July 26, 1938. B. F. CONNER 2,124,873

CONTAINER CLOSURE MEANS

Filed May 4, 1934

Fig. 1

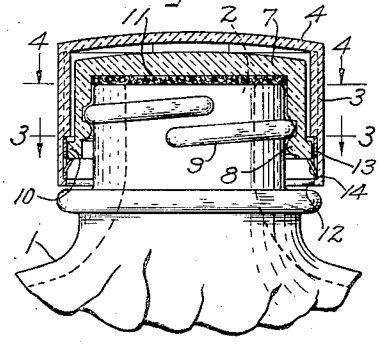



Fig. 2

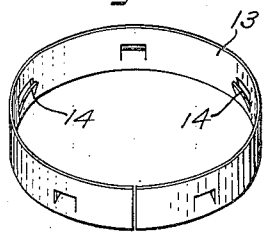



Fig. 3

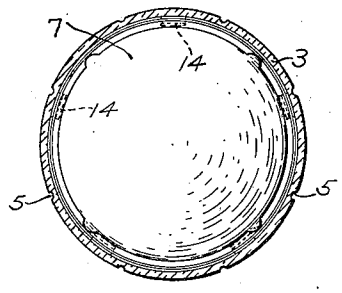



Fig. 4

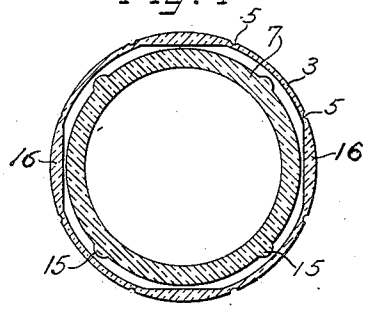



Fig. 5

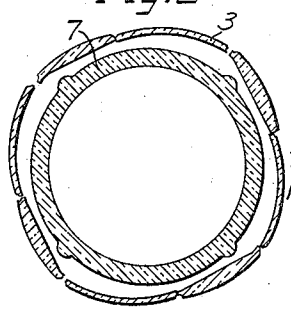



Fig. 9

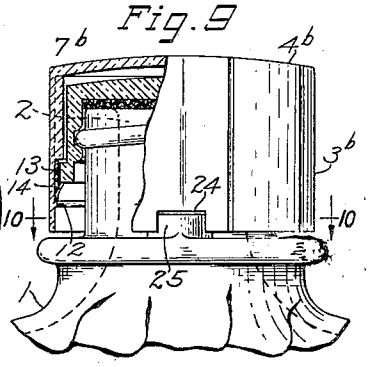



Fig. 6

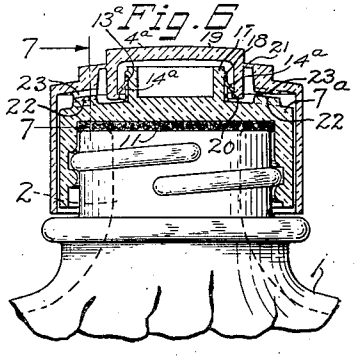



Fig. 7

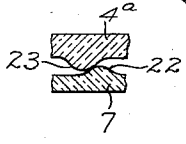



Fig. 8

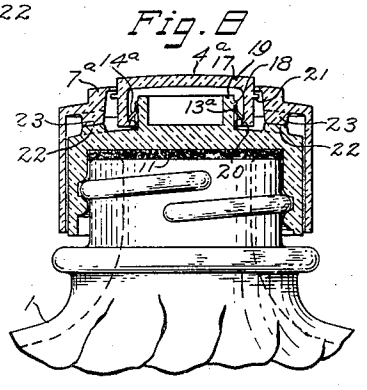
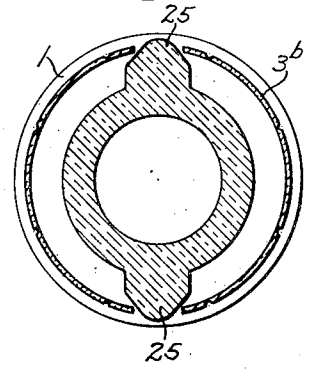



Fig. 10




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Patented July 26, 1938

2,124,873

# UNITED STATES PATENT OFFICE

2,124,873

## CONTAINER CLOSURE MEANS

Benjamin F. Conner, West Hartford, Conn., assignor to Colt's Patent Fire Arms Manufacturing Co., Hartford, Conn., a corporation of Connecticut

Application May 4, 1934, Serial No. 723,864

18 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.

