June 20, 1939. A. SCHAUER 2,162,754

TAMPERPROOF CLOSURE AND CONTAINER

Filed June 5, 1937

Fig. 1

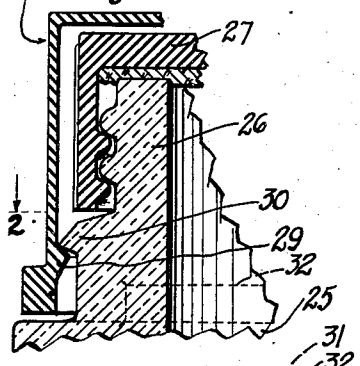


Fig. 3

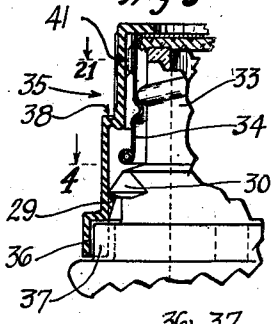


Fig. 5

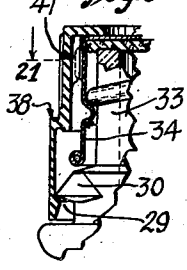


Fig. 6

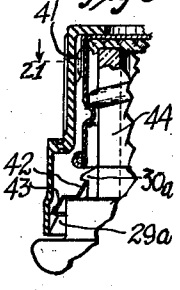


Fig. 2

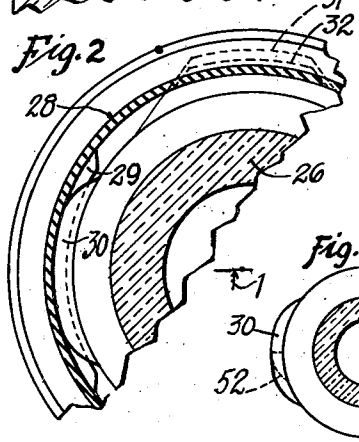


Fig. 4

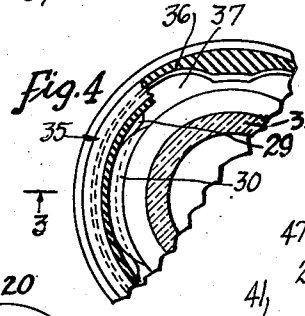


Fig. 7

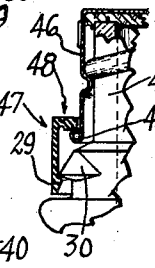


Fig. 8

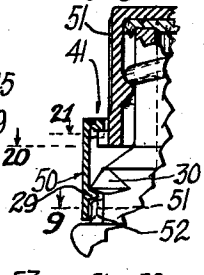


Fig. 20

Fig. 21

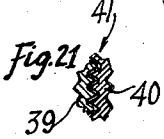


Fig. 9

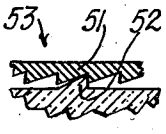


Fig. 10

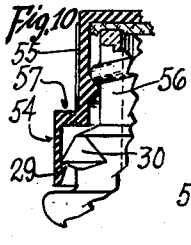


Fig. 11

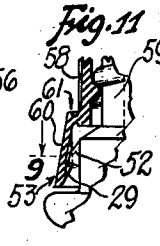


Fig. 12

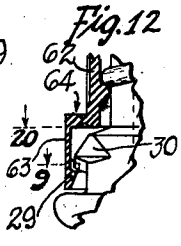


Fig. 13

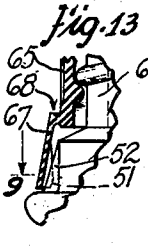


Fig. 14

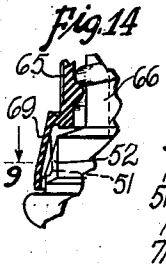


Fig. 15

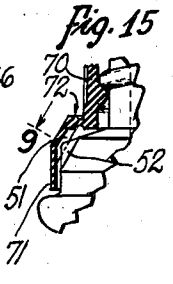


Fig. 16

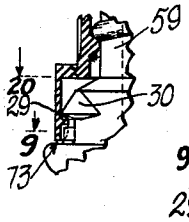


Fig. 17

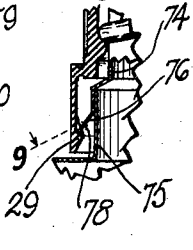


Fig. 18

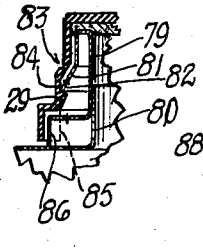
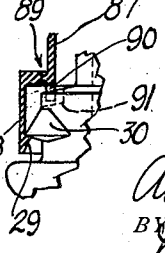


