United States Patent [19]

Lestaevel

[11] **3,858,740**

[45] **Jan. 7, 1975**

[54] **LOCKING DEVICE FOR CONTAINERS**

[76] Inventor: **Pierre J. Lestaevel,** 2727 29th St., N.W., Washington, D.C. 20008

[22] Filed: **May 4, 1973**

[21] Appl. No.: **357,143**

[52] **U.S. Cl.**..... **215/216,** 215/221, 215/331, 215/225

[51] **Int. Cl.** **B65d 55/02,** B65d 85/56, A61j 1/00

[58] **Field of Search**..... 215/216, 217, 221, 9, 224, 215/225, 330, 331

[56] **References Cited**

UNITED STATES PATENTS

3,399,796	9/1968	Steiner	215/217
3,729,110	4/1973	Taylor	215/216

Primary Examiner—George T. Hall

Attorney, Agent, or Firm—Sughrue, Rothwell, Mion, Zinn & Macpeak

[57] **ABSTRACT**

A cap type closure for a container of the type having a depending cylindrical flange surrounding the neck of the container is further provided with a locking ring disposed adjacent the lower edge of the flange which when disposed in smooth external alignment with the outer surface of the cap will provide an interfering engagement with a flange on the neck of the container to prevent axially directed movement of the cap relative to the axis of the container neck. The locking ring or a portion thereof may be pivotally connected at one side to the flange whereby the ring may be eccentrically disposed relative to the cap flange to provide clearance with respect to the flange on the neck of the bottle to allow the removal of the cap. Alternatively, the annular ring may be mounted for transverse sliding movement on the flange of the cap to allow for shifting the ring from the locking position where it is aligned with the cap flange to an eccentric unlocked position.

6 Claims, 35 Drawing Figures

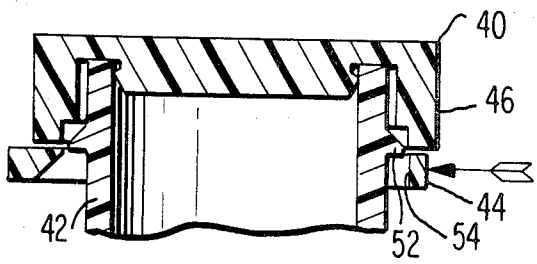


FIG.1

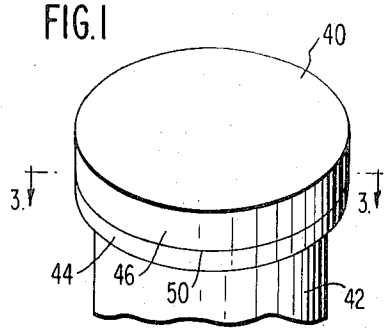


FIG.2

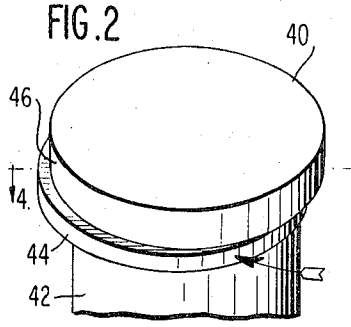


FIG.3

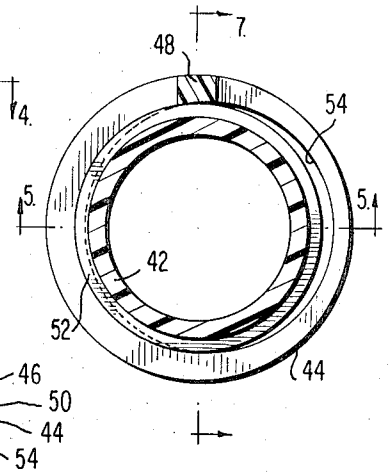
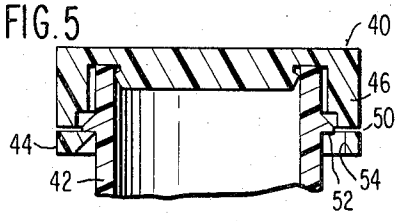


