United States Patent [19]

Grimaldi et al.

[11] **3,773,203**

[45] **Nov. 20, 1973**

[54] **CLOSURES FOR BOTTLES AND THE LIKE**

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[73] Assignee: **Gilison Associates Incorporated**, Cranford, N.J.

[22] Filed: **Jan. 20, 1972**

[21] Appl. No.: **219,269**

[52] **U.S. Cl.** **215/9**

[51] **Int. Cl.** **B65d 55/00**

[58] **Field of Search** 222/153, 546, 556; 221/154; 292/300, 303; 220/30.5, 30.6, 30; 215/98, 9, 95; 114/201, 203

[56] **References Cited**

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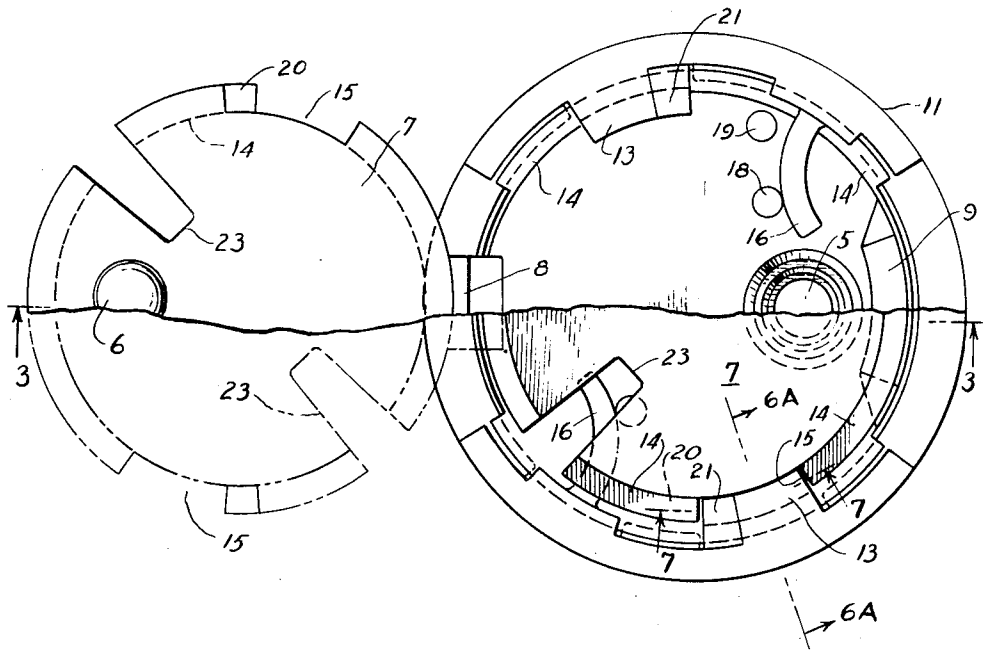
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Assistant Examiner—Norman L. Stack, Jr.
Attorney—Nichol M. Sandoe et al.

[57] **ABSTRACT**

A closure for bottles, cans and like containers which is difficult for small children to open comprises a stationary member adapted to be mounted upon the neck of the container, said member having a dispensing aperture communicating with the passage through the container neck, and comprising a locking ring mounted on and rotatable with respect to said stationary member. Said stationary member includes a hinged lid provided with a stopper adapted to close and seal said dispensing aperture when the lid is closed. Said lid is normally locked in closed position by said locking ring. To open the container the locking ring must be rotated to a position to release the lid which can then be lifted to remove the stopper from the dispensing aperture. Rotation of the locking member to release the lid stresses one or more springs carried by said locking ring so that after the lid is opened, the locking ring is returned to its original locking position by the springs. When the lid is closed cooperating cam surfaces on the lid and locking ring rotate the locking ring to again stress the springs, which thereafter automatically return the locking ring to locking position to again lock the lid in closed position.

