United States Patent [19]

Gerner et al.

[11] **3,912,082**

[45] **Oct. 14, 1975**

[54] **PACKAGING**

[75] Inventors: **Daniel F. Gerner,** Blackwood, N.J.; **Richard S. Sauter,** Laverock, Pa.

[73] Assignee: **Packaging Coordinators, Inc.,** Philadelphia, Pa.

[22] Filed: **Oct. 10, 1974**

[21] Appl. No.: **513,859**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 455,616, March 28, 1974.

[52] **U.S. Cl.** **206/531;** 206/484; 206/462; 206/498; 206/820

[51] **Int. Cl.²** **B65D 83/04;** B65D 75/42; B65D 85/56

[58] **Field of Search** 206/531, 532, 462, 484, 206/498, 820

[56] **References Cited**

UNITED STATES PATENTS

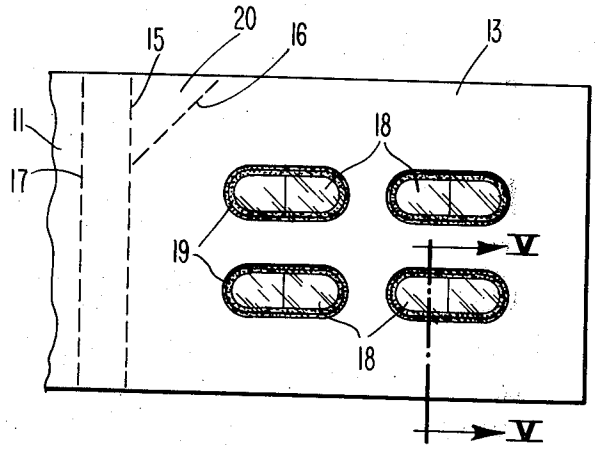
3,305,077	2/1967	Greif et al.	206/532
3,397,671	8/1968	Hartman, Jr. et al.	206/534
3,503,493	3/1970	Nagy	206/532
3,809,221	5/1974	Compere	206/531
3,835,995	9/1974	Haines	229/66
3,856,144	12/1974	Kelley	206/462

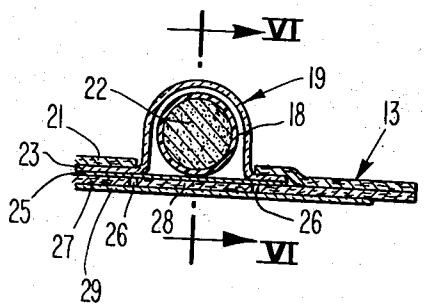
Primary Examiner—William T. Dixson, Jr.
Attorney, Agent, or Firm—Charles A. McClure

[57] **ABSTRACT**

A childproof blister card useful as a package for medicaments in discrete form is openable only by a specific succession of steps. The card has a peelable backing and is perforated to enable the peeling to be started. It also has perforated tabs for access to the contents after removal of the backing. The card is subdivided into separable portions, each of which is openable similarly.