Fig. 19



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UNITED STATES PATENT OFFICE

2,162,754

TAMPERPROOF CLOSURE AND CONTAINER

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Application June 5, 1937, Serial No. 146,597

11 Claims. (Cl. 215—7)

This invention relates to devices such as tamperproof closures.

One object of the invention is to provide a device of the character described wherein the usual locking spring for the indicator member is avoided, and the indicator member is nevertheless reliably locked in place in a simple and inexpensive manner and so as to avoid removal or disengagement of the indicator member relative to the container or closure therefor without breakage.

Another object of the invention is to furnish a device of the nature set forth having improved means formed in part as a permanent or integral section of a container neck and in part as an integral section of an indicator member, one of the parts being annularly continuous and the other part being annularly discontinuous and resilient for interlocking engagement of the parts by a transverse deformation of the indicator member or by an irregular deformation of the annularly continuous part, as the case may be, in response to an axial assembling movement of the indicator member into operative position. If an anti-rotation means is provided for the indicator member both of said parts may be discontinuous.

As stated, the principle of the invention is applicable with considerable advantage to a one piece indicator and closure, but is also useful to a separate indicator member; in the case of the one piece construction, provision is made so that the liner of the closure may be tightly secured despite variations in size due to molding or casting, the possibly limited range of action of the locking means, as where a separate locking spring is avoided; and various arrangements and combinations may be devised within the scope of the principles stated.

This application is a continuation in part of patent application, Serial No. 748,997, filed by Adolf Schauer on October 19th, 1934, for Tamperproof Closure.

Certain features shown but not claimed herein are also shown in application, Serial No. 126,758, filed February 20th, 1937, owned by the assignee herein.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention consists in the novel combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims, and illustrated in the annexed drawing, wherein like parts are designated by the same reference characters throughout the several views.

In the drawing:

Figure 1 is a fragmentary vertical sectional view of a device embodying the invention, taken on the diametral line 1 of Fig. 2.

Fig. 2 is a horizontal sectional view taken on the line 2 of Fig. 1.

Fig. 3 is a fragmentary vertical sectional view of a modification of the invention, taken on the diametral line 3 of Fig. 3.

Fig. 4 is a horizontal sectional view taken in part on the line 4 of Fig. 3.

Figs. 5 to 8 are fragmentary vertical sectional views showing different modifications of the invention.

Fig. 9 is an enlarged sectional view taken on the line 9 of each of Figs. 8 and 11 to 17 inclusive.

Figs. 10 to 19 are fragmentary sectional views each showing a different modification of the invention.

Fig. 20 is a horizontal sectional view taken on line 20 of each of Figs. 8, 12, and 16.

Fig. 21 is an enlarged horizontal sectional view taken on the line 21 of each of Figs. 3 to 6, and 8.

The advantages of the invention as here outlined are best realized when all of its features and instrumentalities are combined in one and the same structure, but, useful devices may be produced embodying less than the whole.

It will be obvious to those skilled in the art to which the invention appertains, that the same may be incorporated in several different constructions. The accompanying drawing, therefore, is submitted merely as showing the preferred exemplification of the invention.

Referring in detail to the drawing 25 denotes a container having an opening defining rigid neck 26 provided with a closure cap 27 screw threaded thereon, and the closure having the usual liner. Enclosing the cap is an indicator member 28 of slightly yielding material and formed with a lower frangible portion provided with diametrically opposed cam shaped arcuate shoulders 29. The container neck may have generally similar shoulders 30, similarly arranged, except that the cam faces of the different shoulders are adapted to readily snap into locking engagement with each other, upon radial yield of the indicator member 28; but the cams will not release from the interlocking engagement without breakage of the indicator member or the lower portion thereof. To prevent rotary movement of the indicator member, the latter may have diametrically opposed re-

cesses 31 to receive corresponding teeth 32 that extend radially from the neck 26 and are adapted for axially entering said recesses. By using the structure 31, 32, the indicator member may be broken by a torque thereon, and the cams 29, 30 may both be discontinuous. Because the sides of the teeth 32 have cam shaped engagement with the recesses 31 as shown, the structure causes a radial outward breaking of the indicator member when the latter is turned. The elements 31, 32 are open to free axial interengagement and do not resist axial removal of the indicator.

