United States Patent [19]

Ayers et al.

[11] **3,837,692**

[45] **Sept. 24, 1974**

[54] **SAFETY FASTENER FOR CONTAINER**

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[73] Assignee: **Eli Lilly and Company**, Indianapolis, Ind.

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[52] **U.S. Cl.** **292/152**, 292/107, 70/63, 292/DIG. 65

[51] **Int. Cl.** **E05b 65/52**, E05c 19/10

[58] **Field of Search** ..... 292/106, 107, 150, 152, 292/207, 145, DIG. 50, DIG. 65; 70/63; 220/55 L; 206/1.5

[56] **References Cited**

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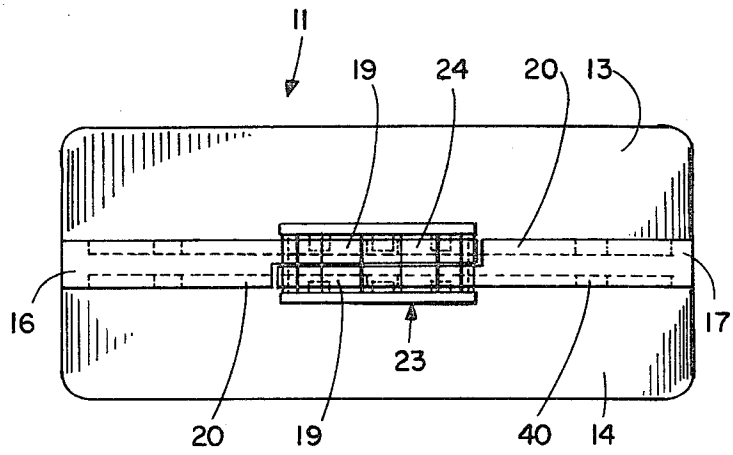
Primary Examiner—Robert L. Wolfe

Attorney, Agent, or Firm—Houston L. Swenson; Everet F. Smith

[57] **ABSTRACT**

A safety fastener for a two-section container having an integral slide which is selectively engaged with a portion of one or both sections of the container to permit the container to be opened or to be maintained in a locked position. The slide has a resilient portion which upon being depressed permits movement of the slide from a locked position to a free position thereby allowing the container to be opened.

