July 26, 1938. B. F. CONNER ET AL 2,124,874

CONTAINER CLOSURE MEANS

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Fig. 1

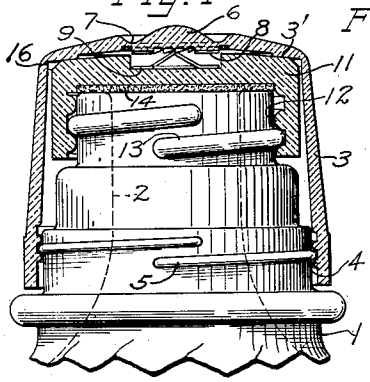


Fig. 2

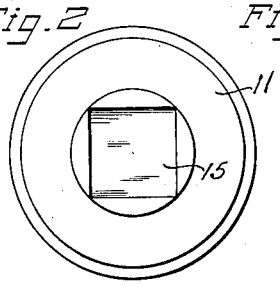


Fig. 3

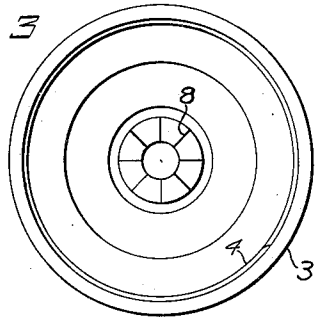


Fig. 4

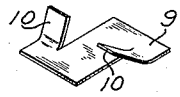


Fig. 5

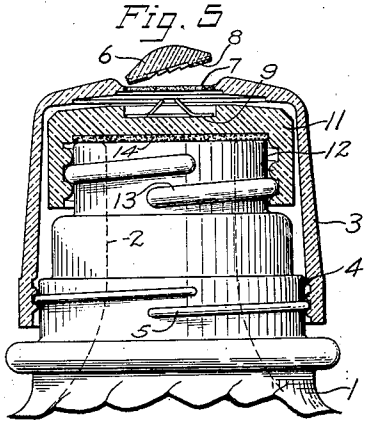


Fig. 8

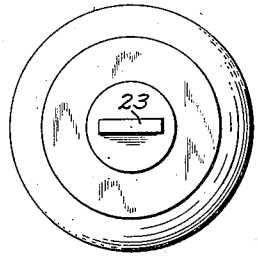


Fig. 7

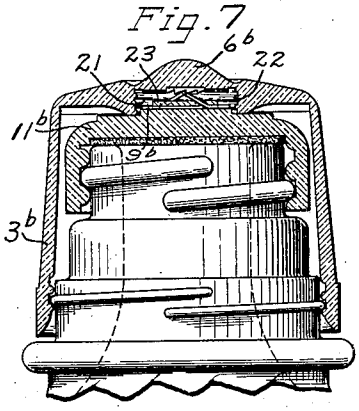


Fig. 6

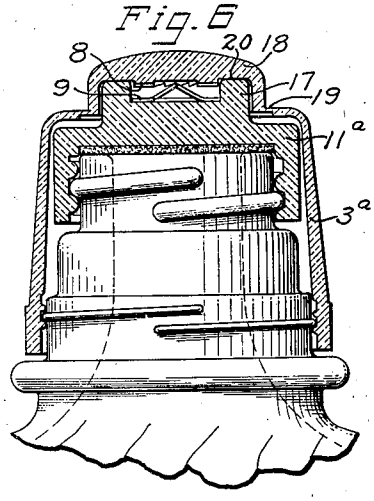


Fig. 9

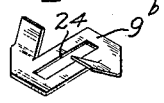


Fig. 10

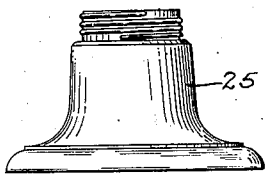
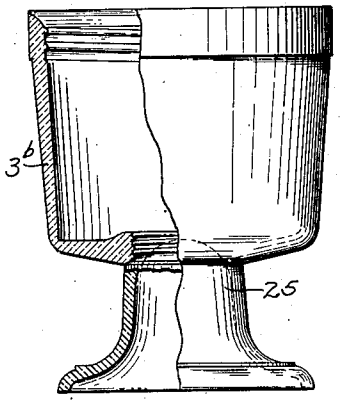


Fig. 11



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CONTAINER CLOSURE MEANS

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Fig. 12

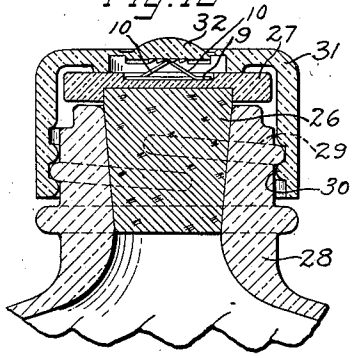


Fig. 13

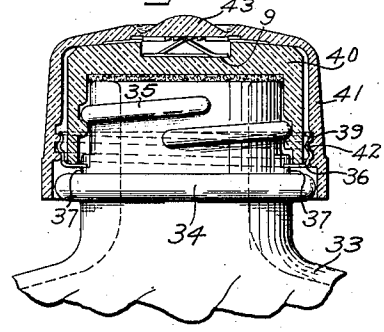


Fig. 14

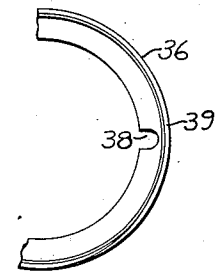


Fig. 15

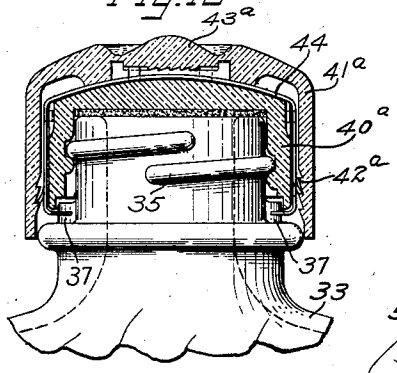


Fig. 21

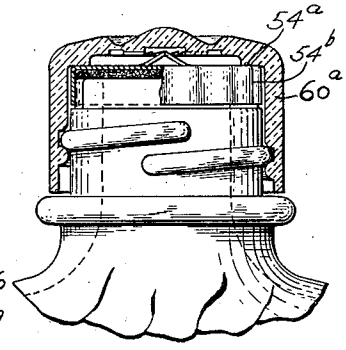


Fig. 17

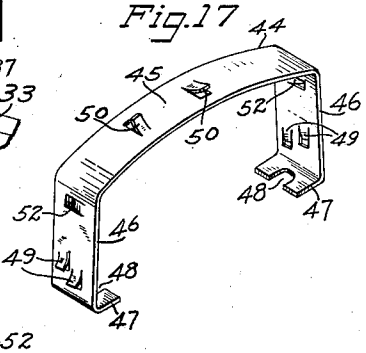


Fig. 16

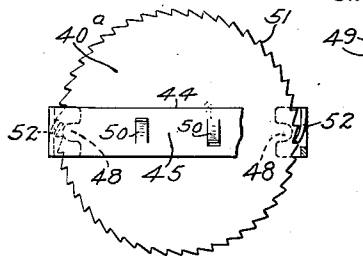


Fig. 20

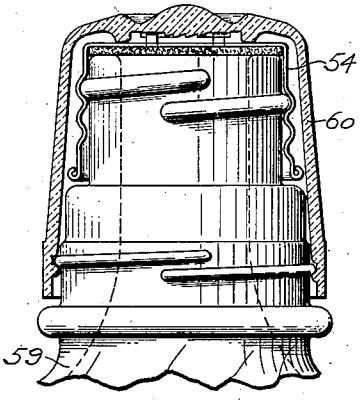


Fig. 19

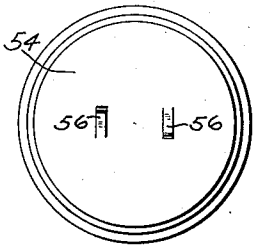
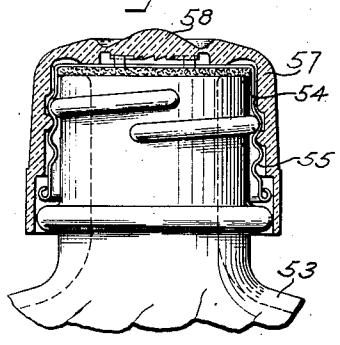


