# United States Patent [19]

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[54] **CHILDPROOF MEDICINE VIAL**


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[52] **U.S. Cl.** ..... **215/9,** 215/41, 220/60 A, 206/1.5

[51] **Int. Cl.** ..... **B65d 55/02**

[58] **Field of Search** ..... 215/9, 41; 220/60 A; 206/1.5, 42



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*Primary Examiner*—George T. Hall

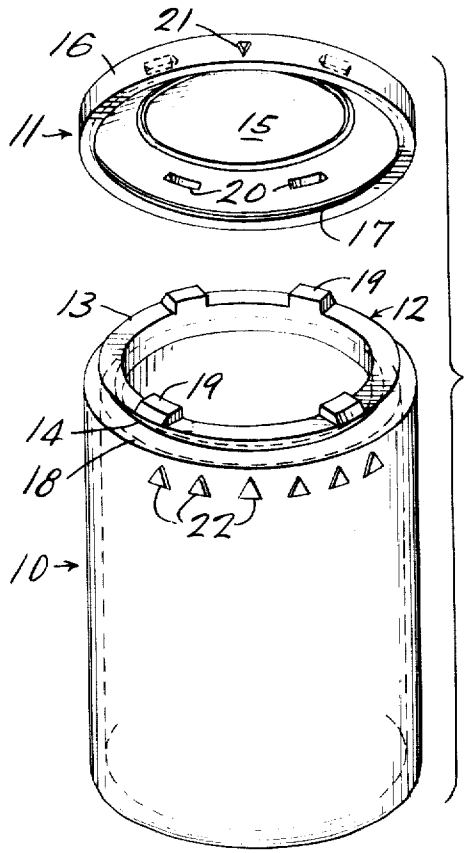
*Attorney, Agent, or Firm*—Henry K. Leonard



[57] **ABSTRACT**

A childproof medicine vial or the like. The vial consists of a container having a circular neck with an undercut annular groove in its outer side. A domed circular cap for the container has an annular rim extending around the container neck. The rim has an inwardly extending lip adapted to snap into the groove for retaining the cap on the container. There are a plurality of axially extending abutments on the container neck and the same number of downwardly extending lugs are formed on the inner surface of the cap. The series of abutments and the series of lugs lie in axially aligned circles. Both the abutments and the lugs are spaced unevenly but identically around the circles so that they are axially aligned in only one relative position of the cap and the container. When the abutments and lugs are aligned, depression of the center of the domed cap engages the abutments and lugs and spreads the cap rim to disengage the lip from the groove in the container neck. Cooperating indicia on the cap and the container indicate when the two are in proper relative angular positions so that the vial can be opened.


