United States Patent [19]

Foster

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[45] **July 31, 1973**

[54] **CHILD-PROOF PILL BOX**

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[73] Assignee: **J. L. Clark Manufacturing Co.**, Rockford, Ill.

[22] Filed: **May 1, 1972**

[21] Appl. No.: **248,889**

[52] **U.S. Cl.** ..... **206/1.5**, 206/42, 220/43 P, 229/44 R

[51] **Int. Cl.** **A45c 13/10**, B65d 83/04

[58] **Field of Search** ..... 206/1.5, 42; 215/9; 220/31 S, 43 P, 60 R; 229/44 R, 44 M, 45

[56] **References Cited**

UNITED STATES PATENTS

3,651,983	3/1972	Haugen	220/31 S
3,294,222	12/1966	Hodgson	206/42
3,342,318	9/1967	Ruekberg et al.	206/42

FOREIGN PATENTS OR APPLICATIONS

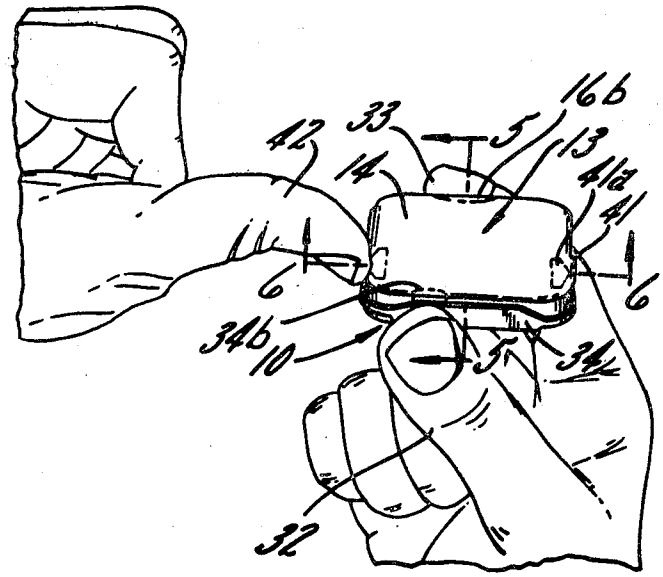
2,631	11/1912	Great Britain	206/1.5

Primary Examiner—Samuel B. Rothberg
Assistant Examiner—Steven E. Lipman
Attorney—Wolfe, Hubbard, Leydig, Voit & Osann

[57] **ABSTRACT**

A child-proof container for aspirin tablets and the like comprises a flanged body of resilient plastic and a sheet metal cover hinged thereon and having a hook positively interlocking with a ledge on a flange of the body as the cover is swung closed. By squeezing the assembly edgewise with a pressure greater than a small child can exert, the plastic body is deflected enough to release the ledge from the hook and allow the cover to be opened by the user's other hand while the squeezing pressure is maintained.

14 Claims, 17 Drawing Figures



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SHEET 1 OF 3

FIG. 1.

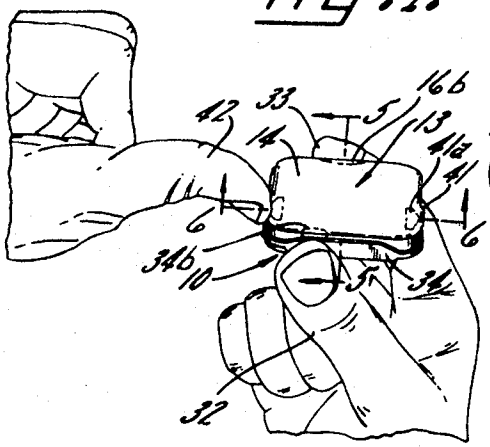


FIG. 2.