In operation, the indicator member 28 is assembled by merely pressing it axially down on the container, causing interlocking at 29, 30, 31, 32. The gradual slopes of the cams 29, 30 cause the indicator member to expand along one diameter and hence to contract along the other transverse diameter; but the sharper slopes cause breakage of the brittle indicator member on attempting to upwardly axially remove the indicator member. The container may be made of glass or metal, etc., and the indicator of Bakelite or other like material.

To permit diametral contraction of the indicator member as stated, ample radial clearance is provided at 31, 32 and elsewhere, so that the indicator may assume an elliptical form in cross section. Preferably, the axis of the cams 29, 30 is at right angles to that of the means 31, 32.

In Fig. 3 is shown a device like that of Fig. 1, including a container neck 33, a metal closure 34 threaded thereon and having a liner, and an indicator member 35 which may be partially open at the top. At its lower edge, the indicator may have diametrically disposed recesses 36 for axially receiving the teeth 37 which project from the neck. Above the means 36, 37, the indicator has diametral cam shoulders 29 for snap locking with the corresponding shoulders 30. The parts 29, 30 may be disposed substantially crosswise to the parts 36, 37. The indicator may have an annular weakened offset 38 above the cam 29, and above said offset, the indicator may have an annular series of teeth 39 for axial interengagement with a corresponding series of teeth 40 on the closure, as in Fig. 21. The teeth 40 are axially positioned so that the teeth 36, 37 engage first to angularly position the indicator. The teeth at 41 are of smaller circular pitch than those at 36, 37.

The locking device 41, consisting of the teeth 39, 40 serves to prevent any turning of the closure without first breaking the indicator. The operation is otherwise the same as for Fig. 1. When the indicator is broken at 38, its lower portion may remain connected to the container, while the upper part of the indicator may then be turned to unscrew the closure by the means 41.

An alternative action is that on turning indicator 41, the lower part alone may break at the means 36, 37, permitting free rotation and consequent unscrewing of the closure by the means 41, whereupon the closure exerts an axial upward thrust on the indicator to cause the breakage thereof at 38. Thus the breaking of the indicator is caused by axial and radial stresses. The advantage in providing the locking structure 36, 37 is that no slight turning and loosening or leaking of the closure is possible.

The device of Fig. 5 is like that of Fig. 3 except that the rotary locking means 36, 37 have been omitted. In use, on turning the indicator, the means 41 causes unscrewing of the closure, and as the latter moves upward, it exerts an axial stress on the indicator so that the cam lock 29, 30 causes the indicator to break.

The device of Fig. 6 is like that of Fig. 5, except that the cams 30 are replaced by an annularly continuous circular locking spring 42 having an annularly continuous tongue 43 for engagement with the cams 29*a* of the indicator. This spring may be radially split or may be axially sprung into engagement with the diametrically arranged lugs 30*a* of the container neck 44. Thus the spring is first deformed into elliptical shape by the lugs 30*a*, and then becomes circular; and when the indicator is applied, the sectional cams 29*a* thereof deform the spring into elliptical form and the spring then returns to the circular form, annular clearance being provided for the deformation. The device of Fig. 6 is a further illustration of the principle of elastic diametral expansion and contraction as explained for Figs. 1, 3 and 5, and if the spring sections 42, 43 be discontinuous, the cams 29*a* and 30*a* may be continuous, for operation according to the principle stated. The spring may be regarded as a part of the container or permanently connected to the neck thereof.