3 Claims, 14 Drawing Figures



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SHEET 1 OF 4

FIG.1

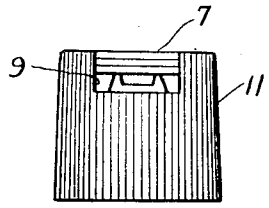


FIG.2

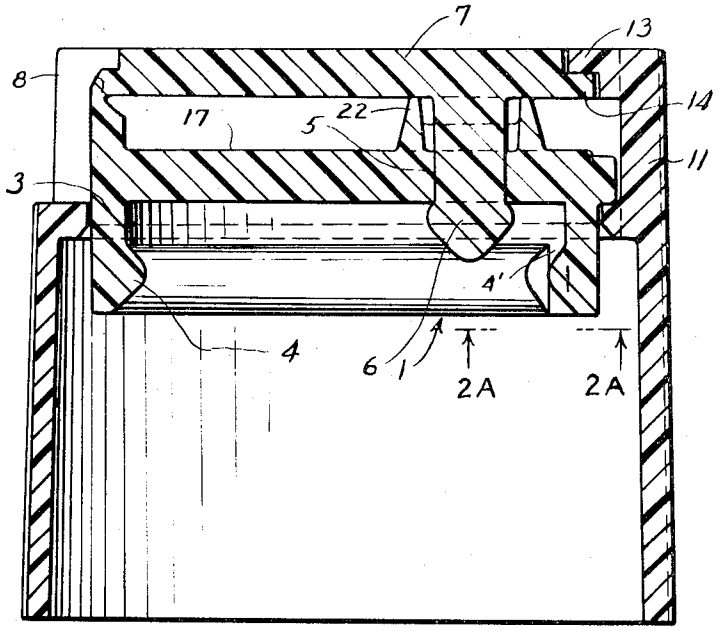


FIG.8

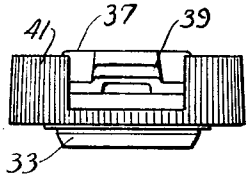


FIG.2A