**3 Claims, 6 Drawing Figures**



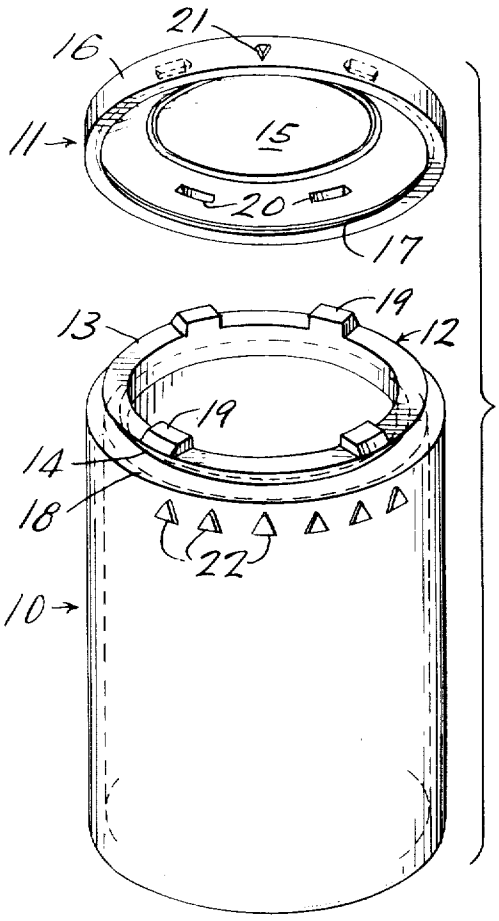



FIG-1-

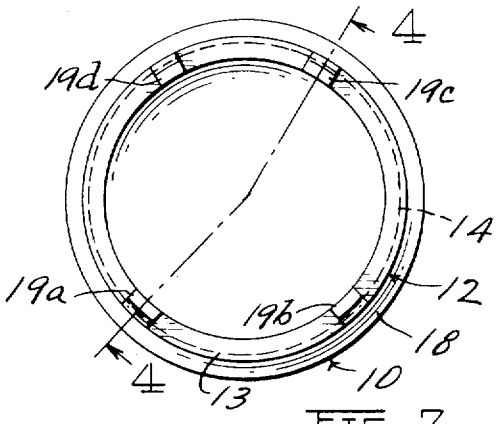



FIG-3-

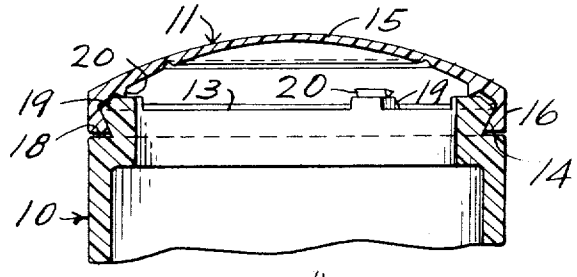



FIG-4-

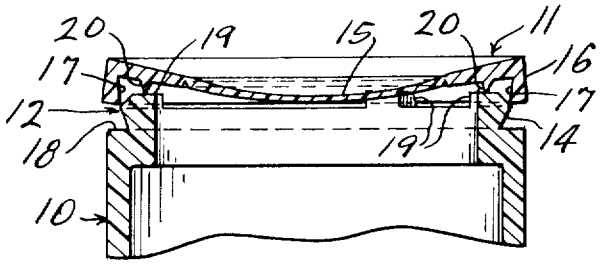



FIG-5-

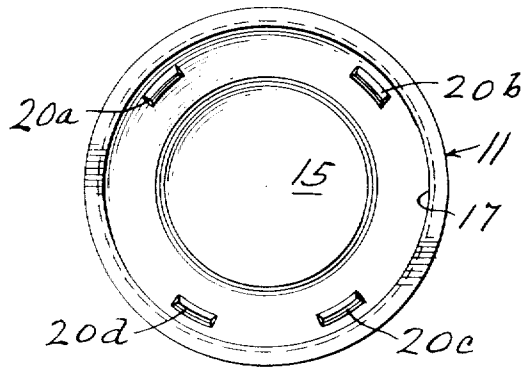



FIG-2-

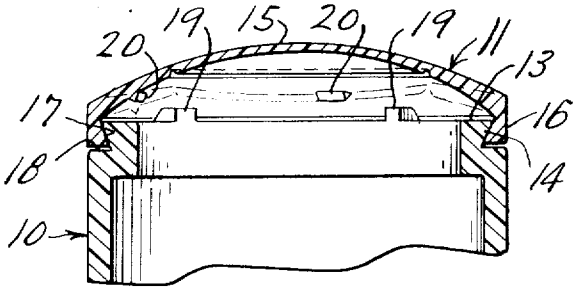



FIG-6-

# CHILDPROOF MEDICINE VIAL

## BACKGROUND OF THE INVENTION

Medicine vials having so-called "snap-off" lids have been utilized by pharmacists for many years for packaging pharmaceuticals of various types including many drugs which are potentially dangerous if imbibed by small children. With the recent advent of the Poison prevention Packaging Act of 1970, it is now becoming increasingly important and, indeed, is required by law that many products be packaged in containers which are significantly difficult for a small child of, say, five years to open. Packages of even relatively harmless drugs such as aspirin must now have means which accomplish this objective. Such packages are frequently called "child-proof" although, of course, they are not perfectly child-proof but only sufficiently so to comply with the requirements of the law and procedures set up under the law.

The conventional "snap-off" lid for a medicine vial quite readily can be removed by a small child since it is merely retained thereon by friction and usually has a tab which protrudes radially and can be grasped even by the fingers of a small child.

It is therefore the principal object of the instant invention to provide a childproof medicine vial which has a snap-off lid but which cannot be opened readily without first properly orienting the lid and the container so that an unexpected movement will result in releasing the lid from the container.

It is yet another object of the instant invention to provide a childproof medicine vial having a domed lid which is tightly retained in place on the container and cannot be removed even by carrying out the unexpected movement, unless and until the lid and the contiiner have first been oriented into an "open" position as determined by indicia thereon.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an exploded view in perspective showing a vial embodying the invention and consisting of a container and cap according to the invention;

FIG. **2** is a bottom view of the cap shown in FIG. **1**;

FIG. **3** is a top plan view of the container shown in FIG. **1**;

FIG. **4** is a fragmentary vertical sectional view taken along a transverse diametric plane and showing the cap and container in "open position," but not yet opened;

FIG. **5** is a view similar to FIG. **4** but showing how the lid is removed by depression of its center portion when the lid and container are in "open" position; and

FIG. **6** is a view similar to FIGS. **4** and **5** but showing the container and lid in misaligned position so that even upon depression of the lid center, the lid will not be actuated for removal.

## DESCRIPTION OF PREFERRED EMBODIMENT

A vial embodying the invention consists of a container generally indicated by the reference number **10** and a lid **11** for the container **10**. The container **10** has a neck **12** which has an annular ledge **13** on its upper end and an inwardly undercut annular groove **14** in the exterior surface of the neck **12** just beneath the ledge **13**.