Fig. 18



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Fig. 22

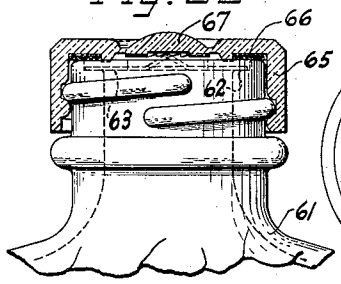


Fig. 23

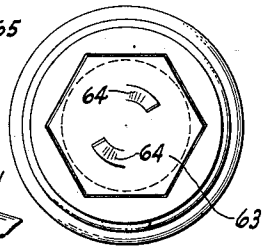


Fig. 24

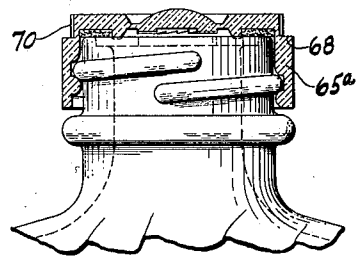


Fig. 27

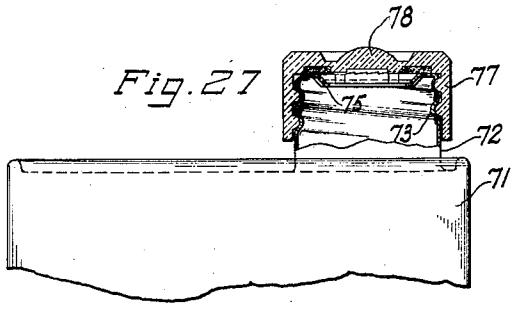


Fig. 28



Fig. 29

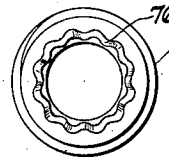


Fig. 25

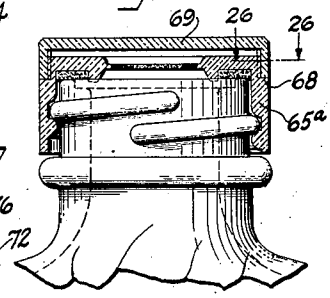


Fig. 26

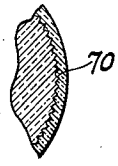


Fig. 30

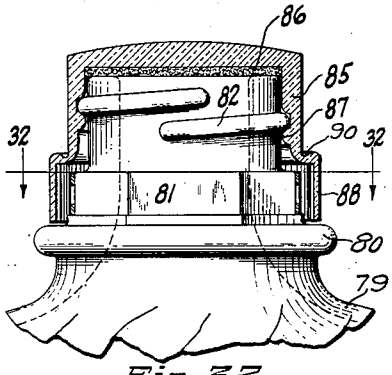


Fig. 31

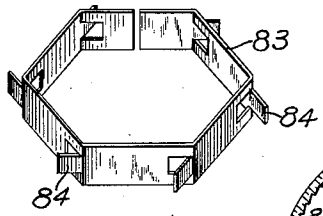


Fig. 33

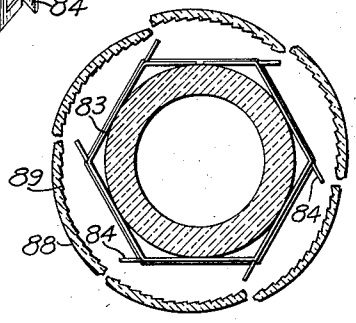
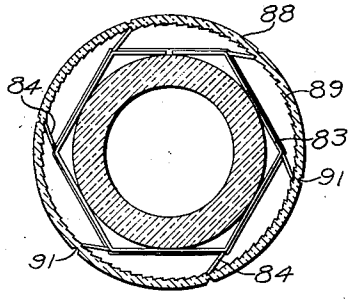


Fig. 32



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CONTAINER CLOSURE MEANS

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Fig. 34

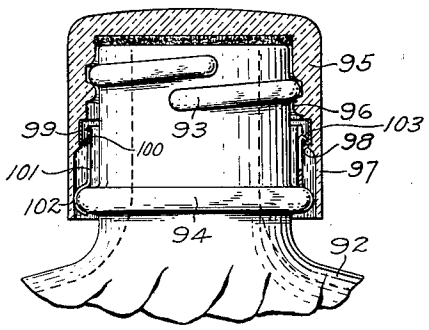


Fig. 35

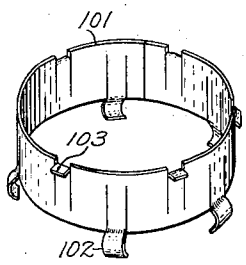


Fig. 36

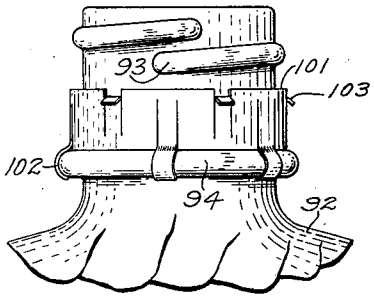


Fig. 37

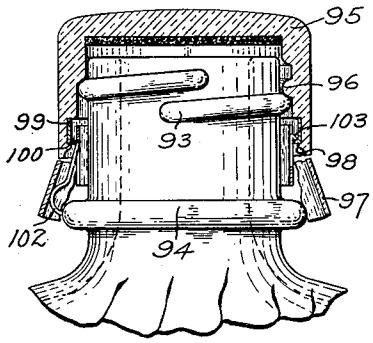
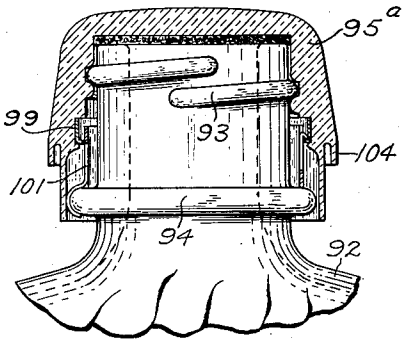


Fig. 38



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CONTAINER CLOSURE MEANS

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Fig. 39

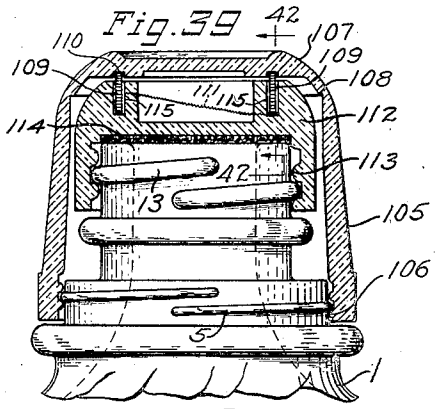


Fig. 40

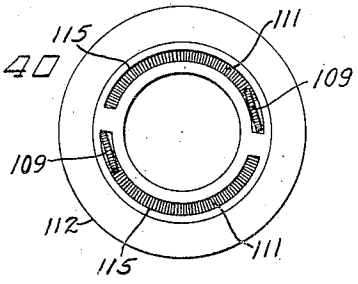


Fig. 41

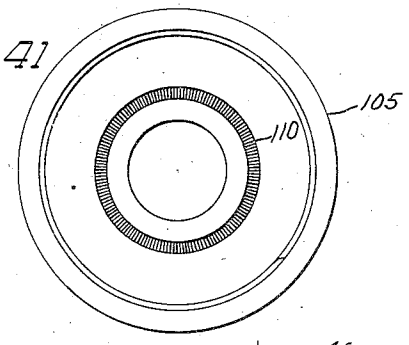


Fig. 42

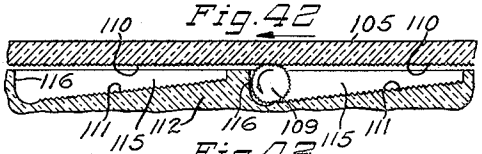


Fig. 43

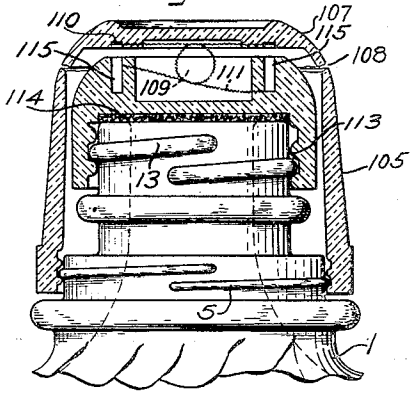


Fig. 44

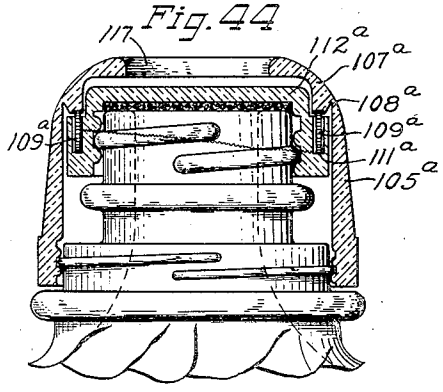


Fig. 45

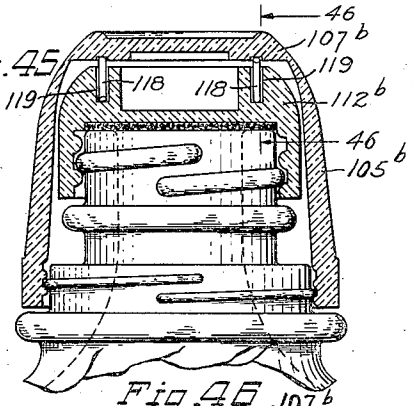


Fig. 46

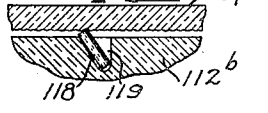
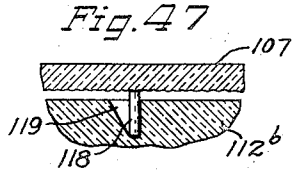


Fig. 47



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Patented July 26, 1938 2,124,874

UNITED STATES PATENT OFFICE

2,124,874

CONTAINER CLOSURE MEANS

Benjamin F. Conner, West Hartford, and William F. Schmalz, Rockville, Conn., assignors to Colt's Patent Fire Arms Manufacturing Co., Hartford, Conn., a corporation of Connecticut

Application May 4, 1934, Serial No. 723,865

37 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 container. The readily breakable indicator member, whether or not also constituting a closure, 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 or paper or fabric or other material adapted to be crimped or folded or shrunk or otherwise put into place by a change in size or shape. Associated with the readily breakable indicator member is a concealed device which permits free movement of the indicator in the closing direction into its normal position but which serves to break a portion of the indicator member upon movement thereof in the opening or unsealing direction. 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 thereby be certain that he is obtaining the original contents of the package as shown by the trade-mark or label or other marking thereon.

This application constitutes a continuation-in-part of our copending application for Container closure, Serial No. 717,192, filed March 24, 1934, upon which has been issued Patent No. 2,054,031, dated September 8, 1936.

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

Of the drawings:

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 plan view of the main or primary closure.

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

Fig. 4 is a detail perspective view of the breaking device interposed between the primary closure and the indicator member.

Fig. 5 is a view similar to Fig. 1, showing the indicator member or outer closure turned slightly in the unscrewing or opening direction so as to break the upper portion thereof.

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

Fig. 7 is a view similar to Fig. 1, but showing another alternative embodiment of the invention.

Fig. 8 is a plan view of the primary closure shown in Fig. 7.

Fig. 9 is a detail perspective view of the breaking device shown in Fig. 7.

Fig. 10 is a side view of an auxiliary base adapted to be used in combination with the indicator member shown in Fig. 7.

Fig. 11 is a view, partly in section and partly in elevation, illustrating the indicator member shown in Fig. 7 combined with the base shown in Fig. 10.

Fig. 12 is a vertical sectional view of an alternative container closure means embodying the invention.

Fig. 13 is a vertical sectional view of another alternative container closure means similar to Fig. 1 embodying the invention.

