

[54] CONTAINER HAVING SAFETY CLOSURE
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[58] Field of Search 215/9, 55, 83, 50

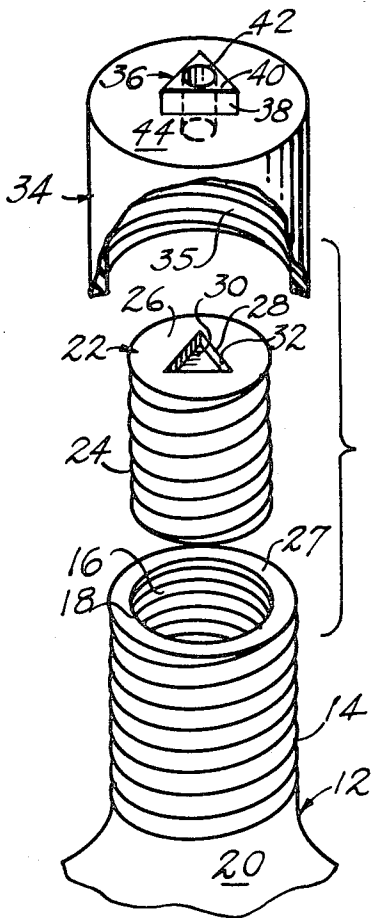
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634,742	10/1899	Bayless	215/50
3,044,648	7/1962	Cohn	215/9
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3,430,795	3/1969	Laufer	215/9 X
3,472,411	10/1969	Turner	215/9
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Primary Examiner—Donald F. Norton
Attorney, Agent, or Firm—Patrick F. Henry

[57] **ABSTRACT**
A container which could be used to store drugs, chemicals, poisons and other harmful substances, having a safety and "child-proof" closure comprising an insert, sometimes called a bung or plug, which is screw threaded into the opening in the container making it air tight and liquid tight and a cap screw threaded onto the container over the insert whereby both the cap and the insert has to be removed to dispense the contents. To make it more difficult, the insert may be tightly screwed into the opening until it is flush or below the entrance edge by means of a complementary fitting comprising an irregular shaped projection on the outside of the cap which fits a complementary, identical and irregularly shaped recess in said insert whereby a certain amount of intelligence and manipulation is necessary to effect the insertion and remove the insert. The cap has an opening large enough to permit escape of the contents so that the bung or insert must be replaced to maintain integrity of the container.

