Jan. 3, 1967 R. H. KNIES 3,295,707

CONTAINER CLOSURE

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FIG. 1

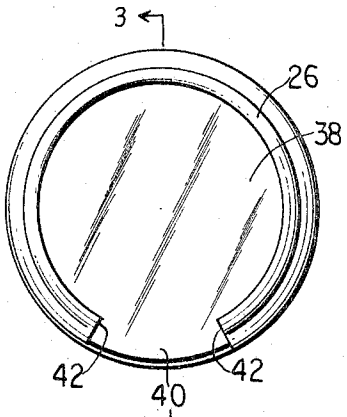


FIG. 2

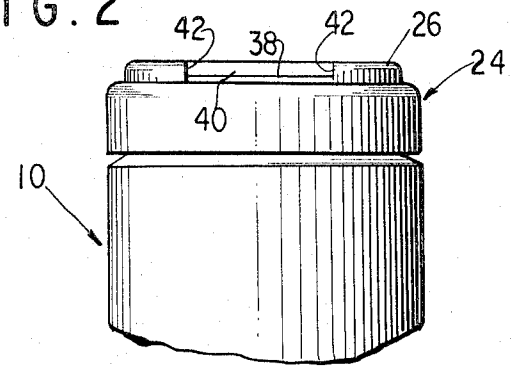


FIG. 3

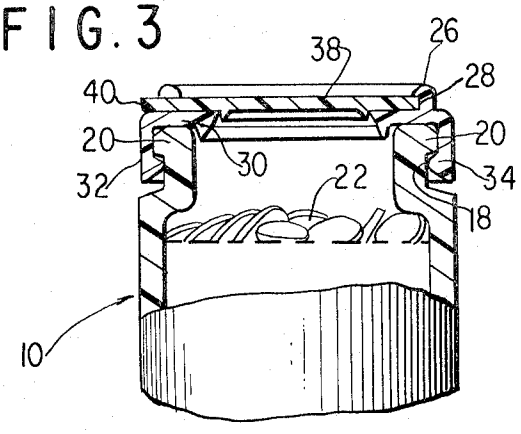


FIG. 4

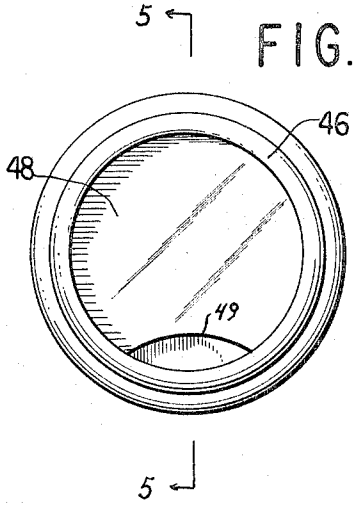
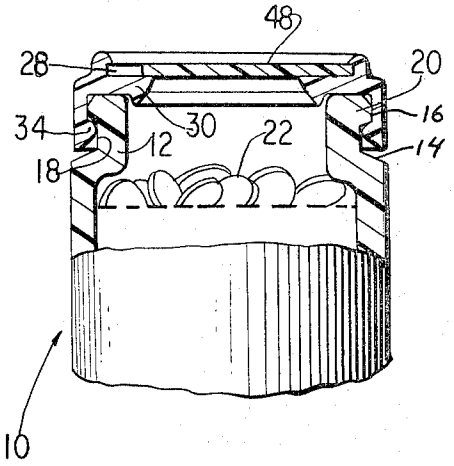


FIG. 5



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CONTAINER CLOSURE

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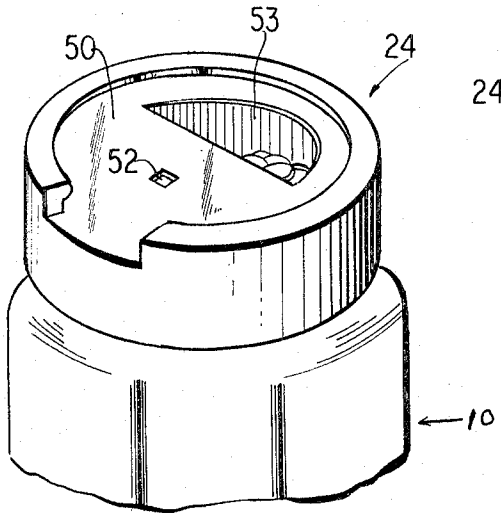