Fig. 14 is a fragmentary plan view of the threaded metallic ring shown in Fig. 13.

Fig. 15 is a vertical sectional view similar to Fig. 13, but showing another embodiment of the invention.

Fig. 16 is a plan view of the primary closure shown in Fig. 15, this view also showing the metal device interposed between the primary closure and the indicator or outer closure.

Fig. 17 is a detail perspective view of the interposed metal device shown in Figs. 15 and 16.

Fig. 18 is a vertical sectional view of another alternative container closure means embodying the invention.

Fig. 19 is a plan view of the primary closure shown in Fig. 18.

Fig. 20 is a vertical sectional view similar to Fig. 18, but showing another embodiment of the invention.

Fig. 21 is a vertical sectional view similar to Fig. 20, but showing another embodiment of the invention.

Fig. 22 is a vertical sectional view of another alternative container closure means embodying the invention.

Fig. 23 is a plan view of the container and breaking device shown in Fig. 22, the closure being omitted.

Fig. 24 is a vertical sectional view similar to Fig. 22, but showing another embodiment of the invention.

Fig. 25 is a vertical sectional view similar to Fig. 24, but showing an auxiliary lid which may be used after the main closure has been broken.

Fig. 26 is a fragmentary sectional view taken along the line 26—26 of Fig. 25.

Fig. 27 is a vertical sectional view similar to Fig. 22, but showing another embodiment of the invention.

Fig. 28 is a plan view of the metallic breaking device shown in Fig. 27.

Fig. 29 is a plan view of the spout of the container shown in Fig. 27, the closure and breaking device being omitted.

Fig. 30 is a vertical sectional view of another alternative container closure means embodying the invention.

Fig. 31 is a perspective view of the metallic breaking device shown in Fig. 30.

Fig. 32 is a horizontal sectional view taken along the line 32—32 of Fig. 30.

Fig. 33 is a view similar to Fig. 32, but showing the closure slightly turned in the unscrewing or opening direction so as to break the skirt portion thereof.

Fig. 34 is a vertical sectional view of another alternative container closure means embodying the invention.

Fig. 35 is a perspective view of the metallic breaking device shown in Fig. 34.

Fig. 36 is an elevational view showing the breaking device in place on the container.

Fig. 37 is a view similar to Fig. 34, but showing the closure slightly turned in the unscrewing direction to break the skirt portion thereof.

Fig. 38 is a view similar to Fig. 34, but showing a slightly different embodiment of the invention.

Fig. 39 is a vertical sectional view of another alternative container closure means embodying the invention.

Fig. 40 is a plan view of the primary closure shown in Fig. 39 with the movable rollers in place thereon.

Fig. 41 is a bottom view of the indicator member or outer closure shown in Fig. 39.

Fig. 42 is a developed circular sectional view taken along the line 42—42 of Fig. 39.

Fig. 43 is a view similar to Fig. 39 showing the indicator member or outer closure turned slightly in the unscrewing or opening direction so as to break the upper portion thereof.

Fig. 44 is a view similar to Fig. 39, but showing another embodiment of the invention.

Fig. 45 is a view similar to Fig. 39, but showing another alternative embodiment of the invention.

Fig. 46 is a fragmentary developed circular sectional view taken along the line 46—46 of Fig. 45.

Fig. 47 is a view similar to Fig. 46, but showing the indicator member or outer closure turned slightly in the opening direction to cause the breaking of the top thereof.

Referring to the drawings, 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 or member 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 as will hereinafter appear the indicator member is not necessarily a complete closure. Preferably and as shown, a means is provided for normally preventing movement of the indicator member 3 upward or outward away from the container, the said means nevertheless permitting relative rotative movement. Preferably and as shown this means consists of an internal thread 4 on the indicator member adapted to engage an external thread 5 on the container. While complete threads are shown on the indicator member and on the container, it will be understood that other interengaging means permitting relative rotation may be substituted in some instances. For example, there may be provided interrupted threads or cams, or there may be provided interrupted annular ribs.

The indicator member 3 has an externally visible element or portion which is adapted to be readily broken or separated from the remainder of the member. As shown this readily breakable or separable element or portion is at the top, as indicated at 6, being surrounded by an annular zone of weakness shown at 7; but as will presently appear the readily breakable or separable portion is not necessarily at the top and may be at the side.

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 zone of weakness such as that at 7, 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 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. 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.

Associated with the readily breakable portion 6 of the indicator member 3 is a breaking means or device structurally separate from the indicator member and initially constructed prior to

assembly so as to permit free movement of the indicator member in one direction and so as to automatically engage and break the indicator member upon movement thereof in the opposite direction. When the indicator member is threaded, as shown, the said breaking device permits the said member to be screwed into its normal position, but causes breaking of the portion 6 thereof when the member is turned in the opposite unscrewing direction. Preferably to facilitate the action of the breaking device, the readily breakable portion 6 is provided with internal teeth as indicated at 8. The teeth 8 are preferably very shallow in order to permit removal from the mold, such removal being possible by reason of the resilience of the molded material while still hot. The teeth as shown in the drawings are somewhat exaggerated in size.

While the invention is not so limited the breaking device may conveniently be a metallic element such as 9 having resilient pawls 10, 10. When the indicator member is being moved or screwed into its normal position, the said pawls 10, 10 freely snap over the teeth 8 of the breakable portion 6; but upon movement of the indicator member in the opposite or unscrewing direction, the pawls 10, 10 automatically engage and hold the said teeth 8 and thereby break the said portion 6.

As will be hereinafter explained, the breakable indicator member may also constitute the main or primary closure for the container, but in Figs. 1 to 5 we have shown a separate primary closure 11 which directly engages the container 1 to close the mouth 2 thereof. The closure 11 is covered or at least partly covered by the indicator member or outer closure 3, the relationship being such that the primary closure 11 cannot be removed while the indicator member or outer closure remains in place and unbroken. The closure 11 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 12 engaging an external thread 13 on the container adjacent the opening 2. The closure 11 may also be molded from a material of the synthetic resin class, and it is provided with a gasket or a liner 14 which engages the top of the container or bottle to seal it in the usual manner.

When a primary closure such as 11 is provided, it preferably serves as the means for supporting the breaking device 9. The device 9 may be a flat sheet metal piece having a square or other non-circular shape. As shown the closure 11 is provided with a square or otherwise non-circular recess 15 which is of suitable size to receive the device 9 and prevent relative rotation 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 11 is put in place in accordance with usual practice. The breaking device 9 is dropped into the recess 15, and then the indicator member or outer closure 3 is put in place, the thread 4 thereof being engaged with the thread 5 on the container. As the indicator member is screwed downward into place, the resilient teeth 10, 10 on the breaking device 9 snap over the teeth 8 on the breakable portion 6, thus permitting the indicator member to move freely to its final position. In the said final position the indicator member is preferably seated directly upon the primary closure, as indicated for instance at 3'.

It will be understood that the primary closure 11 is normally screwed so tightly in place on the container that it cannot be moved in the unscrewing direction by any force transmitted thereto through the teeth 8 and the pawls 10, 10. Any accidental movement of the indicator member 3 in the opening or unscrewing direction, whether resulting from vibration or otherwise, is resisted by the engagement of the pawls 10, 10 with the teeth 8.

When it is desired to open the container, the indicating member or outer closure 3 is forcibly turned in the opening or unscrewing direction. The pawls 10, 10, being in engagement with the teeth 8, resist the turning movement, and the said pawls are bent upward, thus exerting an upward force on the portion 6 which breaks it in the upward direction as shown in Fig. 5. When the portion 6 has been broken out the remainder of the indicator member 3 can be removed and then the primary closure member 11 can be removed in the usual manner.

Preferably the threads 12 and 13 differ substantially in lead or otherwise from the threads 4 and 5 in order to provide a differential action between the primary closure 11 and the indicator member 3 in the event that the said closure and member should turn in unison. Preferably and as shown the threads 12 and 13 have a lead considerably greater than that of the threads 4 and 5, the result being that upon unscrewing movement in unison the primary closure 11 tends to rise faster than the indicator member 3.

As already stated the primary closure 11 is ordinarily firmly seated on the container and cannot be moved by means of the indicator member, but if the primary closure should be loose so as to tend to unscrew with the indicator member, the movement in unison would cause the primary closure to rise more rapidly, thus breaking the top portion of the indicator member. To facilitate such breaking there may be provided an auxiliary annular zone of weakness, as indicated at 16.

From the foregoing description it will be apparent that it is entirely impossible to obtain access to the contents of the container without first breaking out a portion of the indicator member 3. If the primary closure 11 is screwed tightly in place, as it should be, the portion 6 of the indicator member will be broken out by the resilient pawls 10, 10, as already described, as soon as the indicator member is turned in the unscrewing direction. If the primary closure should be loose so as to tend to turn with the indicator member, the entire top of the indicator member would be broken out as the result of the tendency of the primary closure to rise more rapidly.

With the indicator member broken at the top, the consumer 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 consumer can positively protect himself against adulteration or substitution of the container contents. It will of course be understood that the indicator member will ordinarily carry a suitable trade-mark to provide additional protection to the consumer.

The construction shown in Fig. 6 is similar to that shown in Figs. 1 to 5, the principal difference being that the primary closure 11[a] is provided at the top with an upward projecting cen-

tral boss 17 and that the indicator member or outer closure 3[a] is provided with an integral central dome 18 for receiving the boss 17. The dome 18 constitutes the readily breakable portion of the indicator member and an annular zone of weakness 19 is provided at the base of the dome to facilitate breaking. The breaking device 9 is or may be the same as that already described and it similarly cooperates with internal teeth 8 on the dome 18. Preferably the bottom surface of the top wall of the dome seats directly against the top surface of the boss at 20.

The action of the closure means shown in Fig. 6 is very similar to that already described. The principal difference is that upon unscrewing the indicator member, breaking occurs at the annular zone of weakness 19, thus breaking out the entire dome 18 and leaving the upward projecting boss 17 exposed. The indicator member and the primary closure may be of different colors, the former for instance being black and the latter for instance being red. With the dome 18 broken away the red boss 17 will project entirely through the resultant opening in the indicator member, thus constituting a readily apparent danger signal to indicate that the contents of the container have probably been tampered with.