9 Claims, 4 Drawing Figures



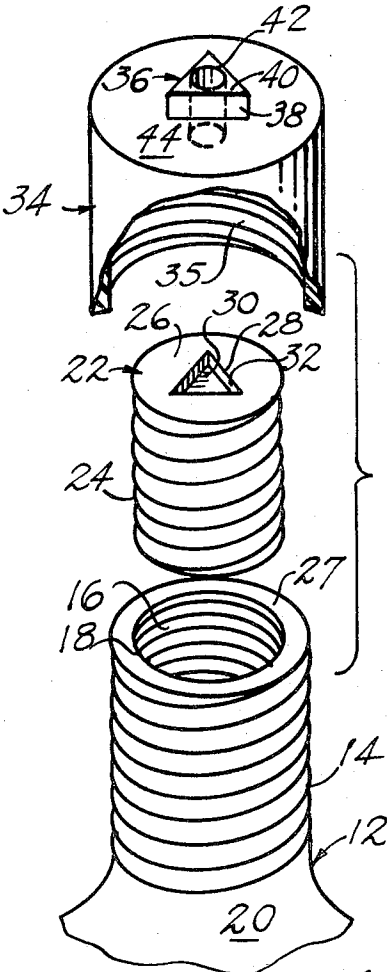


Fig. 1

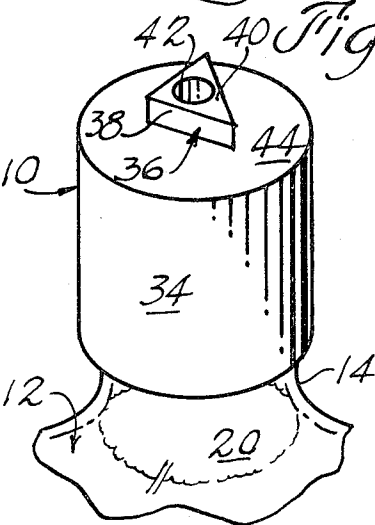


Fig. 2

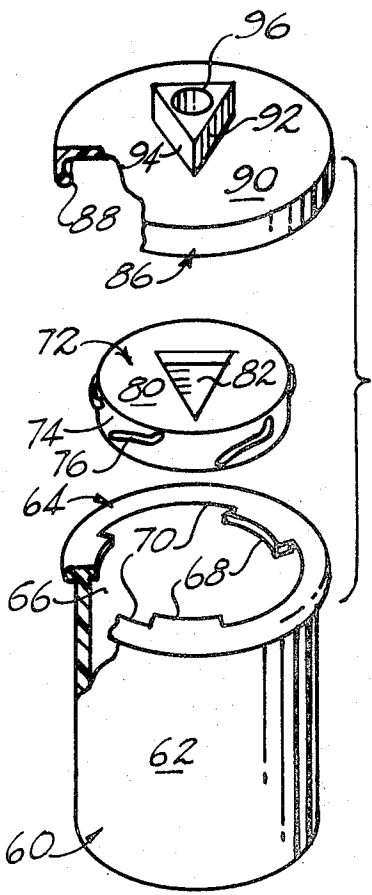


Fig. 3

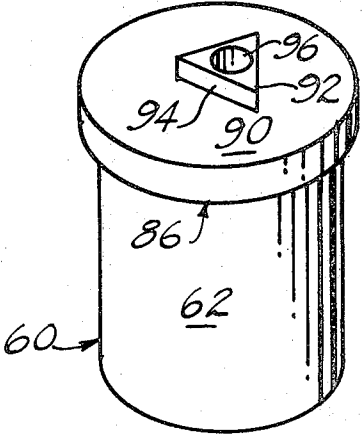


Fig. 4

CONTAINER HAVING SAFETY CLOSURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

Containers having safety closure devices. Safety closure devices for containers comprising inserts and some fitting, such as a tool, to remove the insert.

2. Description of the Prior Art

Prior art includes the following patents recently classified in Class 215, Subclass 9: 3,044,648; 3,124,264; 3,450,290; 3,473,681; 3,409,159 and 3,430,795.

The arrangement of a safety closure container with an interlocking arrangement between relatively removable portion of the disclosure is disclosed in the above noted prior art. U.S. Pat. No. 3,044,648 discloses an outer cap having a key when turned upside down fits into the inner plug closure. The Velt U.S. Pat. No. 3,409,159 discloses what might broadly be considered an insert which is opened by a separate cap having a keyed arrangement. The manner and means for retaining the insert and removing same has a lot to do with both the cost of manufacturing the container and the effectiveness of the container insofar as preventing entry. Also, if the arrangement as presented in some of the above noted patents is too complex than no one would wish to use the containers because of the trouble and time involved in getting to the contents - removing or replacing the cap. People who depend upon drugs and pills at regular intervals and at certain times do not always have the most patience and sometimes actually need the medication rather rapidly. Therefore, safety closure arrangements must not only be child-proof but must also be adult-proof against carelessness and apathy yet easily operated by adults and manufactured at a reasonable cost. The above noted prior art devices will function after the safety insert is discarded as by accident or carelessness. It is considered that the above noted prior art arrangements are not the same as presented herein. In the prior patents mentioned, if their inserts are discarded through carelessness the caps can be replaced and they are no longer safety containers but rather conventional containers. This invention precludes this from occurring due to the cap having a hole passing completely through it.

