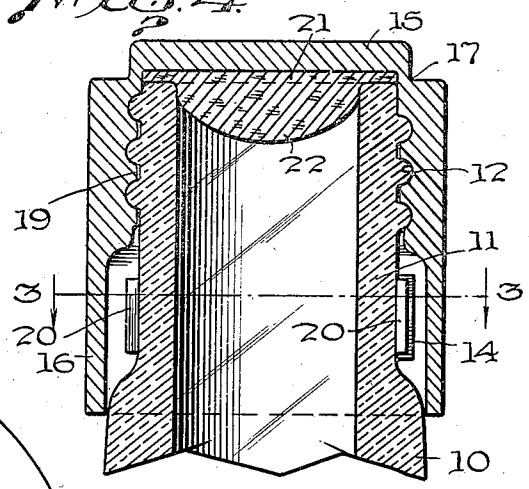


Fig. 2.

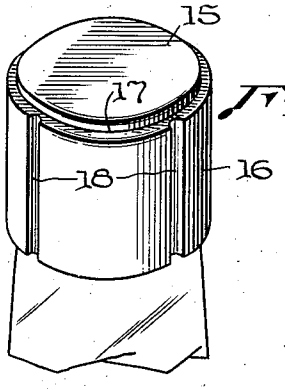
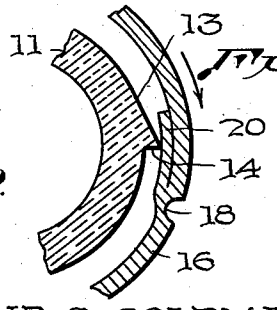


Fig. 5.



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BOTTLE CAP

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9 Claims. (Cl. 215—42)

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My invention relates to improvements in bottle caps and has to do, more particularly, with a bottle cap of the type that will be automatically destroyed by any attempt to remove it from the bottle.

In marketing whiskey and other spirituous liquors, it is desirable to provide a closure for the bottle which may be quickly and easily applied thereto but will be automatically destroyed by any attempt to remove the closure. The internal revenue stamp, and various seals, are often applied over the closure and around the neck of the bottle and, thus, the destruction of the closure will indicate to the buyer that the contents of the bottle may have been tampered with since it left the distillery, at which the closure was first applied. The principal object of my invention, therefore, is to provide an improved closure for a bottle, which will be automatically destroyed by any attempt to remove the closure.

A further object of my invention is to provide a bottle closure comprising a plastic screw cap and means automatically effective to burst the cap upon any attempt to unscrew it from the bottle.

A further object of my invention is to provide a closure that will be automatically destroyed by any attempt to remove it from the bottle, but which will leave behind a portion that may be conveniently used as a temporary stopper for the bottle.

Further objects, and objects relating to details of construction and economies of operation, will definitely appear from the detailed description to follow. In one instance, I have accomplished the objects of my invention by the devices and means set forth in the following specification. My invention is clearly defined and pointed out in the appended claims. A structure, constituting a preferred embodiment of my invention, is illustrated in the accompanying drawings, forming a part of this specification, in which

Fig. 1 is an exploded perspective view showing the neck of a bottle and a bottle cap, constructed in accordance with my invention.

Fig. 2 is a perspective view of the neck of a bottle with the cap applied thereto.

Fig. 3 is a horizontal, sectional view through the cap and bottle neck, taken on the line 3—3 of Fig. 4.

Fig. 4 is a vertical, sectional view through the bottle cap and the neck of the bottle, taken on the line 4—4 of Fig. 3, and

Fig. 5 is a fragmentary, sectional view, corresponding to a part of Fig. 3, but showing the cap

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in such relation to the neck of the bottle that one of the tongues is flexed to one side to permit it to pass a cam shoulder on the bottle neck.

In the drawings, the same reference numerals refer to the same parts throughout the several views and the sectional views are taken looking in the direction of the arrows at the ends of the section lines.