If the primary closure 11[a] should be loose and tend to unscrew with the indicator member, the dome 18 will be broken out in the same manner as already described, this being due to the fact that the top of the boss 17 engages directly with the wall of the dome at 20. With this construction there is no need for a second zone of weakness such as shown at 16 in Figs. 1 and 5.

In Figs. 7 to 9 there is shown another construction very similar to that shown in Figs. 1 to 5, but differing essentially in that the indicator member 3[b] is provided with a recess 21 immediately below the readily breakable portion 6[b], which recess is provided with an internal thread 22. This thread may be very small to enable it to be stripped from the mold, or it may be larger and have the same lead as the main thread on the indicator member. A metallic breaking device 9[b] is positioned within the recess 21, but instead of being seated in a recess in the closure 11[b], is held against rotation by means of a projection 23 thereon which enters a slot 24. The cooperative relationship between the various parts is exactly as already described in connection with Figs. 1 to 5, and repetition of the description is unnecessary.

In order that the indicator member 3[b] may be used as a drinking or measuring cup, notwithstanding the breaking out of the portion 6[b] thereof, there is provided a base 25 shown in Fig. 10. This base has a threaded portion at the top adapted to enter the recess 21 and engage the internal thread 22 therein. After the portion 6[b] of the indicator member 3[b] has been broken out the said member may be entirely removed from the container and inverted and then screwed into place on the base 25, as shown in Fig. 11. The member 25 not only serves as a base but it also serves as a plug or stopper to close the opening left by the breaking out of the portion 6[b]. When the parts 25 and 3[b] are combined as shown in Fig. 11 there is obtained a useful and entirely satisfactory cup or goblet.

In Fig. 12 there is shown a construction which is similar in general principle to that shown in Figs. 1 to 5, but which differs essentially in that the primary closure for the container is a cork or stopper instead of a cap. As shown there is a cork stopper 26 to which is glued or cemented a top disc 27 formed of wood or of a suitable molded material. The bottle or container 28 is provided with an external thread 29 which is engaged by an internal thread 30 on a cap-shaped indicator member 31. The indicator member 31 is provided with a readily breakable top portion 32 similar to the portion 6 shown in Figs. 1 and 5. The disc 27 is recessed to receive a breaking device which may be exactly the same as the breaking device 9 shown in Fig. 4. The resilient pawls 10, 10 of the breaking device 9 cooperate with the teeth on the readily breakable portion 32 in the manner already described in connection with Figs. 1 to 5.

In using the closure means shown in Fig. 12 the cork or stopper 26 is put in place in accordance with usual practice. The breaking device 9 is dropped into place in the recess in the top of the disc 27 and then the idicator member 31 is screwed into place, the resilient pawls 10, 10 snapping over the teeth on the breakable portion 32. When it is desired to open the container, the indicating member 31 is forcibly turned in the opening or unscrewing direction. The pawls 10, 10, being in engagement with the teeth on the breakable portion 32, resist the turning movement and break out the said portion 32 exactly as already described in connection with Figs. 1 to 5. Then the remainder of the indicator member 31 can be removed and the cork or stopper can be withdrawn in the usual manner.

In Figs. 13 and 14 there is shown a construction which differs essentially from any of the constructions thus far shown and described in that the indicator member or outer closure member does not engage directly with the container but is held thereon indirectly by means of the primary closure.

The container or bottle 33 is of substantially standard construction, having the usual annular bead 34 and the usual external thread 35. A metallic ring 36 is provided which is positioned immediately above the bead 34. The ring 36 has a horizontal flange which engages the bottle in such a way as to prevent relative rotation. As shown the bottle is provided with two oppositely positioned lugs 37, 37 and the ring 36 is provided with recesses 38 to receive the lugs. The ring 36 also has an upward extending annular portion which is shaped to form a screw thread 39. A primary closure 40 is provided which is of the cap type, this being internally threaded and adapted to engage the external thread 35 on the bottle. The relationship between the closure 40 and the ring 36 is such that the closure will extend downward within the ring as clearly shown in Fig. 13.

An indicator member or outer closure member 41 is provided having an internal thread at 42 adapted to engage the thread 39 on the metal ring 36. The member 41 is provided with a readily breakable portion 43 similar to the readily breakable portion 6 shown in Figs. 1 and 5. The closure 40 is provided with a recess for receiving a breaking device which may be the same as the breaking device 9 shown in Fig. 4. The cooperative relationship between the breaking device 9 and the breakable portion 43 of the indicator member 41 is or may be exactly the same as already described in connection with Figs. 1 to 5.

In using the closure means shown in Figs. 13 and 14 the ring 36 is first put in place and the primary closure is screwed into position in accordance with usual practice. Then the breaking device 9 is dropped into place in the recess in the closure 40 and the indicator member 41 is screwed into engagement with the thread 39 on the ring 36. It will be observed that as the indicator member is turned the ring 36 is held against rotation by means of the lugs 37, 37 on the bottle, and that the said ring is drawn upward until further upward movement is limited by the engagement of the horizontal flange thereof with the bottom of the primary closure 40. With the parts thus assembled access to the contents of the container can only be obtained by first forcibly unscrewing the indicator member 41 and thus causing the breaking of the top portion 43 thereof in the manner already described. Inasmuch as the ring 36 is held against rotation on the bottle there can be no tendency for the indicator member 41 to turn the primary closure 40.

The construction shown in Figs. 15 to 17 is similar in principle to that shown in Figs. 13 and 14, but it differs in that there is only one auxiliary metallic element, this one element having the functions of the two elements shown in Fig. 13. The container or bottle 33 is or may be exactly the same as that shown in Fig. 13. A primary closure 40^a is provided which may be the same or substantially the same as the closure 40.

A metallic bridge device 44 is provided which is shaped to conform to the cross sectional outline of the closure 40^a. The said device has a top portion 45 which engages the top portion of the closure 40^a, it has two vertical side portions 46, 46 which engage the sides of the closure 40^a and it has two inward extending horizontal flanges 47, 47 which engage the bottom of the closure 40^a. These horizontal flange portions 47, 47 are notched at 48, 48 to receive the lugs 37, 37 on the bottle. It will be understood that the bridge device 44 is sufficiently resilient to enable it to be easily snapped into position after the closure 40^a has been put in place on the bottle. The device 44 instead of being provided with definitely formed screw threads as is the ring 36 shown in Figs. 13 and 14, is provided with resilient teeth or pawls 49, 49 which are adapted to engage with a thread on the indicator member. The bridge device 44 is also provided at the top with resilient pawls 50, 50 which correspond in function with the resilient pawls 10, 10 on the breaking device 9 shown in Fig. 13.

The indicator member or outer closure 41^a is similar to the member 41 shown in Fig. 13, being provided with an internal thread 42^a and with a readily breakable top portion 43^a. The thread 42^a is preferably of the buttress type so as to be more readily engaged by the resilient pawls 49, 49.

In using the closure means shown in Figs. 15 to 17 the primary closure 40^a is first screwed into position in accordance with usual practice. Then the bridge device 44 is snapped into place, the notches 48, 48 thereof fitting the lugs 37, 37 on the bottle. With the bridge device in place, the indicator member or outer closure 41^a can be put in place, and on account of the resiliency of the pawls 49, 49 this member may be pushed vertically downward without rotation. A slight final rotative movement may be desirable in order to avoid any possible looseness. It will be observed that with the indicator member 41^a in place the pawls 50, 50 cooperate with the teeth on the breakable portion 43^a in the manner that has already been described. With the parts thus assembled access to the contents of the container can only be obtained by first forcibly unscrewing the indicator member 41^a and thus causing the breaking of the portion 43^a thereof. Inasmuch as the bridge device 44 is held against rotation on the bottle there can be no tendency for the indicator member 41^a to turn the primary closure 40^a.

In order to avoid any possible accidental unscrewing of the primary closure 40^a by vibration or otherwise, it may be desirable to provide an annular series of ratchet teeth 51 on the closure 40^a and to provide auxiliary resilient pawls 52, 52 on the bridge device 44. When such ratchet teeth and auxiliary pawls are provided it will be evident that accidental unscrewing movement of the primary closure is positively prevented.

In Figs. 18 and 19 there is shown a construction which differs from those shown in Figs. 13 to 17 in that the indicator member or outer closure is threadedly engaged directly with the primary closure without the use of an auxiliary metallic device such as the ring 36 or the bridge device 44. With this construction the bottle 53 may be of entirely standard construction.

The primary closure 54 is provided not only with an internal thread to engage the external thread on the bottle 53, but it is also provided with an external thread adapted to be engaged by an internal thread on the indicator member or outer closure. The primary closure 54 may be of molded material, as shown in Figs. 13 and 15, but there are practical difficulties in the way of economically molding such a closure with both internal and external threads. The closure 54 is preferably therefore formed of metal having a thread 55 rolled therein, there thus being readily provided both an internal thread and an external thread. With the closure 54 formed of metal the necessary resilient pawls 56, 56 can be formed integrally with the top wall of the closure, thus avoiding the necessity for a separate breaking device such as the device 9 shown in Fig. 13.

The indicator member or outer closure 57 is formed with an internal thread adapted to engage the thread on the exterior of the closure 54. It is also provided with a readily breakable top portion 58 similar to the readily breakable top portion 43 shown in Fig. 13.

In using the closure means shown in Figs. 18 and 19 the primary closure 54 is put in place in accordance with usual practice. Then the indicator member or outer closure 57 is screwed into engagement with the external thread on the primary closure, the resilient pawls 56, 56 engaging the teeth on the breakable portion 58 in the manner already described. With the parts thus assembled, access to the contents of the container can be obtained only by first forcibly unscrewing the indicator member 57 and thus causing the breaking of the top portion 58 thereof in the manner already described. It is to be recognized that, while the construction shown in Figs. 18 and 19 has the advantage of simplicity and low cost, it does not have all of the operative advantages incident to the other constructions which have been described. It is necessary for the primary closure 54 to be very

firmly screwed into place in order to prevent any possible unscrewing thereof by reason of force transmitted thereto from the indicator member 57 through the pawls 56, 56; but this is not a serious objection as it is the usual practice to apply considerable force in screwing such a closure into place. The lower portion of the member 57 cooperates with the bead on the bottle to prevent the insertion of a tool for the purpose of turning the primary closure 54.