10 Claims, 13 Drawing Figures





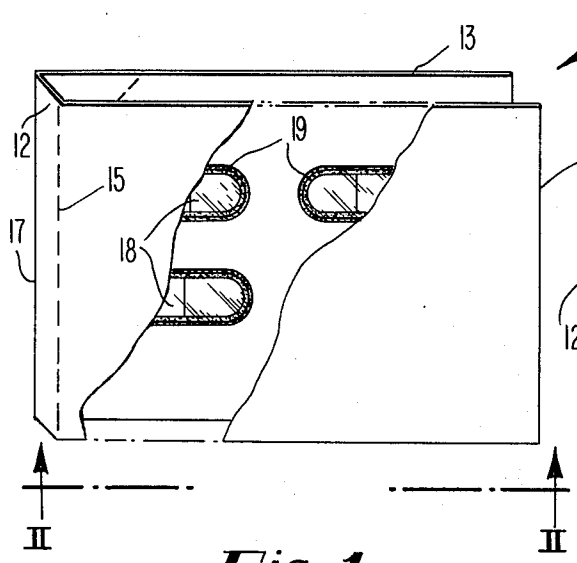


Fig. 1

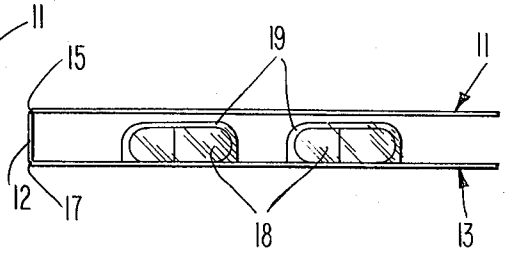


Fig. 2

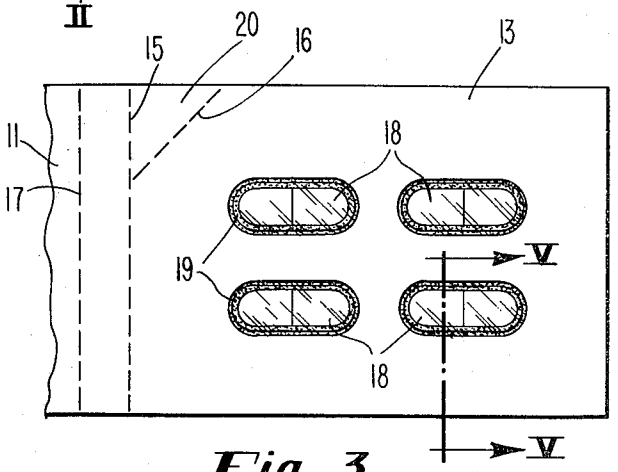


Fig. 3

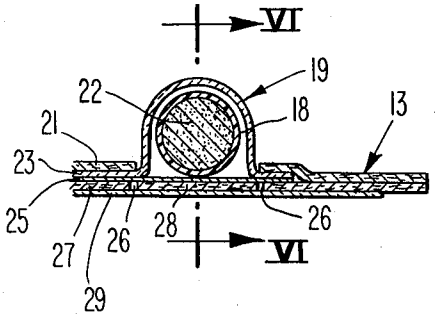


Fig. 5

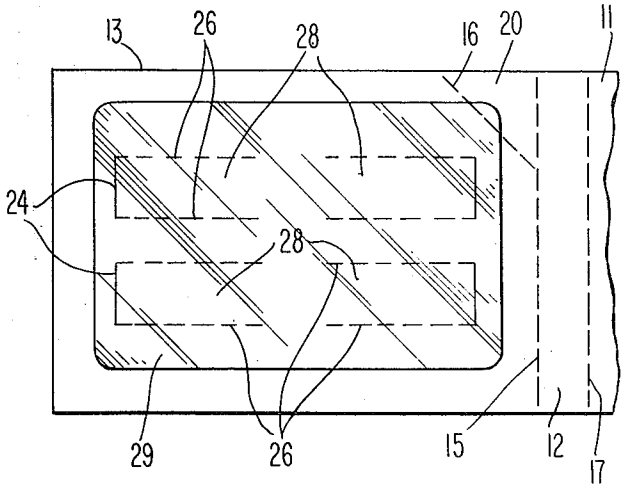


Fig. 4

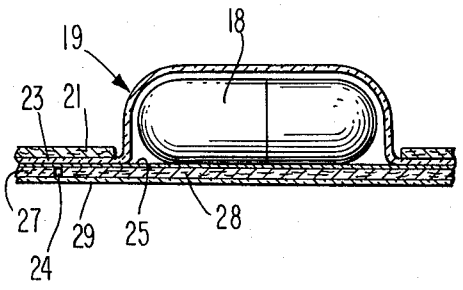


Fig. 6

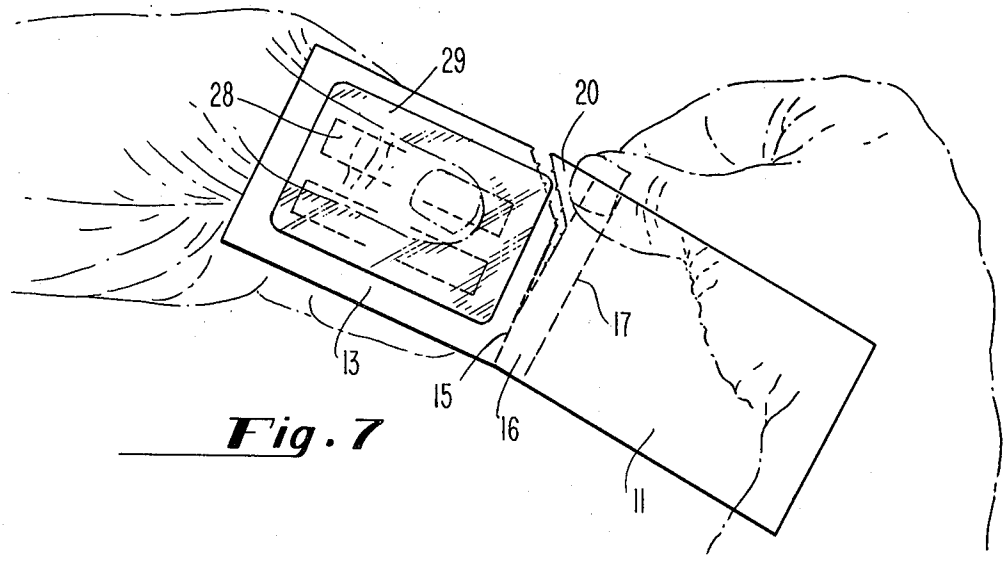


Fig. 7

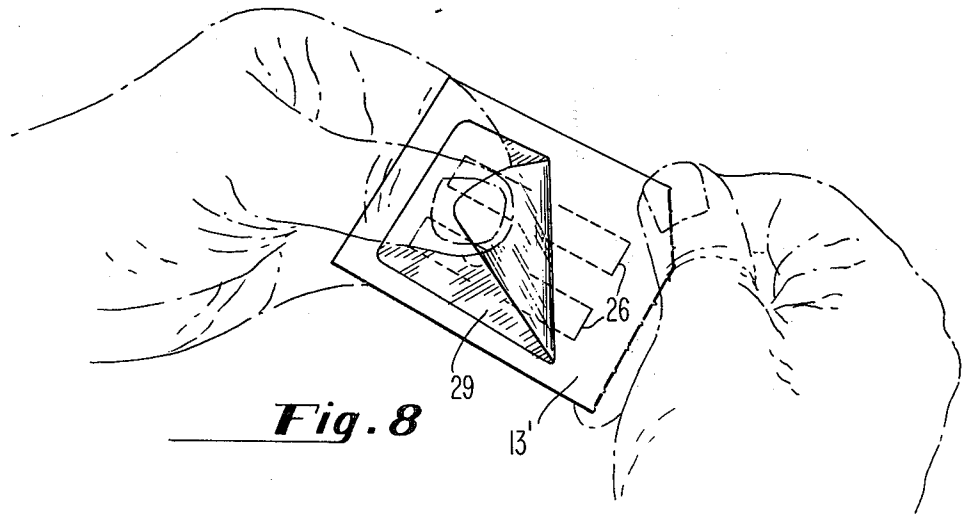


Fig. 8

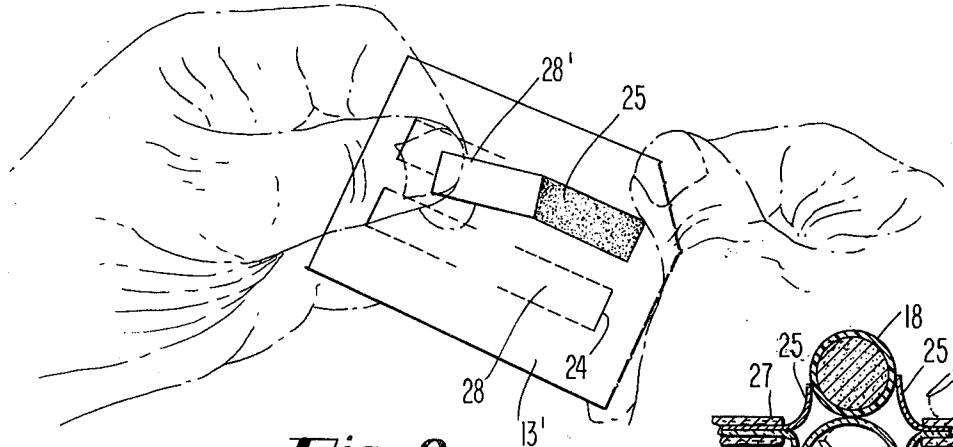


Fig. 9

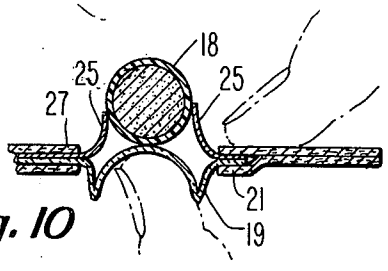


Fig. 10

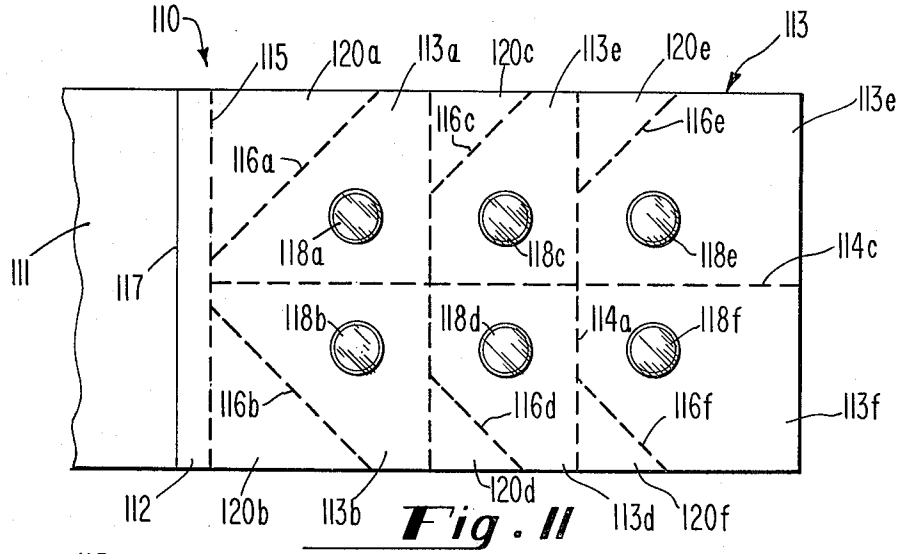


Fig. 11

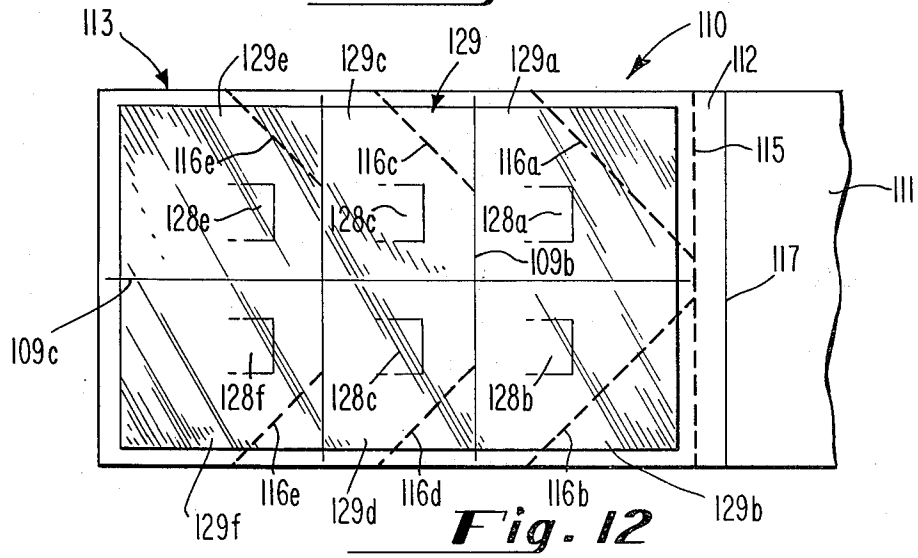


Fig. 12

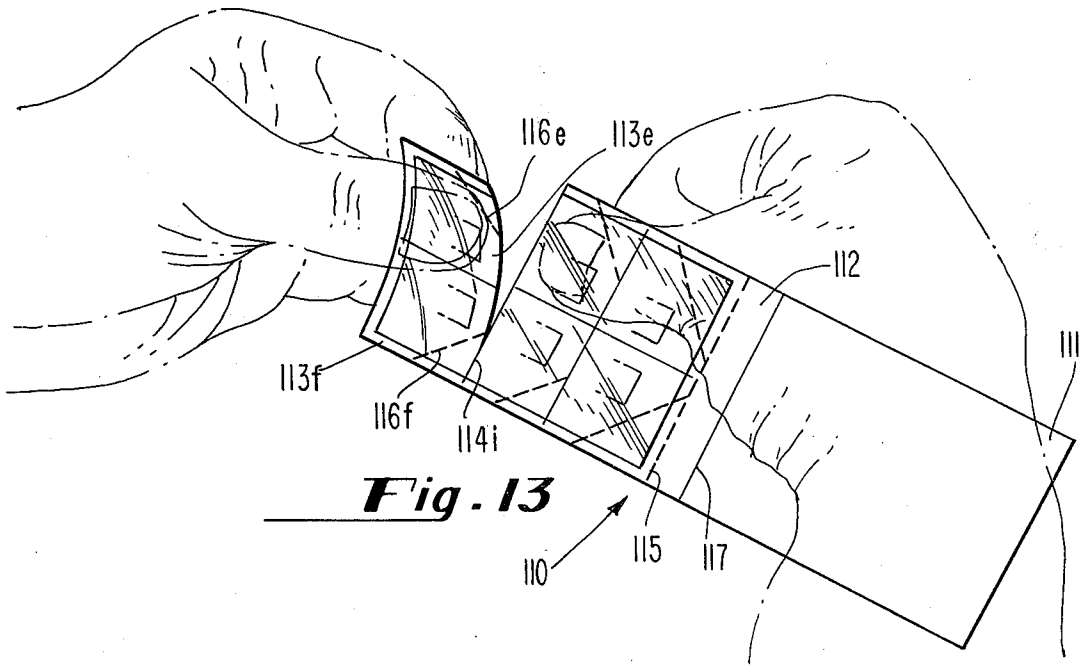


Fig. 13

PACKAGING

This is a continuation-in-part of our copending application, Ser. No. 455,616 filed 28 Mar. 1974.