FIG.5



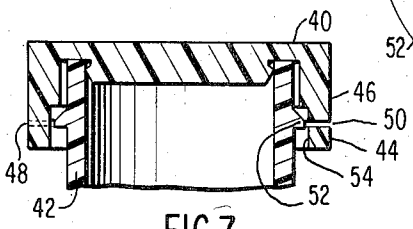


FIG.7

FIG.6

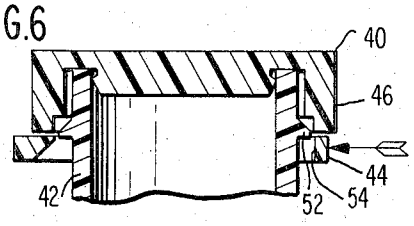


FIG.4

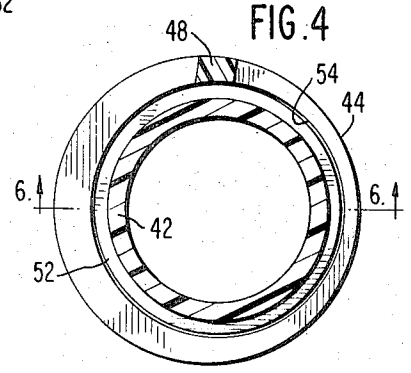


FIG.8

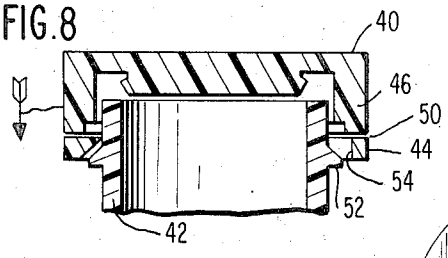


FIG.9

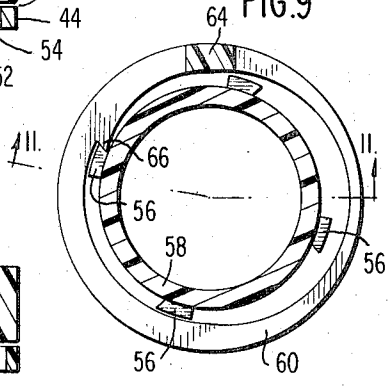


FIG.10

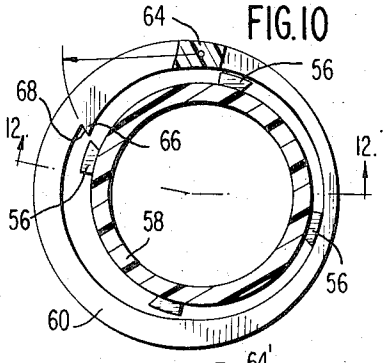


FIG.11

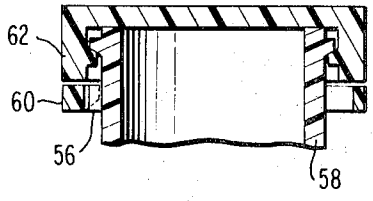
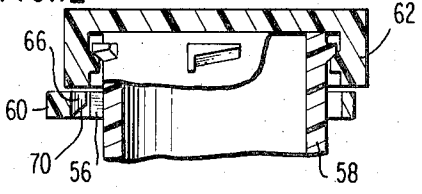