The device of Fig. 7 shows a container neck 45 which is like that of Fig. 5, a metallic closure 46 screwed to the neck and having a liner, and a separate circular indicator 47 of ring form and having an inward extending weakened annular flange 48 that engages over the annular bead 49 of the closure. The indicator 47 may be secured to the container as by cam elements 29, 30. On unscrewing the closure, the latter exerts an upward axial stress on the indicator at the flange 48 causing breakage thereof or of the indicator as a whole, as may be desired, the operation being otherwise the same as hereinbefore described.

The device of Fig. 8 is generally similar to that of Fig. 7 except that the indicator is non-rotatably engaged with the closure and the container. Thus the indicator 50 may have an annular series of fine teeth such as 39 on the underside thereof engageable over an annular series of like teeth such as 40 on the closure 51, the teeth 40 in this case replacing the bead 49 of Fig. 7. Also the indicator 50 may have below the cams 29 thereof an annular series of diametrically opposed teeth 52 of Fig. 9 or 20 on the container neck, the locking device 53 being arranged so that it engages prior to engagement of the teeth of the device 41.

In operation, when the indicator 50 is applied, the cam elements 29, 30 first engage, followed by engagement of the device 53. As the indicator returns to circular from the deformed elliptical condition, the indicator continues to move downward until the teeth of the device interengage. Now, if the closure is turned for unscrewing, the indicator will be broken by axial and torsional stress. Should the closure be turned in the tightening direction, the indicator will elliptically elastically deform as the teeth 51 ride over the teeth 52. In every case, ample clearance is provided for the desired deformation of expansion and contraction of the indicator.

In the device 53 of Fig. 9, it is intended that the two teeth 52 on the container be in every case diametrically opposed for the engagement with the successive teeth of the indicator.

In the devices of Figs. 10 to 17 inclusive the indicator suffers the diametral expansion and contraction according to the elliptical form, all as in the devices of Figs. 1, 3, 5, 7 and 8, except that such action occurs while the closure is being

screwed to the container, because the indicator is integral with the closure.

For example, in the device of Fig. 10, the indicator 54 is formed as an integral part of the lined screw closure cap 55 for the container neck 56. Desirably the indicator is connected to the closure by a radial annular weakened offset or flange 57. The interlocking cams 29, 30 are arranged to snap into engagement with each other as the closure is screwed in place, the indicator deforming into elliptical shape in course of the cam interengagement and then returning to the circular form. Upon unscrewing the closure, the cams 29, 30 resist disengagement so as to cause breakage at 57.

In the devices of Figs. 11, 13 to 15 are shown improved arrangements such that the devices inherently allow for variations in the size and shape of the container or closure or both, due to the molding, casting or other forming operations, and so that the liner of the closure shall be snugly compressed and the indicator engaged tightly and without permitting any play or movement of the closure without breakage of the indicator.

For instance, in Fig. 11, the screw closure cap 58 for the container neck 59 is provided with the usual liner as in Figs. 1, 3, 5 to 8 and 10, and with an intergral indicator 60 connected thereto by an annular weakened offset 61. At the upper face of the annular cam element 29 is provided an annular series of teeth 51 for ratchet-like engagement with the two diametrally opposed teeth 52 of the container according to the means 53 shown in Fig. 9. The two diametrically opposed ratchet teeth 52 of the container have cam faces for both rotary and axial interengagement to lock the indicator correspondingly. The teeth 52 in plan are as shown in Fig. 9, except that they are beveled above and below like the lugs 30. Thus the cams 29, 52 engage and simultaneously the teeth of the means 53 interlock while the indicator is momentarily deformed into elliptical shape. The means 53 positively resists unscrewing of the closure, and in conjunction with the cams 29, 30, cause breakage at 61 due to axial and torsional stresses.

Since in Fig. 11 the means 53 is arranged according to a generally cylindrical or preferably conoidal contour, if the clearance space for the cap liner is too great, the closure may be screwed further and the means 53 will hold it tight even though the cams 29, 52 may be in relatively loose interengagement. The means 29, 52 may be arranged in predetermined relation to the screw threads so as to assure engagement of said means for locking the indicator.

In the device of Fig. 12, the lined screw cap 62 has the indicator 63 connected thereto by the annular weakened part 64, the diametrically opposed cams 29, 30 having the respective teeth 51 and 52, the teeth 51 being above the cam 29 and the teeth 52 below the respective cams 30 as shown in Fig. 20. The operation of this device is generally like that of Fig. 11.

