Nov. 4, 1941. W. DUNN 2,261,875

ARTICLE AND METHOD OF MAKING THE SAME

Filed June 3, 1937

Fig. 1.

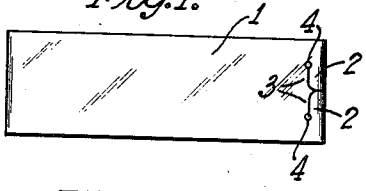


Fig. 2.

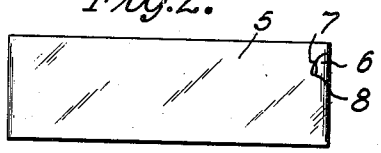


Fig. 3.

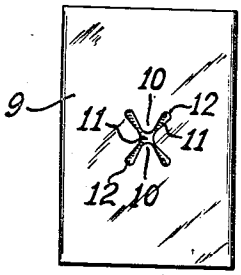


Fig. 4.

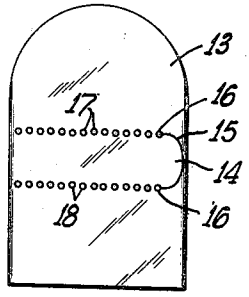


Fig. 5.

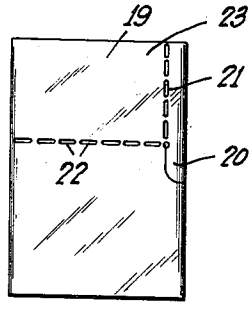


Fig. 6.

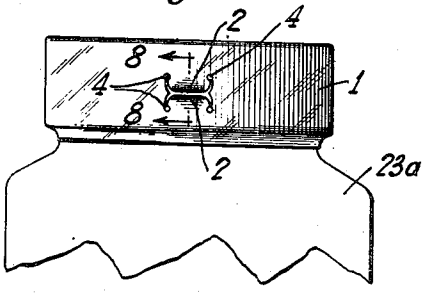


Fig. 7.

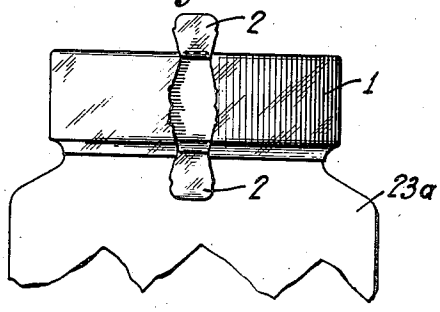


Fig. 9.

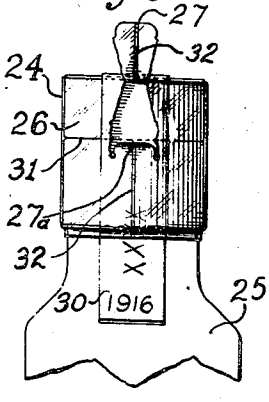


Fig. 10.

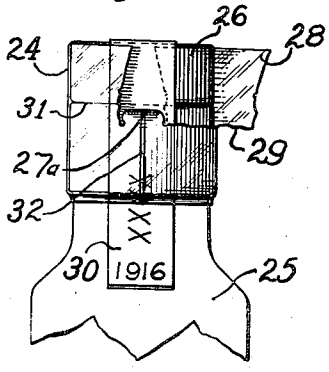
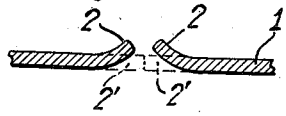


Fig. 8.



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ARTICLE AND METHOD OF MAKING THE SAME

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Application June 3, 1937, Serial No. 146,188

4 Claims. (Cl. 215—38)

The invention relates in general to shrinkable container closures and, in particular, to shrinkable container closures having means associated therewith to facilitate their removal from containers and to correlated improvements in the process for producing the same.

Shrinkable container closures of the cap and band type have long been in use for the purpose of providing a permanent, reliable, and attractive seal on containers. The many advantages of these closures have been recognized in the packaging art but their use has been restricted in many cases to the ever present problem of effectively breaking and removing the closures by the one who is to use the contents of the container. The shrunken closures of the type referred to are characterized by being very tough and of a horny nature. To remove such closures it has been necessary to remove the same by means of a sharp instrument such as a knife which has, in many instances, led to the injury of the person opening the container.

The general object of the invention is to obviate the above and other disadvantages.

The specific object of the invention is to provide a shrinkable container closure which may be removed from a container without the use of extraneous devices or implements.

Another object of the invention is to provide a shrinkable container closure having means integrally associated therewith to facilitate the removal of the closure from a container.

An additional object of the invention is to provide a process for producing shrinkable container closures having means integrally associated therewith for removing the closure from a container.

A further object of the invention is to provide tearing means associated with a shrinkable container closure in such a manner as not to affect the tear resistance of the closure during shrinkage.

Other objects of the invention will, in part, be obvious and will, in part, appear hereinafter.

The invention accordingly comprises the several steps and relation of one or more of such steps with respect to each of the others, and the article possessing the features, properties, and the relation of elements, which are exemplified in the following detailed disclosure, and the scope of the invention will be indicated in the claims.