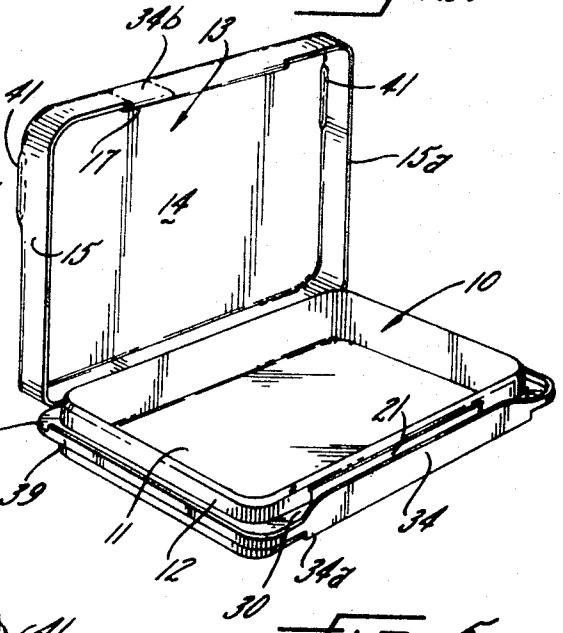


FIG. 3.

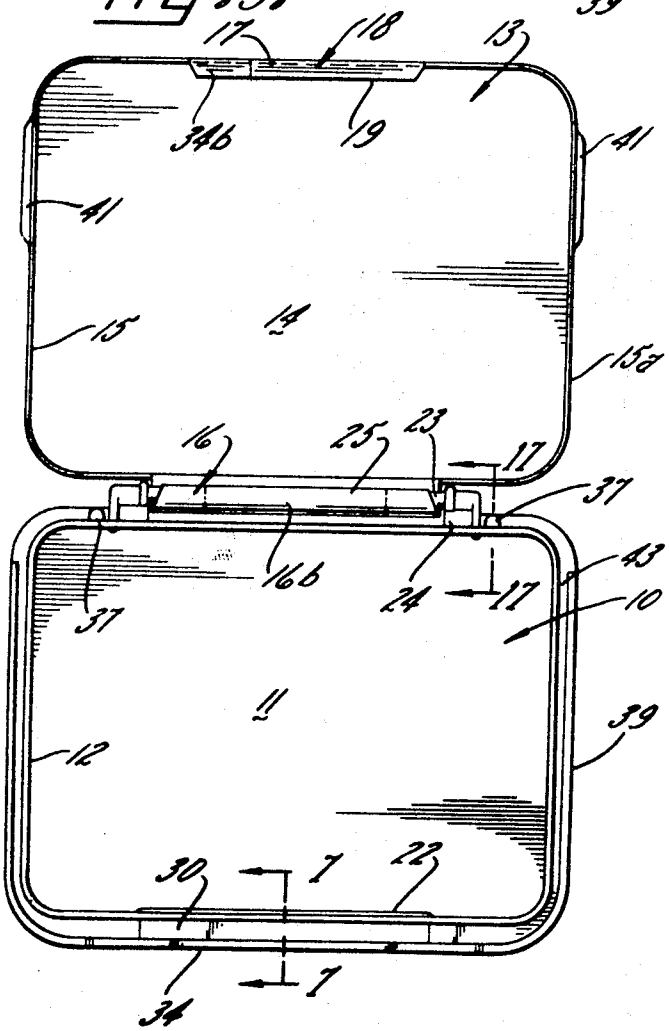


FIG. 5.

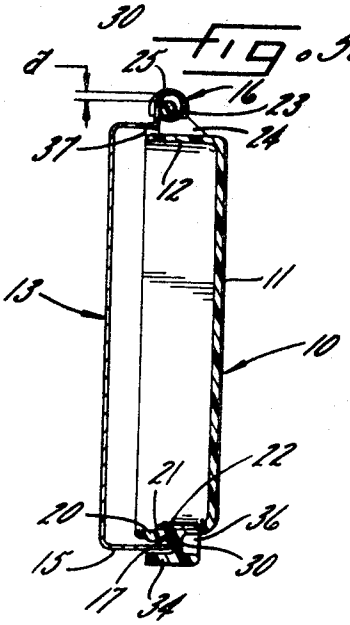


FIG. 7.

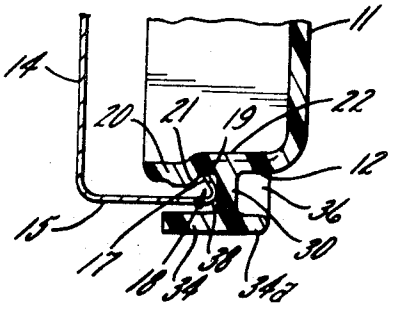


Fig. 4.