In general, my invention comprises a closure for a bottle, rotatable on the neck thereof, and which includes a plastic cap having a top and an integral skirt surrounding the neck of the bottle, and cooperative means on the bottle neck and the cap for exerting a bursting pressure on the skirt, when the cap is rotated in one direction. The skirt of the cap is provided, preferably, with a plurality of longitudinal weakening grooves parallel to the axis of rotation of the cap, and the cooperating means are such that the bursting pressure is applied to the skirt at points in line with these weakening grooves. I prefer to provide the neck of the bottle, in a zone below the external screw thread thereon, with a plurality of cam shoulders, each of which has an inclined cam face tangent to the cylindrical portion of the bottle neck and a face which extends radially of the bottle neck, and to provide a plastic cap comprising a top and a skirt that surrounds the bottle neck and is provided with an internal screw thread, for cooperation with the external screw thread on the neck, and a plurality of integral tongues projecting inwardly from the cap skirt and normally lying tangent to a cylinder coaxial with said skirt. These tongues are located on the cap below the screw thread, so that, when the cap is screwed on the bottle neck, these inwardly-projecting tongues will cooperate with the cam shoulders. The tongues are preferably located on the skirt at points adjacent the longitudinal weakening grooves thereof. When one attempts to unscrew the cap, the radial shoulders on the bottle neck will engage the ends of these tongues and press them lengthwise, thus exerting bursting pressure upon the skirt at the points where it is weakened by the longitudinal grooves. A circumferential weakening groove may be provided at the junction of the top of the cap with the skirt and, when the skirt of the cap is burst, the top, with the cork sealing disc secured thereto, may be used as a temporary stopper for the bottle.

Referring to the numbered parts of the drawings, the bottle 10 has a cylindrical neck portion 11 provided with an external screw thread 12. In the zone below the screw thread 12, the cylin-

drical neck portion is provided with four cam shoulders symmetrically arranged thereon, each of which has an inclined cam face 13, which extends tangentially to the cylindrical neck 11, and a face 14, which extends radially of said neck.

The cap is made of any suitable plastic and comprises a top 15 and a cylindrical skirt 16. The circumferential weakening groove 17 is formed at the junction of the top 15 and skirt 16. The skirt is provided with an internal screw thread 19 for cooperation with the thread 12 on the bottle neck. Weakening grooves 18 are formed in the skirt 16 and extend longitudinally and parallel to the axis of rotation of the cap. The skirt 16 is provided with four integral tongues 20, which merge into the material of the skirt at the points where the longitudinal weakening grooves 18 are formed. These tongues project inwardly of the skirt and normally lie tangent to a cylinder coaxial with the skirt. They are located on the skirt below the screw thread 19 so that, when the cap is screwed home on the bottle neck, the tongues 20 will engage the cam shoulders having the sloping faces 13 and the abrupt faces 14. A sealing disc 21, of cork or cork composition, is cemented to the inner surface of the top 15 of the cap and provided with a hemispherical portion 22, fitting within the mouth of the bottle and serving as a stopper therefor.

When the bottle has been filled, the cap is screwed onto the neck of the bottle until the sealing disc 21 engages the lip thereof, and the portion 22 seats within the mouth of the bottle, as shown in Fig. 4. As the bottle cap is screwed up, the tongues 20 engage and slide over the cam faces 13 of the cam shoulders, being flexed thereby as shown in Fig. 5. The tongues 20 snap over these shoulders successively and, when the bottle cap has been screwed up, the tongues will occupy the positions, shown in Fig. 3, with reference to the radial faces 14 of the cam shoulders. If, now, one attempts to unscrew the cap, this will cause the tongues 20 to press endwise against the radial faces 14 of the cam shoulders and, as a result thereof, a bursting pressure will be transmitted to the skirt 16, at the points where that skirt is weakened by the longitudinal grooves 18. The result will be to burst the skirt of the cap along the grooves 18. The portions of the skirt between the grooves 18 may be broken away, leaving the top 15 and the cork sealing disc, which may be used as a temporary stopper for the bottle.

I am aware that the bottle closure shown and described herein may be varied considerably without departing from the spirit of my invention, and, therefore, I claim my invention broadly, as indicated by the appended claims.

Having thus described my invention, what I claim as new and useful, and desire to secure by Letters Patent, is:

1. The combination of a bottle having a neck, a closure for the bottle rotatable on the neck and including a plastic cap having a top and an integral skirt surrounding the neck, said skirt having a plurality of longitudinal weakening grooves therein parallel to the axis of rotation of the cap and extending from said top to the bottom of said skirt, and means for exerting a bursting pressure on said skirt at points adjacent said weakening grooves, to rupture said grooves and burst the skirt of said cap to disintegrate said cap, upon rotating the cap, in one direction, with respect to said neck.

2. The combination of a bottle having a neck,

a closure for the bottle rotatable on the neck and including a plastic cap having a top and an integral skirt surrounding the neck, said skirt having a plurality of longitudinal weakening grooves therein parallel to the axis of rotation of the cap and extending from said top to the bottom of said skirt, and means on the bottle neck and on the skirt, cooperating, when the cap is rotated on the neck in one direction, to exert a bursting pressure on said skirt at points in line with said weakening grooves, to rupture said grooves and burst the skirt of said cap whereby said cap is disintegrated.