This invention relates to packaging of medicaments or the like in capsule, lozenge, or pill form, into discrete article enclosures such as are provided by a blister card, and especially to such a package designed so as to be unlikely to be openable by a child of insufficient discretion to treat the contents with due respect.

Blister packaging has become popular in recent years not only for small automotive parts, household articles, and miscellaneous hardware but also for medicaments in capsule, lozenge, or pill form. Because the contents are visible and often are brightly colored, children are attracted thereto, with substantial risk of injury if they succeed in opening such a package and ingesting the contents. Accordingly, there is a considerable demand to render such packages too difficult to open for children too young to realize the potential hazard in doing so.

A primary object of the present invention is provision of a blister package readily openable by an adult but not by a child.

Another object is improvement in access closures for blister packages.

A further object is requirement of a specific sequence of several steps for successful opening of blister packages or the like.

Other objects of the present invention, together with means and methods for attaining the various objects, will be apparent from the following description and the accompanying diagrams of specific embodiments of the invention, which are presented by way of example rather than limitation.

FIG. 1 is a perspective view of a blister card of this invention with the overlying flap partly cut away to reveal the underlying flap and contents in part;

FIG. 2 is an edge view of the same package taken at II—II on the preceding view;

FIG. 3 is a front view of the same package opened flat and with part of the normally overlying flap cut away;

FIG. 4 is a rear view corresponding to FIG. 3;

FIG. 5 is a transverse section, on an enlarged scale, taken at V—V on FIG. 3; and

FIG. 6 is a longitudinal section, on the same scale as FIG. 5 and taken at VI—VI thereon.

FIG. 7 is a rear view of the same package at an early stage of being opened, showing severing thereof along perforations;

FIG. 8 is a like view of the remaining part of the package at a later stage of being opened, showing the backing being peeled off;

FIG. 9 shows the same package at a still later stage, showing the opening of an access tab along perforations; and

FIG. 10 is a fragmentary sectional view of the same package, on an enlarged scale, at a still later stage, showing the pressing of a capsule through the foil covering an access opening.

FIG. 11 is a front view, similar to FIG. 3, of a modified package embodiment of this invention;

FIG. 12 is a rear view, similar to FIG. 4, of the package modification shown in FIG. 11;

FIG. 13 is a rear view of such modified package being separated into portions along boundaries subdividing the package into a plurality of like or similar parts.