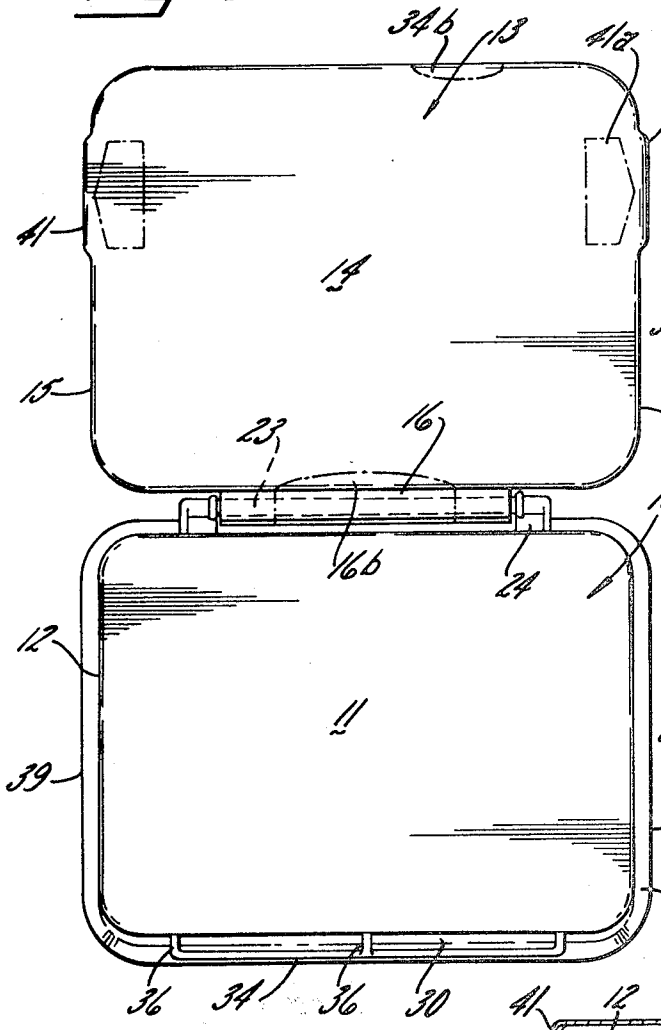


Fig. 8.

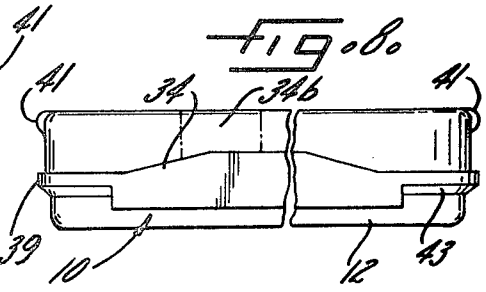


Fig. 9.

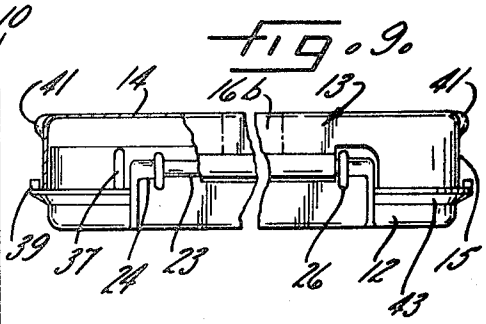


Fig. 6.

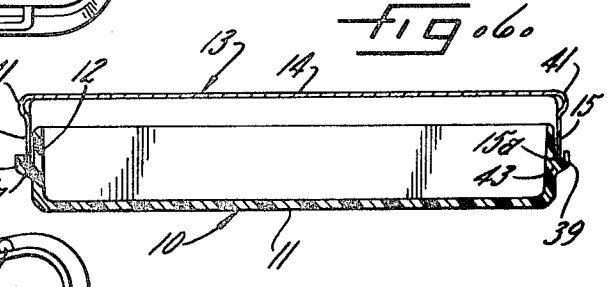


Fig. 10.