In accordance with the present invention there is 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 automatically held against free removal from its normal position. Associated with the readily breakable indicator member is a means which serves to break a portion of the said member upon a definite predetermined movement thereof relative to the container or relative to the primary closure.

The indicator element or 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.

A container closure means embodying the present invention is of the type disclosed in the patent to James P. Burke for Non-refillable device, No. 1,938,063. In a device embodying the present invention the indicator element or member is preferably held in place solely by reason of its engagement with the primary or inner closure and the breaking of the said element or member is caused by means such as came carried either by the inner closure or directly by the container; and the holding means for the indicator member acts automatically to engage the said member and prevent removal thereof.

In the accompanying drawing there are shown several 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 perspective view of the metallic means for engaging the indicator member to hold it in place.

Fig. 3 is a horizontal sectional view taken along the line 3—3 of Fig. 1, the bottle being omitted.

Fig. 4 is a horizontal sectional view taken along the line 4—4 of Fig. 1, the bottle being omitted.

Fig. 5 is a view similar to Fig. 4, but showing the indicator member relatively turned so as to break the side portion thereof.

Fig. 6 is a view similar to Fig. 1, but showing an alternative embodiment of the invention.

Fig. 7 is a fragmentary vertical sectional view taken along the line 7—7 of Fig. 6.

Fig. 8 is a view similar to Fig. 6, but showing the indicator member relatively turned so as to break the top portion thereof.

Fig. 9 is a view similar to Fig. 1, but showing another alternative embodiment of the invention.

Fig. 10 is a horizontal sectional view taken along the line 10—10 of Fig. 9.

Referring to the drawing, particularly Figs. 1 to 5, 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 element is represented at 3 and it is shown as being an integral part of a complete closure or indicator member 4 of the cap type entirely covering the opening 2 in the container. The indicator element 3 of the member 4 is externally visible and is adapted to be readily broken or separated from the remainder of the member. The indicator element 3, whether formed as an integral part of a closure or otherwise, is so related to the complete closure as to prevent the indicator element from being put in place on the container before the closure is put in place. As shown the readily breakable or separable indicator element 3 is at the side of the indicator member 4, being in the form of a depending peripheral skirt having vertical grooves 5, 5 to facilitate breaking. As will presently appear the readily breakable or separable portion is not necessarily at the side and may be at the top.

The indicator member 4 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 particularly when provided with sufficiently thin zones of weakness such as those at 5, 5, and it has the further advantages that it is available in a variety of colors and can be readily molded to provide any desired external 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. Container closures for the same general purpose as the present closure have commonly been made of glass or metal, and have been seriously objectionable because of the likelihood of injury to the hands of the user.

While, as already stated, the indicator member 4 may be and preferably is in the form of a complete closure, there is preferably also provided a primary closure 7 which directly engages the container 1 to close the mouth 2 thereof. The closure 7 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 8 engaging an external thread 9 on the container adjacent the opening 2. The closure 7 preferably has a peripheral rib 10 near the bottom for a purpose to be described. The closure 7 may also be molded from a material of the synthetic resin class and it is provided with a gasket or liner 11 which engages the top of the container or bottle to seal it in the usual manner.

When a primary closure such as 7 is provided it is preferably utilized to constitute at least a part of a means for preventing free and unrestrained removal of the indicator member. The means for preventing such removal of the indicator member may vary widely as to details, and I do not limit myself to any one means, but one suitable means is shown in the drawing, particularly in Figs. 1 and 2.