FIG.3

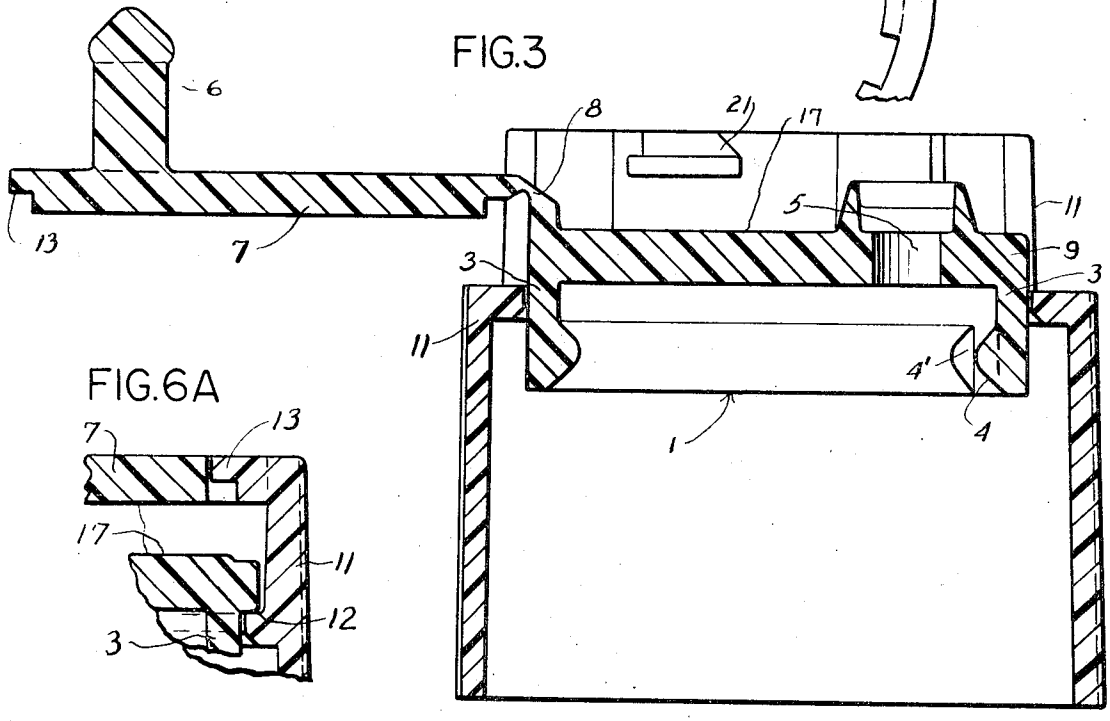


FIG.6A

FIG. 4

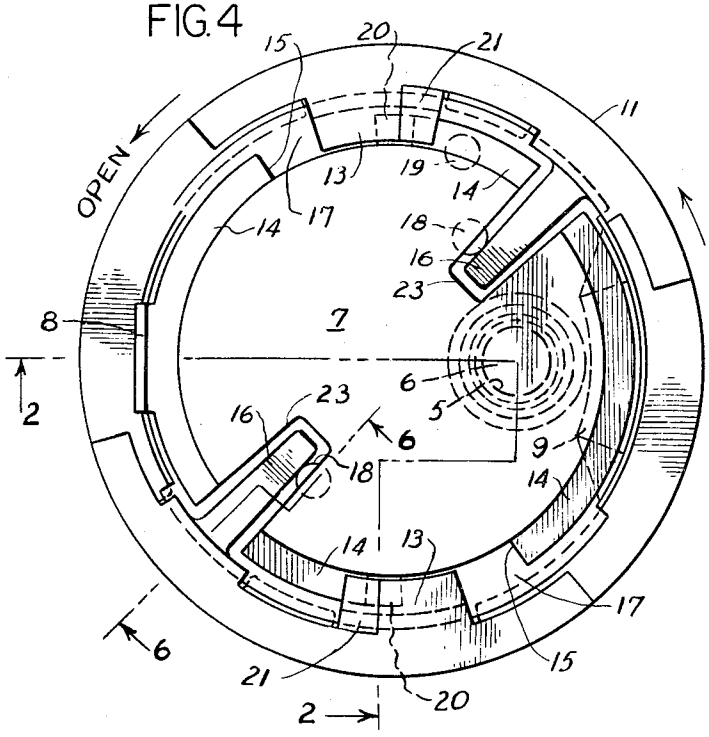


FIG. 6

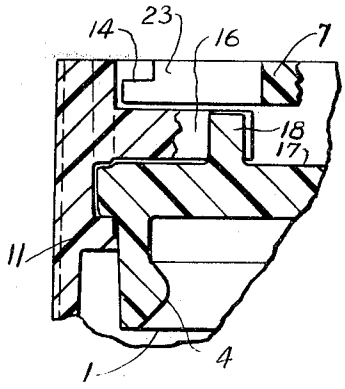


FIG. 5

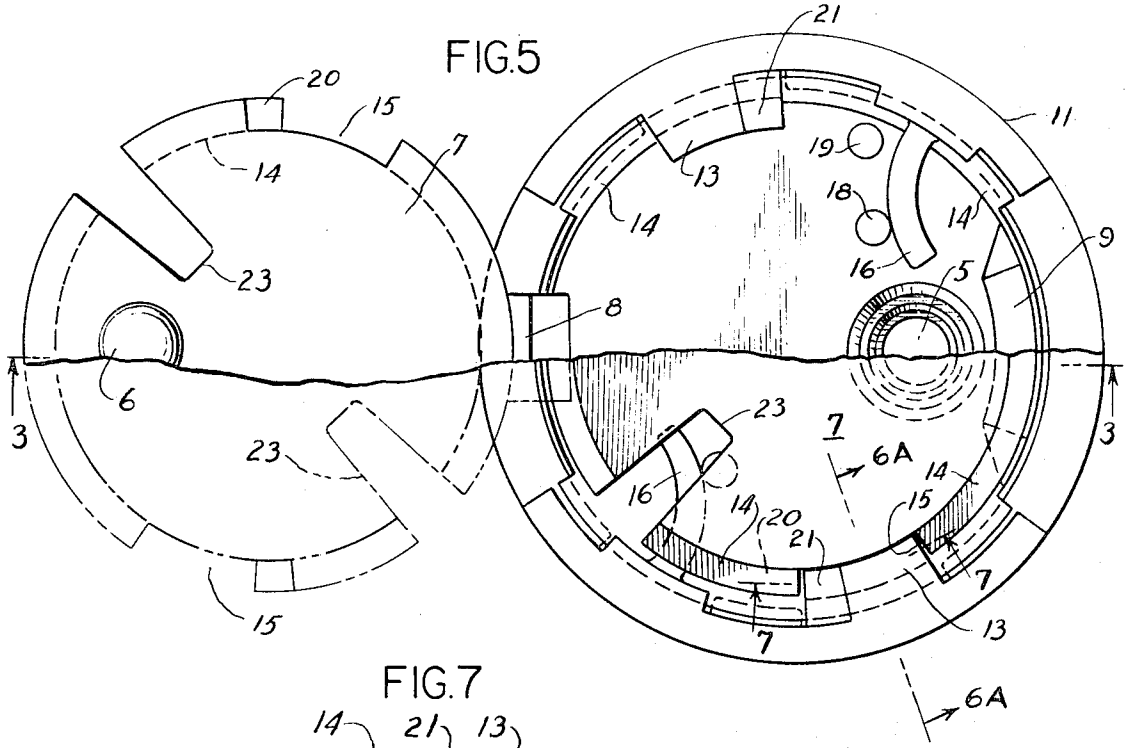
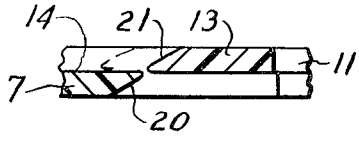


