July 26, 1938. W. R. SHELDON ET AL 2,124,638

BOTTLE CLOSURE

Filed Sept. 3, 1937

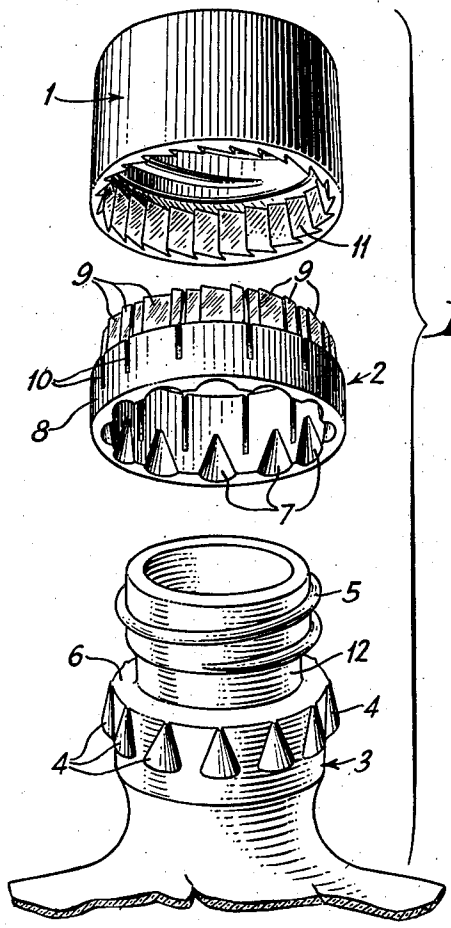


Fig. 1

Fig. 2

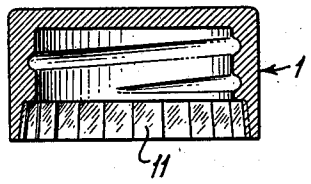


Fig. 3

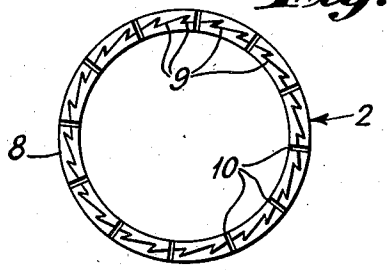


Fig. 4

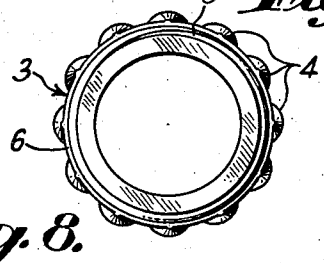


Fig. 8.

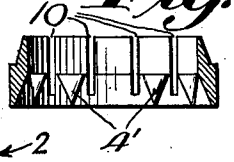


Fig. 6

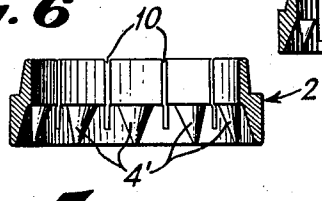


Fig. 5

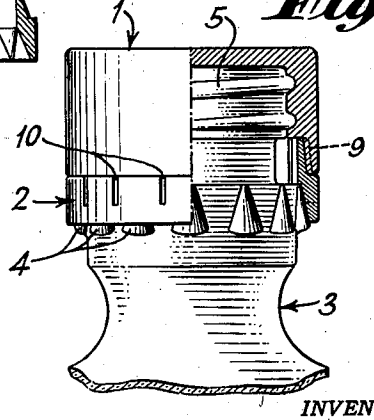
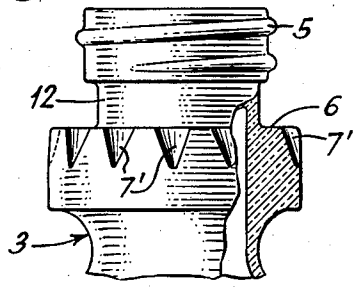


Fig. 7



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BOTTLE CLOSURE

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Application September 3, 1937, Serial No. 162,254

10 Claims. (Cl. 215—7)

This invention relates to bottle closures, and has for one of its objects to provide a closure one of whose parts is frangible and requires breakage before the contents of the bottle can be removed.

Closures of the type to which the invention relates are generally designated "tamper-proof", and are advantageously used in the packaging of commodities, such as liquor, perfume, etc., the nature of which involves the partial removal of the container contents from time to time.

In brief, the invention consists of a two part closure comprising a member for the neck of the bottle and a cover for engaging both the neck of the bottle and said member. Both the member and the cover are provided with teeth which are caused to interlock when the bottle is sealed. Because of the arrangement of these teeth, the cover cannot be removed without mutilating the said member, thus indicating that the bottle has been opened.

The destructibility of one or more parts of the closure is an essential characteristic of the bottle closure of the present invention, and the construction of this closure is such as to permit it to be removed by hand. The desired characteristic is imparted to the closure in part by the material of which the parts of the closure are made, and in part by the form of the individual elements thereof.

