Sept. 8, 1936. S. J. TELLER 2,054,012

CONTAINER CLOSURE MEANS

Original Filed May 22, 1934

Fig. 1

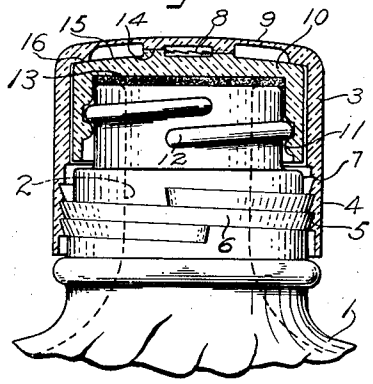


Fig. 2

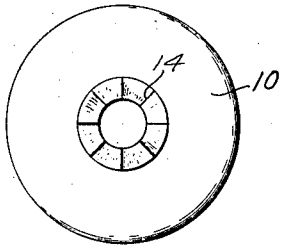


Fig. 3

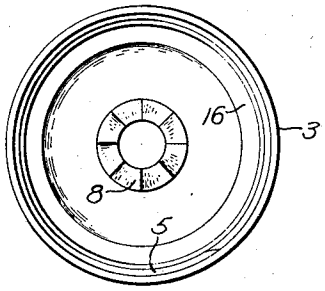


Fig. 4

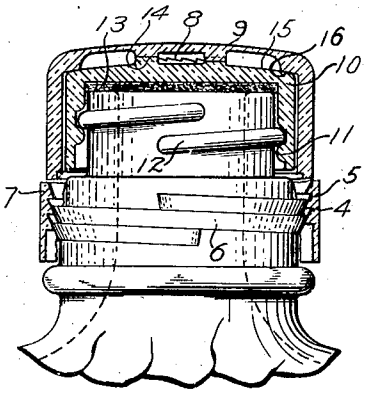


Fig. 6

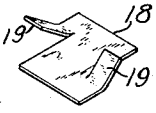


Fig. 5

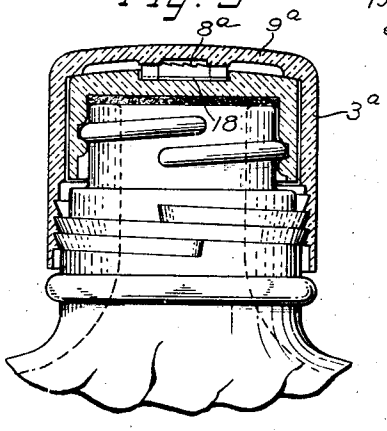
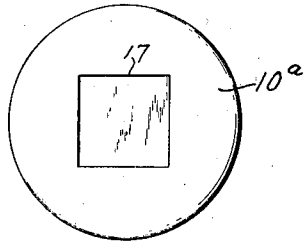


Fig. 7



Inventor
S. Jay Teller

Patented Sept. 8, 1936 2,054,012

UNITED STATES PATENT OFFICE

2,054,012

CONTAINER CLOSURE MEANS

Spencer Jay Teller, West Hartford, Conn., assignor to Colt's Patent Fire Arms Manufacturing Co., Hartford, Conn., a corporation of Connecticut

Application May 22, 1934, Serial No. 726,983
Renewed January 27, 1936

19 Claims. (Cl. 215—7)

This invention relates particularly to container closure means of the type having a readily breakable portion which is necessarily broken when the closure means or one member thereof is removed to permit access to or discharge of the container contents. A closure means of this character when properly put in place on a container serves, so long as it remains unbroken, as a definite indication to the ultimate consumer and to each intermediate distributor or dealer who handles the package that the original contents are intact and that there has been no substitution or adulteration. Closure means embodying the invention are applicable to containers of various types, and they may be used to protect various commodities, whether liquid or otherwise, such as beverages, medicines, cosmetics, food products, lubricating oils, etc.