In particular, the objects of the present invention are accomplished, in a package having discrete article enclosures, such as a blister card for medicaments or the like in capsule, lozenge, or pill form, by means of a first strip having a plurality of blister-like protrusions therein outward from one face and leaving corresponding hollows and openings thereinto at the opposite face thereof, a relatively rupturable second strip adherent to the latter face of the first strip and sealing the openings therein, a supporting card therefor overlying the second strip over the hollow openings and having an openable access tab opposite each such opening, and a peelable backing overlying at least the part of the card containing the access tabs without extending to any edge of the card.

More generally, the invention features the combination of such a peelable backing, a partly underlying perforation or equivalent weakening in the card for separation therealong to facilitate subsequent peeling of the backing, such underlying access tabs, and such underlying access openings covered by rupturable material. The invention includes a card subdivided into separable portions, each of which has such features and is openable similarly.

FIG. 1 shows in perspective, and FIG. 2 in edge view from the bottom, package **10** of this invention comprising overlying rectangular flap **11**, underlying flap **13** of like plan, and narrow rectangular junction strip **12** interconnecting them. Flap **11** is partly cut away in FIG. **1** to reveal the underlying flap and contents in part—also shown from below in FIG. **2**. Protrusions **19** in a transparent blister strip (**23**, see later views) enclose capsules **18**, of which four are shown (spaced in pairs from top to bottom and right to left). Stippling of the area surrounding the capsules in FIG. **1** indicates a foil layer (**25**, see later views) visible through the transparent blister strip.

FIGS. **3** and **4** show the same package, opened flat, from front and rear, respectively. Rear flap **13**, which is plain overall, is largely cut away, but front flap **11** is shown in its entirety. Not previously visible but shown here is diagonal perforated line **16**, which crosses from the upper edge to intersect vertical fold perforation **15**, thereby outlining corner tab **20** of the flap. As is apparent from the rear view in FIG. **4**, that corner tab partly underlies transparent film backing **29** which is generally rectangular but smaller than the flap and does not extend to any edge of the flap. The backing completely covers all four access tabs **28** visible therethrough, each of which is opposite one of the openings left in the blister strip by formation of the protrusions oppositely directed therein.

FIGS. **5** and **6** show, considerably enlarged, sections taken through multiple-layered portions of the package as indicated on FIGS. **3** and **5**. First and second layers **21** and **27** of the flap sandwich the non-protruding portions of blister strip **23** and foil layer **25** over and sealing the openings therein. First layer **21** has openings therein to accommodate protrusions **19** of the blister strip and each corresponding hollow holds capsule **18** with contents **22** therein. Each of the access tabs is bounded by parallel rows **26** of perforations perpendicular and joined to opposite ends of slits **24**, with neither slit nor perforation along the remaining side.

FIGS. **7**, **8**, **9**, and **10** are sequential views, at stages in opening the illustrated embodiment of the invention, taken looking at the rear side, with hands shown in

phantom overlying the views where appropriate. Thus, as shown in FIG. **7**, with the respective flaps opened and coplanar, a person can grip flap **11**, junction strip **12**, and corner tab **20** of flap **13** in the right hand and the rest of flap **13** in the left hand. This enables the tab to be severed along the diagonal perforated line shown previously, together with the junction strip, along the rest of vertical perforated fold line **15**, and flap **11**. (The remnant flap is redesignated **13'**.) Then gripping the exposed corner of backing **29** with the left hand while holding onto the marginal part of flap **13** not covered by the backing permits the backing to be peeled off, as shown in FIG. **8**. Finally, by inserting a fingernail into one of the slits **24**, one can grip an access tab and pull it open along perforated lines **26**. (The opened tab is redesignated **28'**.) Foil **25**, which did not rupture when the tab was opened, is exposed through the resulting rectangular opening and continues to cover the underlying capsule. Finally, as shown in FIG. **10**, depressing the corresponding blister protrusion with a finger forces the capsule to erupt through the foil and to the exterior.

