

[54] SAFETY CONTAINER

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[51] Int. Cl. .... B65d 85/42

[58] Field of Search ..... 206/528-540; 220/345, 346, 347, 350; 229/9, 11

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[57] ABSTRACT

A snap lock and squeeze open slide top container has

a small centered catch depending from the inner face of the cover. The edge of the catch forms with the closed end of the cover a slot which accommodates the rear edge of the drawer portion of the container. The profile of the catch is tapered, forming an inclined plane directed to the front end of the container. The cover and drawer are slidably engaged by lateral meshing flanges which are interrupted near the closed end to provide slight clearances between the inside of the cover and the outside of the drawer. These clearances, together with an inverted V-shaped cut centered in the rear skirt of the cover, permit the cover to bow up when the sides are squeezed, releasing the edge of the drawer portion from the slot formed by the catch, to open the drawer. When the drawer is closed, the edge portion rides forward along the inclined plane depending from the cover, engaging the slot with a click, to lock the container closed. To prevent spillage, the opening of the drawer is limited by a pair of small stops depending from the inner face of the cover near each sidewall, which ride in elongated recesses in the lateral walls.

9 Claims, 11 Drawing Figures

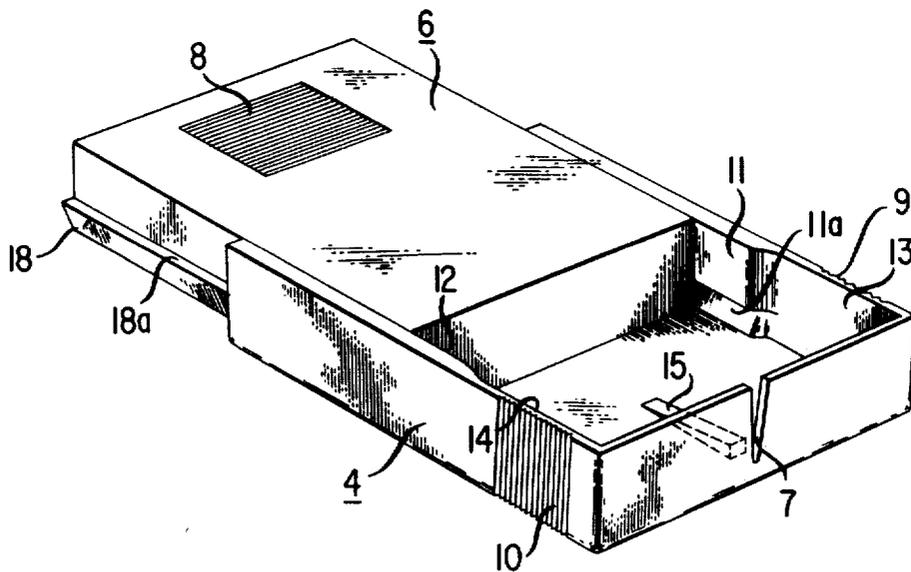


FIG. 1

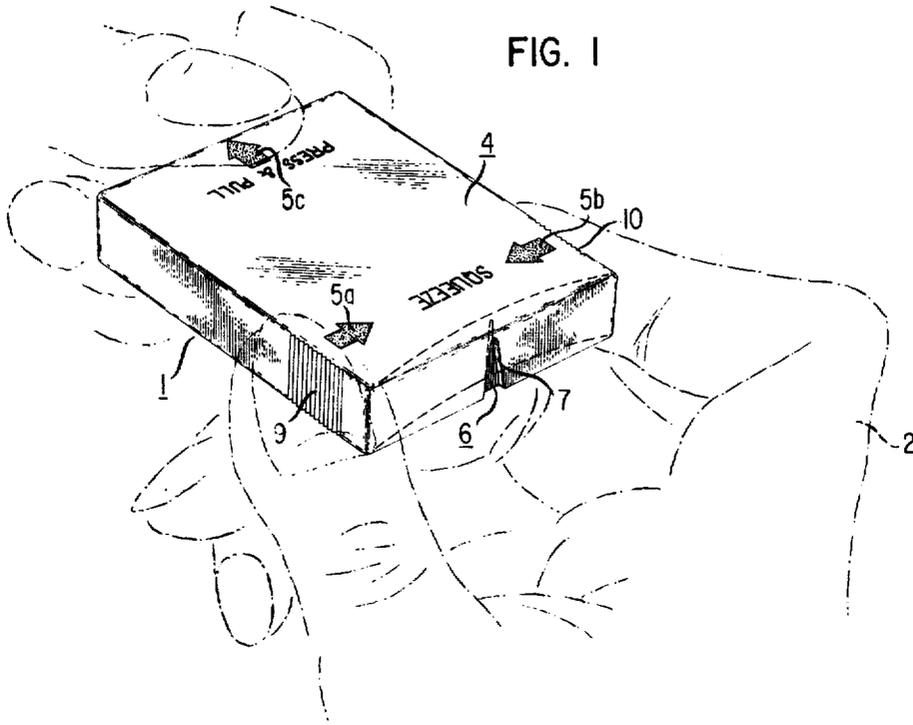


FIG. 2

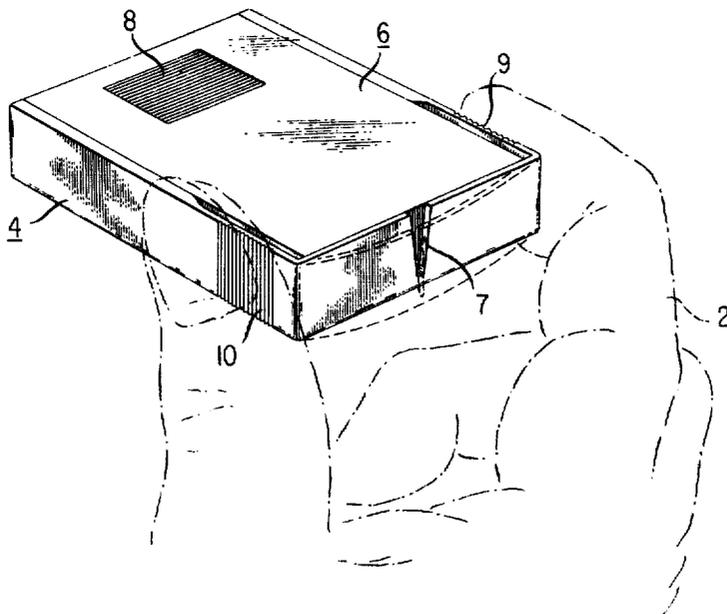


FIG. 3

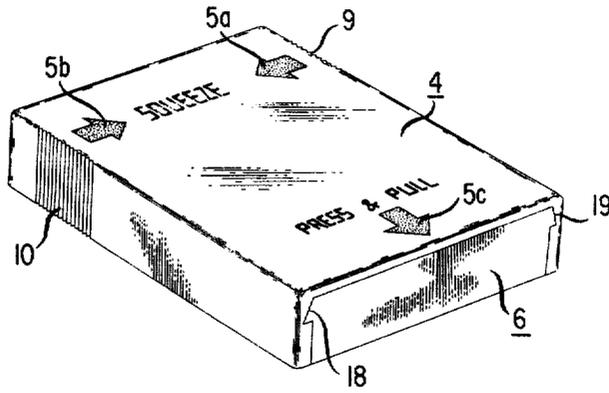


FIG. 4

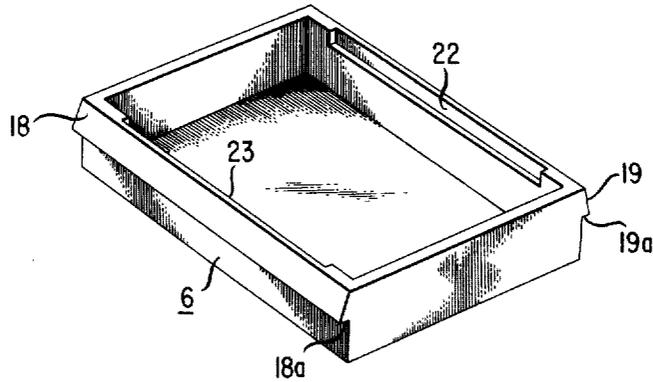
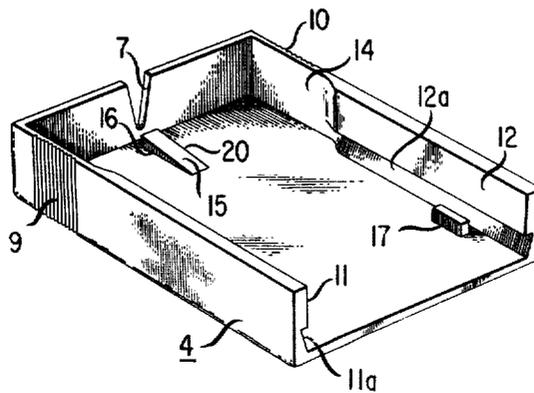


FIG. 5



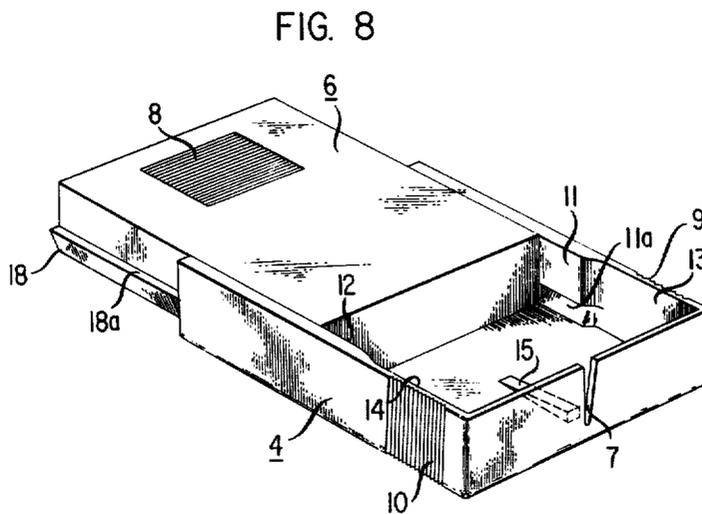
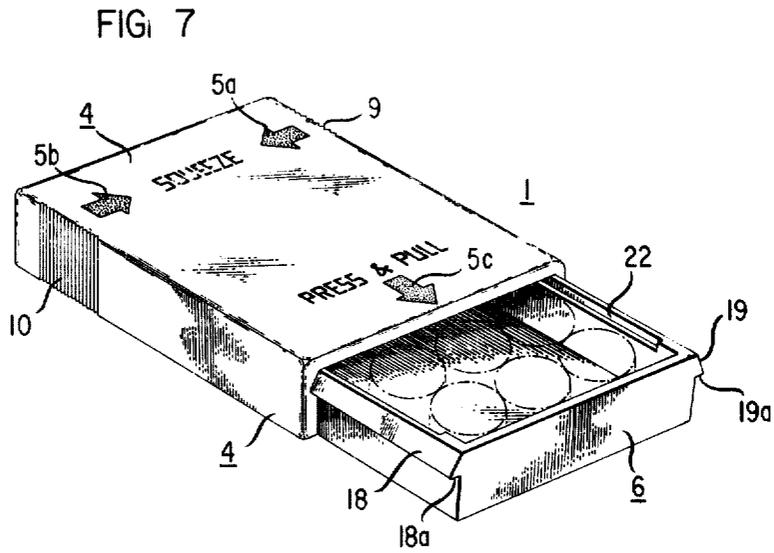
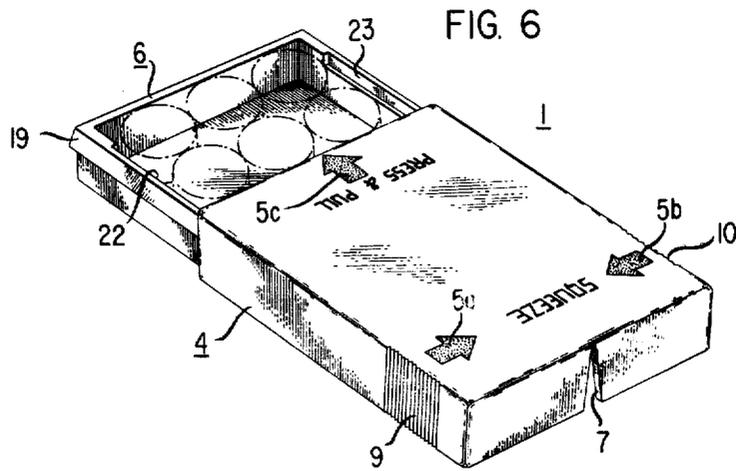