FIG.12



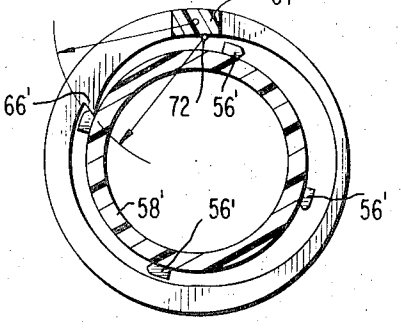


FIG.13

FIG. 27

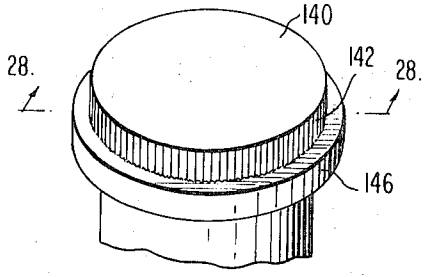


FIG. 28

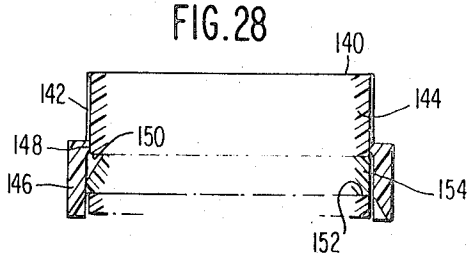


FIG. 14a

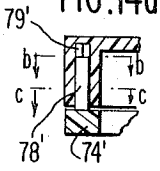


FIG. 14b



FIG. 14c

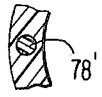


FIG. 29

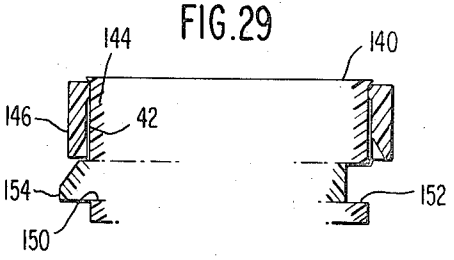


FIG. 31

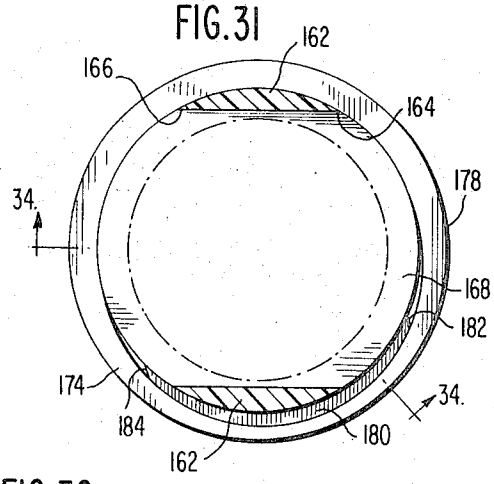


FIG. 33

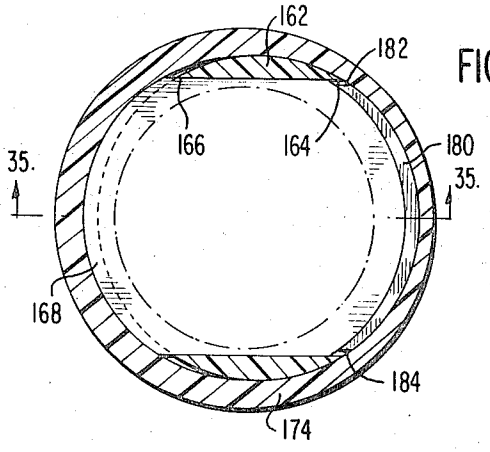


FIG. 32

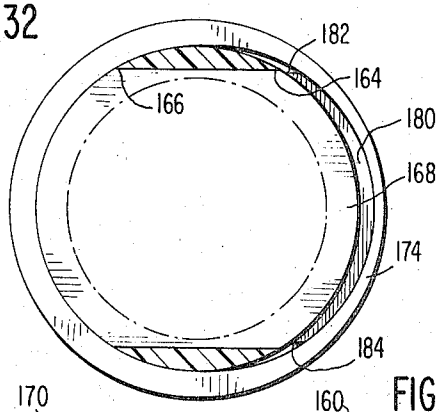


FIG. 30

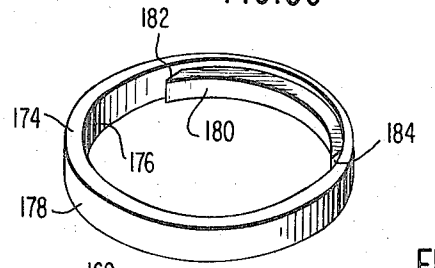


FIG. 34

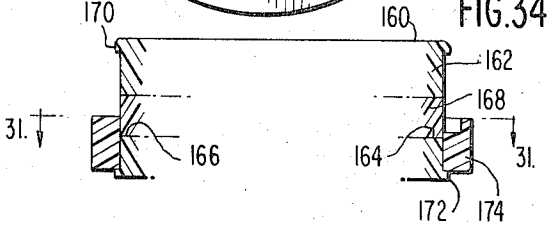


FIG. 35

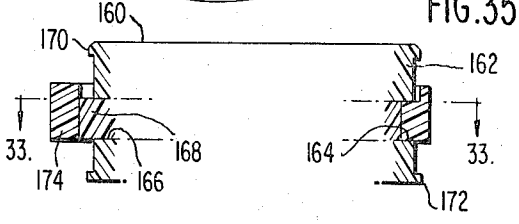


FIG.18

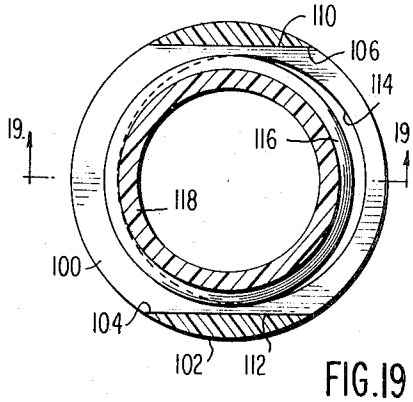


FIG.20

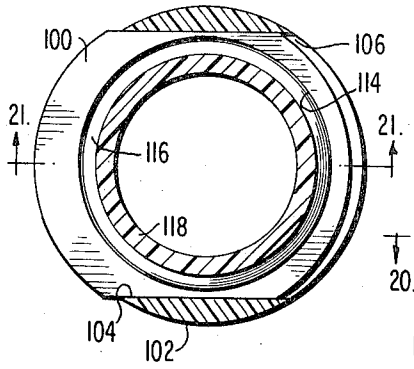


FIG.17

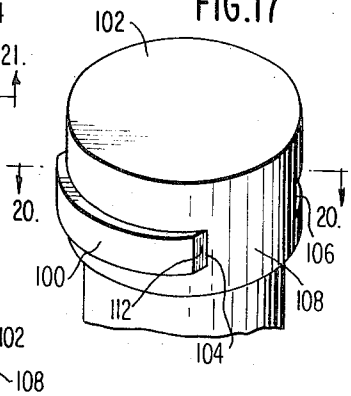


FIG.19

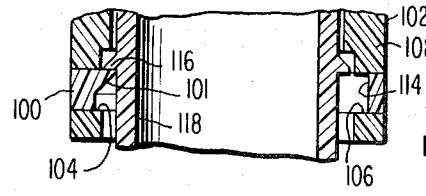


FIG.21

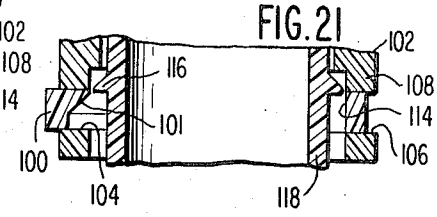


FIG.23

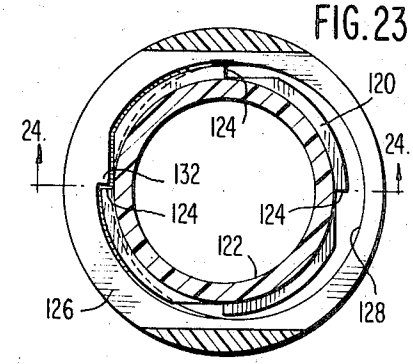


FIG.25

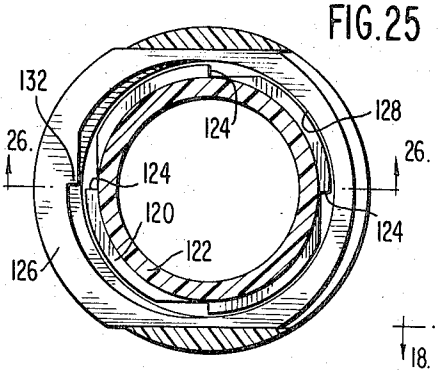


FIG.16

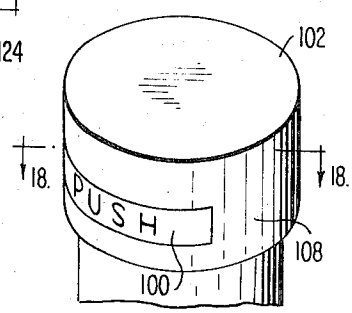


FIG.24

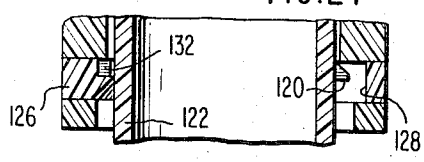


FIG.26

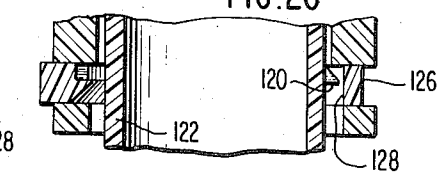


FIG.22

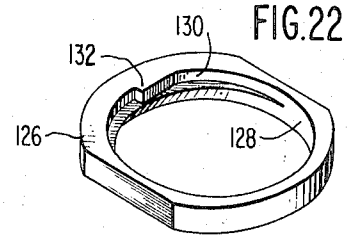


FIG.14

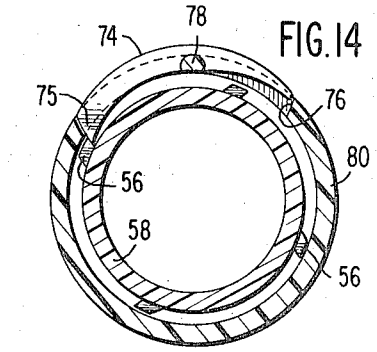
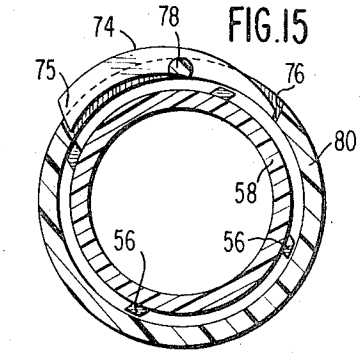


FIG.15



LOCKING DEVICE FOR CONTAINERS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention is directed to a locking device for containers and more specifically to a locking arrangement for securing a screw type or snap type cap on a container.

2. Prior Art

It is often desirable to provide some type of locking arrangement on a container especially if the container is used to hold medicines, poisons or the like which would be extremely dangerous to any unauthorized person taking or using the same. Numerous deaths and serious illnesses are caused every year as a result of children having access to bottles having medicines, cleaning liquid, poisons and the like therein. Even adults sometimes take medicine which has been prescribed for another person or accidentally grab a bottle containing a substance dangerous to them instead of the bottle they are looking for. Numerous attempts have been made in the past to provide locking devices for containers to prevent unauthorized access to the contents thereof. One type of prior art locking device involves the provision of an over cover for the cover which is threaded onto the bottle with the over cover normally being freely rotatably relative to the regular cover. On performing a specific manipulative movement of the over cover such as pushing, pulling or squeezing the over cover relative to the regular cover, it is possible to grip the regular cover to apply a turning torque thereto. Such an arrangement is generally effective to prevent the unauthorized opening of the bottle by a small child but is generally ineffective to prevent an unauthorized adult from having access to the contents of the bottle.

Another prior art locking device utilizes a locking member which is freely mounted on a regular screw type cover and which is normally disposed in locking engagement with a portion of the container to prevent turning movement of the cover when the cover is in the upright position. Upon inverting the container, the locking member will move to a non-locking position thereby allowing turning movement of the cover relative to the container. Such an arrangement however, is unsuitable for containers having liquids therein since the unscrewing of the cover must take place while the container is in the inverted position.