A container closure means of the type to which the present invention relates, includes a readily breakable indicator member which may be formed to also constitute a closure for the receptacle, ordinarily being an outer closure cooperating with a primary or inner closure. The readily breakable indicator member is preformed and is adapted to be put in place on the container without substantial change in size or shape, and it is to be distinguished from various devices of the prior art consisting of sheet metal, of paper, of fabric, or other material adapted to be crimped or folded or shrunk or otherwise put into place by a change in size or shape. The readily breakable indicator member is freely movable into its normal position, but is held against free removal from its normal position. Container closure means of this type are disclosed in Patent No. 1,938,063 to James P. Burke, in application Serial No. 723,864 in the name of Benjamin F. Conner, and in application Serial No. 723,865 in the names of Benjamin F. Conner and William F. Schmalz.

In accordance with the present invention the indicator member or outer closure is held in place by a thread engaging a thread carried by the container, and a concealed ratchet means is provided to automatically prevent unscrewing. Associated with the indicator member is a stop for limiting axial movement of the said member or closure when turned in the opposite or engaging direction. The aforesaid thread of the indicator member or outer closure is formed on a thin readily breakable skirt portion thereof, and the result is that, if the rotative movement of the member or closure is continued after the stop has been engaged, the thread on the said member or closure is forced over the thread on the container, thus causing the breaking of the readily breakable skirt portion.

The indicator member serves as a seal or lock for the closure and when broken it provides a definite warning to anyone handling the package that the container may have been opened and the contents tampered with. The ultimate consumer or any distributor or dealer, by accepting only a package having the seal or indicator thereof intact, can be certain that he is obtaining the original contents of the package as shown by the trade-mark or label or other marking thereon.

In the accompanying drawing there are shown two different embodiments of the invention, but it will be understood that the drawing is intended for illustrative purposes only and is not to be construed as limiting or defining the scope of the invention, the claims forming a part of this specification being relied upon for that purpose.

Of the drawing:

Fig. 1 is a vertical sectional view of a container closure means embodying the invention, the closure means being in place on a bottle which is shown in elevation.

Fig. 2 is a top view of the inner or primary closure.

Fig. 3 is a bottom view of the indicator member or outer closure.

Fig. 4 is a view similar to Fig. 3, but showing the indicator member or outer closure relatively turned so as to break the skirt portion thereof.

Fig. 5 is a view similar to Fig. 1, but showing an alternative embodiment of the invention.

Fig. 6 is a detail perspective view of the ratchet device shown in Fig. 5.

Fig. 7 is a top view of the inner or primary closure shown in Fig. 5.

Referring to the drawing, particularly Figs. 1 to 4, 1 represents a container with which the container closure means embodying the invention may be used, the said container having a mouth or opening 2. The container is shown as being a glass bottle, but it will be understood that the invention may be used with a wide variety of containers. For instance, the container 1, instead of being a glass bottle, may be a metal receptacle such as a can or barrel having projecting metallic parts for engaging the closure means.

The indicator member or element is represented at 3 and it is shown as being a complete closure of the cap type entirely covering the opening 2 in the container, but I do not necessarily limit myself to an indicator member which is a complete closure. The indicator member 3 has

a thin readily breakable skirt portion 4 formed with an internal thread 5 adapted to engage an external thread 6 on the container. The skirt portion 4 of the indicator member is preferably thinner than the remainder of the side wall thereof, there being a distinct zone or line of differentiation at 7.

Associated with the indicator member 3 is a concealed ratchet means permitting the said member to be freely turned in one direction into its normal position, but automatically preventing turning in the unscrewing direction. This ratchet means may be widely varied as to details, but I prefer and have shown ratchet teeth 8 formed integrally with the top wall 9 of the member 3, these teeth being adapted to cooperate with a normally non-rotative means carried by the container.

Preferably and as shown there is provided in addition to the indicator member or outer closure 3 a primary closure 10 which directly engages the container 1 to close the mouth thereof. The closure 10 may be of any one of a variety of types, but it is shown as being of the cap type and as having an internal thread 11 adapted to engage an external thread 12 on the container adjacent the opening 2. The primary closure is provided with a gasket or liner 13 which engages the top of the container or bottle to seal it in the usual manner. The closure 10 is covered or at least partly covered by the indicator member or outer closure 3, the relationship being such that the primary closure 10 cannot be removed while the indicator member or outer closure remains in place and unbroken.