In Fig. 20 there is shown a construction which is the same in principle as the construction shown in Figs. 1 to 5, but which includes a sheet metal primary closure instead of a molded member such as 11. The sheet metal closure is or may be the same as the closure 54 already described in connection with Figs. 18 and 19. The bottle 59 and the indicator member or outer closure 60 are substantially the same as already described in connection with Figs. 1 to 5, there being only minor differences in size and proportion. The manner of use is the same as already described and repetition of the description is unnecessary.

The construction shown in Fig. 21 is similar in principle to that shown in Fig. 20, the major difference being that the closure or cap 54^a is not threaded but is held in place by the outer closure 60^a. The closure 54^a may have vertical corrugations as shown at 54^b and the container or bottle may have one or more vertical ribs to engage with the corrugations to prevent relative rotation. The breaking of the closure 60^a is effected in the manner already described, and it will be observed that the closure 60^a remains effective to engage the closure 54^a and hold it in place for resealing, even though the top indicator portion of the said closure 60^a is broken out.

Figs. 22 and 23 illustrate the fact that it is possible for a single member to serve as a primary closure and also as an indicator member. In the construction shown in these figures the container or bottle 61 may be of substantially standard construction, but it differs from standard in that a ledge 62 is provided in the mouth for receiving a sheet metal breaking device 63, having resilient breaking pawls 64, 64. The device 63 is non-circular in outline, being shown as hexagonal, and the walls of the bottle surrounding the ledge 62 are similarly shaped so as to prevent the device 63 from turning.

The closure 65 is internally threaded to engage an external thread on the bottle 61, and it is provided with an annular liner or gasket 66 adapted to engage the mouth of the bottle to seal it. The top wall of the closure 65 is provided with a readily breakable portion 67 similar to the portion 6 shown in Fig. 1 and similarly provided with teeth. The teeth on the breakable portion 67 are adapted to cooperate with the teeth 64, 64 on the sheet metal breaking device 63 in the manner already described.

In using the closure means shown in Figs. 22 and 23 the bottle or container is filled in the usual way and the sheet metal breaking device 63 is dropped into place. Then the closure 65 is screwed into engagement with the thread on the container, the container being thus sealed in the usual way. With the parts thus assembled, access to the parts of the container can be obtained only by forcibly unscrewing the closure 65 and thus causing the breaking of the top portion 67 thereof in the manner already described.

It will be observed that with the construction shown in Figs. 22 and 23 the primary closure is destroyed when removed, thus making it impossible for the said closure to be used to effectively reseal the bottle or container. However, for many classes of products this is unobjectionable as the practice is to immediately use the entire contents of the container, thus avoiding any need for resealing.

In the event that at least a partial resealing is required, use may be made of the alternative construction shown in Figs. 24 to 26. In this construction there is provided a closure 65^a which is initially exactly like the closure 65 except that it is provided with an annular rabbet 68 adapted to receive an auxiliary lid. The closure 65^a is used in the same manner as already described in connection with Figs. 22 and 23.

For use in conjunction with the closure 65^a there is provided an auxiliary lid 69 having a downward extending peripheral flange adapted to enter the rabbet 68, and the walls of the flange and the rabbet may be serrated as indicated at 70 to prevent relative rotation. It will be understood that the lid 69 is not originally in place on the closure 65^a but it may be supplied in the same package with the container. After the breakable top portion of the closure 65^a has been broken out, as indicated in Fig. 25, the lid 69 may be put in place to provide at least a partial closure for the container. The lid 69 will not effectively seal the container, but it will cover the opening in the closure 65^a to exclude dust and dirt.

In Figs. 27 to 29 there is shown a construction substantially the same in principle to that shown in Figs. 22 and 23. However, instead of illustrating the container as being a bottle, we have illustrated it as being a sheet metal can of the type commonly used for lubricating oil and similar materials. The can 71 is provided with a sheet metal spout 72 having a thread 73 rolled therein. At the top of the spout 72 there is provided a sheet metal breaking device 74 corresponding in function to the device 63 shown in Figs. 22 and 23. The metal of the spout is bent inward and is depressed to form a ledge 75 for supporting the breaking device 74. In order to prevent the device 74 from turning the inclined walls adjacent the ledge 75 may be corrugated as shown at 76 in Fig. 28. The periphery of the breaking device 74 is shaped to fit the corrugations at 76. The closure 77 is or may be substantially the same in construction as the closure 65 shown in Fig. 22. The manner of use of the device shown in Figs. 27 to 29 is substantially the same as that shown in Figs. 22 and 23, and repetition of the description is unnecessary.

The closure shown in Figs. 27 to 29 is particularly adapted for use on cans of lubricating oil to indicate to the purchaser that he is obtaining the original oil packaged by the manufacturer and that there has been no substitution. The dealer can exhibit to the customer the complete can with the closure intact, thus allowing the customer to observe that the breakable indicator portion 78 is intact. Then in the presence of the customer the dealer can remove the closure 77, thus breaking out the indicator portion 78. It will be observed that this construction gives complete protection to the customer, but at the same time avoids any destruction of or damage to the can itself. The can may be returned to the manufacturer and

be re-used, it being only necessary to supply a new closure member 77 and probably a new breaking device 74 each time the can is refilled.

In Figs. 30 to 33 there is shown another closure means in which a single member serves both as the primary closure and also as the indicator member. The bottle 79 is provided above the usual bead 80 with a non-circular portion 81. As shown this non-circular portion is hexagonal in horizontal section, but any other suitable non-circular shape may be substituted. Above the non-circular portion 81 there is provided an external thread 82 which may be of standard form. Substantially fitting the non-circular portion 81 of the bottle is a metallic breaking device 83 as shown in detail in Fig. 31. This device may be a strip of metal bent to conform to the hexagonal or other non-circular shape of the bottle at 81. The breaking device 83 is provided with a plurality of subtsantially tangential resilient pawls 84, 84, as clearly shown in Fig. 31.

The closure 85 is or may be of conventional type so far as its upper portion is concerned. It is provided with the usual liner 86 and with the usual internal thread 87 to engage the external thread 82 on the bottle. The closure 85 is provided with an integral peripheral downward extending readily breakable indicator element or portion. This indicator element is in the form of a skirt 88 which is adapted to surround the breaking device 83 and to extend into close proximity to the bead 80. The indicator element or skirt is provided with internal teeth or serrations 89 as shown in Fig. 32, these preferably being very small to permit removal from the mold. Such removal is possible by reason of the resilience of the molded material while still hot. The teeth as shown in the drawings are somewhat exaggerated in size. An annular zone of weakness is provided at 90 to facilitate the breaking of the skirt, and, in order to further facilitate breaking, the skirt may have vertical grooves therein as shown at 91, 91 in Fig. 32.

In using the closure means shown in Figs. 30 to 33 the metal breaking device 83 is first put in place on the bottle and then the closure 85 is screwed into engagement with the bottle in the usual manner. As the closure 85 moves downward into position the skirt 88 extends over and around the breaking device 83, the resilient pawls 84, 84 of the said breaking device snapping over the teeth 89 on the interior of the skirt. Thus the closure can be freely screwed into position without any substantial resistance being offered by the breaking device.

With the parts thus assembled, access to the contents of the container can be had only by forcibly unscrewing the closure 85. When the closure is unscrewed the resilient pawls 84, 84 engage and hold the teeth 89 and the pawls are caused to bend outward as shown in Fig. 33, thus breaking the skirt 88, ordinarily in several places. After the skirt 88 has been broken the remainder of the closure 85 can be removed to open the container.

In the construction shown in Figs. 30 to 33 a sufficient portion of the closure 85 remains intact after opening to enable the container to be resealed. The annular zone of weakness at 90 makes it possible for the customer to easily break away any portions of the skirt that may not be broken during the initial removal of the closure 85 from the container. When the container is resealed the sheet metal breaking device 83 may be left in place or removed as preferred.

In Figs. 34 to 38 there is shown another construction having a single closure with an integral breakable skirt as shown in Figs. 30 to 33. This construction differs from any of those heretofore described, in that the breaking device is bodily movable when the indicator member is moved in the opening direction.

The bottle 92 is or may be substantially standard in form having the usual external thread 93 and the usual annular bead 94. The closure 95 is or may be of conventional type so far as its upper portion is concerned. It is provided with the usual liner and with the usual internal thread 96 to engage the external thread 93 on the bottle. The closure 95 is provided with an integral downward extending readily breakable skirt 97. Above the skirt is an internal annular bead 98, small enough to be snapped off from the mold. A metallic ring 99 is held in place by the bead 98, this ring being preferably of such size that considerable force must be exerted to put it in place. When so put in place it is held firmly by the bead 98. The ring 99 has a very small inward projecting flange 100.

The breaking device 101 is in the form of a ring, which may be split if desired. It has a series of downward extending resilient fingers 102 shaped to engage the bead 94 on the bottle, and it has a series of outward projecting resilient teeth 103. The device 101 is put in place on the bottle as shown in Fig. 34 before the closure is put in place.

Assuming the breaking device 101 to be in place as shown, the closure 95 is screwed into place in the usual way. The skirt 97 passes downward over the breaking device 101, and finally the teeth 103 thereof snap over and engage the flange 100 of the ring 99.

When the closure 95 is unscrewed the teeth 103 cause the breaking device 101 to move upward with the closure. As the device 101 moves upward the fingers 102 thereof are forced outward by the bead 94, and upon being so forced outward they break the skirt 97 as shown in Fig. 37. The breaking of the skirt serves as an indication that the bottle has been opened, but the closure 95 is nevertheless still effective for resealing.

The skirt 97 may be broken irregularly, and in order to conceal the ragged line of breaking there may be provided a closure 95a as shown in Fig. 38. This closure is similar to the closure 95 except that there is provided a depending annular flange 104 which conceals the ragged break, and thus enhances the appearance of the closure when used for resealing.