FIG. 7



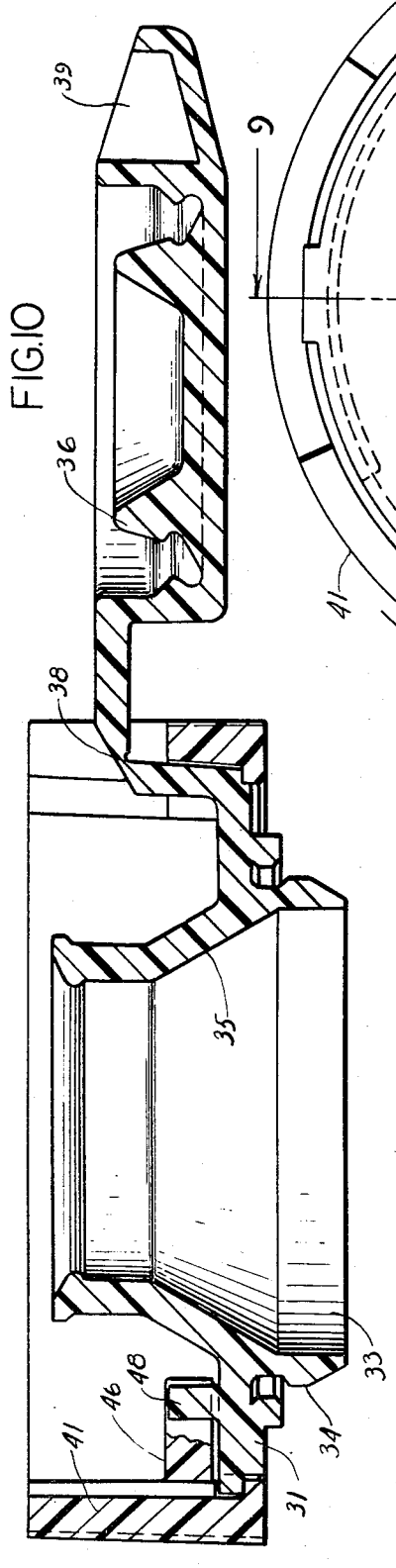


FIG.10

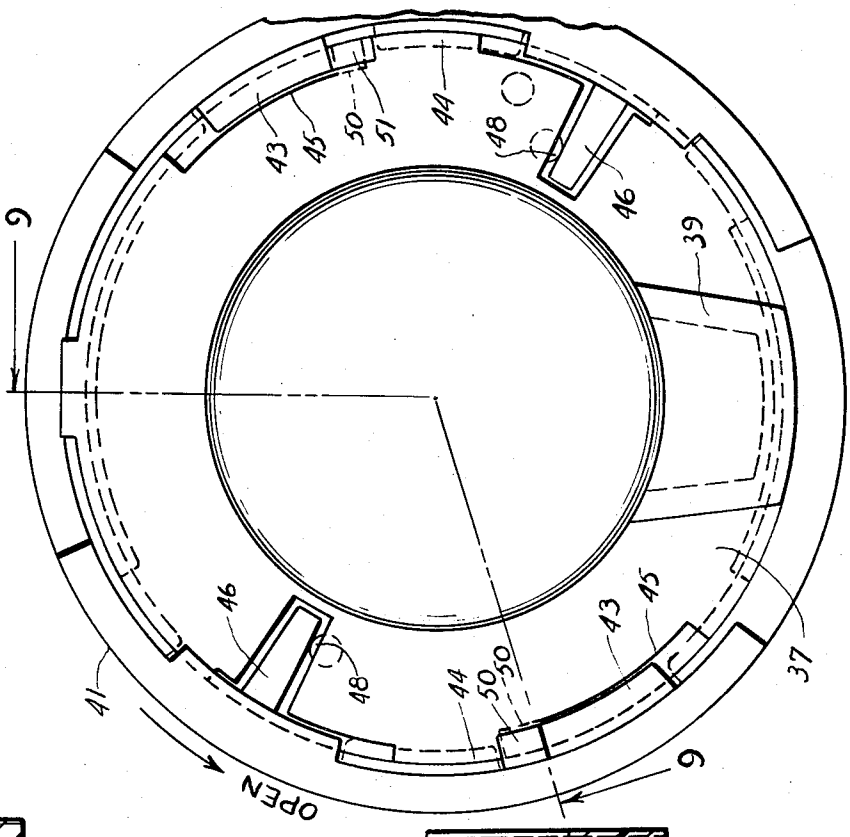


FIG.11

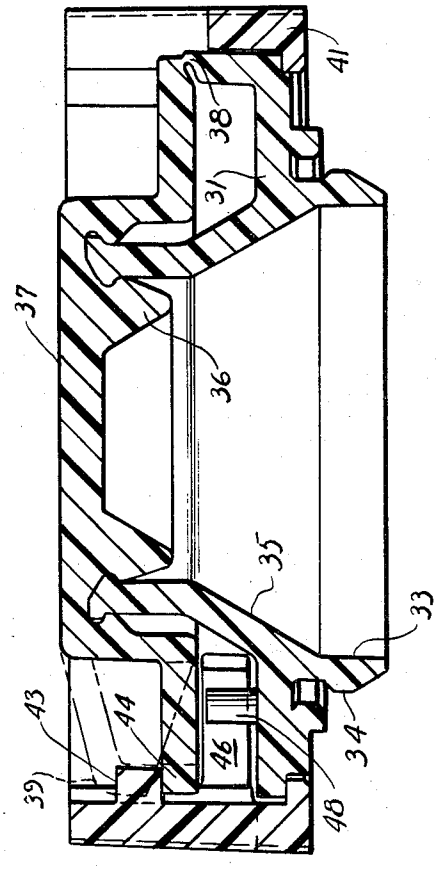
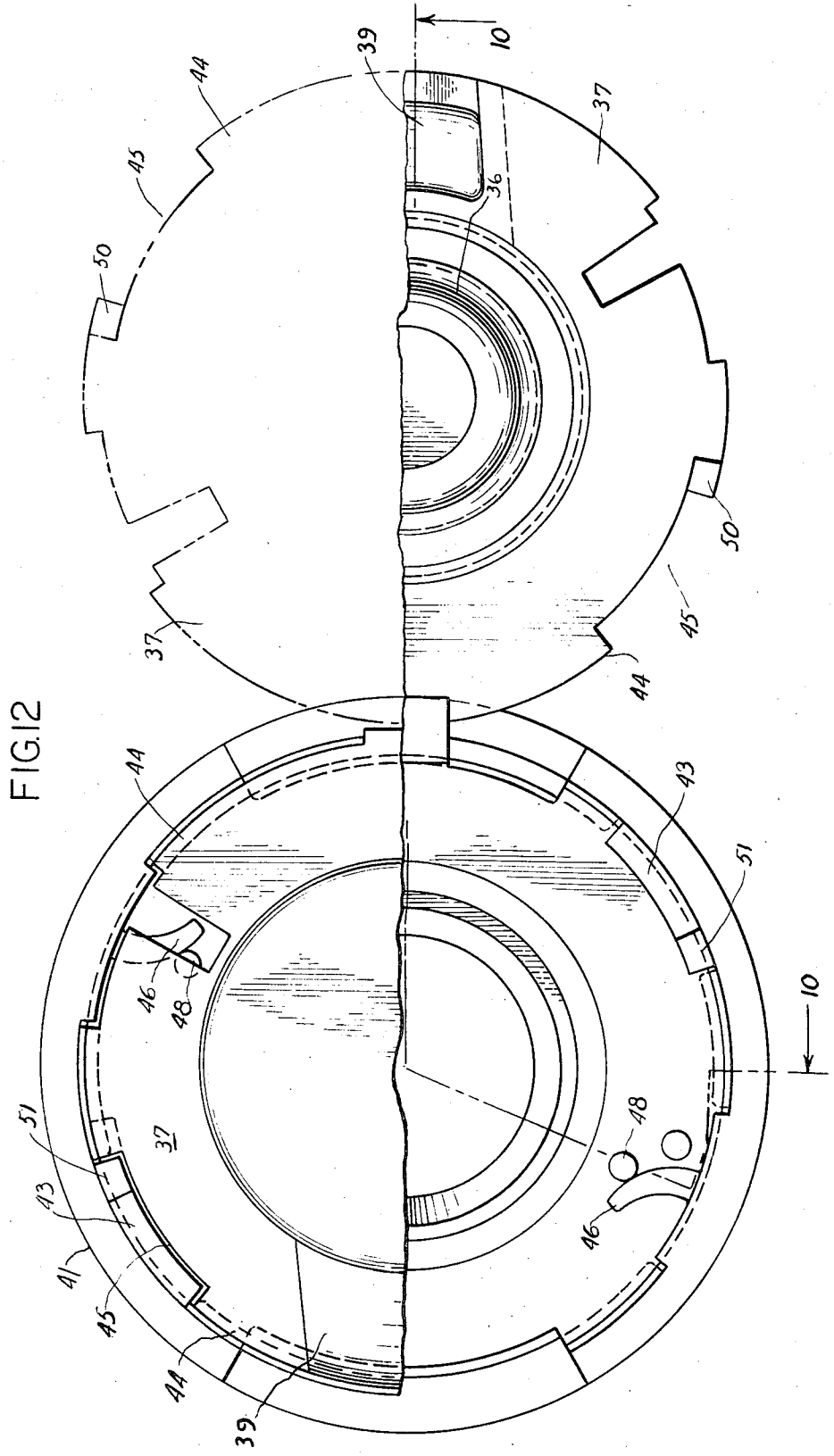


FIG.9

FIG.12



CLOSURES FOR BOTTLES AND THE LIKE

This invention relates to closures for bottles, cans and like containers which is difficult for small children to open. Such closures are commonly referred to as "child proof" closures, and they are in increasing demand to protect children from getting at the contents of containers which are frequently dangerous and sometimes lethal.

For such purposes it is not necessary to provide a closure which cannot be opened by children. Nor is it necessary to provide a closure that is so difficult to open that it presents a problem for adults. It is sufficient if opening of the closure requires more strength and dexterity than is possessed by most small children. It is an object of this invention to provide such closure.