The lid **11** is circular in configuration, having a domed central portion **15** and an annular rim **16** of a size proper to fit circumjacent the end of the neck **12**. There is an inwardly extending lip **17** on the rim **16**, the lip **17** being adapted to fit snugly into the undercut recess or groove **14** of the container neck **12**. The outside diameter of the lid rim **16** is substantially identical with the outside diameter of the portion of the container **10** just beneath the groove **14** and the lower-most edge of the lip **17** fits closely adjacent a shoulder **18** on the container which defines the bottom of the groove **14** thus when the lid **11** is in place on the container **10** (for example FIGS. **4** and **6**) there remains practically no space between the edge of the lid rim **16** and the shoulder **18** of the container into which the fingernails of a small child, for example, could be inserted in order to pry the lid **11** off of the container **10**.

In the illustrated embodiment of the invention, there are shown four axially extending abutments **19** on the container neck **12**, the abutments **19** being erected on the ledge **13** and being spaced axially from each other unevenly. For example, as can best be seen by reference to FIG. **3**, two of the abutments **19** indicated by the reference numbers **19*a*** and **19*b*** are spaced from each other 90° while two opposed abutments indicated by the reference numbers **19*c*** and **19*d*** are separated from each other by only 60°.

Similar lugs **20** are formed on the underside of the lid **11** and lie in a circle of the same size as that defined by the abutments **19** and are similarly spaced around the lid **11**, the lugs indicated by the reference numbers **20*a*** and **20*b*** being angularly spaced 90° and those indicated by the reference numbers **20*c*** and **20*d*** being similarly spaced 60°. Thus the abutments and lugs can be axially aligned with each other only when the lid **11** and the container **10** are angularly oriented into one specific relationship.

Suitable indicia comprising a pointer **21**, for example, on the exterior of the lid rim **16** and one or more indicators **22** on the exterior surface of the container **10** are utilized to indicate to an older child or an adult when the cap **11** and container **10** are properly oriented relative to each other so as to axially align the abutments **19** and lugs **20**. In the arrangement where more than one indicator **22** appears on the exterior of the container **10**, alignment of the pointer **21** with, for example, the third of the indicators **22**, places the cap **11** and container **10** in "open" position. This fact could be known by the older children and the adults in the household, but would not be known to a small child. In the alternative, if desired, only a single indicator **22** would be provided on the exterior of the container **10**, relying upon the fact that the small child would not comprehend the significance of the pointer **21** and single indicator **22**.

When the cap **11** and container **10** are properly oriented relative to each other, the lugs **20** are axially aligned as shown in FIGS. **4** and **5**. After this axial alignment, the central domed portion **15** of the lid **11** is depressed moving it from the position shown in FIG. **4** to the position shown in FIG. **5**. The engagement of the abutments **19** and lugs **20** causes the rim **16** to be spread outwardly moving it from its tight position in the undercut groove **14** and releasing the cap **11** so that it can be removed from the container **10**.

When the cap **11** and the container **10** are not in proper "open" alignment, as shown in FIG. **6**, the abut-

ments **19** and lugs **20** are not axially aligned. If the central portion **15** of the lid **11** is then depressed, the abutments **19** and lugs **20** do not engage each other and there is no force transferred to the lid rim **16** to disengage it from the undercut groove **14.** A small child thus could press the central portion **15** but this action would not disengage the lip **17** from the groove **14** and the small child would not succeed in opening the medicine vial.

Having described my invention I claim:

**1.** A childproof medicine vial or the like consisting of:

a. a container having a circular neck,

**1.** said neck having an annular ledge at its end and

**2.** an inwardly undercut annular groove in the exterior surface of said neck near the end thereof,

b. a domed circular cap for said container, said cap having

**1.** an annular rim adapted to fit circumjacent to the end of said neck and

**2.** an inwardly extending lip on said rim fitting into said undercut groove on said container neck for retaining said cap on said container,



c. a series of axially extending abutments on said container ledge spaced unevenly around said ledge,

d. a similar series of lugs on the under side of said cap lying in a circle axially aligned with said container ledge and spaced therearound for axial alignment with said abutments, and

e. indicia on said container neck and said cap for indicating the correct relative angular positions of said cap and container at "open" position for axially aligning said abutments and said lugs, whereby depression of the domed center of said cap when in "open" position engages said lugs with said abutments and spreads said cap lip for disengaging said lip from said groove.

**2.** A vial according to claim **1** in which the outside diameter of the cap rim is substantially identical to the outside diameter of the container below the groove in the container neck.

**3.** A vial according to claim **2** in which the lower edge of the cap rim fits closely adjacent the contiguous portion of the container neck below the groove in the container neck.

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