It will be observed that the indicator element may be an integral part of the primary closure member, as shown in Figs. 22 to 38, or that it may be an entirely separate member, as shown in Figs. 1 to 21. In either case the closure is held against removal while the indicator element remains unbroken and in its normal position on the container.

The construction shown in Figs. 39 to 43 resembles those shown in Figs. 1 to 21 in that there is an indicator member structurally separate from the primary closure, and the said construction resembles that shown in Figs. 34 to 38 in that the breaking device is bodily movable when the indicator member is moved in the opening direction. Except for the bodily movable breaking device or devices the construction is very

similar to that shown in Figs. 1 to 5. The container or bottle is or may be the same in construction as the bottle 1 shown in Figs. 1 and 5.

The indicator member is represented at 105 and it is shown as being a complete closure entirely covering the opening in the container. It is provided with an internal thread 106 adapted to engage the external thread 5 on the container. The entire top 107 of the indicator member constitutes the readily breakable element or portion thereof, this being separated from the remainder of the member by an annular zone of weakness at 108.

Associated with the readily breakable portion 107 of the indicator member is at least one rigid relatively movable breaking device and preferably there are two or more such devices. As shown there are two relatively movable breaking devices in the form of narrow discs or rollers 109, 109 engaging at their tops with a circular track 110 on the bottom surface of the indicator portion 107 and engaging at their bottoms with upward inclined cam paths 111, 111.

While the invention is not necessarily so limited, the cam paths 111, 111 are shown as being formed on a primary closure 112. The closure 112 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 113 engaging the external thread 13 on the container. The closure 112 is provided with a gasket or liner 114 which engages the top of the container or bottle to seal it in the usual manner.

When a primary closure such as 112 is provided the cam paths 111, 111 are preferably formed at the bottom of arcuate grooves 115, 115 in the top of the closure. The lead of the cam paths 111, 111 is considerably greater than that of the thread 5. At the lower end of each cam path 111 is a shoulder 116 with which the corresponding roller 109 normally engages. Preferably the rollers 109, 109 are peripherally serrated and corresponding serrations or teeth are formed on the track 110. Similar serrations or teeth are formed on the cam paths 111, 111, but preferably the serrations or teeth are omitted at the extreme lower portion of the cam paths, as clearly indicated in Fig. 42.

In using the closure means shown in Figs. 39 to 43, the bottle or container is filled in any usual or preferred manner, and the primary closure 112 is put in place in accordance with usual practice. Then the two rollers 109, 109 are dropped into their respective grooves 115, 115 and they move by gravity to their lowermost positions as shown in Figs. 39, 40 and 42. The indicator member or outer closure 105 is then put in place, the thread 106 thereof being engaged with the thread 5 on the container. As the indicator member is screwed downward into place it moves in the direction indicated by the arrow in Fig. 42, and as it approaches its final position the rollers 109, 109 are engaged by the serrations on the track 100 and they are turned in the counter-clockwise direction as indicated. Inasmuch as there are no serrations at the lower ends of the grooves 115, 115 the rollers can turn as indicated, but they cannot turn freely as the teeth thereon tend to bite into the surfaces on the shoulders 116, 116 and at the bottoms of the grooves. Thus the rollers 109, 109 tend to additionally turn the primary closure 112 in the tightening direction. This is an important feature, as the indicating member or outer closure while being screwed into place thus tends to eliminate any possible looseness of the primary closure. Ordinarily the primary closure is screwed into place with considerable force, but any defect or omission in this respect will be corrected when the indicator member is tightened.

It is to be furthermore observed that the rollers 109, 109 serve to lock both the primary closure 112 and the indicator member 105 so as to prevent any accidental loosening of either of them by vibration or otherwise. The rollers are engaged with the serrations on the track 110 of the indicator member and they are also firmly engaged with the surfaces on the shoulders 116, 116 and at the bottoms of the grooves 115, 115 of the primary closure. Any unscrewing movement of the primary closure relatively to the indicator member is positively prevented; and any unscrewing movement of the indicator member relatively to the primary closure could occur only by forcing the rollers to roll upward along the cam paths 111, 111. Furthermore on account of the difference in lead between the threads 13 and 5 the closure and the indicator member are prevented from turning in unison in the unscrewing direction. Any tendency for them to so turn would be resisted by the increased upward pressure exerted by the closure against the rollers 109, 109.

When it is desired to open the container the indicating member or outer closure 105 is turned in the opening or unscrewing direction. This causes the rollers 109 to roll upward along the cam surfaces 111 as indicated in Fig. 43. Inasmuch as the lead of the cam surfaces is greater than that of the thread 5 the rollers 109 exert a constantly increasing pressure against the top indicator portion 107, with the result that the said portion is broken or separated at the beforementioned zone of weakness 108. After the portion 107 has been broken away, the remainder of the indicator member 105 can be removed and then the closure 112 can be removed in the usual way.

It will be understood that the closure 112 is normally screwed so tightly in place on the container that it cannot move in the unscrewing direction by the action of the rollers 109, 109. However, in the event that the closure 112 should be so loose as to tend to turn with the indicator member 105, breaking of the indicator portion 107 would nevertheless occur as the result of the difference in lead between the threads 13 and 5. If the closure 112 and the indicator member 105 were to turn in unison, the said closure would rise faster than the said indicator member, with the result that the top indicator portion 107, would be forced upward and broken out.

The construction shown in Fig. 44 is in many respects similar to that shown in Figs. 39 to 43, but in order to illustrate the fact that the indicator member need not be a complete closure there is shown an indicator member 105a having a large opening 117 at the top to expose a part of the closure 112a. It will be observed that the indicator member 105a, while not completely covering the closure 112a, nevertheless serves so long as in place and intact to prevent removal of the said closure member. The opening at the top of the member 105a is optional, and if preferred the top may be entirely closed.

The rollers 109a, 109a corresponding to the rollers 109, 109 are positioned in cam grooves at the sides of the closure member 112a instead of

at the top thereof. The indicator member 105[a] is formed with a track at 111[a] positioned to engage the rollers 109[a], 109[a]. The breakable top indicator portion 107[a] of the indicator member 105[a] is annular in form and is separated from the remainder of the said member by an annular zone of weakness as indicated at 108[a].

The operation of the closure means shown in Fig. 44 is similar to that of the device shown in Figs. 39 to 43 and detailed repetition is unnecessary. It will be observed that any attempt to unscrew the closure 112[a] by direct engagement therewith through the opening 117 in the indicator member 105[a] will result in the breaking out of the indicator portion 107[a]; and on account of the different leads of the threads this breaking would occur even though the closure and the indicator member were turned in unison.

In Figs. 44 to 47 there is shown a construction which is similar to that shown in Figs. 39 to 43 with the exception that tiltable pins 118, 118 are provided in lieu of the rollers 109, 109. The indicator member or outer closure 105[b] is or may be identical in construction to the closure 105, and is provided with a breakable or separable top indicator portion 107[b]. The closure 112[b] is or may be similar to the closure 112 with the exception that instead of being formed with long cam grooves it is formed with narrow recesses 119, 119 adapted to hold the tiltable pins 118, 118 in inclined positions as shown in Figs. 45 and 46. When the indicator member or outer closure 105[b] is turned in the tightening direction, as indicated in Fig. 46, the serrations or teeth thereon will ride over the tops of the pins 118, 118 until further relative rotation is impossible. With the pins in this position, as shown in Fig. 46, they serve to lock the closure 112[b] and the indicator member 105[b] in place. For the reasons already explained in connection with Figs. 39 to 43, accidental loosening of either the closure or the indicator member is prevented.

To effect opening, the indicator member or outer closure 105[b] is forcibly turned in the opening or unscrewing direction, and thereupon each of the pins 118 moves from the inclined position shown in Fig. 46 toward the upright position shown in Fig. 47, with the result that the top indicator portion 107[b] is forced upward and is broken away from the remainder of the member 105[b]. If the closure 112[b] should be loose and should start to turn in unison with the indicator member 105[b] the top indicator portion 107[b] would nevertheless be broken out by reason of the different leads of the threads as already explained in connection with Figs. 39 to 43.

The embodiments of the invention shown in Figs. 13 to 20 inclusive are not herein specifically claimed, these constituting the subject matter of our copending divisional application for Container closure means, Serial No. 737,528, filed July 30, 1934, upon which has been issued Patent No. 2,054,033, dated September 8, 1936.

The embodiments of the invention shown in Figs. 21 to 29 inclusive are not herein specifically claimed, these constituting the subject matter of our copending divisional application, for Container closure means, Serial No. 737,529, filed July 30, 1934, upon which has been issued Patent No. 2,054,034, dated September 8, 1936.

The embodiments of the invention shown in Figs. 30 to 38 inclusive are not herein specifically claimed, these constituting the subject matter of our copending divisional application, for Container closure means, Serial No. 737,530, filed July 30, 1934.

The embodiments of the invention shown in Figs. 39 to 47 inclusive are not herein specifically claimed, these constituting the subject matter of our beforementioned Patent No. 2,054,031, for Container closure.

What we claim is:

1. The combination of a container having an opening, a preformed indicator element adapted to be freely assembled with the container without substantial change in size or shape and including an externally visible readily breakable portion, a closure member for the container opening held against removal while the indicator element remains unbroken and in its normal position on the container, and a device so positioned as to be concealed by the said breakable portion of the indicator element and initially constructed prior to assembly so as to permit free movement of the indicator element in one direction into its said normal position and so as to automatically engage and break the said breakable portion of the indicator element upon movement of the said element in the opposite direction out of its said normal position.

2. The combination of a container having an opening, a preformed indicator element adapted to be freely assembled with the container without substantial change in size or shape and including an externally visible readily breakable portion having internal teeth thereon, a closure member for the container opening held against removal while the indicator element remains unbroken and in its normal position on the container, and a device structurally separate from the indicator element and so positioned as to be concealed by the breakable portion thereof, the said device being initially constructed prior to assembly so as to permit free movement of the indicator element in one direction into its said normal position and so as to automatically engage and hold the said teeth and thereby break the breakable portion of the indicator element upon movement of the said element in the opposite direction out of its said normal position.