9 Claims, 8 Drawing Figures



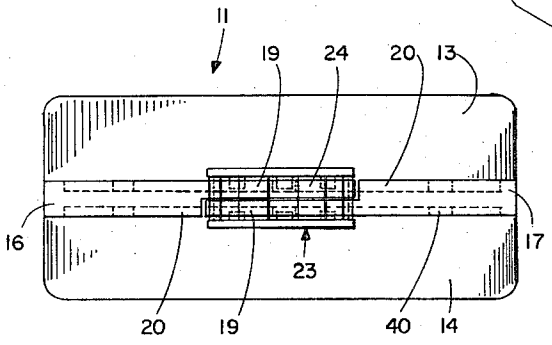


FIG. 1

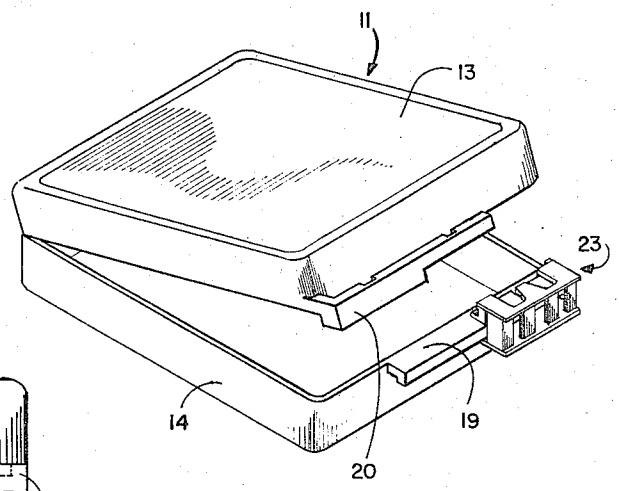


FIG. 2

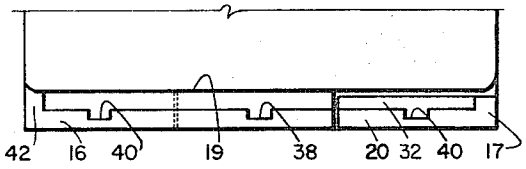


FIG. 3

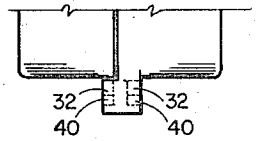


FIG. 4

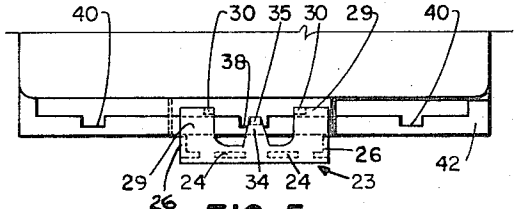


FIG. 5

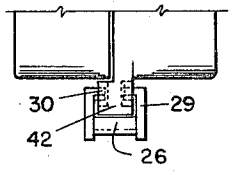


FIG. 6

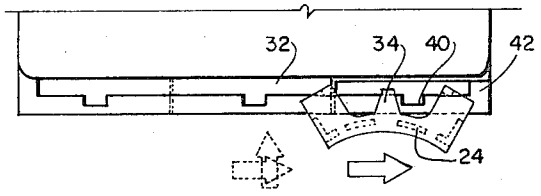


FIG. 7

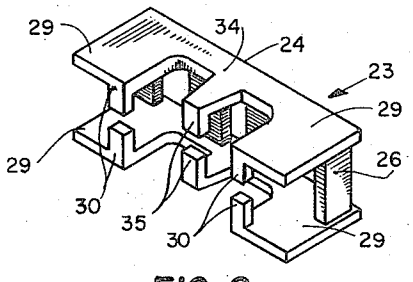


FIG. 8

SAFETY FASTENER FOR CONTAINER

BACKGROUND OF THE INVENTION

For a considerable time efforts have been directed toward the design and efficient production of containers which will have locking or safety devices to deter opening of them by children. In particular, the pharmaceutical industry has had a need for containers that can be readily opened by adults but not opened easily by young children. A great number of designs have evolved which are directed toward providing safety closures for bottles. However there has still been a need for providing a safety closure design that can be used on other types of containers such as conventional plastic boxes having two sections which are normally hinged together for opening.

In the prior art designs have been produced for providing safety fasteners for purses which are hinged. Referring to the design disclosed in U.S. Pat. No. 1,883,481, Baum, a fastener of a slide concept has been developed for securing one or both sections of a purse. In order to open the purse it is necessary to first depress the slide at one end to disengage it from a complementary section of the purse and then slide it toward one end of the purse, thereby moving it from both portions of the purse to one portion. It is apparent that although a fastening device requiring a number of elements may be suitable for purses it is not acceptable from an economical standpoint for adaptation on millions of inexpensive plastic boxes. Likewise, U.S. Pat. No. 2,006,268, Geiser et al., discloses a multi-piece slide fastener adapted for securing the handles of a purse together. Such slides as shown in the Baum and Geiser et al. patents, in addition to being expensive to produce, are also likely to fail to meet standards established for the pharmaceutical industry in packaging medicaments inasmuch as a child could readily operate these fasteners.

SUMMARY OF THE INVENTION

The safety closure of our invention can be molded from inexpensive plastic materials and, due to the integral nature of the safety slide, expenses in assembling the closure to a plastic box are held to a minimum. A conventional two-section container having a lid and base can be adapted by providing a pair of rails that extend from them and which are in alignment when the box is closed. A slide molded from plastic material is engaged on a portion of both of the rails in order to maintain the box in a locked position. This is achieved through the provision of a catch on the slide which can be placed in a caught position with at least one of the rails while the slide is overlapping both of the rails. In this caught position the slide cannot be moved along the rails. The slide has a resilient portion from which the catch depends and upon depressing this portion the catch is disengaged from its caught position, thereby permitting concurrent movement of the slide along the rails to an unlocked position where the slide engages only one of the rails. In this manner the two sections can be displaced from each other and the box opened. By providing sufficient strength in the slide and in particular in its resilient portion it has been determined that children below the age of 6 years old are generally unable to simultaneously depress the slide and move it along the container's rails.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a front view in elevation of a container embodying the safety fastener of this invention;

FIG. 2 is a perspective view of the container in an opened position;

FIG. 3 is a partial top view of the container illustrating its pair of rails prior to attachment of the safety slide;