The indicator member 4 is provided at or near the bottom with a very shallow inward projecting bead 12, this bead being sufficiently small to permit the member 4 to be snapped off from the mold on which it is formed, reliance for such snapping off being placed on the resilience which the molded material has, particularly while still hot. A metallic retaining ring 13 is provided of such size and shape as to be adapted to fit within the lower portion of the indicator member 4 immediately above the bead 12 thereof. The ring 12 may be split in order to facilitate its assembly with the indicator member. Formed integrally with the ring 13 are several inward projecting upward facing resilient teeth 14, 14. These teeth 14, 14 are adapted to engage the bottom of the closure 7 as shown, and the flange 10 on the closure prevents the ring 13 from collapsing so as to be disengaged from the bead 12. With the parts assembled as shown in Fig. 1 the indicator member 4 can turn relatively to the closure member 7, but it cannot be removed.

In accordance with the invention there is provided a normally stationary means which serves to break the readily breakable portion of the indicator member, in this case the skirt 3 thereof, when the indicator member is relatively turned. The breaking means may be variously constructed but preferably it consists of one or more normally stationary cams. As shown most clearly in Fig. 4, cams 15, 15 are provided on the periphery of the primary closure 7 and the skirt of the indicator member 4 is provided with thickened portions at 16, 16 which constitute cams adapted to engage with the cams 15, 15. These thickened portions or cams 16, 16 are shown as extending downward far enough to serve as stops to limit relative upward movement of the ring 13. It will be observed that the cams 15 have no part in holding the indicator member in place, it being held solely by means of primary closure and the ring 13. The said cams are entirely free from any engagement with the indicator member which would prevent direct upward movement thereof.

In using the closure means shown in Figs. 1 to 5 the container is filled in any usual or preferred manner and the primary closure is put in place in accordance with usual practice. The ring 13 is assembled with the indicator member 4 and then the indicator member, with the ring in place therein, is moved vertically downward into the position shown in Fig. 1, care being taken to see that the cams 16, 16 do not engage the breaking cams 15, 15. As the indicator member moves downward the resilient teeth 14, 14 are flexed outward by the rib 10 on the closure 7, and they then snap inward to engage the bottom of the said rib, as clearly shown in Fig. 1. As already explained the indicator member after once having been put in place cannot be removed but it can be relatively turned.

In order to open the container it is necessary to first break the indicator member, and this is effected by merely turning it in either direction, thus bringing the cams 16, 16 into engagement with the breaking cams 15, 15. The entire skirt portion 3 of the indicator member is thus broken in an outward direction in the general manner indicated in Fig. 5, although the exact manner of breaking will vary. With the skirt portion 3 broken as shown, the remainder of the indicator member can be easily removed and the ring 13 can also be removed. Then the primary closure can be unscrewed in the usual way.

It is to be understood that the primary closure is normally screwed firmly into place so that considerable force is required to unscrew it. It is impossible to obtain access to the closure 7 so as to apply the required unscrewing force so long as the indicator member 4 remains in place and unbroken. Only by first picking the indicator member can access be had to the clo-

sure. It will be observed that the skirt of the indicator member extends into close proximity to the usual bead on the bottle, thus making it impossible to insert a tool to engage and turn the primary closure 7.

With the indicator member broken the customer or, in fact, anyone else handling the package will know, or at least have reason to suspect, that the contents of the container have been tampered with and he should refuse to accept the package. Thus by refusing to accept any package on which the indicator member is not intact the customer can positively protect himself against adulteration or substitution of the container contents. It will, of course, be understood that the indicator member 3 will ordinarily carry a suitable trade mark to provide additional protection to the customer.

In Figs. 6 to 8 there is shown a construction similar in principle to that shown in Figs 1 to 5, but differing in the relative arrangement of parts. The primary closure $7^a$ has an upward extension 17 at the top provided with a shallow bead 18 thereon adapted to be snapped out of the mold. A retaining ring $13^a$ is provided somewhat similar to the ring 13, but smaller so as to be adapted to fit around the extension 17 and to be engaged by the bead 18 thereon. The ring $13^a$ has resilient teeth $14^a$ formed integrally therewith and facing downward as shown.