3. The combination of a container having an opening with a thread adjacent the opening, a threaded preformed indicator element engaging the container thread and adapted to be freely assembled with the container without substantial change in size or shape, the said indicator element including an externally visible readily breakable portion having internal teeth thereon, a closure member for the container opening held against removal while the indicator element remains unbroken and in its normal position on the container, and a device so positioned as to be concealed by the said breakable portion of the indicator element and initially constructed prior to assembly so as to permit free rotative movement of the indicator element in the direction to screw it into its normal position on the container and so as to automatically engage and hold the said teeth and thereby break the breakable portion of the indicator element upon movement thereof in the opposite unscrewing direction.

4. The combination of a container having an opening, a preformed indicator element having a thread by which it is held in place and including an externally visible readily breakable portion having internal teeth thereon, a closure member for the container opening held against

removal while the indicator element remains unbroken and in its normal position with respect to the container, and a concealed device normally held against substantial movement relative to the container and having resilient pawls, the said pawls being adapted to snap over the teeth on the indicator element during rotative movement thereof in the direction to screw it into its normay position but adapted to automatically engage and hold the said teeth and thereby break the breakable portion of the indicator element upon movement of the said element in the opposite unscrewing direction.

5. The combination of a container having an opening with a thread adjacent the opening, a threaded preformed indicator element engaging the container thread and adapted to be freely assembled with the container without substantial change in size or shape, the said indicator element including an externally visible readily breakable portion having internal teeth thereon, a closure member for the container opening held against removal while the indicator element remains unbroken and in its normal position on the container, a concealed device normally held against substantial movement relative to the container and having resilient pawls, the said pawls being adapted to snap over the teeth on the indicator element during rotative movement thereof in the direction to screw it into its normal position on the container but adapted to automatically engage and hold the said teeth and thereby break the breakable portion of the indicator element upon movement of the said element in the opposite unscrewing direction.

6. In combination, a preformed closure adapted to normally completely cover a container opening and having an integral portion constituting an externally visible readily breakable indicator, and a device normally concealed by the breakable indicator portion of the closure and initially constructed prior to assembly so as to permit free movement of the closure in one direction into its normal container closing position and so as to automatically engage and break the breakable indicator portion of the closure upon movement of the said closure in the opposite direction out of its said normal position.

7. In combination, a preformed closure adapted to normally completely cover a container opening and including an integral portion constituting an externally visible readily breakable indicator and having internal teeth formed thereon, and a device structurally separate from the closure and normally concealed by the breakable indicator portion thereof and initially constructed prior to assembly so as to permit free movement of the closure in one direction into its normal container closing position and so as to automatically engage the said teeth and thereby break the indicator portion of the closure upon movement of the said closure in the opposite direction out of its said normal position.

8. In combination, a preformed closure adapted to normally completely cover a container opening and having a thread by which it may be held in place, the said closure having an integral portion constituting an externally visible readily breakable indicator, and a device structurally separate from the closure and normally concealed by the breakable indicator portion thereof and initially constructed prior to assembly so as to permit free rotative movement of the closure in the direction to screw it into its normal container closing position and so as to automatically engage and break the indicator portion of the closure upon movement of the said closure in the opposite unscrewing direction.

9. In combination, a preformed threaded closure adapted to engage a thread on a container and to normally completely cover the container opening, the said closure including an integral portion constituting an externally visible readily breakable indicator and having internal teeth formed thereon, and a normally concealed device adapted to be held against substantial movement relative to the container, the said device having resilient pawls adapted to snap over the teeth on the indicator portion during rotative movement of the closure in the direction to screw it into its normal container closing position but adapted to automatically engage and hold the said teeth and thereby break the indicator portion of the closure upon movement of the said closure in the opposite unscrewing direction.

10. A preformed threaded closure of the cap type adapted to normally completely cover a container opening and including an integral portion constituting an externally visible readily breakable indicator and having internal teeth formed thereon, the said teeth on the indicator portion being adapted to be engaged by a breaking device carried by the container and held against movement in unison with the closure and the said indicator portion being adapted to be broken by the said device when the closure is turned to unscrew it from its normal position on the container.

11. A container closure means comprising in combination, a preformed threaded closure adapted to engage a thread on a container and to normally completely cover the container opening, the said closure including an integral portion at the top constituting an externally visible readily breakable indicator, and a device adapted to be carried by the container and to be positioned adjacent the indicator portion of the closure so as to be concealed thereby, the said device being initially constructed prior to assembly so as to permit free rotative movement of the closure in the direction to screw it into its normal container closing position and so as to automatically break the top indicator portion of the closure upon movement of the said closure in the opposite unscrewing direction.

12. A container closure means comprising in combination, a preformed threaded closure adapted to engage a thread on a container and to normally completely cover the container opening, the said closure including an integral portion at the top constituting an externally visible readily breakable indicator and having internal teeth formed thereon, and a normally concealed device adapted to be carried by the container adjacent the indicator portion of the closure, the said device being adapted to permit free rotative movement of the closure in the direction to screw it into its normal container closing position but adapted to automatically engage and hold the said teeth and thereby break the indicator portion of the closure upon movement of the said closure in the opposite unscrewing direction.

13. A container closure means comprising in combination, a preformed threaded closure adapted to engage a thread on a container and to normally completely cover the container opening, the said closure including an integral portion at the top constituting an externally visible readily breakable indicator and having internal

teeth formed thereon, and a normally concealed device adapted to be carried by the container and to be held against substantial movement relative thereto, the said device being adjacent the indicator portion of the closure and having resilient pawls adapted to snap over the said teeth during rotative movement of the closure in the direction to screw it into its normal container closing position but adapted to automatically engage and hold the said teeth and thereby break the indicator portion of the closure upon movement of the said closure in the opposite unscrewing direction.

14. A preformed threaded container closure of the cap type adapted to normally completely cover a container opening and including an integral portion at the top constituting an externally visible readily breakable indicator and having internal teeth formed thereon, the said teeth on the indicator portion being adapted to be engaged by a breaking device carried by the container and held against movement in unison with the closure and the said indicator portion being adapted to be broken by the said device when the closure is turned to unscrew it from its normal position on the container.

15. For use with a preformed threaded container closure having an integral portion at the top constituting an externally visible readily breakable indicator and having internal teeth formed thereon, a flat sheet metal breaking device having a non-circular shape whereby it is adapted to be held against rotative movement relative to the container, the said breaking device being provided with resilient pawls adapted to snap over the teeth on the indicator portion during rotation of the closure in one direction but adapted to engage and hold the said teeth and thereby break the indicator portion upon rotation of the closure in the opposite direction.

16. The combination in a container closure means, of a closure adapted to normally close a container opening, a preformed indicator member structurally separate from the closure and including an externally visible readily breakable portion, the said indicator member being adapted to at least partly cover the closure to prevent removal thereof while the indicator member is in place and unbroken and the said indicator member being provided with a thread by which it is held in place, and a means so positioned as to be concealed by the said breakable portion of the indicator member and initially constructed prior to assembly so as to permit free rotative movement of the indicator member in the direction to screw it into its normal position and so as to automatically engage and break the breakable portion of the indicator member upon rotative movement of the said member in the opposite unscrewing direction.

17. The combination in a container closure means, of a closure adapted to normally close a container opening, an indicator member structurally separate from the closure and including an externally visible readily breakable portion, the said indicator member being adapted to at least partly cover the closure to prevent removal thereof while the indicator member is in place and unbroken and the said indicator member being threaded and adapted to be freely engaged with a thread on the container without substantial change in size or shape, and a means on the closure so positioned as to be concealed by the said breakable portion of the indicator member and initially constructed prior to assembly so as to permit free rotative movement of the indicator member in the direction to screw it into its normal position on the container but adapted to automatically engage and break the breakable portion of the indicator member upon rotative movement of the said member in the opposite unscrewing direction.

18. The combination in a container closure means, of a primary closure adapted to normally close a container opening, a preformed outer closure structurally separate from the primary closure and adapted to entirely cover it and having an integral portion constituting an externally visible readily breakable indicator, the said outer closure being provided with a thread by which it is held in place, and a means so positioned as to be concealed by the said breakable portion of the outer closure and initially constructed prior to assembly so as to permit free rotative movement of the outer closure in the direction to screw it into its normal position and so as to automatically engage and break the indicator portion of the outer closure upon rotative movement thereof in the opposite unscrewing direction.

19. The combination in a container closure means, of a primary closure adapted to normally close a container opening, a preformed outer closure structurally separate from the primary closure and adapted to entirely cover it and having an integral portion constituting an externally visible readily breakable indicator, the said outer closure being threaded and adapted to be freely engaged with a thread on the container without substantial change in size or shape, and a means on the primary closure so positioned as to be concealed by the said breakable portion of the outer closure and initially constructed prior to assembly so as to permit free rotative movement of the outer closure in the direction to screw it into its normal position on the container and so as to automatically engage and break the indicator portion of the outer closure upon rotative movement thereof in the opposite unscrewing direction.

20. 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 provided at the top with an externally visible readily breakable portion, the said indicator member being adapted to at least partly cover the closure to prevent removal thereof while the indicator member is in place and unbroken and the said indicator member being threaded and adapted to be freely engaged with a thread on the container, and a means at the top of the closure so positiond as to be concealed by the said breakable portion of the indicator member and initially constructed prior to assembly so as to permit free rotative movement of the indicator member in the direction to screw it into its normal position on the container and so as to automatically break the top portion of the indicator member upon rotative movement thereof in the opposite unscrewing direction.

21. 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 provided at the top with an externally visible readily breakable portion having internal teeth thereon, the said indicator member being adapted to at least partly cover the closure to prevent removal thereof while the indicator mem-

ber is in place and unbroken and the said indicator member being threaded and adapted to be freely engaged with a thread on the container, and a normally concealed means at the top of the closure adapted to permit free rotative movement of the indicator member in the direction to screw it into its normal position on the container but adapted to automatically engage and hold the said teeth and thereby break the top portion of the indicator member upon rotative movement thereof in the opposite unscrewing direction.