FIG. 9

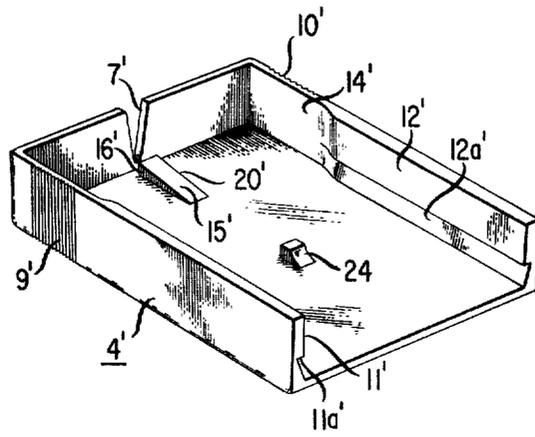


FIG. 10

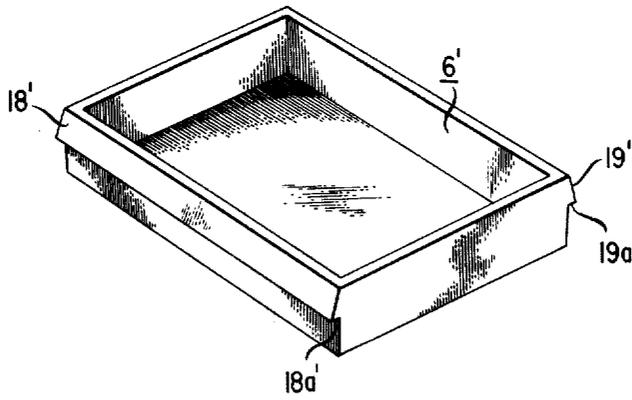
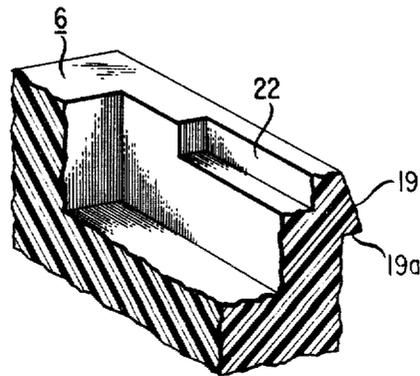


FIG. 6A



## SAFETY CONTAINER

## BACKGROUND OF THE INVENTION

This invention relates in general to dispensing containers with slide-on covers and, more particularly, to safety containers designed to accommodate pills or tablets in a manner inaccessible to small children.

Many of the pill and capsule containers presently available on the market can be readily opened to their full extent by children too young to understand the nature of their contents, who may spill, or worse, consume the contents. In order to avoid this hazard, containers have been designed which require greater strength or skill to open; but, many of these have proved inconvenient and inaccessible for the users.