First and second layers **21** and **27** of the card are conventionally formed from a single sheet of tag paper or the like, suitably punched out and perforated, adhesively coated (as with polyethylene) on one face, and folded over to sandwich other components of the package. Blister strip **23** is conventionally made of transparent plastic, such as polyvinyl chloride (PVC), from which protrusions **19** are vacuum-formed in the usual manner, spaced at regular intervals so as to protrude through punched openings in the first layer of the card sheet. Before being sandwiched by the card material the blister strip has its protrusions filled with the articles being packaged, whereupon foil strip **25** (usually a laminate with a central paper layer sandwiched by thin metal layers) is secured thereto, as by heat-sealing. Then the layers of card material are juxtaposed, with the blister strip and foil therebetween, and are sealed to one another, usually by application of heat and pressure. The discrete pieces of film backing **29** are applied next or at any subsequent stage as may be desired, being formed of appropriately transparent and adherent material. Such a film of polyester (such as polyethylene terephthalate), for example, is heat sealed to the exposed side of the second layer of card material at locations destined to become flap **13** and multiples thereof. Then perforation lines **15**, **16**, and **17** are formed in the resulting two-ply card material, and individual cards are cut or stamped therefrom.

The end result is a package that requires sequential severing of perforations between non-connecting edges (as compared with connecting edges of an external corner, for instance), peeling the backing off, and opening an access tab—which necessitates rupturing of the second paper layer of the card along perforated lines—and finally forcing a capsule through the foil layer and an access opening by depression of the opposite blister-like protrusion. Each of these several steps is sufficiently demanding that a young child can be expected to fail to accomplish one or more of them. Moreover, even if performable individually, they pose the additional problems of being necessarily sequential and sufficiently time-consuming to be discouraging to a child who may be merely playing or who lacks the ability to concentrate long enough on the task to release the contents. A child able to perform all the steps in sequence so as to reach the contents should have sufficient understanding and discretion to avoid ingesting such contents. The safety factor presented by such packaging will tend to protect adults who are too befuddled (as by age, drink, or drugs) to cope with the task of opening the package.

FIGS. **11** to **13** illustrate a modified embodiment of package according to this invention having the same composition but comprising the multiplicity of individually separable portions. In these views parts and features corresponding to those of the preceding embodiment are identified by reference numerals greater by 100, i.e., with 1 prefixed to the previous numerals. Thus, package **110** is made up of rear flap **113**, front flap **111**, and junction strip **112** intervening between vertical perforated line **115** (along the near edge of the front flap) and score or fold line **117** (along the near edge of the rear flap). Duplicated (or further multiplied) portions are designated by a single numeral plus alphabetical suffixes; thus flap portions **113***a*, 113*b*, 113*c*, 113*d*, 113*e*, and **113***f* (designated more briefly as **113***a* to *f*) outlined by the flap edges and orthogonal perforated lines.

This package embodiment has a half dozen individual flap portions **113***a* to *f*, having (as shown in the front view of FIG. **11**) single pills **118***a* to *f* contained therein, respectively, like capsules **18** in the preceding embodiment, here covered by corresponding protrusions in an overlying blister film indicated by diagonal shading over each such pill. The respective flap portions have diagonal perforated lines **116***a* to *f* corresponding to single such line **16** in the first embodiment and similarly defining corner tabs **120***a* to *f*. In addition, the present embodiment has a horizontal perforated line **114***c* dividing the card into upper and lower halves and a pair of vertical perforated lines **114***a* and **114***b* dividing it into right, left, and middle thirds, thus resulting in two rows and three columns of flap portions.

Transparent backing **129** (as shown in the rear view of FIG. **12**) is subdivided similarly by horizontal slit **109***c* and two vertical slits **109***a* and **109***b* extending from side to side and from top to bottom, respectively, except for a narrow unslit margin at each edge. The half dozen pills shown in the preceding view are concealed in this view by corresponding access tabs **128***a* to *f*. Also visible underneath the transparent backing are the perforated lines already identified, along which the flap is adapted to be severed in the opening of this package to gain access to the pills.

FIG. **13** shows an intermediate stage in the opening of the package. Pair **113***e* and **113***f* of end portions are being detached from the rest of the package by severing along vertical slit **114***i* in the backing (and along the underlying perforated line—not visible—in the flap). The respective portions may be separated from one another for individual use or be opened together, whichever may be desired. Opening of either or both of them is accomplished by removal of the corner tab by separation along the diagonal perforated line, gripping of the then available corner of the transparent backing portion, opening of the thus exposed access tab, and depression of the pill from the front through the foil layer underlying the access tab—all as illustrated in FIGS. **7** to **10** for the previous embodiment. The present embodiment has the advantage of enabling the backing to continue to cover the access tabs for those pills, etc. not to be used until later. This modified pack-

age is, in effect, a multiplicity of like package portions joined to one another but readily separable therefrom for opening.