Still another prior art locking arrangement involves the use of combination type rings in combination with a screw cap. With this type of device it is necessary to rotate the combination rings through specific relative positions with respect to each other and the container to allow the cover to be unscrewed from the container. This type of locking arrangement not only prevents the unauthorized opening of the container by children but often proves difficult for authorized adults since it is often difficult to remember the combination.

SUMMARY OF THE INVENTION

The present invention is directed to a locking ring arrangement which is suitable for use with a screw type or snap type cover for a container to prevent the unauthorized removal of the cover from the container.

The present invention provides a cap for a container wherein the locking member is completely flush with the cap and the ordinary manipulation of the cap to remove the same will prove ineffectual. Since the locking ring is concealed or at least unobtrusive it is unlikely that a child would manipulate the locking ring and any accidental manipulation of the locking ring would not necessarily result in the removal of the cap from the container.

One embodiment of the present invention is directed to a cap of the type having an annular depending flange surrounding the neck of the bottle with the fastening means such as a plug, interfitting flanges or screw threads disposed internally thereof. A locking ring is disposed adjacent the lower edge of the cap flange and is connected to the flange at a single point for pivotal movement thereabout. The internal circumference of the locking ring is eccentrically disposed relative to the external surface of the locking ring and in the locked position, the external surface of the locking ring will be flush with the external surface of the cap flange. In this position, one side of the internal circumference of the locking ring will be disposed beneath a circumferential flange or locking ridge which is formed integrally with the neck of the bottle. Upon pivotal movement of the locking ring transversely relative to the cap flange about the point of connection, the external surface of the locking ring will be disposed eccentrically with respect to the cap flange and the internal surface of the locking ring will be disposed concentrically with respect to the locking rib on the neck of the container with sufficient clearance to allow axial movement of the locking ring past the locking flange of a rib. With the locking ring disposed in the unlocking position the cap can then be removed axially from the bottle by manipulating the interengaging means between the cap flange and the neck of the container in the ordinary manner. In the screw threaded type closures utilizing four discontinuous threaded portions disposed about the cap and neck of the container, it would be possible to utilize four equally spaced apart lugs each having an undercut face disposed in the same direction. A complementary tooth may be formed on the internal surface of the locking ring which is arranged for engagement with the undercut surface of a lug when the external surface of the locking ring is flush with the external surface of the cap flange. Thus, any attempt to rotate the cap in the thread disengaging direction will be blocked by the engagement of the tooth on the locking ring with the lug on the neck of the container. By pivoting the locking ring, the tooth may be cleared from the lug to allow threaded disengagement of the cap on the neck of the container. The under surface of the tooth on the locking ring may be chamfered so that the ring will snap over the lugs during a closing operation. Also, instead of utilizing a completely annular ring, it is possible to pivot a segment of a ring in an opening in the side of the cap flange and form the locking tooth on the internal surface on one end of the pivoted segment.