Accordingly, it is a principal object of the present invention to provide a dispensing container for pills and the like which may be readily opened by adults and older children, but for which the contents are substantially inaccessible to children too young to understand their nature. Another object of the invention is to provide a container in which access to the contents is limited, to reduce loss or spillage.

A further object of the invention is to provide a safety container of a design which is readily mass produced from thermoplastic materials.

These and other objects are realized in accordance with the present invention in a shallow slide cover box which snap-locks closed in response to slight pressure on its open end. In order to open the box, the lateral walls of its closed end are squeezed together between the thumb and finger of one hand while the thumb of the other hand depresses the face of the cover at its other end and the fingers of that hand pull the drawer forward. All of these operations are clearly indicated by simple printed instructions on the box cover.

The snap lock and squeeze open operations are made possible by construction features which include a small centered cam or catch depending from the inner face of the cover, which is provided with an edge substantially parallel to and forming a slot with the closed end of the cover. The slot accommodates the rear edge of the drawer in its closed position. The cam is tapered in longitudinal section, forming a short inclined plane directed toward the front of the cover.

The drawer and cover are slidably engaged by means of meshing lateral flanges. The outwardly directed lateral flanges on the drawer portion extend symmetrically the entire lengths of the two sides, so that the drawer is reversible in the cover. On the cover, the interruption of the lateral inwardly directed flanges near the rear provides clearances on each side. The rear end of the cover adjacent the cam contains an inverted V-shaped cut or slit, whose maximum width slightly exceeds the combined widths of lateral clearances between the rear portions of the cover and the inside of the drawer. These features enable the cover to bow up when its two rear sides are squeezed together, so that the edge of the drawer is dislodged from the slow and overrides the small cam, sliding along the inclined plane as it moves to open position of the box.

When the drawer slides open, its outward motion is arrested by a pair of small stops which depend from the inner face of the cover near each sidewall and ride in elongated recesses along the lateral drawer walls, engaging the abrupt ends of the recesses when the drawer

has been removed about halfway. This prevents loss or spillage of the contents.

Scoring on the sides near the slit end of the cover and under the front portion of the drawer prevents the fingers from slipping when the container is grasped.

A particular feature of the container of this invention is that it is substantially inaccessible to small children unable to read; but, is opened with relative ease by persons following simple written directions.

Another feature of the container of this invention is that it requires minimal finger strength or skill to snap it closed or to open it as directed.

A further feature of the invention is that the design is simple to construct and lends itself to mass production techniques, using thermoplastic materials.

These and other objects, features and advantages will be apparent from a study of the detailed specification hereinafter with reference to the drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows the container of the present invention in fully assembled closed condition, in the hand of a user (shown in phantom);

FIG. 2 shows the fully assembled closed container of FIG. 1, bottom side up, in the hand of a user (shown in phantom);

FIG. 3 shows the slide cover of the container of FIGS. 1 and 2 from which the drawer has been removed;

FIG. 4 shows the drawer of the container of FIGS. 1, et seq., with the cover removed;

FIG. 5 shows the slide cover of the container of FIGS. 1, et seq., removed and turned upside down;

FIG. 6 shows the back of the partly open container of FIGS. 1, et seq.;

FIG. 6A shows an enlarged section of an internal flange on the drawer of FIG. 6 on which the cover is slidably engaged;

FIG. 7 shows the front of the partly open container of FIGS. 1, et seq.;

FIG. 8 shows the partly open container of FIGS. 1, et seq., bottom side up; and

FIGS. 9 and 10 show a modification of the cover and drawer to accommodate a single stop.