When a primary closure such as 10 is provided it preferably serves as the means for supporting that portion of the ratchet means which cooperates with the before-mentioned teeth 8. As shown the closure 10 is provided at the top with an annular series of ratchet teeth 14 adapted to directly engage the ratchet teeth 8 on the outer closure member. Inasmuch as the ratchet teeth 8 and 14 directly engage each other, it is necessary to provide a certain amount of resiliency, and as shown this is obtained by making the top wall 9 of the outer closure 3 relatively thin. The teeth 8 are shallow and with the top wall 9 thin and resilient, the teeth 8 are permitted to snap over the teeth 14 when the outer closure is screwed into its normal position as shown in Fig. 1. The engagement of the teeth 8 with the teeth 14 prevents any movement in the unscrewing direction.

A stop is provided for limiting the axial movement of the indicator member or outer closure when turned in the engaging direction, and when there is a primary closure such as 10, the top surface 15 of the primary closure may serve as a stop, this surface being engaged by a surface 16 on the outer closure.

In using the closure means shown in Figs. 1 to 4, the container is filled in any usual or preferred manner and the primary closure 10 is put in place in accordance with usual practice. Then the indicator member or outer closure 3 is put in place, the thread 5 thereof being engaged with the thread 6 on the container. The outer closure is turned until the surface 16 thereof engages the stop 15, and care is taken to avoid any excessive force which would turn the said outer closure after the said stop has been engaged. It will be apparent that the teeth 8 will snap over the teeth 14 as already described, and that the said teeth will engage each other to prevent any unscrewing of the outer closure member.

When it is desired to open the container, the indicator member or outer closure 3 is forcibly turned in the direction to tighten it. During such turning the teeth 8 snap over the teeth 14 as already described. Inasmuch as the surface 16 of the outer closure is already engaged with the stop 15 further downward axial movement is impossible and the thread 5 on the skirt 4 is forced over the thread 6 on the container, thus breaking the skirt into several pieces as indicated in Fig. 4. With the skirt 4 broken the remainder of the outer closure 3 can be removed to permit access to the primary closure 10 which can then be removed in the usual way.

To facilitate the breaking of the cap in the manner indicated in Fig. 4, it may be preferable to make the threads 5 and 6 of the buttress type, these threads having their substantially perpendicular surfaces facing upward, as clearly shown in the drawing. This enables the inclined surface of the thread 5 to more readily be cammed outward by the inclined surface of the thread 6 so as to facilitate breaking.

Preferably the thread 12 on the container and the corresponding thread 11 on the primary closure are right hand threads so that the primary closure can be put in place and removed in the ordinary manner. The thread 6 on the container and the corresponding thread 5 on the outer closure member are preferably left hand threads. The making of the threads 5 and 6 left hand has the advantage, that the additional turning of the closure member to effect the breaking of the skirt thereof is effected in the left hand direction, which is the direction in which a person would ordinarily turn a cap to unscrew it. It is not necessary for the person opening the package to have any special knowledge of the interior construction, and it is merely necessary for him to turn the outer closure in the same direction in which he would naturally turn a right hand threaded cap to unscrew it. The left hand turning of the outer closure, instead of unscrewing it, tends to tighten it, and this attempted tightening causes the breaking of the skirt portion thereof in the manner already described.

By reason of the ratchet means, that is the teeth 8 and 14, any turning of the outer closure 3 in the unscrewing direction is positively prevented, and any attempt to so turn it would result merely in additionally tightening the primary closure 10. Ordinarily the primary closure is firmly engaged with the container and will not readily turn, but if the primary closure should be loose, the outer closure serves as a means for preventing further loosening by vibration or otherwise. If the primary closure should be so loose as to tend to unscrew when the outer closure is turned, such unscrewing would cause the skirt of the outer closure to be broken even more quickly.

The indicator member 3 may be formed of any one of a variety of materials, but it is preferred to mold the said member from a material of the synthetic resin class. Such a material is somewhat brittle and is readily breakable when provided with a sufficiently thin portion such as the skirt portion 4 below the line 7; and such material has the further advantages that it is available in a variety of colors and can be molded to provide any external trade-mark or ornamental design. Synthetic resin material has the further advantage that upon breaking it does not

form sharp fragments or splinters dangerous to the person opening the container. The primary closure 10 may also be molded from a synthetic resin material.