According to the invention there is provided a shrinkable container closure formed of a shrinkable colloidal material and having a tearing tab formed integrally therewith. The tab may be formed by punching or cutting the material while in a dry or wet condition and preferably while in a wet or gel-state.

For a fuller understanding of the nature and objects of the invention reference should be had to the following detailed description taken in connection with the accompanying drawing, in which:

Figs. 1 and 2 illustrate shrinkable closures of the band type having a tearing tab of the invention formed integrally therewith;

Figs. 3–5 show further embodiments of the closure of the invention;

Fig. 6 illustrates the closure of Fig. 1 applied to a container;

Fig. 7 shows the structure shown in Fig. 6 during tearing;

Fig. 8 is an enlarged cross-sectional view taken on the line 8—8 of Fig. 6; and

Figs. 9 and 10 each illustrate a stage in the step of removing a closure of the invention from a container.

The closure may be formed of any suitable colloidal material which will shrink upon the loss of moisture and/or solvent or swelling agent such, for example, as cellulose hydrate, cellulose esters, cellulose ethers and oxy-ethers, synthetic resins, gelatin, casein or the like. In the formation of bands the colloidal material is extruded in the form of a seamless tubing which is subsequently severed transversely to produce bands of the desired length. Cap-type closures are produced by dipping a mandrel in a solution or dispersion of the colloidal material and subsequently stripping the cap from the mandrel.

Referring to Fig. 1 there is shown a relatively wide shrinkable band 1 in a flattened state having a pair of diametrically opposed tearing tabs 2 formed by cuts 3 each of which terminates in a perforation 4. The tabs 2 are preferably formed in a single punching operation by means of a die which will simultaneously form the perforations 4 and the cuts 3. The band is die cut while in a flattened condition as shown in Fig. 1 so that both the top and bottom sides of the seamless band are cut in a single operation thus forming U-shaped tabs as shown in Fig. 6. The die punching operation may be carried out simultaneously with the conventional operation of severing the bands from a continuous seamless tubing.

In Fig. 2 there is shown a shrinkable closure 5 having a single tearing tab 6 formed by a cut 7 which terminates in rounded perforations 8. When a single tearing tab is provided in a closure of this type it is preferable to position the top portion of the tab near one end of the closure

so that the major portion of the length of the band may be torn by the tearing tab.

A long relatively narrow band **9** such as is used on bottles is shown in Fig. 3 in an opened condition and is provided with tearing tabs **10** defined by punched-out portions **11** terminating in rounded portions **12**. In this embodiment the band may also be punched at the creased edge while in a flattened condition so that both the upper and lower layers are simultaneously cut to form a pair of diametrically opposed tearing tabs. If two sets of tearing bands are desired, the closure may be punched through the middle, while in a flattened condition, with a die designed to coincide with the punched out portion as shown.

The embodiment illustrated in Fig. 4 comprises a cap **13** having a pair of tearing tabs **14** defined by cuts **15** terminating in perforations **16**. A series of parallel perforations or weakened lines **17** and **18** may be provided to facilitate the tearing of a substantially uniform strip around the closure. This series of perforations or weakened lines may be formed simultaneously with the formation of the tear tabs by the use of a suitably designed die.

Another embodiment of the invention is shown in Fig. 5 and which may be formed by simultaneously die-punching a flattened closure **19** to form a tearing tab **20**, two parallel rows of perforations **21** extending vertically from each side of the base portion of the tab and a second series of perforations **22** extending transversely around the closure. In removing this embodiment from a container the tab **20** will be pulled upwardly to tear out a strip between the two rows of perforations **21** after which the corner **23** will act as a tab to permit tearing to follow the perforations **22**. The embodiments shown in Figs. 4 and 5 are particularly suited for liquor bottles to be used for bar consumption as the lower remaining portion of the closure will serve to retain the tax stamp on the bottle during use as required by law.

In Fig. 26 there is shown a container **23***a* such as the Mason jar type having applied thereto a closure **1** of the type shown in Fig. 1. Upon shrinking, the closure will snugly embrace the container and the opposed cut edges in the closure will draw away from each other so as to form open spaces between the tearing tabs **2** and between the tearing tabs and the adjacent edges of the closure. Due to the absence of any tension during drying the tearing tabs very conveniently shrink in such a manner as to form a curl at their extremities as will be more fully described hereinafter.

In removing the closure **1** from the container **23***a* the tearing tabs **2** are pulled whereby a tearing action results as shown in Fig. 7. After the tearing is completed the remainder of the closure may be easily removed.

As hereinbefore disclosed the tearing tabs automatically assume an outward curl or are caused to project outwardly during the shrinking operation as illustrated in Fig. 8 which is a view taken on the line **8—8** of Fig. 6. The portions **2'** show the relationship of the tearing tabs before drying and shrinking and the portions **2** indicate their relative position after complete drying or shrinkage. This curling of the tearing tabs has proved to be a distinct asset and materially enhances the value of the structure as the gripping of the tabs is facilitated considerably. In the production of band-type closures the continuous length of tubing, from which the bands are subsequently severed, is usually processed in a flattened condition thereby forming two longitudinal creases or ribs. As hereinbefore stated, it is preferable to die-punch the tubing at the creased edge thereby forming tabs having a rib **32** extending longitudinally through the center thereof and which functions to strengthen or reenforce the tab.