A preferred embodiment of the invention selected for purposes of illustration is shown in the accompanying drawings, in which,

FIG. 1 is a front elevation of a closure intended primarily for use as a closure for bottles.

FIG. 2 is an enlarged section on the line 2—2 of FIG. 4 showing the closure in closed position.

FIG. 2A is a fragmentary bottom plan view.

FIG. 3 is a similar view showing the closure in open position.

FIG. 4 is an enlarged top plan view showing the closure in closed position.

FIG. 5 is a similar view showing the closure in open position.

FIG. 6 is a fragmentary section on the line 6—6 of FIG. 4.

FIG. 6A is a fragmentary section on the line 6A—6A of FIG. 5.

FIG. 7 is a section on the line 7—7 of FIG. 5.

FIG. 8 is a front elevation of a modified form of closure intended primarily for use as a closure for cans.

FIG. 9 is an enlarged section on the line 9—9 of FIG. 11 showing the closure in closed position.

FIG. 10 is a similar view showing the closure in open position.

FIG. 11 is an enlarged top plan view showing the closure in closed position.

FIG. 12 is a similar view showing the closure in open position.

Referring to FIGS. 1 to 6, the closure comprises a stationary member 1 which is adapted to fit the neck of a container such as a bottle. In the embodiment illustrated, the depending annular flange 3 is provided with an internal annular rib 4 which snaps over the upper rim of the bottle neck to hold the closure firmly in place. If desired the rib 4 may be provided with notches 4' adapted to engage suitable mating projections on the bottle neck to prevent rotation of the member 1 with respect to the bottle. Alternatively, if the neck of the bottle is threaded externally, the flange 3 may be threaded internally to fit.

The stationary member is provided with a dispensing aperture 5 adapted to be closed and sealed by a stopper 6 formed integrally with and projecting downwardly from the lid 7 which is hingedly connected to the edge of the stationary member by a thin flexible web 8 located diametrically opposite to the dispensing aperture.

A locking ring 11 is rotatably mounted on the stationary member, said ring having shoulders 12 which seat against the outer peripheral edge of the stationary member 1, as shown in FIG. 6. The locking ring is also provided with a plurality of short flanges 13 which extend radially inwardly and engage the outwardly extending flanges 14 of the lid 7 when the lid is in closed position as shown in FIGS. 2 and 4. Thus, when the lid is in closed position, as shown in FIGS. 2 and 4, it is locked in closed position and cannot be lifted to open the bottle. It is only when the locking ring is rotated counter-clockwise to the position shown in FIG. 5 in which the flanges 13 are in register with the recesses 15 in flanges 14 of the lid that the lid may be lifted and swung backwardly on its hinge 8 to remove the stopper from the dispensing aperture. The edge of the stationary member at a point opposite the hinge 8 may be notched at 9 to facilitate lifting of the lid.

The locking ring 11 also carries a plurality of springs in the form of prongs 16 extending radially inwardly from the ring and located between the lower surface of the lid 7 and the upper surface 17 of the stationary member. It will be understood that the closure is preferably made of a plastic material such as polypropylene which is flexible and resilient. The stationary member 1 is provided with stops 18 which project upwardly from the surface 17 and contact the prongs 16 when the lid is in closed position as shown in FIG. 4. When the locking ring is rotated in counter-clockwise direction to release the lid, the prongs are bent rearwardly by the stops as shown in FIG. 5, thus stressing the prongs which then tend to rotate the ring in clockwise direction. Thus, after the lid has been lifted, if the locking ring is relased, the stressed prongs rotate the ring in clockwise direction to return the locking ring to its original position. A limit stop 19 may be provided, if desired, to limit the counter-clockwise rotation of the ring.