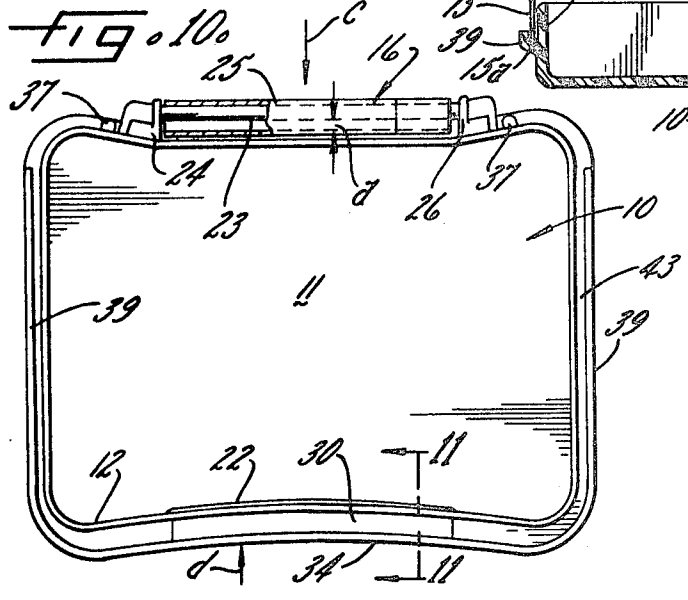


Fig. 11.

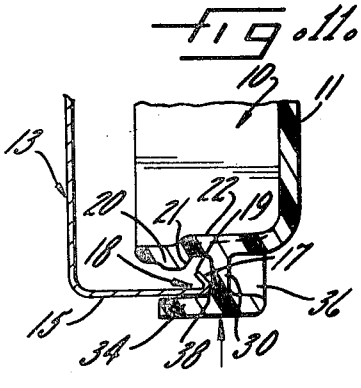


Fig. 12.

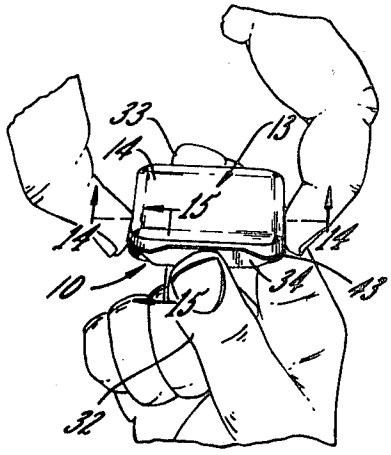


Fig. 13.

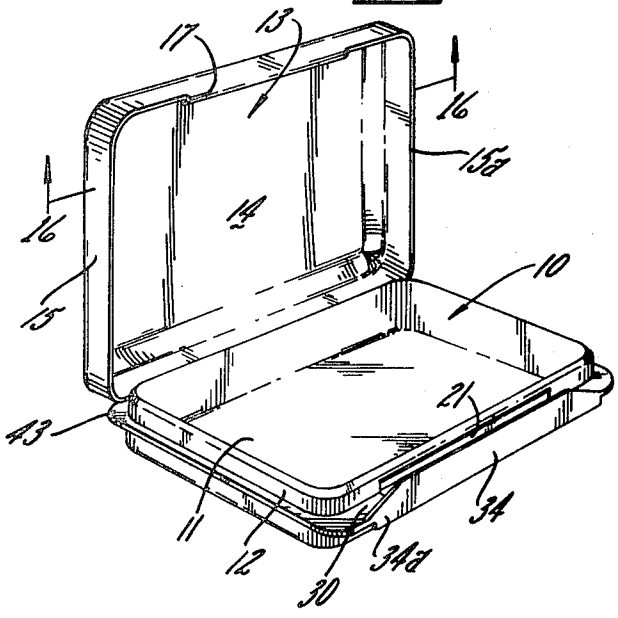


Fig. 17.

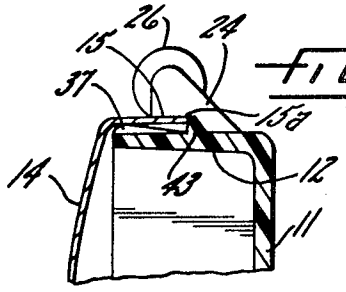


Fig. 14.