A variation of the foregoing embodiment contemplates the use of an annular ring which is mounted for a sliding transverse movement relative to the cap flange. The cap flange is provided with two diametrically opposed cut-out portions and the annular ring is provided with opposed flattened circumferential portions to allow the passage of the locking ring through the opposed openings in the cap flange. As in the previous embodiment, the internal surface of the annular ring is eccentrically disposed relative to the external surface of the ring so that when the external surface of

the ring is flush with the external surface of the cap flange one portion of the internal surface will be disposed in interfering engagement with a locking rib formed on the neck of the container. By pushing the annular ring inwardly through one of the openings in the cap flange, the opposite surface of the ring will protrude beyond the circumference of the cap flange and the internal surface of the locking ring will be disposed concentrically with clearance relative to the locking rib on the neck of the container to allow axial movement of the cap relative to the container neck. As in the foregoing embodiment it would also be possible to substitute four locking lugs for the locking flange or rib on the neck of the bottle and form a single locking tooth on the internal circumference of the locking ring for interengagement with one of the locking lugs. The present invention also contemplates the use of a cover flange slidably mounted on the external surface of the cap flange for axial non-rotative movement relative thereto. By sliding the cover flange downwardly, the locking ring would be covered completely and the cover flange would hold the locking ring in the locked position. Upon sliding the cover flange upwardly, the locking ring will be exposed for manipulation as indicated above. Another form of cover flange or ring would be freely rotatable on the external circumference of the cap flange but constrained for limited axial movement relative thereto. The cover ring would have a circular external surface concentric with the cap flange at an internal surface eccentric thereto. A partial internally extending rib would be located on the internal circumference of the cover ring at the narrowest point thereof and the internal surface of the rib would be concentric with the external surface of the cover ring. The circumferential extent of the rib is slightly less than the minimum external diameter of the locking ring so that upon properly positioning the projecting rib in alignment with the opening in the cap flange it will be possible to transversely shift the cover ring so that the projecting rib will extend within the opening in the cap flange and force the locking ring transversely to its unlocked position.

The foregoing and other objects, features and advantages of the invention will be apparent from the following more particular description of preferred embodiments of the invention as illustrated in the accompanying drawings.

IN THE DRAWINGS

FIG. **1** is a perspective view showing one form of cap and locking ring on the neck of a container in the locked position.

FIG. **2** is a perspective view similar to FIG. **1** showing the locking ring in the unlocked position.

FIG. **3** is a sectional view taken along the line **3—3** of FIG. **1.**

FIG. **4** is a sectional view taken along the line **4—4** in FIG. **2.**

FIG. **5** is a sectional view taken along the line **5—5** in FIG. **3.**

FIG. **6** is a partial sectional view taken along the line **6—6** in FIG. **4.**

FIG. **7** is a partial sectional view taken along the line **7—7** in FIG. **3.**

FIG. **8** is a partial sectional view similar to FIG. **5** but with the cap and locking ring positioned above the locking rib on the neck of the container.

FIG. **9** is a modification of the foregoing embodiment and is a sectional view similar to the section view shown in FIG. **3.**

FIG. **10** is a view similar to FIG. **9** but showing the ring in the unlocked position.

FIG. **11** is a partial sectional view taken along the line **11—11** in FIG. **9.**

FIG. **12** is a partial sectional view taken along the line **12—12** in FIG. **10.**

FIG. **13** is a sectional view similar to FIG. **9** showing a slight variation in the configuration of the locking tooth and lugs.

FIG. **14** is a sectional view similar to FIG. **9** showing the modification of that embodiment. FIGS. **14***a -c* show pivot details.

FIG. **15** is a view similar to FIG. **14** but showing the locking member in the unlocked position.

FIG. **16** is a perspective view of the cap unlocking ring on the neck of a bottle according to another embodiment of the present invention with the locking ring disposed in the locked position.

FIG. **17** is a view similar to FIG. **16** but showing the locking ring in the unlocked position.

FIG. **18** is a sectional view taken along the line **18—18** in FIG. **16.**

FIG. **19** is a sectional view taken along the line **19—19** in FIG. **18.**

FIG. **20** is a sectional view taken along the line **20—20** in FIG. **17.**

FIG. **21** is a sectional view taken along the line **21—21** in FIG. **20.**

FIG. **22** is a perspective view of a modified form of locking ring.

FIG. **23** is a sectional view similar to the sectional view in FIG. **18** but utilizing the locking ring in FIG. **22.**

FIG. **24** is a sectional view taken along the line **24—24** in FIG. **23.**

FIG. **25** is a sectional view similar to the sectional view in FIG. **23** but with the locking ring disposed in the unlocked position.