SUMMARY OF THE INVENTION

A container such as a plastic bottle with a neck receives a detachable insert, sometimes also referred to as a bung or plug, which may be threaded or otherwise retained in place in such a way as to make it difficult to remove by fingers alone such as being flush position with the top of the neck or forced in tightly whereby it is virtually impossible to remove with the fingers. The closure cap for the container has a product opening therethrough and a small keyed arrangement or tool extending therefrom which fits into a recessed, complementary-shaped cavity in the top of the insert which is also formed with slanted sides whereby it is virtually impossible for anyone to remove it without the complementary tool on the cap which is too complicated for a small child to fathom. The arrangement is such that it may be molded or similarly formed in one simple operation and in one material as well as a combination of materials such as metal and plastic, glass and plastic, or glass and metal, or any other suitable material or combination of materials.

An object of this invention is to provide a safety closure arrangement which is easy to manufacture and simple to operate.

Another object of this invention resides in the arrangement of an insert which may be made from a similar or dissimilar material from the container with a recessed portion of irregular shape which must be opened by a similarly configured tool and means, in the form of a cap opening in the preferred embodiment, whereby the utility or integrity of the container is destroyed if the insert is not used.

Another object of this invention is found in the arrangement which permits the use of any number of different irregular shapes and children are not apt to learn how to open one even over a period of time.

A further advantage is the accomplishment of some of the foregoing without springs, valves or independently moving parts.

Other objects and advantages of this invention will become apparent upon reading the following description of a preferred embodiment and the modifications thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective assembly view of the container, the insert and the closure cap positioned for insertion or immediately after removal.

FIG. 2 is a perspective view of the arrangement shown in FIG. 1 after the insert is in place and the cap is secured.

FIG. 3 is a perspective view of a modified form of the container, insert and cap suitable for snap-on plastic caps.

FIG. 4 is a perspective view of the assembled arrangement shown in FIG. 1.

DESCRIPTION OF A PREFERRED EMBODIMENT

In FIG. 1 the overall assembled and completed container is referred to by reference numeral 10 and comprises the container main body 12 which may be a plastic bottle, glass bottle, glass container, or other container having a neck 14 which is threaded on the outside and on the inside 16. There is a conventional dispensing opening 18 leading to the interior of the container body 12 through which the contents 20 such as pills, liquids, powders or other substances may be dispensed. The container 10 and the construction thereof is conventional and the present invention lends itself to the use of any container, closure arrangement and other conventional arrangements.

An insert 22 which also is sometimes referred to as a bung or plug, may be manufactured from glass, plastic, wood or any other material which is either similar or dissimilar to the material for the container 10 and has a threaded exterior portion 24 which matches the threads inside the threaded neck 16. The flat top 26 of insert has a recessed or concave portion 28 which in the embodiment shown in FIG. 1 is an asymmetrical triangle in configuration with a closed bottom 30 and angled sides 32. The entire insert 22 may be screwed down into the opening 18 until the flat top 26 is flush with the top edge 27 of the neck 14 or therebelow which makes it more difficult to remove the insert 22. The threads inside the threaded neck 16 may be so arranged as to cause the insert 22 to become tight just after the flat top 26 drops slightly below the top edge

of the neck 16 so that the insert is very tight in the opening and force must be used to remove it.