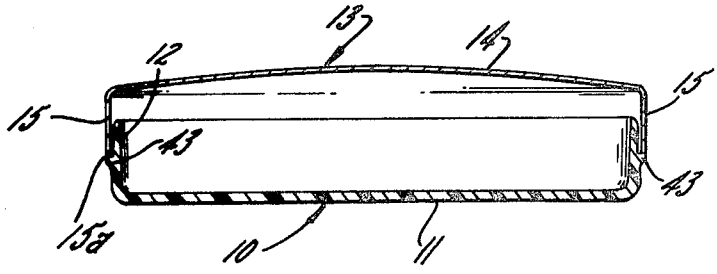


Fig. 15.

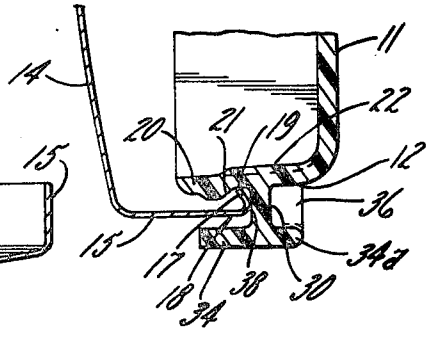
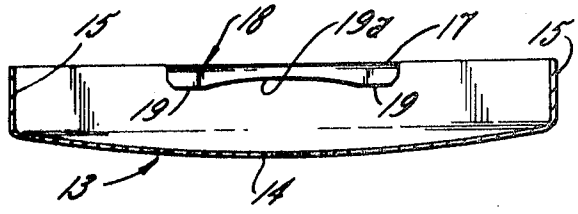


Fig. 16.



CHILD-PROOF PILL BOX

BACKGROUND OF THE INVENTION

This invention relates to a box for aspirin tablets or the like comprising a shallow generally rectangular and flanged body and a flanged cover hinged to one side flange of and adapted to telescope with the body flange as the cover is swung to closed position in which it is held releasably by the interengagement of formations on the box and cover flanges at the free edge of the latter.

SUMMARY OF THE INVENTION

The general object of the present invention is to render a pill box of the above character child-proof, as contemplated by existing Federal regulations, by providing for positive latching of the cover against opening in the normal way even by an adult while providing for release of the latch and opening of the cover by a combination of forces capable of being applied by separate hands of a normal adult but greater than a small child is able to exert. This objective is achieved by making one of the parts of rigid construction and the other of material such as resilient plastic adapted to yield and be deflected sufficiently under edgewise squeezing pressure of predetermined magnitude to release a hook type latch which acts positively in holding the cover closed. While the squeezing pressure, beyond the strength capabilities of a small child, is being exerted by one hand of the adult user to hold the latch released, the cover may be lifted by the user's other hand and swung upwardly to open the box.

The invention also resides in the novel construction of the cover latch and the flanges of the plastic body to provide for the deflection required for releasing the cover only while edgewise pressure of the proper magnitude is being applied.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a container embodying the present invention and illustrating the manner of applying the combination of forces required for opening the container.

FIG. 2 is a perspective view of the open container.

FIGS. 3 and 4 are plan views of the inside and outside of the container after opening thereof.

FIGS. 5 and 6 are double size sections taken along the lines 5—5 and 6—6 of FIG. 1.

FIG. 7 is an enlargement of a part of FIG. 5.

FIGS. 8 and 9 are elevational views of the front and rear edges of the closed container.

FIG. 10 is a plan top view of the open container body while deflected by edgewise squeezing, the deflection being shown on an exaggerated scale.

FIG. 11 is a fragmentary cross-section taken along the line 11—11 of FIG. 10 while the closed container is being squeezed edgewise as illustrated in FIG. 1.

FIGS. 12 and 13 are perspective views similar to FIGS. 1 and 2 but showing a modified construction.

FIG. 14 is a section taken along the line 14—14 of FIG. 12.

FIG. 15 is an enlarged fragmentary section taken along the line 15—15 of FIG. 12.

FIG. 16 is a section taken along the line 16—16 of FIG. 13.

FIG. 17 is a fragmentary section taken along the line 17—17 of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the drawings, the invention is shown for purposes of illustration incorporated in a shallow and generally rectangular container of the type commonly used for aspirin tablets and the like and comprising a rectangular body 10 having a flat bottom 11 and an upstanding peripheral flange 12 and a cover 13 having a generally flat top 14 and a depending peripheral flange 15 joined along one side to the body flange by a hinge 16 and adapted to telescope down over and around the upper portion of the body flange to form a closed assembly as shown in FIGS. 1, 5 and 6.