It will be observed that one of the advantages of the container closure means shown in Figs. 1 to 4, is that there are only two pieces, both of them molded. There is no separate metallic breaking or ratchet device, which would add to the cost of original manufacture and which would also add to the cost of assembling the closure means with the container.

The construction shown in Figs. 5 to 7 differs essentially from that shown in Figs. 1 to 4 in that a separate metallic ratchet device is provided between the two closures. The separate ratchet device is not ordinarily preferred, but it may be necessary when it is desired to make the outer closure of a material not sufficiently resilient to permit the direct engagement with the primary closure as shown in Fig. 1.

The outer closure 3^a is similar to the outer closure 3 except that the top wall 9^a thereof may be much thicker and without any particular resilience or flexibility. The said top wall 9^a is provided with teeth 8^a similar to the teeth 8 already described. The primary closure 10^a is provided with a recess 17 therein adapted to receive a metallic ratchet device 18 having resilient pawls 19, 19 formed thereon.

With the parts assembled as shown in Fig. 5 the ratchet device 18 is held against rotation by the walls of the recess 17 and the resilient pawls 19, 19 thereof engage the teeth 8^a to prevent turning of the outer closure 3^a in the unscrewing direction. Except for the necessity of putting in place the separate ratchet device 18, the manner of use of the container closure means shown in Figs. 5 to 7 is substantially the same as that of the container closure means shown in Figs. 1 to 4, and repetition of the description is unnecessary.

What I claim is:

1. The combination of a container having an opening and having an external thread surrounding the opening, a preformed indicator member having a thin readily breakable skirt portion formed with an internal thread engaging the container thread, concealed ratchet means permitting the indicator member to be freely turned in one direction into its normal position but automatically preventing turning in the unscrewing direction, and a stop serving to limit axial movement of the indicator member when turned in the first said direction and thereby causing the skirt portion of the said member to be broken by the container thread upon additional turning movement in the same direction.

2. The combination of a container having an opening and having adjacent the opening an external buttress thread with the substantially perpendicular surface thereof facing upward, a preformed indicator member having a thin readily breakable skirt portion formed with an internal thread engaging and fitting the said container thread, concealed ratchet means permitting the indicator member to be freely turned in one direction into its normal position but automatically preventing turning in the unscrewing direction, and a stop serving to limit axial movement of the indicator member when turned in the first said direction and thereby causing the skirt portion of the said member to be broken by the buttress thread on the container upon additional turning movement in the same direction.

3. The combination of an externally threaded container having an opening, a preformed indicator member having a thin readily breakable skirt portion formed with an internal thread engaging the container thread and provided at the top with internal ratchet teeth, concealed means permitting the indicator member to be freely turned in one direction into its normal position but automatically engaging the ratchet teeth to prevent turning in the unscrewing direction, and a stop serving to limit axial movement of the indicator member when turned in the first said direction and thereby causing the skirt portion of the said member to be broken by the container thread upon additional turning movement in the same direction.

4. The combination of an externally threaded container having an opening, a preformed closure completely covering the container opening and having a thin readily breakable skirt portion formed with an internal thread engaging the container thread, concealed ratchet means permitting the closure to be freely turned in one direction into its normal position but automatically preventing turning in the unscrewing direction, and a stop serving to limit axial movement of the closure when turned in the first said direction and thereby causing the skirt portion of the closure to be broken by the container thread upon additional turning movement in the same direction.

5. A preformed indicator member adapted for use on a container and having a thin readily breakable skirt portion formed with an internal thread adapted to engage an external thread carried by the container, the said member having teeth adapted to be engaged by means for thereby automatically preventing rotation in the disengaging or unscrewing direction and also having a portion adapted to be engaged by a stop to limit axial movement of the member when turned in the opposite direction whereby upon additional turning movement in the last said direction the skirt portion is broken by the thread on the container.

6. A preformed container closure of the cap type adapted to completely cover the container opening and having a thin readily breakable skirt portion formed with an internal thread adapted to engage an external thread carried by the container, the said closure having teeth adapted to be engaged by means for thereby automatically preventing rotation in the disengaging or unscrewing direction and also having a portion adapted to be engaged by a stop to limit axial movement of the closure when turned in the opposite direction whereby upon additional turning movement in the last said direction the skirt portion is broken by the thread on the container.