FIG. **26** is a partial sectional view taken along the line **26—26** in FIG. **25.**

FIG. **27** is a perspective view of still another embodiment of a cap and locking ring according to the present invention.

FIG. **28** is a sectional view taken along the line **28—28** in FIG. **27.**

FIG. **29** is a view similar to FIG. **28** but the cover flange disposed in the raised position and the locking ring disposed in the unlocked position.

FIG. **30** is a perspective view of a modified form of cover ring.

FIG. **31** is a transverse sectional view taken along the line **31—31** in FIG. **34** utilizing the modified cover ring of FIG. **30.**

FIG. **32** is a view similar to **31** but with the cover ring rotated approximately 60°.

FIG. **33** is a sectional view similar to FIG. **31** taken along the line **33—33** in FIG. **35.**

FIG. **34** is a partial sectional view taken along the line **34—34** in FIG. **31.**

FIG. **35** is a partial sectional view taken along the line **35—35** in FIG. **33.**

DETAILED DESCRIPTION OF THE INVENTION

When the cap **40** shown in FIG. **1** is secured in locked condition on the neck of a bottle or container **42,** the

locking ring 44 will be disposed in a smooth, flush relation to the flange 46 of the cap. The locking ring 44 is pivotally connected by means of a small post 48 which may be of integral one piece construction with the main portion of the cap and the locking ring. In the formation of the locking ring it would generall be formed of integral one piece construction with the flange 46 of the cap and a thin slit 50 would be made completely around the flange with the exception of the post 48 to free the locking ring 44 from the flange 46. Thus, the locking ring 44 may be shifted laterally to the flange 46 as shown in FIGS. 2 and 4. A locking flange or rib 52 is formed integrally with the neck of the container 42. The upper surface of the locking rib 52 is beveled downwardly to facilitate the passage of the locking ring over the rib during a closing operation. The internal surface 54 of the locking ring 44 is disposed eccentrically relative to the external surface so that when the external surface of the locking ring is disposed flush with the external surface of the flange 46 as shown in FIG. 1, the upper surface of the locking ring will be disposed in part beneath the lower surface of the locking rib 52 as shown in FIG. 3. Upon shifting the locking ring 44 to the position shown in FIG. 2, the internal surface 54 of the locking ring 44 will be aligned concentrically with the locking rib 52 with sufficient clearance for removal as shown in FIG. 4. A means for securing the cap 40 to the neck of the container 42 are disposed within the flange 46 of the cap and may be in the form of continuous screw threads, discontinuous screw threads, complementary snap flanges on the cap and bottle or merely a plug-type stopper disposed concentrically relative to the flange 46 for insertion into the neck of the bottle or container. Since the foregoing closure means are old and well known in the art and can be readily used interchangably with the locking ring arrangement, the details of the fastening means have been omitted. FIGS. 5 and 6 show the relationship of the locking ring 44 relative to the locking rib 52 in the locked and unlocked positions respectively. FIG. 8 shows the relationships of the locking ring 42 relative to the locking rib 52 during a closing operation to show that the locking ring will be readily cammed over the locking rib and the inherent resiliency of the pivotal connection 48 will automatically swing the locking ring back into locking position beneath the rib 52.

A variation of the arrangement shown in FIGS. 1–8 inclusive is shown in FIG. 9 wherein the locking rib has been replaced by four identical equally spaced lugs 56 on the neck 58 of a container. A locking ring 60 is connected to the flange 62 of a cap having conventional fastening means therein by a post 64 similar to the post 48 in the previous arrangement. The outer circumferential surface of each of the lugs 56 lie in a common circle and the internal surface of the locking ring 60 is disposed eccentrically relative to the external surface thereof. A single tooth 66 is formed on the inner surface of a locking ring 60. The leading surface 68 of the tooth is formed substantially along the arc of a circle whose radius is disposed in the center of the connecting post 64. The complementary surface of each locking lug 56 is beveled inwardly so that further counterclockwise turning movement of a cap will be prevented by the enegagement of the tooth 66 with one of the locking lugs 56. This type of arrangement is most suitable for those containers and caps having four discontinuous segmental threaded portions disposed equidistant on the circumference of the neck and the locking lug 56 would be disposed adjacent each one of these partial threaded portions. In order to remove the cap 62 it is necessary to apply a counter-clockwise turning torque as viewed in FIG. 9 and to accomplish this it is necessary to shift the locking ring 60 from the position shown in FIG. 9 to the position shown in FIG. 10. Since the interengaging surfaces of the tooth 66 and the lug 56 are disposed on the arc of a circle whose center is the center of a pivot point or post 64, the tooth will readily slide past the locking lug thereby concentrically aligning the internal surface of the locking ring with the external circumferential surfaces of the locking lugs 56 and freeing the cap 62 for rotation relative to the neck of the container 58. The lowermost surface 70 of the tooth 66 is beveled to facilitate passage of the locking ring over the locking lugs during a closing operation. FIGS. 11 and 12 show the locked and unlocked positions of the locking ring 60 relative to the cap 62 respectively.

A further variation similar to the arrangement in FIGS. 9–12 inclusive is shown in FIG. 13. In this variation, the complementary surfaces of the tooth 66′ and the locking lug 56′ are formed along the arc of a circle whose center 72 is offset inwardly from the center of the pivot post 64′. Thus, when the locking ring 60′ is pivoted about the center of the pivot post 64′, the curved surfaces of the curved surfaces of the tooth 66′ and locking lug 56′ will interfere to provide a snap action. Thus, the locking ring is more positively held in the locked position wherein the external surface thereof is flush with the external surface of the cap.