In the device of Fig. 13, the lined screw closure cap 65 for the container neck 66 has an annular indicator 67 connected thereto by an annular weakened part 68, and the indicator having an annular series of teeth 51 for ratchet-like engagement with two conoidal diametrically opposed teeth 52 formed on said neck. The conoidal arrangement affords ample flexibility for adjustment of liner compression. The device operates in general like that of Fig. 11, but the cams 29, 30 have been omitted.

The device of Fig. 14 is like that of Fig. 13 except that the indicator 69 extends below the teeth 51, 52 to fully enclose and conceal the same.

The device of Fig. 15 includes a closure 70 having an annular indicator 71 provided with an annular series of teeth 51 adjacent to the line of weakness 72, and having ratchet like engagement with two opposed teeth 52 for an operation otherwise generally similar to that of Figs. 13 and 14.

In the device of Fig. 16, the arrangement is generally similar to Figs. 8 and 11, except that the annular series of teeth 51 on the indicator is spaced below its cam 29, and the two opposed teeth 52 are disposed directly below and in spaced relation to the two opposed cams 30 of the container to thus form a locking device 73. The device operates like that of Fig. 11 or 12.

In the device of Fig. 17, the arrangement is generally like that of Fig. 11, except that the metallic neck 74 is connected to a metallic neck portion 75 of a container and is formed with an annular outwardly and downwardly flared flange 76 which operates like the cams 30. The flange 76 may be cut away near its lower edge to provide diametrically opposed teeth the outline of which is like that of teeth 52, for like engagement and cooperation with the teeth 51 at the cam 29, as heretofore described for the device of Fig. 11.

In the device of Fig. 18, the metallic reversely annularly folded neck 79 secured to the neck portion 80 provides a downward and outward flared annular flange 81, that is cut away at its lower edge to form diametrically opposed cam portions 82 like the cams 30. These are adapted to similarly engage the annularly continuous cam 29 disposed below and near the annular line of weakness 83. Below the cams 29, 82, the indicator 84 is formed with two opposed recesses or teeth as at 85 for axial nonrotating engagement with the two teeth 86 formed on the neck 79, for operation generally similar to that of Fig. 3.

In the device of Fig. 19, the indicator 87 which may be like that of Figs. 1 and 3, has a depending indicator portion 88 and an intermediate annular line of weakness 89, with the interengaging cam elements 29, 30 like those hereinbefore described. The indicator 87 may have two opposed cam elements 90 in advance of the line of weakness and engaging the two cam recesses 91 above the locking cams 29, 30, the cams 90, 91 serving to cause an axial upward movement 87 to cause breakage at 89 upon attempted turning of the indicator. The device is axially assembled and operates like the device of Fig. 3, except that the indicator causes its own axial stresses.

It will be noted that the devices of all the figures are alike in construction and operation except as otherwise stated. In each case, the indicator is externally visible and is annular and normally conceals the locking means, and in each case, the indicator and locking means are preformed for interengagement by an axial movement without any substantial change in size or shape, and the indicator or closure being irremovable without breakage of the indicator as by a movement axial or rotary or both, opposite to the attaching motion.

In Figs. 3, 5 to 8 and 10 to 19, the line of weakness may be formed by opposite outside and inside grooves as shown, to control and facilitate the breaking of the indicator portion. Further the surface of breakage is always lateral so as to face outward and be readily visible in elevation,

instead of facing downward and being thus concealed. The lateral weakened offset or breaking flange facilitates breakage by providing a leverage, and by increasing the size of the indicator affords more elasticity and flexibility for the desired deformation of the indicator into elliptical form in course of engagement.

In forming the indicator integral with the closure a further important result is obtained in that the closure reenforces the indicator so that the latter is better adapted for the elliptical distortion without accidental breakage.

By this invention, a separate locking spring is avoided, the resilience inherent in the indicator being utilized for the locking action by virtue of the said elliptical distortion, this principle being of especial advantage where the indicator is one piece with the closure, the resulting structure representing the maximum in simplicity and low cost. Where the arrangement is like that of Figs. 11, 13 and the like, the liner of the cap can be suitably compressed for fluid tightness irrespective of variations in the size of the container neck, glass being especially subject to variation. The alternative arrangement as in Fig. 6 shows that the inner member 43 or a part of the container neck may undergo the elliptical deformation, or both the container and inner locking element may suffer such deformation.