22. 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 primary closure and provided at the top with an externally visible readily breakable portion having internal teeth thereon, the said indicator member being adapted to at least partly cover the closure to prevent removal thereof while the indicator member is in place and unbroken and the said indicator member being threaded and adapted to be freely engaged with a thread on the container, and a normally concealed device structurally separate from both the closure and the indicator member and positioned at the top of the former, the said device being adapted to permit free rotative movement of the indicator member in the direction to screw it into its normal position on the container but adapted to automatically engage and hold the said teeth and thereby break the top portion of the indicator member upon movement thereof in the opposite unscrewing direction.

23. In a container closure means, the combination of a primary closure adapted to normally close a container opening, a preformed outer closure structurally separate from the primary closure and adapted to entirely cover it and provided with threads by which it is held in place, the said outer closure having a readily breakable integral portion at the top provided with internal teeth and constituting an externally visible indicator, and a normally concealed means on the primary closure including resilient pawls adapted to snap over the said teeth on the top indicator portion of the outer closure during rotative movement thereof in the direction to screw it into its normal position but adapted to automatically engage and hold the said teeth and thereby break the said top indicator portion upon rotative movement of the outer closure in the opposite unscrewing direction.

24. In a container closure means, the combination of a primary closure adapted to normally close a container opening and provided with a non-circular portion at the top, a preformed outer closure structurally separate from the primary closure and adapted to entirely cover it and provided with threads by which it is held in place, the said outer closure having a readily breakable integral portion at the top provided with internal teeth and constituting an externally visible indicator, and a normally concealed sheet metal device carried by the primary closure and engaging the non-circular portion thereof to prevent relative rotation, the said device including resilient pawls adapted to snap over the said teeth on the top indicator portion during rotative movement of the outer closure in the direction to screw it into its normal position but adapted to automatically engage and hold the said teeth and thereby break the said top indicator portion upon rotative movement of the outer closure in the opposite unscrewing direction.

25. A primary container closure adapted to normally close a container opening and adapted for use in conjunction with a preformed outer closure having a readily breakable integral portion at the top provided with internal teeth and constituting an externally visible indicator, the said primary closure being provided at the top with a non-circular portion adapted to engage and prevent relative rotation of a device for breaking the indicator portion of the outer closure.

26. In combination, a threaded closure adapted to normally engage a thread on a container and to close the opening thereof, a preformed externally visible readily breakable indicator member adapted to at least partly cover the closure to prevent removal thereof while the indicator member is in place and unbroken, the said indicator member having a thread different from that on the closure and adapted to normally engage a corresponding different thread on the container whereby rotative movement of the closure and the indicator member in unison in the direction to unscrew the former will cause the closure to break the indicator member, and a normally concealed means adapted to interengage between the closure and the indicator member and adapted to permit free rotative movement of the latter relative to the former in the direction to screw it into its normal position but adapted to automatically engage and break the indicator member when it is turned in the unscrewing direction independently of the closure.

27. In combination, a threaded closure adapted to normally engage a thread on a container and to close the opening thereof, a preformed externally visible readily breakable indicator member adapted to at least partly cover the closure to prevent removal thereof while the indicator member is in place and unbroken, the said indicator member having a thread inclined similarly to that on the closure but of smaller lead and adapted to normally engage a corresponding thread of smaller lead on the container whereby rotative movement of the closure and the indicator member in unison in the unscrewing direction will cause the former to break the latter, and a normally concealed means adapted to interengage between the closure and the indicator member and adapted to permit free rotative movement of the latter relative to the former in the direction to screw it into its normal position but adapted to automatically engage and break the indicator member when it is turned in the unscrewing direction independently of the closure.

28. In combination, a threaded primary closure adapted to normally engage a thread on a container and to close the opening thereof, a preformed outer closure structurally separate from the primary closure and adapted to entirely cover it and having an externally visible readily breakable indicator portion at the top, the said outer closure having a thread different from that on the primary closure and adapted to normally engage a corresponding different thread on the container whereby rotative movement of the two closures in unison in the direction to unscrew the primary closure will cause the primary closure to break the top indicator portion of the outer closure, and a normally concealed device adapted to interengage between

the primary closure and the indicator portion of the outer closure and adapted to permit free rotative movement of the latter relatively to the former in the direction to screw it into its normal position but adapted to automatically engage and break the said indicator portion when the outer closure is turned in the unscrewing direction independently of the primary closure.

29. In combination, a threaded primary closure adapted to normally engage a thread on a container and to close the opening thereof, a preformed outer closure structurally separate from the primary closure and adapted to entirely cover it and having an externally visible readily breakable indicator portion at the top provided with internal teeth, the said outer closure having a thread different from that on the primary closure and adapted to normally engage a corresponding different thread on the container whereby rotative movement of the two closures in unison in the direction to unscrew the primary closure will cause the primary closure to break the indicator portion of the outer closure, and a normally concealed means on the primary closure including resilient pawls adapted to snap over the said teeth on the top indicator portion of the outer closure during rotative movement thereof in the direction to screw it into its normal position but adapted to automatically engage and hold the said teeth and thereby break the top indicator portion of the outer closure upon movement thereof in the opposite unscrewing direction.

30. A container closure means comprising in combination, a primary closure adapted to normally close a container opening and having at the top an upward projecting central boss, a preformed outer closure structurally separate from the primary closure and adapted to entirely cover it and provided with threads by which it is held in place, the said outer closure having an integral central dome for receiving the boss on the primary closure which dome is readily breakable at its base and is provided at the top with internal teeth, and a normally concealed means at the top of the boss on the primary closure adapted to permit free rotative movement of the outer closure in the direction to screw it into its normal position but adapted to automatically engage and hold the said teeth on the dome of the outer closure and thereby break the said dome at the base thereof upon movement of the outer closure in the opposite unscrewing direction.

31. A container closure means comprising in combination, a primary closure adapted to normally close a container opening and having at the top an upward projecting central boss, a preformed outer closure structurally separate from the primary closure and adapted to entirely cover it and provided with threads by which it is held in place, the said outer closure having an integral central dome for receiving the boss on the primary closure which dome is readily breakable at its base and is provided at the top with internal teeth, and a normally concealed means at the top of the boss on the primary closure including resilient pawls adapted to snap over the teeth on the dome of the outer closure during movement thereof in the direction to screw it into its normal position but adapted to automatically engage and hold the said teeth and thereby break the said dome at the base thereof upon movement of the outer closure in the opposite unscrewing direction.

32. A container closure means comprising in combination, a threaded primary closure adapted to normally engage a thread on a container and to close the opening thereof and having at the top an upward projecting central boss, a preformed outer closure structurally separate from the primary closure and adapted to entirely cover it and having an integral central dome for receiving the boss on the primary closure which dome is readily breakable at its base and is provided at the top with internal teeth, the said outer closure having a thread different from that on the primary closure and adapted to normally engage a corresponding different thread on the container whereby rotative movement of the two closures in unison in the direction to unscrew the primary closure will cause the primary closure to break the outer closure, and a normally concealed means at the top of the boss on the primary closure adapted to permit free rotative movement of the outer closure in the direction to screw it into its normal position but adapted to automatically engage and hold the said teeth on the dome of the outer closure and thereby break the said dome at the base thereof upon movement of the outer closure in the opposite unscrewing direction.

33. In a container closure means, the combination of a primary closure adapted to normally close a container opening, a preformed outer closure structurally separate from the primary closure and adapted to entirely cover it and provided with threads by which it is held in place, the said outer closure having a readily breakable integral portion at the top constituting an externally visible indicator and the said outer closure also having a recess with an outer wall adapted to engage a stopper adapted to close the opening made by the breaking of the said indicator portion, and a normally concealed means at the top of the primary closure adapted to permit free rotative movement of the outer closure in the direction to screw it into its normal position but adapted to automatically engage and break the top indicator portion upon rotative movement of the outer closure in the opposite unscrewing direction.

34. In a container closure means, the combination of a primary closure adapted to normally close a container opening, a preformed outer closure structurally separate from the primary closure and adapted to entirely cover it and provided with threads by which it is held in place, the said outer closure having a stopper receiving recess at the top and having a readily breakable integral portion initially closing the recess and constituting an externally visible indicator, a normally concealed means at the top of the primary closure adapted to permit free rotative movement of the outer closure in the direction to screw it into its normal position but adapted to automatically engage and break the top indicator portion upon rotative movement of the outer closure in the opposite unscrewing direction, and a combined base and stopper adapted to engage the walls of the recess in the outer closure after the breaking of the indicator portion thereof to provide a cup or goblet.

35. A preformed threaded container closure of the cap type adapted to normally completely cover the container opening and having a stopper receiving recess at the top and also having a readily breakable integral portion initially closing the recess and constituting an externally visible indicator, the readily breakable indicator

portion having internal teeth formed thereon and adapted to be engaged by a breaking device carried by the container and held against movement in unison with the closure whereby the said indicator portion is adapted to be broken by the said device when the closure is turned to unscrew it from its normal position on the container.

36. A container closure means comprising in combination, a stopper adapted to enter and close a container opening, a preformed indicator member structurally separate from the stopper and provided at the top with an externally visible readily breakable portion, the said indicator member being adapted to at least partly cover the stopper to prevent removal thereof while the indicator member is in place and unbroken and the said indicator member being threaded and adapted to be freely engaged with a thread on the container, and a normally concealed means at the top of the stopper adapted to permit free rotative movement of the indicator member in the direction to screw it into its normal position on the container but adapted to automatically engage and break the top portion of the indicator member upon rotative movement thereof in the opposite unscrewing direction.

37. A container closure means comprising in combination, a stopper adapted to enter and close a container opening, a preformed outer closure structurally separate from the stopper and adapted to entirely cover it and provided with container engaging threads by which it is held in place, the said outer closure being provided at the top with an externally visible readily breakable indicator portion having internal teeth thereon, and a normally concealed device at the top of the stopper including resilient pawls adapted to snap over the said teeth on the top indicator portion of the outer closure during rotative movement thereof in the direction to screw it into its normal position but adapted to automatically engage and hold the said teeth and thereby break the said top indicator portion upon rotative movement of the outer closure in the opposite unscrewing direction.

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