The outer periphery of the lid 7 is provided with two diametrically opposed bevelled cam surfaces 20 which are positioned to engage and cooperate with similar cam surfaces 21 on the short flanges 13 of the locking ring. Thus, when it is desired to close the container, it is only necessary to swing the lid downwardly toward closed position. As it nears closed position, the cam surfaces 20 and 21 come into engagement to cause counter-clockwise rotation of the locking ring sufficient to bring the flanges 13 into registration with the recesses 15 and to stress the prongs 16. This permits the lid to move to its closed position, at which point the cam surfaces become disengaged to permit the stressed prongs to rotate the ring in clockwise direction to locking position. If desired, the dispensing aperture 5 may be surrounded by a pouring lip 22 which projects upwardly from the surface 17 to contact the lid 7 in its closed position and thereby provide an additional seal.

The oppositely disposed recesses 23 extending radially inwardly from the periphery of the lid 7 are provided for convenience in assembly of the ring with the stationary member.

In operation, when it is desired to open the closure, the locking ring is rotated in counter-clockwise direction until the flanges 13 come into register with the recesses 15 of the lid which can then be lifted to remove the stopper from the dispensing aperture. Upon release of the ring it is returned automatically to locking position by the prongs 16. To close the container it is only necessary to close the lid, as the cam surfaces 20 and 21 automatically move the ring to unlocked position and the stressed prongs restore it to locked position. Children have difficulty in performing these operations, first because the prongs 16 are relatively stiff and

it if not easy to rotate the locking ring, second because the ring must be rotated only enough to bring the flanges 13 into exact register with the recesses 15, and third, because the lid must be lifted while these parts are exactly registered.

Referring now to FIGS. 7 to 11, a modified form of closure is illustrated which is particularly designed and adapted for use with cans in which a larger dispensing aperture is usually required. Thus, as shown in FIG. 8, the depending annular flange 33 of the stationary member 31 is intended to be inserted into the neck of the can and is provided with an external rib 34 to engage the bead of the neck.

In this form of the closure, the dispensing aperture is at the end of a short neck 35 which is closed by a stopper 36 formed integrally with the lid 37. As before the lid is hingedly connected to the edge of the stationary member by a thin flexible web 38. In this form the dispensing aperture is concentric with the stationary member.

In this form of the invention, the locking ring 41 is provided with short flanges 43 correspond to flanges 13, and the flanges 44 of the lid correspond to the flanges 14. Likewise, the recesses 45 of the lid correspond to recesses 15, and the prongs 46 and stops 48 correspond to prongs 16 and stops 18 and cooperate in the manner previously described as the locking ring is rotated. Likewise cam surfaces 50 and 51 on the lid 37 and flanges 43, respectively, correspond to the cam surfaces 20 and 21 and cooperate in the same manner.

In this form, the lid 37 is provided with a lifting tab 39.

The operation of the modified form is as previously described.

What is claimed is:

1. A closure for containers comprising a stationary member adapted to engage the neck of a container, said stationary member having a dispensing aperture communicating with the passage through the container neck, and having a hinged lid connected thereto provided with a stopper adapted to close and seal said dispensing aperture when the lid is closed, and a locking ring rotatably mounted on and surrounding the periphery of said stationary member, said locking ring and stationary member having means including interengaging flange elements to engage and lock said lid in closed position in one position of rotation of said locking ring and to release said lid in another position of rotation, a spring comprising a flexible, resilient prong carried by said locking ring and extending radially inwardly from said ring over said stationary member, and a stop on said stationary member which engages and stresses said spring on rotation of said locking ring to release said lid.

2. A closure as claimed in claim 1 including means operable by said lid to rotate said locking ring to its release position as said lid is moved to its closed position.

3. A closure as claimed in claim 2 in which said means operable by said lid comprises a cam surface on said lid and a cam surface on said ring positioned to be engaged by the cam surface of the lid as the lid is closed.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,773,203 Dated November 20, 1973

Inventor(s) Anthony J. Grimaldi, Nicholas W. Kachur and Anthony F. Tomburo

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Correct the name of the Assignee to read

--Gibson Associates Incorporated--.

Signed and sealed this 16th day of April 1974.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

FORM PO-1050 (10-69)

USCOMM-DC 60376-P69
* U.S. GOVERNMENT PRINTING OFFICE : 1969 O—366-334.

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