In certain cases, as in Figs. 1, 3, 5 to 8, 10 to 12, and 16 to 19, the lower indicator portion may remain locked on the container as a permanent indication that the container has been opened.

It is noted that the horizontal axis of the axial locking lugs in Figs. 1, 3 and 18 is perpendicular to the axis of the rotary locking teeth of the container, whereas in Figs. 8, 12 and 16 both of these axes coincide. Hence in Figs. 1, 3, and 18, the breaking teeth, in turning the indicator, tend to cause the latter to be more tightly gripped by the locking cams.

I claim:

1. A device including a container outlet neck having an external generally circular cam means continuously immovably connected thereto, a means for controlling the outlet sleeved around the neck and having a generally circular internal cam means continuously immovably connected thereto, one of the cam means having diametrically opposed interruptions of substantial length to afford deformation clearance, the outside diameter of the external cam means being greater than the internal diameter of the internal cam means, one of the cam means being adapted to suffer an elastic deformation into generally oval shape in axially forcibly applying the controlling means to the outlet neck to thus interlock the cam means to prevent removal of the controlling means, and both of said cam means being otherwise relatively rigid to substantially resist deformation of either cam means.

2. A device including a container outlet neck having an external generally circular cam means continuously immovably connected thereto, a means for controlling the outlet sleeved around the neck and having a generally circular internal cam means continuously immovably connected thereto, one of the cam means having diametrically opposed interruptions of substantial length to afford deformation clearance, the outside diameter of the external cam means being greater than the internal diameter of the internal cam means, one of the cam means being adapted to suffer an elastic deformation into generally oval shape in axially forcibly applying the controlling means to the outlet neck to thus interlock the cam means to prevent removal of the controlling means, and both of said cam means being otherwise relatively rigid to substantially resist deformation of either cam means in an axial direction, the controlling means including an indicator member to which the cam means thereof is connected and a closure fixedly connected to the indicator member and threadedly secured to the container neck, and the cam means of the indicator member and container including teeth having ratchet-like engagement with each other to resist unscrewing of the closure.

3. A device according to claim 1, wherein the different cam means are integral with the respective indicator member and container, and the indicator member being circular and consisting of a material having sufficient elasticity to deform into oval shape together with its cam means.

4. A device including a container member having an opening, means to control said opening including a preformed indicator member extending around the opening and having a frangible portion, interlocking portion to prevent removal of the indicator member without breakage of the frangible portion, one of the interlocking portions being connected to the container member and the other being integral with the indicator member, one of said members being resilient at its interlocking portion to permit relative radial motion between the interlocking portions to permit the latter to operatively interengage each other by expansion of one of the interlocking portions along a diameter thereof, and one of the interlocking portions having arcuate recesses of substantial length along a second diameter substantially at right angles to the first mentioned diameter to afford clearance for contraction of one of the interlocking portions along the second diameter.

5. A device including a container having a neck affording an opening, and means for controlling said opening, including an indicator member having a frangible portion extending around the neck, the container having an integral portion at the base of the neck, the indicator member having an integral portion adapted to pass over and interlock with the companion integral portion to prevent removal of the indicator member without breaking the frangible portion, the indicator member being initially preformed and consisting of a brittle material having a slight degree of resilience sufficient for partial expansion of the indicator member and relative interlocking movement between the locking portions, the container and its locking portion consisting of a rigid material, and one of the locking portions being sufficiently interrupted along a diameter to afford clearance to permit the indicator member to be contracted along said diameter coincident with expansion of the indicator member along a diameter at right angles thereto for the interlocking action.

6. A device including a container member having an opening, means to control said opening including an indicator member having a preformed frangible element extending around said opening, said members each having an integral generally circular portion, the said portions coacting with each other for interlocking engagement to prevent removal of the indicator member without breaking the frangible element, at least one of said portions presenting a cam face to the other portion to facilitate the interlocking

engagement, one of said members being resilient at its said portion to permit the cam engagement, and said portions having positively interengaging faces to prevent release of said portions by resiliently deforming one of the members without breaking the frangible portion, and said portions being sufficiently spaced from each other along a diameter of the device to afford clearance so that the resilient member can be deformed into generally elliptical shape in course of the said interengagement by spreading action of the cam faces.