FIG. 4 is a partial end view in elevation of FIG. 3;

FIGS. 5 and 6 are partial top and end views respectively of a container bearing a safety slide;

FIG. 7 is a partial top view of a container bearing a safety slide positioned in an unlocked relationship therewith; and

FIG. 8 is an enlarged perspective view of the safety slide.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The two-sectioned container **11** illustrated in the drawing may be formed from a plastic material or any other suitable material that enables the container to maintain rigidity. Thus the illustrated container has been formed from a conventional injection plastic molding technique and is comprised of a lid **13** and a base **14** which may be connected together at their rear by conventional plastic hinges. Although this container is of a rectangular form it will be apparent that it can take on other forms such as an eliptical or circular configuration without departing from the invention herein. With one exception this container may be of a conventional design. It is to be noted that at the front end of the container as shown in the drawing a pair of rails **16** and **17** are provided on the lid and base. The rails are of like configuration with each having a ledge portion **19** and a stepped portion **20.** Each rail extends across a predetermined distance of the container whereby the two ledges **19** overlap each other. The height of each of the stepped portions **20** is such that it is flush with the ledge of the opposite container section, thereby causing the two rails to assume an aligned position when the container is closed (FIG. **3** and **4**). In the illustrated embodiment the overlapping ledge portions **19** extend a distance such as to nearly abut the stepped portion **20** of the opposite rail in order to provide a surface that is substantially smooth.

Referring to FIGS. **1, 5, 7** and **8** an integral slide is provided for engagement with portions of one or both of the rails **16** and **17.** Slide **23** is likewise formed of a plastic material or other suitable material and again can be formed in a single injection molding step. This slide (FIG. **8**) comprises a front panel **24** and a pair of end panels **26.** Depending from these panels are two pairs of legs **29** with each of these legs being of similar configuration and having a foot **30** extending therefrom (FIG. **8**). The length of each of these feet is just slightly less than the depth of the recessed area **32** extending along each side of rails **16** and **17.**

Depending from the front panel **24** of the slide are a pair of detents or catches **34** which are positioned intermediate of the end legs **29.** As best shown in FIG. **5** these catches are shorter than the legs of the slide. Referring to FIG. **8** each catch **34** has a foot **35** that extends from it in a right angled fashion similar to feet **30** extending from legs **29.** In FIG. **7** slide **23** is in an unlocked position and is consequently shown in a dis-

torted form. This distortion is permitted by the provision of a resilient central portion in panel **24** from which catches **34** depend.

As shown in FIGS. **1** and **3,** the overlapped portions **19** of the two rails each has a cutout or recess **38** which is located midway along its length. Each of these cutouts is of a rectangular configuration in order to snugly receive a foot **35** on the slide's catch elements **34.** In addition to this pair of first cutouts appearing on the overlapping ledges **19** of the two rails two pairs of second cutouts **40** are positioned intermediate the first cutouts and the outer ends of the rails. These cutouts are also of a rectangular configuration for again securely receiving the feet **35** on catches **34.** Outer end abutments **42** are provided on the ends of the rails to limit the movement and maintain the slide thereon.

Slide **23** may be formed of a flexible material thereby permitting its legs **29** and catches **34** to flex outwardly temporarily while the slide is being assembled in a straddling position over the rails. When the slide is so positioned it is to be noted that the underneath surface of its front panel **24** is spaced from the rails and is maintained in such a position by the cooperative effect of its end panels **26** and legs and catches with their corresponding feet extending into the recessed surfaces **32** on each rail. It thereby becomes extremely difficult to remove the slide from the rails since there is insufficient space to enable one to easily spread the legs outwardly for disengagement from the rails.

As shown in FIGS. **1** and **5** slide **23** is in a locked position on the container. In this position the slide assumes an unstressed form with its catches **34** having their feet **35** interlocked with the first cutouts **38** on the two rails. Inasmuch as the catches **34** are on shorter length than the legs **29** of the slides the feet **35** are maintained in the cutouts and prevent the slides from moving either to the left or the right.