## DETAILED DESCRIPTION

Referring to FIG. 1, there is shown the container 1 of the present invention, fully assembled, having a rectangular cover 4, which is 1.885 inches long, 1.5 inches wide, 0.36 inch deep and having a wall thickness of between 0.04 and 0.045 inch, formed of polyethylene or polypropylene. Other plastic materials well-known in the art which can be used for the purposes of the present invention include polystyrene, acrylonitrile-butadiene-styrene, materials known by the trademarks Celcon (Celanese Corporation) and Delrin (E. I. DuPont de Nemours & Co., Inc.) and copolymers of any of the foregoing or, in fact, any thermoplastic materials. It will also be understood that wood, sheet metal or pressed paper products can be used for the purposes of the present invention. In each case, the thickness of the sheet material used will be determined by its strength and flexibility.

The rectangular cover 4 fits onto a drawer 6, to be described in detail with reference to FIG. 4. It will be noted that the cover 4 includes, on its face, a series of arrows 5a, 5b and 5c. The arrows 5a and 5b are directed inwardly from the lateral walls of the cover 4,

near its right-hand end, as shown in FIG. 1, and bear the legend SQUEEZE. The arrow 5c is directed to the left-hand end of the container 1, near which it is centered, bearing the legend PRESS & PULL. Centered in the right-hand edge of the cover 4, as shown in FIG. 1, is a downwardly directed V-shaped cut 7 which is 0.26 inch high and tapers from 0.062 inch across the bottom to a rounded apex of 0.015 inch radius, 0.08 inch from the top face of cover 4.

FIG. 1 indicates the closed container 1 in the right hand 2 of a user (shown in phantom), in which the thumb and index finger are pressed against the two sides of the cover 4, causing it to bow up, becoming displaced in the manner indicated by the dotted lines. (See, FIG. 2). Simultaneously, the left hand 3 of the user (also shown in phantom) grasps the under portion of the drawer 6 at the left-hand end for withdrawing the same from the cover 4. Roughened or scored surfaces 9 and 10, about  $\frac{3}{8}$  inch wide on each of the left-hand and right-hand sides of the cover 4, opposite arrows 5a and 5b, prevent thumb and fingers from slipping when the container is grasped and squeezed.

FIG. 2 shows the assembly of FIG. 1, bottom side up. It will be noted that on the bottom of the drawer 6, centered near its left-hand end, is a scored surface 8 about  $\frac{1}{2}$  inch wide, similar to 9 and 10 on the cover, which enables the thumb of the left hand to grasp the drawer 6 without slipping, for removing the same from the cover 4.

FIG. 3 shows the cover 4 after the drawer 6 has been removed. The shapes of cover 4 and drawer 6 will be better understood by reference to FIGS. 4 and 5 of the drawings. It will be noted that the drawer 6, of which the bottom face has an overall length and width of 1.837 by 1.37 inches, has a wall thickness of 0.045 inch and a height of 0.32 inch. Extending down 0.094 inch from the upper edge of the drawer on the left- and right-hand sides at the front end, are a pair of flanges 18 and 19 which flare out slightly to form an angle of approximately  $14^\circ$  with the vertical, providing on each side the undercut surfaces 18a and 19a, respectively, 0.025 inch wide, which serve as tracks for slidable engagement between the drawer 6 and the cover 4, as will be explained. Flanges 18 and 19 extend the entire length of outer wall of drawer 6, on both sides.

On the interior peripheral edges of drawer 6 are recesses 22 and 23, each 0.05 inch wide and 0.04 inch deep and extending from a position 0.240 inch from the left-hand (front) end of drawer 6 equidistant from the right-hand (rear) end of the drawer, so that the drawer is symmetrical at its two ends, and reversible in cover 4. The function of the recesses 22 and 23 is to accommodate stop mechanisms 17 and 20 (not shown) on the inside face of cover 4, shown upturned in FIG. 5. The recesses 22 and 23 are also visible in FIGS. 6 and 7, which show the drawer and cover partly closed. FIG. 6A shows the recess 22 in enlarged detail.