In the accompanying drawing, wherein like parts are labeled with like reference numerals throughout the several views:

Fig. 1 illustrates an exploded view of the two parts of the closure of the invention in their proper order of assembling in relation to the top of a bottle;

Fig. 2 is a sectional view of the cover or cap part of the closure of the invention;

Fig. 3 is a bottom view of the lower part or bottle neck engaging member of the closure of the invention;

Fig. 4 is a top view of the top of a bottle especially constructed to cooperate with the closure of the invention;

Fig. 5 is a side elevation, partly in section, of the neck of a bottle having a closure embodying the invention applied thereto;

Fig. 6 is a sectional view, and Fig. 7 an elevation partly in section of modifications of the lower part or bottle engaging member of the closure and of the neck of the bottle, respectively; and

Fig. 8 is a sectional view of a further modification of the lower part of the two-part closure.

Referring to the drawing in more detail, particularly Fig. 1, there is shown a container having a bottle neck 3 which is provided with exterior screw threads 5 like those commonly used upon containers adapted to be sealed by ordinary screw caps, and below these threads on a portion of the bottle neck separated from the threads by a ledge 6 with a plurality of conical shaped symmetrically arranged beads 4, 4 which are adapted to fit into suitable conical shaped recesses 7, 7 in the closure member 2.

The closure proper comprises a cover or cap part 1 and a bottle neck engaging part 2, both of which are made of a composition material, preferably a ceramic plastic.

Closure member 2 is in the form of a sleeve whose inner diameter is large enough to pass freely over the threads 5 of the bottle neck 3. The interior of member 2 is fitted with conical recesses 7, 7 of suitable width to accommodate the beads 4, 4 on the bottle neck. The spacing of recesses 7, 7 is arranged to correspond to the spacing of the beads 4, 4. The upper part of member 2 is formed of a multiplicity of teeth 9, 9, all running in the same direction; in the case illustrated, from right to left. These teeth 9, 9 are designed to mesh and interlock, in a manner to be described later, with a ratchet arrangement comprising similarly numbered and spaced teeth 11 provided in the cover or cap part 1. In order to enable teeth 9, 9 to interlock properly with the ratchet arrangement 11 of the cover part 1, in the process of sealing the bottle, and without any breakage of the parts or elements thereof, there are provided a plurality of slots 10 around the periphery of the member 2. These slots extend, as shown, over the width of the teeth 9, 9 and into the smooth cylindrical outer portion 8, and serve the purpose of giving a certain amount of flexibility to the plastic member 2. In the preferred arrangement of member 2, there are provided at least thirty teeth 9, 9 and at least eight slots 10.

The cover or cap part 1 of the closure comprises, in the upper portion of its interior, an ordinary screw threaded surface adapted to engage upon the threads 5 of the bottle neck. The lower portion of the interior of the cover part 1, however, is of wider diameter than the upper portion and has a ratchet arrangement 11 composed of a plurality of teeth designed to mesh and interlock with the teeth 9, 9 of the lower member 2. It will be noted that the teeth of the ratchet arrangement 11 run in an opposite direction to the teeth 9, 9, thus enabling an intermesh

between them but preventing disengagement without breakage or mutilation of one element of the closure.

In sealing the bottle, the member 2 is first slipped over the neck of the bottle in such a way that the beads 4, 4 snugly fit into the recesses 7, 7. In this position the teeth 9, 9 will surround the smooth portion 12 of the bottle neck. Cover part 1 is then placed on top of the bottle neck and screwed down on the threads 5 as far as possible. In the lowermost position of the cap 1, the ratchet mechanism 11 will mesh with the teeth 9, 9 of the member 2, thus providing a secure seal which cannot be broken without mutilating the teeth 9, 9.

In the process of manufacturing the closure of the invention, member 2 is made frangible in order to be broken or completely destroyed when pressure is exerted in unscrewing the cover part 1 in breaking the seal. The cover part 1, however, is of more durable material, or tempered differently, so as not to break, because this part must be used to reseal or prevent evaporation or spilling of the bottle contents.

Figs. 6 and 7 illustrate how the beads and recesses of the bottle neck 3 and member 2 can be interchanged. In these figures, there are provided conical beads 4', 4' on the interior of member 2, and conical recesses 7', 7' on the exterior surface of the bottle neck 3. The beads and recesses are of course correspondingly spaced and the same number.

Where desired, the arrangement of beads and recesses can be made unsymmetrical and varied in the process of manufacturing bottles and closure caps, in order to provide different code combinations. Fig. 8 shows one such an arrangement having beads unsymmetrically placed around the interior of the lower part of the closure. This feature will discourage a dishonest distributor of the merchandise from attempting to remove the contents of a bottle and reseal with unauthorized closures made in accordance with the invention.

It will be understood, of course, that the invention is not limited to the precise arrangement of parts shown since various modifications may be made without departing from the spirit and scope thereof. For example, the beads, recesses, and teeth can have different forms and shapes, and the dimensions of the closure parts can be changed at will.