In accordance with the present invention, the body 10 and the cover 13 incorporate numerous novel features which coact in unique ways to render the closed assembly "child-proof" in the sense contemplated by Federal regulations, that is to say, virtually all small children, for example four years old, are not capable of reading and understanding instructions marked for adults on containers and do not possess the strength or dexterity required for opening of the container. On the other hand, a normal adult is capable by using both hands to apply the combination of forces needed to open the container.

Among these features is the making of the cover 13 of rigid construction, preferably of sheet metal and the body 10 as a single piece molding of resilient plastic material such as polypropylene which is capable of being compressed and deflected by edgewise squeezing of the closed assembly.

Secondly, provision is made for holding the cover closed positively so that it cannot be swung open in the normal way even by an adult. For this purpose, a narrow and preferably flat length 17 of the flange 15 at the free edge of the cover is bent inwardly and somewhat reversely so as to form a latch in the form of a hook 18 having an acute included internal angle. The hook is considerably shorter than the free side of the cover flange 15 and extends along the central portion thereof. The free edge 19 of the hook is located so that, in the final closing of the cover, the hook engages a ledge 21 formed by the upper surface of a shallow rib 20 extending along the outer surface of the body flange 12 near the upper edge thereof. As the hook moves across the rib 20, the body flange is cammed inwardly until the hook edge passes. The rib then snaps inwardly beneath the edge 19 of the hook (FIGS. 5 and 7) as the cover reaches fully closed position. This position is determined herein by engagement of the rounded end of the hook with a peripheral web 30 extending around the flange 12 between opposite ends of the hinge 16 and disposed parallel to the bottom 11 about midway between the upper and lower edges of the flange 12. To facilitate molding, the ledge 21 is inclined upwardly somewhat from the bottom 11 of the body as shown in FIG. 7. Preferably, a shallow rib 22 is formed along the inner surface of the body flange 12 on the inner side thereof opposite the ledge 21 to strengthen this portion of the flange.

Release of the latch hook 18 to permit upward swinging of the cover is effected in accordance with the present invention by exerting, on opposite edges of the closed assembly in the manner illustrated in FIG. 1, forces indicated by the arrows *c* and *d* in FIG. 10 and of sufficient magnitude to deflect the plastic body edge-

wise and move the ledge 21 inwardly beyond the free edge 19 of the hook. Preferably, such deflection is achieved by inward bending of opposite sides of the body flange 12 as illustrated in FIG. 10 in response to edgewise squeezing of the closed assembly between the face of the thumb 32 and the forefinger 33 of one of the user's hands, the force *c* being applied to the hinge 16 preferably near the center thereof while the force *d* is applied to an auxiliary flange 34 spaced outwardly from and connected through the web 30 with the free edge side of the flange 15. When the hook 18 is of substantially uniform width throughout its length (FIGS. 1 to 10), the force *d* is preferably exerted on the flange 34 at a point spaced from the center of this flange. To guide the adult user, areas 16^b and 34^b of colors contrasting with that of the cover 13 may be printed on the cover and its flange 15 to indicate the lines along which the forces *c* and *d* are to be applied to the closed assembly in order to insure consistent release of the cover.

To facilitate the desired inward bowing of the flange 12 on the hinge side of the body, the hinge 16 includes a pintle 23 integral with and spaced outwardly from the body flange 12 and spaced somewhat above the bottom 11 of the body. Opposite ends of the pintle are integral with outwardly projecting lugs 24 on the body flange. To complete the hinge, an edge portion 25 of the cover flange 15 is inserted between the body flange and the plastic pintle 23 and rolled around the latter in the final assembly operation. The hinge curl 25 is held in centered position by arcuate ribs 26 which are integral with the lugs 24 and extend partially around the hinge axis. The length of the hinge is substantially less than the body 10 and a small radial clearance indicated at *a* in FIG. 10 is provided between the curl and the pintle. It will be observed that the hinge is disposed between upper and lower edges of the body flange 12 so as to allow for inward bending of the latter by the force *c*.