A conventional screw threaded closure or cap 34 with the usual internal threads 35 matching the external threads on neck 14 has been modified either by molding or separate provision to include a projection 36 which is a tool complementary and substantially identical to the recessed arrangement 28 in the insert 22 for the purpose of inserting therein and turning the insert from its opening. The projection 36 is an asymmetrical triangle and has sides 38 and a flat top 40. An opening 42 extends completely through the projection 36 and through the flat top 44 of the cap 34 to prevent the use of the cap 34 and the container 10 without the use of the insert 22 which is an additional safety feature preventing the present arrangement from being defeated by carelessness or thoughtlessness. The hole 42 in cap 34 extends through the top of the cap 34 and lengthwise thru the projection 36. The purpose of the hole 42 is to prevent careless or hasty persons from simply throwing away the bung 22 when the container 12 is first opened and simply using the cap alone for subsequent closures. The size of the hole is not so critical except that it should not be so large as to seriously impair the strength of the projecting key tool 36 but yet large enough to permit easy passage of the container's 12 contents - whether liquid, powder, capsule, or tablet, and so as to prevent its use as a closure on its own. It is also noted that the presence of the hole 42 further adds to the visual confusion of the mirror image asymmetric triangular key and recess when viewed by a child. Also, the presence of the hold 42 may relieve the supplier of the containers or the contents from liability in products liability matters or in the regulations about safety containers from government as it renders the container substantially useless for most purposes if the insert is left out.

All the parts could be manufactured in like substances for both the container 12 and the top insert 22 in cap 34 such as glass with glass, metal with metal, plastic with plastic, or with parts of unlike substances such as glass with metal, metal with plastic, plastic with glass, etc. It should be noted that there are no moving parts except for the motion transmitted by the manipulation by hand and therefore there are no springs or valves, pistons or plungers or other similar more expensive and more complex organizations. Actually there are just three basic parts and two of which are conventional in containers, the container and the cap, with the additional provision of the removable insert or plug.

The projection 36 is a tool for removing the plug insert 22 which to a normal adult would be a simple matter of inserting the tool projection 36 and turning it until it matches with the complementary opening 28 but to a small child this would be a very difficult, due to the fact that it is in mirror image, and by using asymmetrical designs which permits the two parts to fit together only one way thus presenting a puzzling and impossible situation which would take so long that surely the child would abandon its efforts. Careless adults are prevented from removing the insert 22 and discarding it permanently on first use by means of the hole in the form of the through opening 42 which can be of varying sizes dependent only upon the contents of the container. In the case of liquids the hole 42 does not need to be very large nor need it be very large for containers

which contain powdered contents. However, for containers which are intended to contain pills or tablets the hole should be of such a size that without the insert 22 in place the contents could be dispensed through the hole 42 itself which of course is against the purpose of the safety container as well as making the container useless to prevent air from entering which would discourage careless adults from throwing the insert 22 away. In a sense the projection or tool 36 is a key and the insert 22 is the lock with the cavity of the recessed concave portion 28 is the keyhole and entrance which "unlocks" the insert 22. The recess 28 adapts so readily but accurately the counterpart geometric projection tool 36 that many, many configurations could be used for this "lock and key" arrangement - the simplest desirable one being that which in cross-section is an isosceles triangle (just short of being an equilateral triangle) since this provides the simplest arrangement whereby the key - can be inserted into the lock - recessed portion 28 - in one position only. It should be noted an important feature of this invention is that on looking down into the triangular recess on top of the bung or insert 22 and down into the concave portion 28, the one triangle is a concave mirror image of the other convex so that a young child from simple inspection of the two would not readily conclude that one was intended to fit the other. The various complexities that involve recognition of the relative positions of the engaging angles between lock and key prior to insertion of the cap 34 and the necessity from making a coordinated insertion with no visual aids are all features of this invention.

The geometric design of the projection 42 and the concave portion 28 and hole 42 should be of sufficient size to allow the tool to operate proportionate to the size of the container and the contents.