Another embodiment of the invention is illustrated in Figs. 9 and 10 wherein a shrinkable closure **24** is shown shrunk about the neck portion of a bottle **25** to effectively form a seal between the stopper, screw-cap or like closure **26** and the bottle **25**. The closure **24** is provided with tearing tabs **27** and **27***a* in the same manner as hereinbefore described. In removing the closure **24** from the bottle **25** the tearing tabs **27** and **27***a* may be pulled in their respective directions in the same manner as shown in Fig. 7 or the tab **27** may be pulled upwardly as shown in Fig. 9 and removed, after which the portion **28** as shown in Fig. 10 may be grasped and pulled outwardly and around to cause transverse tearing to take place along the line **29**. This latter method of removing only the upper portion of the closure **24** is particularly useful for bartenders or others serving liquor as the remaining lower portion of the closure serves to retain the ends of the tax stamp **30** on the liquor bottle as required by law.

While many of the embodiments shown in the drawing are provided with two tearing tabs it is also within the purview of the invention to provide shrinkable closures having only one or having more than two tearing tabs. In removing only the upper portion of a closure as shown in Figs. 9 and 10 only the upper tab **27** would be necessary. However, the crown portion of the same should be positioned at or below the joint **31** formed between the closure **26** and the bottle **25** so as to insure complete exposure of the closure **26** after breaking of the seal.

While several embodiments have been shown and described and while several others are contemplated within the purview of this invention it is highly important in all cases that the cuts or punched out portions forming the tearing means should be spaced away from the edges of the seamless closures to insure against any possibility of a tear resulting during shrinkage. Moreover, the cut should terminate in smoothly cut rounded areas or perforations to avoid splitting or tearing during shrinkage.

The shape of the tearing tabs is governed by the curvature of the cuts or cut out portions which may be varied to produce the desired shaped tab. The expression "U-shaped" is used herein to generically connote a tearing tab of any suitable shape whether it be U-shaped, V-shaped, square-shaped, dove-tailed, or any configuration of intermediate shape.

The shrinkable closures of the invention may be transparent, translucent or opaque and may have any suitable indicia applied thereto which may in certain instances cooperate with the tab portions. The shrinkable closures of the invention may be of the window-type employed on liquor bottles in which case it is highly preferable to form the tearing tabs in the transparent areas so as not to interfere with the indicia usually applied to the translucent or opaque areas. Moreover, the transparent areas, which are free from loading materials such as pigments, respond more

favorably to the tearing action caused by the tearing means of the invention.

While the tearing tabs have been illustrated as being positioned to cause tearing either longitudinally and/or transversely with respect to the closure it is within the purview of the invention to dispose the tabs at any convenient angle or location provided the cut or punched out portions do not directly communicate with the edges of the closure. In the case of the cap-type closures, a tab or tabs may be formed on the crown portion of the same.

While the closures of the invention may be composed of any suitable shrinkable colloidal material it is highly preferred to employ closures composed of cellulose hydrate which may be derived from the regeneration of viscose, cuprammonium solutions of cellulose or from the deesterification of cellulose esters such as cellulose nitrate.

Since certain changes in carrying out the above process, and certain modifications in the article which embody the invention may be made without departing from its scope, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim:

1. A sealed container, comprising, in combination, a container and a closure composed of a colloidal material shrunk thereon, the closure being provided with a U-shaped cut defining a tearing tab, the tab being reenforced longitudinally, and the ends of the U-shaped cut terminating in rounded cut out portions.

2. An article of manufacture of the character described, comprising, in combination, a container having a mouth, a member adapted to close said mouth, and an outer encircling seal constructed and arranged to cooperate with said member in closing said mouth, said seal being formed of flexible, frangible, material in such a manner as initially to encircle loosely the closure member and subsequently to shrink tightly thereon during evaporative dehydration, and means to facilitate the removal of said seal, said means including a tongue sloping outwardly from the seal, said tongue being formed by a line of cut the opposite ends of which diverge with respect to one another, with the longitudinal axis of the tongue extending in the general direction of the longitudinal axis of the container.

3. A cellulose cylindrical shrinking closure for containers, said closure being provided with a tongue portion formed in the body thereof by a line of cut the opposite ends of which diverge with respect to one another, with the longitudinal axis of the tongue extending in the general direction of the longitudinal axis of the cylindrical closure.

4. A cellulosic cylindrical shrinking closure for containers, said closure being provided with a tongue portion formed in the body thereof by a cut having opposite cut lines which diverge with respect to one another, with the longitudinal axis of the tongue extending in the general direction of the longitudinal axis of the cylindrical closure, said closure also having rounded perforations so positioned relative to said cut that the said diverging lines will not be extended beyond the perforations during shrinking of the closure.

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