The ledge 21 on the opposite or free side of the body flange 12 is also disposed well above the bottom 11 of the body (See FIGS. 7 and 11) so that by bowing this side of the flange inwardly relative to the bottom 11 as illustrated on an exaggerated scale in FIG. 10, the central portion of the ledge engaging the hook 18 will be moved inwardly from the edge 19 of the hook and beyond the latter as shown in FIG. 11 and out of engagement with the full length of hook thus releasing the cover for upward swinging. For this purpose, the web 30 is spaced above the bottom 11 of the body and is joined to the auxiliary flange 34 intermediate the upper and lower edges of the latter. Thus, under the force *d* applied to the flange 34, the central portion of the flange 12 will be bent inwardly relative to the bottom 11 and about the rounded junction between the latter and the flange 12. As a result, the full length of the flange 12 will be bowed inwardly far enough to move the ledge 21 beyond the hook edge 19 over the full length of the latter. To facilitate the desired inward bowing of flange 12, the lower edge portion 34*a* of the axiliary flange 34 is reinforced by crosspieces 36 (FIGS. 4 and 11) integrally joining the two flanges at spaced points along their lengths.

To insure holding of the ledge 21 securely in engagement with the hook 18 while permitting inward bowing under the edgewise squeezing, the hinge side of the body flange 12 is stiffened by the molding on the outer side thereof of two upright nibs 37 (FIGS. 3 and 17) extending partially across the flange 12 starting near the upper edge thereof. These ribs stiffen the upper edge portion of the flange on the side of the body opposite the ledge 21 and assist in holding the ledge securely in engagement with the hook while the cover is in closed position. Preferably, each nib tapers downwardly as shown in FIG. 17 so as not to engage the edge 15*a* of the flange 15 and block the swinging of the cover to fully closed position.

The rigidity of the cover 13, resiliency of the plastic of the body 10, the thickness of the flange 12, the spacing of the web 34 above the bottom 11 of the body, and the required inward bowing of the flange for releasing the hook 18 are correlated with each other so that the magnitude of the edgewise squeezing required to be exerted on the hinge 16 and the auxiliary flange 34 as illustrated in FIGS. 1 and 10 for disengaging the ledge 21 from the edge 19 of the hook 18 is capable of being applied by a normal adult but is greater than the expected strength capability and dexterity of a four year old child. Under the required squeezing pressure, the clearance *a* in the hinge is taken up, the pintle 16 and its supportig flange are shifted inwardly and the flange 12 at the free edge of the body are shaped and bowed inwardly approximately as shown in FIG. 10 with the result that the ledge 21 is moved inwardly relative to the cover hook 18 beyond the edge 19 of the latter over the full length thereof. Upward swinging of the cover thus released from the body may be effected by upward pressure exerted by a digit 42 of the other hand of the user on one or both of two tabs 41 formed on and projecting outwardly from the cover preferably near the corners and the top thereof. Indicia 41*a* on the top of the cover indicate the location of the tabs 41.

The closed position of the cover is limited as shown in FIG. 6 by abutment of the hook end 38 (FIG. 7) and the edge 15*a* of the flange 15 with a flange 43 which is a continuation of the web 30 and extends around the ends of the body 10 (FIGS 2, 6 and 9). If desired, access to the abutment joint between the cover edge 15*a* and the web 30 and the flange 43 may be prevented by a flange 39 of lesser depth than the auxiliary flange 34 and integral with the outer edge of the abutment flange 42 all around the ends of the body as shown in FIGS. 2, 6 and 9.

In some containers, the protective flange 39 and the lift tabs 41 may be omitted in order to reduce the overall size of the container and simplify its manufacture. Such a modification is shown in FIGS. 12 to 16 in which the parts corresponding to those above described are indicated by the same reference numerals. In this modification, the bottom 11 of the sheet metal cover 13 is domed somewhat as shown in FIGS. 14 and 15 and the edge flange 39 above described is omitted leaving the abutment joint between the body flange 43 and the cover edge 15*a* exposed around the ends of the closed assembly.