Referring to FIG. 5, the stop mechanisms 17 and 20 (not shown) are 0.200 inch long, 0.056 inch wide and 0.04 inch deep, having parallel sides and slightly rounded ends. They are affixed to the inside of cover 4 with their lateral inner edges 0.053 inch from the respective inside walls and 0.240 inch from the open front thereof.

In FIG. 5, it will be noted that the cover 4 has a pair of inwardly directed flanges 11 and 12, extending 1.385 inches from the front end of the cover and interrupted

at about 0.600 inch from the rear inside wall, where it gradually tapers off to the inside wall thickness. The flanges are located 0.1 inch down from the inner surface of the cover 4 and provide undercut surfaces 11a and 12a, each 0.025 inch wide, which are respectively engaged by the undercut edges 18a and 19a of the drawer 6, shown in FIG. 4. When the latter are engaged, the stop mechanisms 17 and 20 ride in the respective recesses 22 and 23.

Centered on the inside face of the rear end of cover 4 is an inclined plane cam 15. The rear straight edge 16 of cam 15 depends 0.04 inch from the inside face of cover 4. The cam is 0.1 inch wide and symmetrical about the centerline of the V-shaped cut 7 in the back wall of the cover 4 from which it is spaced apart 0.06 inch, providing a slot 20. Cam 15 decreases in thickness toward the front, along an inclined plane which forms an angle of  $5^\circ$  with the horizontal inner face of the cover 4.

FIGS. 6 and 7 show the partially closed container 1 with the left-hand end forward in FIG. 6, corresponding to the showing of FIG. 1, and with the right-hand end forward in FIG. 7. FIG. 8 shows the container 1 in partly closed condition, with the guiding flange 11a of the cover in engagement with flange 18a of the container, the flanges 12a and 19a on the other side, which are not visible in this showing, being similarly engaged. It will be noted that between the right-hand ends of the flanges 11a and 12a and the inside rear end of cover 4, due to the interruption of the said flanges, are provided a pair of recesses 13 and 14 which extend from the bottom to the top edge of cover 4. When the container is closed, these provide a clearance of 0.005 inch on each side between the container and the inside of the cover at its closed end.

The operation of the container 1 will be described. In order to prevent access to a child unable to read or understand the nature of the contents of the container, it is designed so that once closed it cannot be opened without following the directions as indicated by the arrows 5a, 5b and 5c on the face of the cover 4. When the container 1 is squeezed, in accordance with the directions indicated, by holding it in the left hand, between the thumb and index finger, adjacent the arrows 5a and 5b, the closing of the clearances 13 and 14 and the closing together of slit 7, causes the cover 4 to bow up in the manner indicated in dotted lines on FIGS. 1 and 2, disengaging the edge portion of the drawer 6 and causing it to be dislodged from the slot 20 formed between the edge 16 of the cam 15 and the back end of the cover 4, to override cam 15 and slide down its inclined plane. The cover 4 is released and the container 1 can then be opened a restricted amount, to a position shown in FIG. 6, permitting access to a maximum of, say, six pills. It will be seen that the opening of the cover 4 is limited by engagement of stop mechanisms 17 and 20 (not shown) against the rear terminal portions of the respective recesses 22 and 23.

To close the container 1, the drawer 6 is pushed forward into the cover 4, riding on the tracks provided by matching flanges 11a, 18a and 12a, 19a, until its rear edge, which moves up the inclined plane cam 15, finally overrides the top and seats with a click in the slot 20 between the cam edge 16 and the back cover edge 4a.

FIGS. 9 and 10 of the drawings show the cover and drawer, respectively, of a modified form of the pill box

container of the present invention in which the dual lateral stops 17 and 18 (not shown) (see, FIG. 5), riding in their respective recesses 22 and 23 (see, FIG. 4), are replaced by a single slightly larger stop 24 depending from the center of the cover about a third of the distance from the front end. In this embodiment, the drawer portion, as shown in FIG. 10, is formed without lateral slots, the edge portion being uninterrupted. The primed numbers represent corresponding elements shown in FIGS. 1-8 of the previously described embodiment.