The indicator member $4^a$ is formed with a dome 19 adapted to receive the extension 17 on the primary closure member. The peripheral wall of the dome 19 is provided with an inward projecting shallow flange 20 adapted to be snapped from the mold and positioned to be engaged by the teeth $14^a$ of the ring $13^a$. Surrounding the dome 19 is an annular zone of weakness 21. One or more upward projecting cams 22 are provided on the top of the primary closure $7^a$, and one or more downward projecting cams 23, 23 are provided on the indicator member $4^a$.

In using the container closure means shown in Figs. 6 to 8 the primary closure $7^a$ is put in place in any usual or preferred manner and the retaining ring $13^a$ is assembled with the said primary closure, this being done either before or after the primary closure is put in place on the container. Then the indicator member $4^a$ is pushed vertically downward into place, the resilient teeth $14^a$ being flexed inward by the wall of the dome 19 and then snapping outward to engage the bead 20 and thus prevent removal of the indicator member. In putting the indicator member $4^a$ in place care should be taken that the cams 23 thereof do not engage the cams 22 on the primary closure.

When it is desired to open the container, the indicator member $4^a$ is forcibly turned in either direction so as to bring the cams 23, 23 thereof into engagement with the cams 22, 22 on the primary closure $7^a$. This causes the entire top of the indicator member to be broken in an upward or outward direction along the zone of weakness at 21 as shown in Fig. 8, and the top and side portions of the indicator member can then be removed so as to provide access to the primary closure. It will be observed that the dome 19 remains attached to the primary closure and may thus serve as a signal that the package has been tampered with. In order to enhance the value of the said dome as a signal, the indicator member and the closure may be of distinctly contrasting colors.

In Figs. 9 and 10 there is shown a construction which is very similar to that shown in Figs. 1 to 5, the principal difference being that the breaking means for the skirt of the indicator member are carried directly by the container itself and not by the primary closure. The primary closure $7^b$ may be identical with the primary closure 7 except for the omission of the breaking cams 15, 15. The retaining ring 13 may be identical with that shown in Figs. 1 and 2. The indicator member $4^b$ may be identical with the indicator member 4 except that the readily breakable skirt portion $3^b$ thereof is extended downward and is provided with notches 24, 24. Carried by the container or bottle is a breaking means which preferably consists of integral breaking cams 25, 25 which are adapted to project through the notches 24, 24.

The manner of use of the container closure means shown in Figs. 9 and 10 is similar to that of the means shown in Figs. 1 to 5, and it will be understood that in putting the indicator member $4^b$ in place care must be taken to have the notches 24, 24 register with the cams 25, 25. It will be observed that the skirt portion $3^b$ of the indicator member will be broken upon any attemped turning of the said member in either direction.

The construction shown in Figs. 9 and 10 has the advantage that the indicator member is necessarily broken upon being turned, even though the primary closure $7^b$ should be loose on the container. Even if the primary closure should be so loose as to tend to turn in unison with the indicator member, the indicator member would nevertheless be broken, thus clearly showing that the package has been tampered with.

It will be observed that with all of the constructions disclosed the indicator element or member is broken in an outward direction; that is, in a direction away from the inner or primary closure. In two of the constructions the breaking is radially outward, and in the other construction the breaking is vertically outward.

What I claim is:

1. The combination of a container having an opening and having an external thread, an internally threaded closure adapted to engage the thread on the container and to close the container opening, an externally visible preformed readily breakable indicator element adapted to be freely assembled with the container without substantial change in size or shape, the said indicator element being so related to the closure as to prevent the indicator element from being put in place on the container before the closure is put in place, and means for causing the breaking of the indicator element upon a substantial change from the normal assembled relationship between the said element and the container and the closure, the said breaking means being free from any engagement with the indicator element which would prevent direct upward movement thereof.

2. The combination of a container having an opening and having an external thread, an internally threaded closure adapted to engage the external thread on the container and to close the container opening, an externally visible preformed readily breakable indicator member structurally separate from the closure and at least partly overlying it to prevent removal thereof and adapted to be freely assembled with the container without substantial change in size or shape, concealed means connecting the indicator member with the closure to prevent re-

moval of the said member from the closure while the former remains unbroken, and a normally stationary cam for causing the outward breaking of the indicator member upon substantial rotative movement thereof relative to the container, the said cam being free from any engagement with the indicator member which would prevent direct upward movement thereof.