A still further variation of this embodiment is shown in FIGS. 14 and 15. Instead of having an annular locking ring pivoted to the flange of the cap, only a small arcuate locking segment 74 is provided. The segment 74 is pivoted in a slot 76 formed in the side of the cap and having an arcuate dimension slightly larger than the arcuate dimension of the locking piece 74. The pivot pin 78 for the segment 74 is formed integral at both ends with the flange 80 of the cap and a complementary groove in the locking segment 74 is snapped on the pin 78 so that the segment 74 can pivot about the pin 78. As in the embodiment of FIG. 9, the locking segment 74 may be pivoted about the pin 78 as shown in FIG. 15 to free the end 75 from the locking lug 56 to allow for a rotational movement of the cap to remove it from the container 58. The center of curvature of the complementary faces of the locking segment 74 and locking lug 56 may be located at the center of the pin 78 similar to the arrangement in FIG. 10 or may be offset therefrom similar to the arrangement shown in FIG. 13.

As shown in FIGS. 14*a*–14*c* the pin 78′ may be molded integrally with the locking segment 74′ which is pivoted in a notch formed in the bottom edge of the cap flange. The pin 78′ is provided with a cylindrical mid-section as seen in FIG. 14*c* and the end 79′ is formed with a polygon cross-section which is adhesively secured in a complementary recess in the cap to prevent the rotation of the end of the pin. It is also contemplated that the pin 78 could be a separate member secured in complementary holes in the flange 80 and the locking segment 74. The use of a separate pivot pin or a pivot pin integral with the locking ring is also adaptable to the previous embodiments using an annular locking ring.

A further embodiment of the invention utilizes a transversely slidable locking ring **100** as opposed to the pivoted locking rings or segments in the previous arrangements. The cap **102** is provided with a pair of opposed cut-outs **104** and **106** in the flange **108.** The opposed sides of the sliding ring **100** are flattened at **110** and **112** and the internal circumference **114** of the locking ring is eccentrically disposed with respect to the external surface thereof. When the locking ring **100** is disposed flush with the flange **108** of the cap **102** as shown in FIG. **16,** the internal circumference **114** of the locking ring will be disposed as shown in FIG. **18** and FIG. **19** wherein a portion of the ring will be disposed beneath a locking rib **116** formed integrally with the neck of the container **118.** When the locking ring is pushed inwardly at one of the exposed portions, the ring will be shifted to the position shown in FIGS. **20** and **21** wherein the internal circumference **114** of the locking ring will be concentrically disposed with clearance relative to the locking rib **116** to permit the removal of the cap by ordinary manipulative movements. The uppermost surface of the locking ring **116** is beveled as in the previous embodiment for cooperation with the downwardly beveled surface **101** of the locking ring to facilitate the passage of the locking ring over the locking rib during a closing operation. As in the previous embodiments, the connecting means between the neck of the container and the cap above the locking ring may be of any conventional nature such as continuous screw threads, interrupted screw threads, interlocking ribs or an interfitting plug or stopper.

A variation of the foregoing embodiment is shown in FIGS. **22** through **26** which is somewhat analogous to the arrangement previously discussed with respect to FIGS. **9** through **15.** In this embodiment, the locking rib **120** on the neck of the container **122** is formed with four equally spaced notches **124.** The locking ring **126** is provided with an internal surface which is eccentric relative to the external surface of the locking ring and above this eccentric surface **128** a recess with a single inwardly extending tooth **132** which is complementary to the notches **124** formed in the rib on the neck of the container. The undersurface of the eccentric surface **128** beneath the tooth **132** may be inwardly beveled and the upper surface of the locking rib **120** may also be beveled to facilitate the putting on of the cap as in the previous embodiments. When the external surface of the locking ring **126** is disposed flush with the external surface of the cap as shown in FIGS. **23** and **24,** the tooth **132** will be engaged in a selected notch **124** to prevent counter-clockwise rotation of the cap to unscrew the cap from the container. This type arrangement is especially suitable for the discontinued thread arrangement wherein four equally spaced complementary thread protions are located about the neck of the container and the internal surface of the cap flange. Instead of forming notches **124** in a locking rib **120** it would be equally possible to have the tooth **132** cooperate directly with the end of the threaded portion on the neck of the bottle. When the locking ring is pushed inwardly at one side, it will be shifted to the position shown in FIGS. **25** and **26** wherein the tooth **132** will be disengaged from the notch **124** and the internal surface of the locking ring will be disposed eccentrically with clearance about the circumference of the locking rib to permit rotary and axial movement of the cap relative to the neck of the container for removal of the cap from the container. In both these arrangements, one of the exposed faces of the locking ring may be provided with an appropriate legend such as "push" so that the person will know which end to push in order to move the locking ring to the unlocked position. On the other hand, as an added safety feature, both exposed surfaces of the locking ring could be left blank since it is only possible to push the locking ring in one direction and a simple trial and error experiment would readily determine which direction.