The container of the present invention has been described in detail as a pill dispensing device, with reference to the specific embodiment shown in the drawing, giving specific dimensions and naming specific materials to enable a person skilled in the art to better practice the invention. However, it will be understood that the present invention is not limited to the specific form or application shown, by way of example, and can be used for other applications for which a safety closure is desirable, such as, for example, jewelry boxes, food or candy containers. Moreover, the invention is not limited to any of the specific materials, structures or dimensions described herein by way of example, but is only limited by the scope of the appended claims.

What is claimed is:

1. A safety container which comprises in combination:

- a rectangular drawer,
- a substantially rectangular cover comprising a closed top and depending rear and side walls, and constructed to move slidably to and fro on said drawer between closed and opened positions by engagement with guide means on opposite lateral walls of said drawer,
- means comprising a cam-like member projecting downwardly from the underside of said cover intermediate between said side walls,
- said cam having an edge disposed to form with the inner rear wall of said cover a slot for accommodating the peripheral edge of the rear wall of said drawer,
- said cam tapered in decreasing thickness from back to front, forming at its frontal end a smooth junction with the underside of said cover,
- and means constructed and arranged when said container is locked in closed position to respond to pressure on the two lateral walls of said cover adjacent its closed rear end to distend the top of said cover adjacent said slot thereby raising said cam and releasing the peripheral edge of the rear wall of said drawer from said slot to override the said cam.

2. The combination in accordance with claim 1, wherein said means responsive to pressure on the two lateral walls of said cover comprise a slit in the rear wall of said cover substantially adjacent said slot.

3. The combination in accordance with claim 2, wherein said guide means comprises a pair of internally

directed flanges on the opposite inner side walls of said cover in slidably engaging relation with matching flanges on external opposite sides of said drawer.

4. The combination in accordance with claim 2 wherein said slit has an inverted V-shape, its upper end terminating at a position substantially corresponding to the lower projecting edge of said cam.

5. The combination in accordance with claim 3 wherein said means responsive to pressure on the two lateral walls includes in closed condition of said drawer a clearance between each of the inner rear side walls of said cover and each of the outer side walls of said drawer, said clearances resulting from the interruption of the flange on the inner side walls of said cover at matching lateral positions near the rear of said cover.

6. The combination in accordance with claim 3 wherein a lateral wall of said drawer comprises an elongated recess extending partway between the front end and rear end of said drawer, and

said cover includes a stop depending from the inside thereof near a lateral wall of said cover partway between the front end and rear end thereof, which is constructed and arranged to ride in said recess when said drawer is moved slidably relative to said cover and to engage a terminal portion of said recess for restricting the opening of said cover.

7. In a safety container comprising a cover having a closed end, a drawer constructed to move to and fro slidably in said cover for opening and closing said container, the improvement comprising:

means for locking said container in closed condition including a catch member depending from the inner face of said cover comprising an inclined plane directed toward the open end of said cover, having an abrupt end forming with the inner surface of the closed end of said cover a slot for accommodating a peripheral edge of the end of said drawer, and

means for unlocking said container comprising means for distending the closed end of said cover when said container is in locked condition to release the edge of said drawer from the slot formed by said catch member.

8. The combination in accordance with claim 7 wherein the means for distending the closed end of said cover comprises a slit in the form of an inverted V in the closed end of said cover.

9. The combination in accordance with claim 8 wherein said cover comprises a pair of closed sides including lateral flanges, and said drawer has mating flanges in engagement with the lateral flanges of said cover for slidably moving said drawer in to and fro relation to said cover, the flanges on said cover being interrupted partway between the open and closed ends of said container to provide in the locked condition of said container a pair of clearances between the lateral walls of said drawer and said cover adjacent the closed end of said cover.

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