7. A device including a container member having a neck providing an opening, means enclosing the neck to control said opening, said means including a closure member and a preformed indicator member axially assembled with the neck, the indicator member having an externally visible frangible element, the latter and the container member each having an integral locking portion, said locking portions being arranged for coaxial movement into interlocking relation to prevent release of the indicator member without breaking the frangible portion, at least one of the locking portions presenting a cam face to the other portion to facilitate the interlocking action, one of the indicator and container members being resilient at its locking portion so as to radially yield and permit interlocking of said portions, said portions having faces for positive interlocking engagement to prevent release of the indicator member by springing one of the indicator and container members, without breaking the frangible portion.

8. A device including a container member having a circular portion including a neck providing an opening, means enclosing the neck to control said opening, said means being axially assembled with the neck and including a circular preformed indicator member extending around the neck, said indicator member having a frangible portion, said members having locking portions adapted for camming interlocking engagement with each other upon relative movement of the members about their common axis to thus prevent removal of the indicator member without breaking the breakable portion, the respective locking portions being integral with the indicator and with the container member at the circular portion thereof, at least one of said members being resilient at its locking portion so as to be adapted to be deformed thereat from a circular to an oval shape, by pressure exerted along a diameter of the member, one of said members having a plurality of said locking portions disposed along a diameter and being otherwise free of locking portions to thus permit the locking portions of said members to snap into engagement with each other along the long diameter of the oval while permitting contraction of the member along the short diameter of the oval shape.

9. A device including a container member having a neck providing an opening, means extending around the neck and adapted to control said opening, said means including a preformed indicator member consisting of a relatively brittle readily breakable material having a degree of resilience, said indicator member having diametrically opposed integral shoulder portions extending inward and providing clearance recesses therebetween, the container neck having an annular shoulder portion consisting of relatively rigid material, the indicator member being adapted to be downwardly axially sleeved over the neck and the shoulder portions having cam faces adapted to interengage and cause transverse resilient distortion of the indicator member by the interengagement of the cam faces as the shoulder portions of the indicator member pass and move to a position below the shoulder portions of the container for interlocking engagement, and the said shoulder portions having faces at a large angle to the axis of the device to prevent camming release of the shoulder portions from the interlocking position.

10. A device including a container member having an outlet, a closure member for the outlet connected to the container member, an indicator means having a breakable portion, means for mounting the indicator means in association with said members so as to prevent removal of the closure member without breaking the breakable portion, the mounting means including means to engage the indicator means and one of said members, the engaging means comprising a plurality of cam means on one of said members and on said indicator means respectively, each of said cam means having a circular base portion, one of said cam means being operable so that its base is resiliently deformable from circular to oval form, one of said cam means being discontinuous to provide cam sections adjacent the ends of one diameter of its base, said cam sections being engageable with the other cam means by distortion into said oval form of the circular base of one of the cam means by interengaging movement of the cam means on relative movement in one direction between the container member and indicator means, with the different cam means being of different diametral sizes for interlocking to prevent removal of the indicator means upon return of the resilient base to the circular form with corresponding movement of its cam means into interlocking position.

11. A device including a container neck, a control member for the latter having a breakable portion, and securing means for securing the control member to the container neck to prevent removal thereof without breaking the breakable portion, said securing means including a plurality of separate cam means having circular bases located on the container and on the controlling member, respectively, one of the cam means being circularly continuous and being operable so that its base is resiliently deformable into oval form with corresponding movement of the operative portions of said cam means, the other cam means being discontinuous to provide cam sections adjacent to the ends of one diameter only of its base, said cam sections being engageable with the continuous cam means on relative movement in one direction between the control member and the container neck, the sizes of the different cam means being so different that said deformation of said resilient base is caused by the continuous cam means on interengaging movement, with the different cam means interlocking to prevent relative reverse movement and removal of the control member upon return of said resilient base to circular form and corresponding movement of its cam means.

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