3. In a container closure means, the combination of a container having an opening, a closure normally closing the container opening, an indicator member structurally separate from the closure and at least partly covering it and having a portion adapted to be readily broken, and two separate means engaging the indicator member and at least one of them connecting it with the closure, one of the said means serving to permit free movement of the indicator member into normal position but automatically preventing free removal therefrom while permitting rotative movement relative to the container and the other of the said means serving to break the said readily breakable portion of the indicator member upon a relative rotative movement of predetermined extent.

4. In a container closure means, the combination of an internally threaded closure adapted to engage an external thread on a container and to close the container opening, an externally visible preformed readilly breakable indicator member structurally separate from the closure and adapted to be freely assembled with the container without substantial change in size or shape, a metallic ring surrounding the closure and surrounded by the indicator member, the said ring being engaged with the indicator member to prevent relative vertical movement and having resilient prongs engaging the bottom of the closure, a means for normally causing the breaking of the indicator member upon substantial rotative movement thereof relative to the container.

5. A container closure means comprising in combination, a container having an opening, a closure normally closing the container opening, an indicator member structurally separate from the closure and at least partly covering it and having a portion adapted to be readily broken, and two separate means engaging the indicator member and at least one of them connecting it with the closure, one of the said means serving to permit free movement of the indicator member into normal position but automatically preventing free direct upward removal therefrom while permitting rotative movement relative to the container and the other of the said means being free from any engagement with the indicator member which would prevent direct upward movement thereof and serving to break the said readily breakable portion of the indicator member upon a relative rotative movement of predetermined extent.

6. A container closure means comprising in combination, a closure adapted to close a container opening, an externally visible preformed readily breakable indicator member structurally separate from the closure and adapted to be freely assembled with the container without substantial change in size or shape, means serving to permit free movement of the indicator member into normal relationship with the closure but automatically preventing free direct upward removal therefrom, and means for normally causing the breaking of the indicator member upon substantial rotative movement thereof relative to the container, the said breaking means being free from any engagement with the indicator member which would prevent direct upward movement thereof.

7. The combination in a container closure means, of a closure adapted to close a container opening, an externally visible preformed readily breakable indicator member structurally separate from the closure and adapted to be freely assembled with the container without substantial change in size or shape, means serving to permit free movement of the indicator member into normal relationship with the closure but preventing free direct upward removal therefrom, and means carried by the closure for normally causing the breaking of the indicator member upon substantial rotative movement thereof relative to the closure, the said breaking means being free from any engagement with the indicator member which would prevent direct upward movement thereof.

8. The combination in a container closure means, of a closure adapted to close a container opening, an externally visible preformed readily breakable indicator member structurally separate from the closure and adapted to be freely assembled with the container without substantial change in size or shape, concealed means connecting the indicator member with the closure to permit relative rotation but prevent removal of the indicator member from the closure while the former remains unbroken, and an element additional to the aforesaid concealed means and carried by the closure for normally causing the breaking of the indicator member upon substantial rotative movement thereof relative to the closure.

9. The combination in a container closure means, of an internally threaded closure adapted to engage an external thread on a container and to close the container opening, an externally visible preformed readily breakable indicator member structurally separate from the closure and adapted to be freely assembled with the container without substantial change in size or shape, concealed means connecting the indicator member with the closure to permit relative rotation but prevent removal of the indicator member from the closure while the former remains unbroken, and interengageable cams on the closure and on the indicator member respectively for breaking the indicator member upon substantial rotative movement thereof relative to the closure.

10. The combination in a container closure means, of an internally threaded closure adapted to engage an external thread on a container and to close the container opening, an externally visible preformed readily breakable indicator member structurally separate from the closure and adapted to be freely assembled with the container without substantial change in size or shape, concealed means serving to permit free movement of the indicator member into normal relationship with the closure but automatically preventing free removal therefrom, and an element additional to the aforesaid concealed means and carried by the closure for normally causing the breaking of the indicator member upon substantial rotative movement thereof relative to the closure.