In order to open the container it is necessary that the slide be moved into a position whereby it engages only one of the two rails and in the particular embodiment is moved to a position where it straddles the stepped portion **20** of a single rail. This may be accomplished with one hand (adult) by gripping the box between the thumb and middle finger with the index finger placed on the front panel **24** of the slide. By pressing the spaced front panel toward the rails the catches **34** are moved inwardly as shown in FIG. 7 and consequently their respective feet are moved out of the first cutouts **38.** At this point if pressure is released on the front panel the feet of the catches will resume their interlocked position with the cutouts as shown in FIG. **5.** Thus it is apparent that pressure must be maintained on the front panel while simultaneously pushing the slide either to the left or right on the rail. The dotted arrows of FIG. 7 depict the two concurrent forces of depressment and sliding to the right (or left) required to move the slide out of its locked position.

In the illustration of FIG. 7 the slide has been depressed and simultaneously moved toward the right. It has not completed the full distance it is permitted to travel until it reaches the end abutment **42.** As the slide of FIG. 7 is moved a slight distance more toward the right the feet **35** of the catches **34** will drop into the second cutouts **40** on a rail. With the slide fully moved toward the right and straddling only stepped portion **20** of a single rail **17** the container is in an unlocked position and may be opened as shown in FIG. **2.** It is to be noted that as the slide is moved from its locked position in FIG. **5** to an unlocked position that the feet **30** on the left pair of legs **29** will pass over the first cutouts **38.** It may therefore be desirable in order for assured smooth movement that the width of these feet **30** be greater than the width of the first cutouts **38** in order that these feet do not hang up in the cutouts. However, the strained condition of the slide caused by the riding of the shorter catches **34** and their feet **35** (FIG. 7) will normally prevent feet **30** from tending to hang up in cut-outs **38.**

With the slide in either a fully extended left or a right unlocked position and gripping only a single rail the method of locking the container is as follows. The lid and bottom are closed and the box is gripped again between the fingers and thumb of the hand with the index finger pressing against the front panel **24** of the slide. As pressure is applied the catches disengage from cutouts **40** on the single rail **17** thereby enabling the slide to be simultaneously moved toward the central or locked position of FIG. **5.** During such movement the slide is again in a cocked position as shown in FIG. **7.** The shorter catches **34** ride along the rails and further assist in assuring that the feet of legs **29** do not enter a cutout. Thus the catch may be returned to a locked position which comprises straddling the overlapping ledges of the two rails.

Another feature of this safety fastener is that its components on the two box sections are identical. Therefore, if the box has hinges of the ball and socket type, such as in U.S. Pat. No. 2,570,341, Hake, a single mold cavity can be used for both the lid and base sections. To obtain three sizes of boxes which differ in depth, one need only employ two mold cavities of different depths.

I claim:

1. A safety fastener for a two-section container having a lid and base comprising:

a pair of rails extending from said lid and base which are in alignment when said box is closed,

an integral slide selectively engaged with a portion of both of said rails in a locked position of said fastener and with only one of said rails in an unlocked position of said fastener,

said slide in the locked position of said fastener having an intermediate catch in a caught position with at least one of said rails and preventing movement of said slide along said rails,

said intermediate catch depending from a resilient portion of said slide, said resilient portion being spaced from said rails and which upon being depressed releases said catch from its caught position and permits concurrent movement of said slide along said rails.

2. A safety fastener for a two-section box in accordance with claim **1** in which said intermediate catch, in its caught position, has a first detent interlocked with a first cutout in one of said rails.

3. A safety fastener for a two-section box in accordance with claim **2** in which said slide is engaged with said rails by depending legs which grip said rails in a straddling relationship.

4. A safety fastener for a two-section box in accordance with claim **3** in which each of said legs has a foot positioned on the underneath side of said rail for sliding there along.

5. A safety fastener for a two-section box in accordance with claim 4 in which each of said legs is longer than said intermediate catch.

6. A safety fastener for a two-section box in accordance with claim 3 in which said intermediate catch has a second detent opposite said first detent for interlocking with a corresponding first cutout in the other of said rails.

7. A safety fastener for a two-section box in accordance with claim 4 in which each of said rails has an outer end abutment in alignment with said legs' feet for limiting movement of said slide along said rails.

8. A safety fastener for a two-section box in accordance with claim 1 in which said portion of said rails engaged with said slide in its locked position comprises overlapping ledges of said rails.

9. A safety fastener for a two-section box in accordance with claim 2 in which each of said rails has a second cutout intermediate said first cutout and its outer end adapted to receive said first detent of said slide and secure it in an unlocked position.

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