FIG. 6

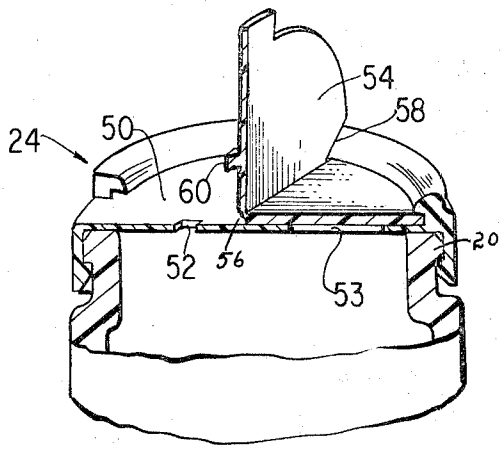


FIG. 7

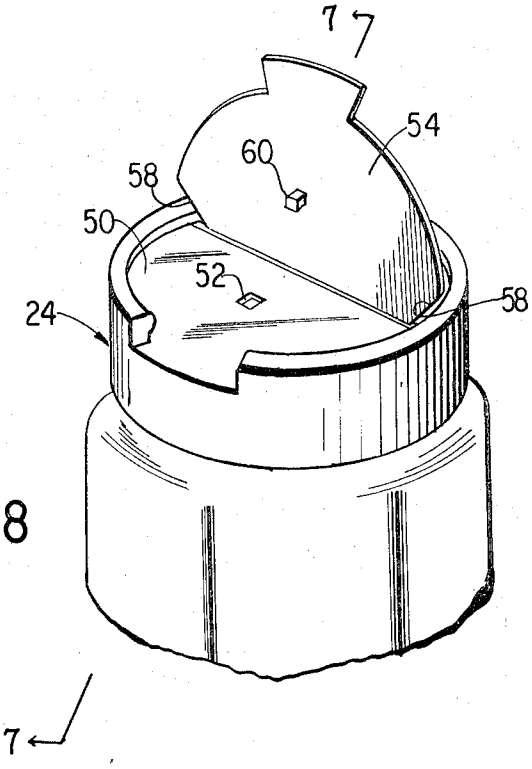


FIG. 8

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3,295,707

Patented Jan. 3, 1967

3,295,707

CONTAINER CLOSURE

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Filed July 23, 1965, Ser. No. 474,438
5 Claims. (Cl. 215—41)

This invention relates to closures for containers and particularly to a closure and container combination of such construction as to prevent or retard the removal of the closure from the container by children.

The danger of small children getting into medicine cabinets and removing dangerous pills from bottles is one that is very familiar to all parents. The ease with which most closures may be removed from the bottles gives youngsters virtually unimpeded access to the contents once they have reached the bottle.

Accordingly, it is an object of this invention to provide a closure which is economical to fabricate and easy to install on containers. It is another object of this invention to provide a closure-container combination constructed so as to make removal of the closure from the container by small children exceedingly difficult and highly unlikely, but one which will permit ready removal of an adult.

It is a further object of this invention to provide a closure-container combination permitting removal of the closure from the container only after prying a disk upwardly within a certain pre-determined circumferential area about the closure.

Other objects and advantages of this invention will become readily apparent from the following detailed description taken in conjunction with the annexed set of drawings, in which:

FIG. 1 is a plan view of one embodiment of the closure of this invention;

FIG. 2 is a side elevation of the closure of FIG. 1 mounted on a bottle;

FIG. 3 is a cross-sectional elevation of the closure of FIG. 1 taken on the line 3—3 thereof;

FIG. 4 is a plan view of another embodiment of the closure of this invention;

FIG. 5 is a cross-sectional elevation taken on the line 5—5 of FIG. 4 together with a medicine bottle;

FIG. 6 shows a perspective view of a closure component of the embodiment shown in FIG. 8;

FIG. 7 shows a partial cross-sectional elevation of the closure of FIG. 8 taken on line 7—7; and

FIG. 8 shows a perspective view of one embodiment of the closure mounted on a bottle.

Referring now to the drawings, and particularly to FIGS. 1–3, there is shown a bottle 10 having a neck 12 with a lip mouth 20 at the top thereof. The neck 12 has an annular bead 16 adjacent the top thereof which is separated from the bottle shoulder 14 by an annular restriction 18. For the purposes of illustration, the bottle 10 contains medicinal tablets 22. The closure 24 is an annular resilient retaining wall having an annular ring 26 at its top, a groove 28 which subscribes a major or the entire inner circumference thereof. Below the groove 28 is a radially inward flange 30 which abuts and overlies the mouth 20 of the container. Below the ring 26 there is an integral depending annular skirt 32 having an inwardly projecting annular bead 34 which cooperates with the bottleneck bead 16 and groove 18 to securely hold the closure in place. Snapped within the resilient groove 28 is a circular disk 38. The ring 26 above flange 30 is notched out forming ends 42—42 and the disk 38 has a radially extending tab 40 which fits within said notched out portion with the outward margins of said tab being substantially flush with the ring circumference

and the tab extending no further outwardly than the portion of the closure therebelow. The bottom of the tab 40 is in abutting relationship with the portion of the closure therebelow.

In opening of the closure shown in FIGS. 1–3 a blade or even a fingernail can be inserted between the lower surfaces of the tab 40 and the upper surfaces of the ring underlying said tab and the disk pried upwardly. This snaps the disk 40 out of the groove 28 and permits removal of the container contents such as tablets 22. The closure opening can then be again sealed by alining the tab 40 between the cut out ends 42—42 and pushing the disk downwardly to snap its edges within groove 28.