Although particular embodiments have been shown and described, other modifications may be made therein, as by adding, combining, or subdividing parts or steps, or substituting equivalents, while retaining significant advantages and benefits of the invention, which itself is defined in the following claims.

The claimed invention:

1. In a package with discrete article enclosures, such as a blister card for medicaments or the like in capsule, lozenge, or pill form, including a first strip having a blister-like protrusion formed therein outward from one face and leaving a corresponding hollow and an opening thereinto at the opposite face thereof, a relatively rupturable second strip adherent to the latter face of the first and sealing the opening, a supporting card including a first layer of material juxtaposed to the first face of the first strip and having an opening therein to accommodate the protrusion and including a second layer of material juxtaposed to the first layer and overlying the second strip, the second layer having a perforated access tab in the part thereof opposite the corresponding hollow opening, and a solid film backing overlying and adherent to the perforated part of the second layer and peelable therefrom, the improvement comprising a multiplicity of package portions each so composed and defined relative to one another by perforated lines across the card and by corresponding slits across the backing to unslit margins thereof.

2. Package according to claim **1,** wherein the first and second layers of supporting material are adherent together and to parts of the first and second strips in contact therewith.

3. Package according to claim **1,** wherein each access tab is at least partly outlined by perforation of the second layer and by a slit therein to facilitate initiation of opening of the access tab along the perforation.

4. Package according to claim **1,** wherein in each separable portion the supporting material is perforated from an edge to and underlying a corner of the peelable film to facilitate initiation of peeling thereof.

5. A blister card for child-proof packaging of medicaments in discrete capsule, lozenge, or pill form, comprising a plurality of individually openable portions; each such portion including a non-rupturable transparent plastic strip having a plurality of blister-like protrusions therein outward from one face and leaving a corresponding plurality of hollows and openings thereinto at the opposite face thereof, a rupturable foil strip adherent to the latter face of the plastic strip and sealing the openings therein, a supporting card portion including a first paper layer juxtaposed to the first face of the plastic strip and having one or more openings therein to accommodate the protrusions and including a second paper layer overlying the foil strip and the first paper layer and adherent thereto, the second paper layer having perforated access tabs in the parts thereof opposite the corresponding hollow openings, and a relatively non-rupturable transparent film backing overlying and adherent to the access tabs and surrounding part of the second paper layer and peelable therefrom, the adherent first and second paper layers in each such openable portion having a corner tab formed therein and outlined by perforation underlying a corner of the peelable backing to facilitate initiation of peeling thereof, and the perforated access tabs of the second paper layer being exposable by peeling of the backing therefrom and slitted to facilitate initiation of opening thereof along the perforations; the respective openable portions being defined from one another by an intervening perforated line across the card portion and by an intervening slit across the backing.

6. Blister card according to claim **5,** wherein the perforation of the adherent paper layers includes transverse edge-to-edge perforation enabling the card to be folded flap-like to cover the blister-like protrusions and their contents, and wherein in each separable portion the corner tab perforation for facilitating peeling of the backing extends diagonally from an edge of the card to intersection with such transverse edge-to-edge perforation or with such intervening perforated line.

7. Blister card according to claim **6,** wherein the perforated access tabs of the second paper layer exposable by peeling the backing therefrom are rectangular in outline, having two opposite edges perforated, one intervening edge slitted, and the other intervening edge neither perforated nor slitted.

8. In a blister card the combination of a multiplicity of individually separable portions arranged in a plurality of rows and of columns, each such portion including a first strip having a plurality of blister-like protrusions therein outward from one face, and leaving corresponding hollows and openings thereinto at the opposite face thereof, a relatively rupturable second strip adherent to the latter face of the first strip and sealing the openings therein, a supporting card therefor overlying the second strip over the openings and having an openable access tab opposite each opening, and a peelable backing overlying at least the part of the card containing the access tabs without extending to edges of the card.

9. Blister card according to claim **8,** wherein each separable portion of the card has a tab perforated from one or more edges to and underlying an edge portion of the backing to facilitate initiating peeling removal thereof.

10. Blister card according to claim **8,** wherein each of the access tabs is outlined at least in part by perforation.

* * * * *