What is claimed is:

1. A two-part bottle closure comprising a cover part and a member for sliding over the neck of a bottle, said neck being provided with a plurality of recesses on its exterior surface, said member being provided at its lower part with a similar plurality of beads arranged around the interior thereof for insertion into said recesses, whereby rotation of said member on the neck of the bottle when fitted thereover is prevented, the upper portion of said member being provided with teeth located on the exterior surface and forming an integral part thereof, said cover part being provided, in the lower portion of its interior, with a similar number of teeth for meshing with the teeth of said member, at least one portion of one of said parts being frangible.

2. A two-part bottle closure comprising a cover part and a member for sliding over the neck of a bottle, said member being provided at its lower part, in the interior thereof, with a plurality of recesses arranged at intervals around said member for preventing its rotation on the neck of the bottle when fitted thereover, the upper portion of said member being provided with teeth located on the exterior surface and forming an integral part thereof, said cover part being provided, in the lower portion of its interior, with a similar number of teeth for meshing with the teeth of said member, the upper portion of the interior of said cover being of smaller diameter than its lower portion and threaded to engage the threads on the neck of said bottle, at least one portion of one of said parts being frangible.

3. The combination with a bottle having a neck provided with a helical thread, and beads positioned around and below said thread, of a two-part bottle closure comprising a cover part and a ring-like member for sliding over the neck of said bottle, said member having an interior diameter larger than the diameter of said neck at the location of said thread, the interior of said member having recesses corresponding in number and having the same spacing as said beads, whereby said beads can be accommodated in said recesses, the exterior of said member being provided with teeth forming an integral part of said member, said cover having the upper portion of its interior threaded to engage the threads on the neck of said bottle and the lower portion of its interior provided with teeth to intermesh with the teeth on said member when both are applied to said bottle, said member being made of a frangible molded plastic for breaking when said cover is removed from said member.

4. The combination with a bottle having a neck provided with a helical thread, and recesses positioned around and below said thread, of a two-part bottle closure comprising a cover part and a ring-like member for sliding over the neck of said bottle, said member having an interior diameter larger than the diameter of said neck at the location of said thread, the interior of said member having beads corresponding in number and having the same spacing as said recesses, whereby said beads can be accommodated in said recesses, the exterior of said member being provided with teeth forming an integral part of said member, said cover having the upper portion of its interior threaded to engage the threads on the neck of said bottle and the lower portion of its interior provided with teeth to intermesh with the teeth on said member when both are applied to said bottle, said member being made of a frangible molded plastic for breaking when said cover is removed from said member.

5. The combination defined in claim 3, characterized in this that said beads and recesses are conical in shape and symmetrically located around the periphery of said bottle neck.

6. The combination defined in claim 4, characterized in this that said beads are unsymmetrically positioned around the interior of said member.

7. The combination with a bottle having a neck provided with a helical thread, and beads positioned around and below said thread, of a two-part bottle closure comprising a cover part and a ring-like member for sliding over the neck of said bottle, said member having an interior diameter larger than the diameter of said neck at the location of said thread, the interior of said member having recesses corresponding in number and having the same spacing as said beads, whereby said beads can be accommodated in said recesses, the exterior of said member being provided with teeth, said member having a plurality of vertical slots around the periphery thereof for

giving to said member a certain amount of flexibility, said cover having the upper portion of its interior threaded to engage the threads on the neck of said bottle and the lower portion of its interior provided with teeth to intermesh with the teeth on said member when both are applied to said bottle, said member being made of a frangible plastic for breaking when said cover is removed from said member.

8. A two-part bottle closure comprising a cover part and a member for sliding over the neck of a bottle, said member being provided at its lower part with means for preventing its rotation on the neck of the bottle when fitted thereover, the upper portion of said member being provided with teeth located on the exterior surface thereof, said member having a plurality of vertical slots symmetrically arranged around the periphery thereof for giving to said member a certain amount of flexibility, said cover part being provided, in the lower portion of its interior, with a similar number of teeth for meshing with the teeth of said member, the upper portion of the interior of said cover being of smaller diameter than its lower portion and threaded to engage the threads on the neck of said bottle, at least one portion of one of said parts being frangible.

9. A two-part bottle closure comprising a cover part and a member for sliding over the neck of a bottle, said member being frangible and provided at its lower part with means adapted to cooperate with correspondingly located portions on the neck of the bottle for preventing its rotation on said neck when fitted thereover, the upper portion of said member being provided with at least thirty teeth located on the exterior surface thereof, said member having at least eight vertical slots arranged around the periphery thereof for giving to said member a certain amount of flexibility, said cover part being provided, in the lower portion of its interior, with a similar number of teeth for meshing with the teeth of said member.

10. A two-part closure comprising a ceramic cover part and a ceramic member for sliding over the neck of a bottle, said member being provided at its lower part with means for preventing its rotation on the neck of the bottle when fitted thereover, the upper portion of said member being provided with teeth located on the exterior surface thereof, said member having a plurality of vertical slots arranged around the periphery thereof for giving to said member a certain amount of flexibility, said cover part being provided in the lower portion of its interior with a number of teeth for meshing with the teeth of said member, the upper portion of the interior of said cover being of smaller diameter than its lower portion and threaded to engage the threads on the neck of said bottle, at least one portion of one of said parts being frangible.

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