7. In combination with an externally threaded container having an opening, a preformed indicator member having a thin readily breakable skirt portion formed with an internal thread engaging the container thread, the top wall of the indicator member being thin and resilient and being formed with shallow internal ratchet teeth, rigid means within the closure permitting it to be freely turned in one direction into its normal position but automatically serving by reason of the resiliency of the top wall of the closure to engage the ratchet teeth and prevent turning in the unscrewing direction, and a stop serving to limit axial movement of the indicator member when turned in the first said direction and thereby causing the skirt portion of the said member to be

broken by the container thread upon additional turning movement in the same direction.

8. In combination with an externally threaded container having an opening, a preformed closure completely covering the container opening and having a thin readily breakable skirt portion formed with an internal thread engaging the container thread, the top wall of the closure being thin and resilient and being formed with shallow internal ratchet teeth, rigid means within the closure permitting it to be freely turned in one direction into its normal position but automatically serving by reason of the resiliency of the top wall of the closure to engage the ratchet teeth and prevent turning in the unscrewing direction, and a stop serving to limit axial movement of the closure when turned in the first said direction and thereby causing the skirt portion of the closure to be broken by the container thread upon additional turning movement in the same direction.

9. A preformed indicator member adapted for use on a container and having a thin readily breakable skirt portion formed with an internal thread adapted to engage an external thread carried by the container, the said member having a thin resilient top wall formed with shallow internal ratchet teeth adapted to be engaged by rigid means carried by the container for automatically preventing rotation in the disengaging or unscrewing direction but permitting rotation in the opposite direction and the said member also having a portion adapted to be engaged by a stop to limit axial movement of the member when turned in the said opposite direction whereby upon additional turning movement in the last said direction the skirt portion is broken by the thread on the container.

10. A preformed container closure of the cap type adapted to completely cover the container opening and having a thin readily breakable skirt portion formed with an internal thread adapted to engage an external thread carried by the container, the said closure having a thin resilient top wall formed with shallow internal ratchet teeth adapted to be engaged by rigid means carried by the container for thereby automatically preventing rotation in the disengaging or unscrewing direction but permitting rotation in the opposite direction and the said closure also having a portion adapted to be engaged by a stop to limit axial movement of the closure when turned in the said opposite direction whereby upon additional turning movement in the last said direction the skirt portion is broken by the thread on the container.

11. The combination in a container closure means, of a primary closure adapted to normally close a container opening, a preformed indicator member structurally separate from the closure and adapted to at least partly cover it and having a thin readily breakable skirt portion formed with an internal thread adapted to engage an external thread carried by the container, concealed ratchet means carried in part by the primary closure and adapted to permit the indicator member to be freely turned in one direction into its normal position but automatically preventing turning in the unscrewing direction, and a stop adapted to limit axial movement of the indicator member when turned in the first said direction and to thereby cause the skirt portion of the said member to be broken by the thread on the container upon additional turning movement in the same direction.

12. The combination in a container closure means, of a primary closure adapted to normally close a container opening, a preformed indicator member structurally separate from the closure and adapted to at least partly cover it and having a thin readily breakable skirt portion extending below the closure and provided with an internal thread adapted to engage an external thread formed on the container independently of the closure, concealed ratchet means carried in part by the primary closure and adapted to permit the indicator member to be freely turned in one direction into its normal position but automatically preventing turning in the unscrewing direction, and a stop adapted to limit axial movement of the indicator member when turned in the first said direction and to thereby cause the skirt portion of the said member to be broken by the thread on the container upon additional turning movement in the same direction.

13. The combination in a container closure means, of a primary closure adapted to normally close a container opening, a preformed indicator member structurally separate from the closure and adapted to at least partly cover it and having a thin readily breakable skirt portion extending below the closure and provided with an internal thread adapted to engage an external thread formed on the container independently of the closure, concealed ratchet means carried in part by the primary closure and adapted to permit the indicator member to be freely turned in one direction into its normal position but automatically preventing turning in the unscrewing direction, and a stop formed on the closure and independent of the container adapted to limit axial movement of the indicator member when turned in the first said direction and to thereby cause the skirt portion of the said member to be broken by the thread on the container upon additional turning movement in the same direction.