FIGS. 4 and 5 show a modification of this invention wherein the bottle 10 and closure 24 are substantially identical to that in FIGS. 1–3, except that the upper portion of a ring 46 is not notched. Instead of a radially extending tab on the disk, the disk 48 has a cut-away segment 49. The flange 30 below the cut-away segment extends radially inwardly at least as far as segment 49 to prevent removal of the container contents. In the operation of this embodiment, a blade or other flat object is inserted between the top of the flange 30 and the underside of the cut-away portion of the disk in order to pry the disk upwardly and provide an unobstructed opening for removing the contents of the container. The disk is replaced on the container by simply snapping it within the resilient groove.

FIGS. 6–8 show still another modification of this invention. The closure 24 is much like that of FIG. 1. However, the annular wall 24 has a radially inward flange 50 extending about halfway across the diameter thereof The flange 50 has a snap-in slot 52. The disk 54 has a weakened section 56 which forms a hinge, a snap-in button 60 and cutout sections 58—58. In operation of this device, the edges of the disk 54 are snapped within the groove 28 with the tab extending within the notched-out area of the ring. To aid in holding the disk in place, button 60 is snapped within slot 52. To open the closure, the tab is pried upwardly to the position shown in FIG. 8. The disk is then rotated about 180° in order to expose the opening 53 through the flange 50. The cut-away segments 58, 58 adjacent the hinge 56 facilitate rotation of disk 54 in the opening operation.

The resilient closure of this invention can be fabricated from thermoplastic material such as polyethylene or polypropylene. The disk can be fabricated from polystyrene or polypropylene (particularly when the resilient closure is fabricated from polyethylene). The rigid disk can also be fabricated of polyethylene but its thickness should be sufficient to provide for relative rigidity required for being pried off of the closure ring and for snapping into place in sealing the closure.

A particularly advantageous feature of this invention is the combination of a circular closure fitted over a lip mouth and restricted neck formed above on an annular shoulder of a substantially cylindrical bottle. The diameter of the closure is preferably no greater than that of the bottle below the shoulder. The bottom of the closure and shoulder are in close proximity so that the entire closure assembly is exceedingly difficult to pry upwardly in the area of the opposed surfaces of the closure bottom and shoulder. Also, the cooperating beads or flanges of the closure and container have sufficient strength to normally retain the closure assembly on the container neck in assembled relationship, thus necessitating prying of the disk to obtain access into the container.

What is claimed is:

1. In combination, a bottle having an inward circular shoulder on its outer surface and a mouth defining neck of smaller radial extent rising above said shoulder, an

outwardly projecting annular bead about the top of said neck, a circular hollow closure surrounding said neck and mouth, said closure having an opening at the top and bottom ends thereof, said closure having an inwardly projecting bead at its lower end cooperating with the neck bead for securing to said bottle adjacent to the bottom shoulder, the diameter of said closure being no greater than the outer diameter of the bottle shoulder, said closure having a radially inwardly directed flange overlying the mouth of said bottle, a groove above said flange circumscribing a major inner circumference of said closure, a rigid disk snapped within said groove, the top of said disk being below the closure top and providing a partition thereacross, said disk being in contact with the flange and entirely within the area of the closure outer circumference therebelow a minor circumferential edge of said disk being exposed, but the underside of said exposed edge being in contact with the closure or flange therebelow, said cooperating closure and neck beads having sufficient resistance to displacement so as to normally retain the closure on said container neck in assembled relationship, thus necessitating prying of said disk within the closure circumference to obtain access into said container.

2. A closure of claim 1 wherein a minor segment of the disk is cut away, the edges of said segment being radially inwardly of the closure top opening and the inner circumference of the mouth defining neck wherein the flange in the area of said cutout segment extends radially inwardly for a distance at least as great as the cutout segment and inwardly of the bottle mouth to provide a downwardly flexible area for inserting a thin flat instrument between the disk and flange for prying the disk upwardly out of the closure.

3. A closure of claim 1 wherein a minor circumference of said closure above the flange is notched out, and wherein the disk has a radially extending tab fitting within said notch, the underside of said tab being in contact with the notched out area of the closure and necessitating the insertion of a thin flat instrument for prying the disk upwardly out of the closure.

4. A closure of claim 3 wherein said disk has a hinge substantially normal to said tab and wherein the flange below the tab portion of the disk extends inwardly beyond the disk hinge.

5. A closure for a container having an upper opening and a neck therebelow comprising: an annular resilient member having an opening at the top and bottom thereof, an integral inwardly projecting flat flange below its top adapted to overlie the upper end of said container and having a downwardly extending integral skirt, an inwardly projecting annular bead adjacent the skirt bottom for securing the closure to the container, a groove within said resilient member circumscribing a major inner circumference thereof between the flange and the top, a minor circumference of said resilient member above the flange being notched out, a rigid disk within said resilient member forming a partition between the top and bottom thereof, said disk overlying the flange, a major circumference about the disk edges snapped within said groove, a radially extending tab protruding from a minor circumference of said disk, said tab fitting within the resilient member notch, the outer edges of said tab being exposed but extending outwardly at a distance not greater than the portion of the skirt therebelow, said disk having a hinge substantially normal to said tab and wherein the resilient member flange underlying the tab portion of said disk extends inwardly beyond the disk hinge.

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