3. The combination of a bottle having a cylindrical neck provided with an external screw thread and a plurality of cam shoulders below said screw thread, and a closure for said bottle including a plastic cap having a top, an integral skirt surrounding the neck and internally threaded, and a plurality of integral, inwardly-extending tongues adapted to engage said cam shoulders and normally lying tangent to the cylindrical portion of the bottle neck, said tongues being adapted to be flexed by engagement with the cam surfaces of said shoulders as the cap is screwed up on the bottle neck and to snap over the shoulders successively, rotation of the cap in the direction for removal forcing said tongues endwise against radial faces of said cam shoulders, whereby the application of force to unscrew the cap will generate pressure exerted on said skirt at a plurality of points to burst the skirt.

4. The combination of a bottle having a cylindrical neck provided with an external screw thread and a plurality of cam shoulders below said screw thread, and a closure for said bottle including a plastic cap having a top, an integral, internally threaded skirt surrounding the neck and having a plurality of longitudinal weakening grooves therein parallel to the axis of rotation of the cap, and a plurality of inwardly-extending tongues integrally united with the skirt at one end adjacent said grooves, said tongues normally lying tangent to the cylindrical portion of said neck and being positioned so as to engage said cam shoulders when the cap is screwed on the bottle, said tongues being adapted to be flexed by engagement with cam surfaces of said shoulders as the cap is screwed up on the bottle neck and to snap over the shoulders successively, rotation of the cap in the direction for removal forcing said tongues endwise against radial faces of said cam shoulders, whereby the application of force to unscrew the cap will generate pressure exerted on said skirt in line with the weakening grooves to burst the skirt.

5. The combination of a bottle having a cylindrical neck provided with an external screw thread and a plurality of cam shoulders in a zone below said screw thread, each shoulder having an inclined cam surface tangent to the cylindrical neck and a face radial thereof, and a plastic cap including a top, an integral skirt surrounding the bottle neck and having an internal screw thread and a plurality of longitudinal weakening grooves parallel to the axis of rotation of the cap, and a plurality of integral tongues projecting inwardly from said skirt, at points in line with said grooves, in a zone below said screw thread and normally lying tangent to the cylindrical neck, said tongues being adapted to be flexed by engagement with said cam surfaces as the cap is screwed up on the bottle neck and to snap over said shoulders successively, rotation

of the cap in the direction for removal forcing said tongues endwise against said radial faces, whereby the application of force to unscrew the cap will generate pressure exerted on said skirt in line with the weakening grooves to burst the skirt.

6. The combination of a bottle having a cylindrical neck provided with an external screw thread and a plurality of cam shoulders in a zone below said screw thread, each shoulder having an inclined cam surface tangent to the cylindrical neck and a face radial thereof, and a plastic cap including a top, an integral skirt surrounding the bottle neck and having an internal screw thread and a plurality of longitudinal weakening grooves parallel to the axis of rotation of the cap, a circumferential weakening groove at the junction of the top and skirt, and a plurality of integral tongues projecting inwardly from said skirt, at points in line with said longitudinal grooves, in a zone below said screw thread and normally lying tangent to the cylindrical neck, said tongues being adapted to be flexed by engagement with said cam surfaces as the cap is screwed up on the bottle neck and to snap over said shoulders successively, rotation of the cap in the direction for removal forcing said tongues endwise against said radial faces, whereby the application of force to unscrew the cap will generate pressure exerted on said skirt in line with the longitudinal weakening grooves to burst the skirt.

7. A plastic bottle cap having a top, a cylindrical skirt provided with an internal screw thread, and a plurality of integral tongues projecting inwardly from said skirt, in a zone below the screw thread, having such substantial length as to be independently flexible with respect to the skirt and normally lying tangent to a cylinder coaxial with said skirt.

8. A plastic bottle cap having a top, a cylindrical skirt provided with an internal screw thread and a plurality of longitudinal weakening grooves parallel to the axis of said skirt, and a plurality of integral tongues projecting inwardly from points of said skirt adjacent said grooves, in a zone below the screw thread, having such substantial length as to be independently flexible with respect to the skirt and normally lying tangent to a cylinder coaxial with said skirt.

9. A plastic bottle cap having a top, a cylindrical skirt provided with an internal screw thread and a plurality of longitudinal weakening grooves parallel to the axis of said skirt, a circumferential weakening groove at the junction of top and skirt, and a plurality of integral tongues projecting inwardly from points of said skirt adjacent said longitudinal grooves, in a zone below the screw thread, having such substantial length as to be independently flexible with respect to the skirt and normally lying tangent to a cylinder coaxial with said skirt.

PHILIP G. COLEMAN.

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