14. The combination in a container closure means, of a closure adapted to normally close a container opening and having at the top an annular series of ratchet teeth, a preformed indicator member structurally separate from the closure and adapted to at least partly cover it and having a thin readily breakable skirt portion formed with an internal thread adapted to engage an external thread carried by the container, the said indicator member also having a thin resilient top wall formed with an annular series of shallow internal ratchet teeth adapted to directly engage the teeth on the closure and thereby automatically prevent turning in the unscrewing direction although permitting turning in the opposite direction, and a stop adapted to limit axial movement of the indicator member when turned in the said opposite direction and to thereby cause the skirt portion of the said member to be broken by the thread on the container upon additional turning movement in the same direction.

15. The combination in a container closure means, of a primary closure adapted to normally close a container opening and having at the top an annular series of ratchet teeth, a preformed outer closure structurally separate from the primary closure and adapted to entirely cover it and having a thin readily breakable skirt portion extending below the primary closure and formed with an internal thread adapted to engage an external thread formed on the container independently of the primary closure, the said outer closure also having a thin resilient top wall formed with an annular series of shallow internal ratchet teeth adapted to directly engage the teeth on the

primary closure and thereby automatically prevent turning in the unscrewing direction although permitting turning in the opposite direction, and a stop adapted to limit axial movement of the outer closure when turned in the said opposite direction and to thereby cause the skirt portion of the said outer closure to be broken by the thread on the container upon additional turning movement in the same direction.

16. A primary container closure adapted to normally close a container opening and adapted for use in conjunction with a preformed threaded outer closure having a thin resilient top wall formed with an annular series of shallow internal ratchet teeth, the said primary closure being provided at the top with an annular series of ratchet teeth adapted to be directly engaged by the said teeth on the outer closure to prevent rotation thereof in the unscrewing direction although permitting rotation in the opposite direction.

17. In a container closure means, the combination of a closure adapted to normally close a container opening, a preformed indicator member structurally separate from the closure and adapted to at least partly cover it and having a thin readily breakable skirt portion formed with an internal left hand thread adapted to engage a similar external thread carried by the container, concealed ratchet means interengaging directly between the closure and the indicator member and adapted to permit the indicator member to be freely turned in the left hand direction but automatically preventing turning in the unscrewing or right hand direction, and a stop adapted to limit axial movement of the indicator member when turned in the said left hand direction and to thereby cause the skirt portion of the said member to be broken by the thread on the container upon additional turning movement in the same left hand direction.

18. In a container closure means, the combination of a closure adapted to normally close a container opening and having a right hand internal thread adapted to engage a similar external thread on the container, a preformed outer closure structurally separate from the primary closure and adapted to entirely cover it and having a thin readily breakable skirt portion formed with an internal left hand thread adapted to engage a similar external thread on the container, concealed ratchet means interengaging directly between the primary and outer closures and adapted to permit the latter to be freely turned in the left hand direction but automatically preventing turning in the unscrewing or right hand direction, and a stop adapted to limit axial movement of the outer closure when turned in the said left hand direction and to thereby cause the skirt portion of the said outer closure to be broken by the second said thread on the container upon additional turning movement in the same left hand direction.

19. In a container closure means, the combination of a closure adapted to normally close a container opening and having a right hand internal thread adapted to engage a similar external thread on the container, the said primary closure also having at the top an annular series of ratchet teeth, a preformed outer closure structurally separate from the primary closure and adapted to entirely cover it and having a thin readily breakable skirt portion formed with an internal left hand thread adapted to engage a similar external thread on the container, the said outer closure also having a thin resilient top wall formed with an annular series of shallow internal ratchet teeth adapted to directly engage the teeth on the primary closure and thereby automatically prevent turning of the outer closure in the unscrewing or right hand direction although permitting turning in the left hand direction, and a stop adapted to limit axial movement of the outer closure when turned in the said left hand direction and to thereby cause the skirt portion of the said outer closure to be broken by the second said thread on the container upon additional turning movement in the same left hand direction.

S. JAY TELLER.