An added safety feature relative to this embodiment is provided in FIGS. **27–29.** In this embodiment, the cap **140** is provided with a plurality of axially extending splines **142** about the entire circumference of the cap flange **144.** A cover flange, or ring **146** is provided with a plurality of complementary splines **148** adjacent the upper edge thereof. The splines **142** on the flange of the cap terminate adjacent the top and bottom edges of the flange so that the cover ring **146** cannot slide off the cap. The lower portion of the cap flange **144** is provided with a pair of diametrically opposed openings **150** and **152** for the reception of a slidable locking ring similar to the foregoing embodiment. When the locking ring is disposed in its locking condition the ends of the ring will be flush with the surface of the cap and the cover ring **146** will be disposed in its lower position as viewed in FIGS. **27** and **28** to completely hide the locking ring **154** from view. In order to unlock the cap for the removal of the same from the neck of a container it is only necessary to slide the cover ring **146** upwardly as shown in FIG. **29** to expose the locking ring **154** for the sliding movement thereof in a mode according to the previous embodiments. The upper surface of the locking ring and the lower surface of the cover ring are beveled so that after the cap is resecured on the bottle, a downward sliding movement of the cover ring **146** will automatically cam the locking ring **154** into its recessed locking position. The details of the complementary fastening means between the cap and the neck of the container as well as the details of the locking ring have been omitted since they are either conventional or disclosed previously.

Another form of cover ring is shown in FIGS. **30–35.** In this embodiment, the cover **160** is again provided with a downwardly depending flange **162** having a pair of diametrically opposed apertures **164** and **166** for the sliding reception of a locking ring **168** similar to the locking ring disclosed in the foregoing embodiments. The upper and lower circumferential edges of the flange **162** of the cap are provided with ribs **170** and **172** to retain the cover ring **174** in sliding engagement on the external surface of the cap flange. The cover ring **174** is best seen in FIG. **30** which clearly shows that the internal surface is oval shaped. In the area of the cover ring having the narrowest dimension, an internally projecting rib **180** is provided having a vertical height slightly less than the vertical height of the apertures **164** and **166.** The portion **176** of the inner surface opposite projection **180** and the innermost surface of the projection **180** form a substantially cylindrical surface having the center thereof disposed at the center of the cap flange **162.** The ends **182** and **184** are spaced apart a straight line distance equal to or slightly less than the width of the apertures **164** and **166** in the flange of the cap. When the cover ring **174** is disposed in its lowermost position against the rib **172** as shown in FIG. **34** and is rotated to a position wherein the pro-

jection **180** is not aligned with the aperture **164**, it will be impossible to move the locking ring **168** to an unlocked position to permit removal of the cap from the container. In order to unlock the container it is necessary to rotate and lift axially, the ring **174** to a position where the projection **180** will be exactly aligned with the aperture **164** as best seen in FIG. **32**. A subsequent transverse shifting movement of the cover ring **174** will force the projection **180** into the aperture **164** thereby shifting the locking ring **168** to the unlocked position as shown in FIGS. **33** and **35**. Once again, the details of the complementary means between the cap and the neck of the container as well as the details of the locking ring have been omitted for the sake of clarity. It is obvious that any or all of the features of the locking ring and complementary locking ribs and notches on the container as shown in FIGS. **18–26** may be utilized in the modifications shown in FIGS. **27– 35**.

The cap, locking elements and container as illustrated in the present application are preferably plastic but other suitable materials may be used. The stopper type closure of FIGS. **5–8**, the interrupted screw-thread arrangement of FIGS. **11** and **12** as well as any other type of fastener or closing means may be used with any of the locking arrangements disclosed. The cover ring of FIGS. **27–29** could also be used in the embodiments of FIGS. **1–13**.

While the invention has been particularly shown and described with reference to preferred embodiments thereof, it will be understood by those skilled in the art that the foregoing and other changes in form and details may be made therein without departing from the spirit and scope of the invention.

What is claimed is:

1. A container having cover means, said container having a neck defining an opening into said container, said cover means having a circumferential flange extending about said neck, complementary fastening means on said cover means and said neck, locking ring means, pivot means for pivotally connecting said ring means on said cover flange for movement transversely relative to said neck and cover flange, complementary locking means on said neck whereby upon operative locking engagement of said locking ring means with said complementary locking means, manipulation of said fastening means to remove said cover means is prevented.

2. A container as set forth in claim **1**, wherein said locking ring means is comprised of an annular ring having a cylindrical external surface with the same radius as the radius of said cover flange and an internal surface disposed eccentrically relative thereto, said complementary locking means comprising an annular locking rib formed on said neck whereby when said cover means is secured in locked position on said neck the external surface of said annular locking ring will be flush with the external surface of said cover flange and a portion of the upper surface of said locking ring will be disposed below said locking rib to prevent axial movement of said cover means relative to said neck.

3. A container as set forth in claim **1**, wherein said locking ring means is comprised of an annular ring having an external cylindrical surface with a radius equal to the radius of the cover flange and having an internal surface eccentrically disposed relative thereto, an undercut notch being provided in the portion of said locking ring having the greatest radial dimension to define a locking tooth, said complementary locking means comprising a plurality of locking lugs formed on and protruding radially outwardly from said neck for engagement by said tooth when the external surface of said locking ring is flush with the external surface of said cover flange.

4. A container as set forth in claim **1**, wherein said cover flange and said locking ring means are of integral one piece construction joined by narrow post means acting as a torsional pivot member normally maintaining said locking ring means and said cover flange in flush aligned relation.

5. A container as set forth in claim **5**, wherein the complementary engaging faces of said locking tooth and said locking lugs are formed as arcs of a common circle whose center is concentric with the axis of said pivot means.

6. A container as set forth in claim **5**, wherein the complementary engaging faces of said locking tooth and said locking lugs are formed as arcs of circles having the same radius but with the centers thereof being offset from each other to provide a snap action interference fit.

* * * * *