The use in containers of the variety employed in the filling and dispensing of prescriptions which are not intended for long shelf life a slight variation of this container can be used. Such containers are usually conventionally cylindrical in shape and manufactured in plastic with snap-on tops which are neither air tight nor liquid tight but are specifically designed for short shelf life items. In FIG. 3 there is shown a modified container designated generally by reference numeral 60 and having a conventional cylindrical container body 62 with a lip 64 in the top leading to a large opening 66 about which there are projecting flanges or ledges 68 having intermediate recessed arcuate portions 70 receiving the insert 72 which has a circular body 74 with tapered projection 76 that fit into the portion 70 and after turning lock in place against the projection 68. The insert 72 has a flat top 80 and a concave portion 82 of asymmetrical triangular configuration the same as in the previous embodiment. The snap-on cap 86 has an internal bead 88 which snaps over the lip 64 of the container 62 and has a flat top 90 which is arranged the projecting tool or key 92 of complementary configuration to the recess of concave portion 82. The projection 92 has sides 94 and a through opening 96 for same purpose as in the previous embodiment. This simpler form of the container 60 is suitable for use where short term storage is only intended and not under the most rigorous conditions as for example where a relatively small quantity of a medicinal substance is dispensed by a pharmacist for an individual's use within a few days.

While the present invention is certainly intended for holding and transporting medicinal substances under standard conditions acceptable for such substances its use is not restricted to the packaging of medicinal compounds but is equally suitable for the packaging, long and short term storage and transportation of any various or potentially poisonous substances including commonly used household chemicals such as acids, alkalis, bleaches, polishes, insecticides, garden chemicals, detergents, cleansing agents, and any substance whatsoever in liquid or dry form.

While I have shown and described a preferred embodiment of this invention together with an alternative embodiment and suggested modification this is for the purpose of illustration and understanding and does not constitute any sort of limitation on the scope of the invention since various alterations, changes, deviations, eliminations, additions, removals, substitutions and departures may be made in the embodiment shown and described without departing from the scope of the invention as shown in the appended Claims.

I claim:

1. In a safety container:

- a. a container body having an opening therein through which the contents, including solid pills or liquid medicines and chemicals, may be dispensed, said container opening being provided with part of matching rotational retaining means,
- b. an insert having retaining means thereon matching with and fitting said rotational retaining means in said opening, said insert being thereby rotated into position in said opening so that the top of said insert is substantially even and flush with the top of said container opening whereby it is not possible for a small child to grasp any significant part of the insert with the fingers for removal from said container opening, said insert being retained in said opening by said matching retaining means and it requiring rotation for removal therefrom,
- c. a closure fitted on said container body and over said insert when said insert is in said opening in said container body, said closure having a through opening therethrough whereby if said closure were placed on said container body without said insert in place said container contents would be exposed to the outside and the contents could dispense therefrom, thereby to discourage the use of the

container without the insert and to encourage the replacement of the insert after removal,

d. an irregularly-shaped projection on said closure functioning as a tool providing the only ready means whereby the insert which is at least substantially flush may be rotated and removed,

e. and an irregularly-shaped recess in said insert complementary with and matching said projection in one and only one position of said projection and recess, whereby it is necessary to align and match the recess and projection in order to use the closure and projection as a tool for turning and removing the insert thereby providing an impediment to the use by a small child.

2. The device in claim 1 wherein said closure is a cap and said container has a threaded portion thereon onto which said cap is fitted.

3. The device in claim 1, wherein said insert has a plurality of threads thereon matching with a plurality of threads in said opening.

4. The device in claim 1 wherein said closure is a cap and said container has a threaded portion thereon onto which said cap is fitted, there being a plurality of threads on said insert matching with a plurality of threads in said opening.

5. The device in claim 1, said opening in said closure being through said projection.

6. The device in claim 1: said insert having projecting lugs that fit beneath ledges on said opening, said insert being retained by inserting said lugs in open spaces and then turning said insert whereby said tool on said closure is required to remove said insert.

7. The device in claim 1: said tool being an irregular geometrical shape.

8. The device in claim 1:

said insert being inserted substantially flush with or lower than the terminal edge of the container body at the container opening whereby it is difficult to remove the insert with the fingers alone so that a child will be discouraged.

9. The device in claim 1:

said recess being a concave asymmetrical triangle and said projection being a convex complementary configuration whereby the view thereof to a child complicates the understanding of opening relationship.

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