Release of the cover hook 18 in response to edgewise squeezing of the closed assembly may be achieved by applying the force *d* near the center of the flange 34 and closed assembly as illustrated in FIG. 12. To insure consistency of the release, it is desirable to make the central portion 19*a* of the cover flange 17 defining the hook 18 somewhat narrower, usually on the order of 0.010 of an inch, as illustrated on an exaggerated scale in FIG. 16. By thus changing the shape of the hook edge 19, the primary engagement between the ledge and the hook is at and near the ends of the edge 19 so

that the inward bowing of the flange 12 in response to the force *d* when applied near the center of the flange 34 effectually disengages the ledge from the hook thus releasing the cover in the desired way.

It will be apparent from the foreoging foregoing the container contemplated by the present invention is child-proof as defined above in that the cover is held positively against opening in the normal way either by an adult or a child, that access to the container contents cannot be gained by the application of any combinations of the forces within the strength capabilities and expected dexterity of a four year old child but, by edgewise squeezing of the closed container with sufficient force and by one hand, a normal adult may release the cover and, while continuing the edgewise squeezing, swing the cover open using his other hand.

I claim:

1. A child-proof container for pills and the like having, in combination, a body composed of resilient plastic and having a generally flat bottom and an upstanding peripheral flange with opposite generally parallel sides, a cover composed of rigid material having a depending flange adapted to partially telescope down over and around the upper portion of said body flange to a limit closing position, a hinge joining said body and cover along adjacent sides of said flanges for swinging of the cover to and away from said closed position, formations on the opposite free sides of said body and cover flanges interengaging as the cover reaches said closed position and acting positively to latch the cover against reverse swinging, and a second flange integral with the free side of the body flange and spaced outwardly from said free side of the cover flange, the parts of said plastic body being sufficiently yieldable and deflectable in response to oppositely directed forces of predetermined magnitude exerted on said hinge and said second flange of the closed assembly to deflect the latter edgewise, shift said formations edgewise relative to each other, and disengage the two enough to release said cover for upward swinging to open the assembly.

2. A child-proof container as defined in claim **1** in which said hinge and said second flanges of said body are bendable toward each other in response to edgewise squeezing of said closed assembly.

3. A child-proof container as defined in claim **2** in which said hinge and said second flange are joined to opposite sides of said body flange between the upper and lower edges thereof.

4. A child-proof container as defined in claim **1** in which said rigid cover is composed of metal and said body is a single piece molding of resilient plastic.

5. A container as defined in claim **1** in which said cover is composed of metal and said latching formation on the free edge flange thereof is a narrow portion of such flange bent inwardly and toward the top of the cover to form a hook coacting with a generally horizontal ledge on the opposed side wall of the body flange.

6. A container as defined in claim **5** in which said hook extends along the central edge portion of the free side of the cover flange and is substantially shorter than the length of such side so that said ledge may be released from the hook by inward bowing of the central part of the free side of the body flange.

7. A container as defined in claim **4** in which the bent portion of said cover flange forms a substantially acute included angle with the flange.

8. A container as defined in claim **1** in which the pintle of said hinge is an integral part of the flange of said plastic body.

9. A container as defined in claim **1** including a formation projecting outwardy and edgewise from the exposed top of said cover to facilitate upward swinging of the cover by one hand of the user while said required edgewise squeezing force is being exerted by the user's other hand to hold said latch released.

10. A container as defined in claim **1** in which said second flange is extended around the adjacent ends of the box so as to cover the peripheral line of abutment between the edges of said body and cover flange in said closed position of the cover.

11. A container as defined in claim **1** in which said hinge includes a pintle integral at opposite ends with and spaced outwardly from said body flange and a portion of said cover flange curled around said pintle, said hinge being substantially shorter than said body and operable during said edgewise squeezing to bow the cover flange inwardly.

12. A container as defined in claim **11** including between said hinge curl and said pintle a small clearance which allows for some edgewise shifting of said cover and inward bowing of the body flange during said edgewise squeezing of the closed assembly.

13. A container as defined in claim **5** in which upright nibs molded integral with the hinge side of said body flange beyond opposite ends of said hinge extend across the upper portion thereof and reinforce the flange whereby to assist in holding said ledge in engagement with the edge of said hook in the closed position of said cover.

14. A container as defined in claim **13** in which said nibs taper downwardly so as not to engage the lower edge of the cover flange and interfere with upward swinging of the cover.

* * * * *