11. The combination in a container closure means, of an internally threaded closure adapted to engage an external thread on a container and to close the container opening, an

externally visible preformed readily breakable indicator member structurally separate from the closure and adapted to be freely assembled with the container without substantial change in size or shape, a metallic ring surrounding the closure and surrounded by the indicator member and serving to permit relative rotation but prevent removal of the indicator member from the closure while the former remains unbroken, and interengageable cams on the closure and on the indicator member respectively for breaking the indicator member upon substantial rotative movement thereof relative to the closure.

12. In a container closure means, the combination of an internally threaded closure adapted to engage an external thread on a container and to close the container opening, an externally visible preformed readily breakable indicator member structurally separate from the closure and adapted to be freely assembled with the container without substantial change in size or shape, means carried by the closure and engaging the indicator member and serving to permit free movement of the indicator member into normal position but automatically preventing removal of the indicator member while it remains unbroken, and a concealed means for normally causing the radially outward breaking of the side portion of the indicator member upon substantial rotative movement thereof relative to the container.

13. In a container closure means, the combination of a closure adapted to close a container opening, an externally visible preformed readily breakable indicator member structurally separate from the closure and adapted to be freely assembled with the container without substantial change in size or shape, concealed means connecting the indicator member directly with the closure to permit relative rotation but prevent removal of the indicator member from the closure while the former remains unbroken, and an element additional to the aforesaid concealed means and carried by the closure at the side thereof for normally causing the breaking of the side portion of the indicator member upon substantial rotative movement thereof relative to the closure.

14. In a container closure means, the combination of an internally threaded closure adapted to engage an external thread on a container and to close the container opening, an externally visible preformed readily breakable indicator member structurally separate from the closure and adapted to be freely assembled with the container without substantial change in size or shape, concealed means connecting the indicator member with the closure to permit relative rotation but prevent removal of the indicator member from the closure while the former remains unbroken, and a cam formed integrally with the closure at the side thereof for normally causing the breaking of the side portion of the indicator member upon substantial rotative movement thereof relative to the closure.

15. A container closure means comprising in combination, a closure adapted to close a container opening, an externally visible preformed readily breakable indicator member structurally separate from the closure and adapted to be freely assembled with the container without substantial change in size or shape, concealed means connecting the indicator member directly with the closure to permit relative rotation but prevent removal of the former from the latter while the former remains unbroken, and an element additional to the aforesaid concealed means and carried by the closure at the top thereof for normally causing the breaking of the top portion of the indicator member upon substantial rotative movement thereof relative to the closure.

16. A container closure means comprising in combination, an internally threaded closure adapted to engage an external thread on a container and to close the container opening, an externally visible preformed readily breakable indicator member structurally separate from the closure and adapted to be freely assembled with the container without substantial change in size or shape, concealed means connecting the indicator member directly with the closure to permit relative rotation but prevent removal of the indicator member from the closure while the former remains unbroken, and a cam formed integrally with the closure at the top thereof for normally causing the breaking of the top portion of the indicator member upon substantial rotative movement thereof relative to the closure.

17. A container closure means comprising in combination, an internally threaded closure adapted to engage an external thread on a container and to close the container opening, an externally visible preformed readily breakable indicator member structurally separate from the closure and adapted to be freely assembled with the container without substantial change in size or shape, concealed means serving to permit free movement of the indicator member into normal position with respect to the closure but automatically preventing free direct upward removal therefrom, and an element additional to the aforesaid concealed means and carried by the closure at the top thereof for normally causing the breaking of the top portion of the indicator member upon substantial rotative movement thereof relatively to the closure.

18. The combination of a container having an opening, a closure normally closing the container opening, an indicator member structurally separate from the closure and at least partly covering it and having a portion adapted to be readily broken, and two separate means engaging the indicator member and connecting it respectively with the container and with the closure, one of the said means serving to permit free movement of the indicator member into normal relationship with the closure and container but automatically preventing free direct upward removal therefrom and the other of the said means being free from any engagement with the indicator member which would prevent direct upward movement thereof and serving to break the said readily breakable portion of said member in an outward direction upon a relative rotative movement of predetermined extent.

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