June 29, 1954 M. SAX 2,682,138

METHOD OF MAKING PACKAGES

Filed March 22 ,1952 2 Sheets-Sheet 1

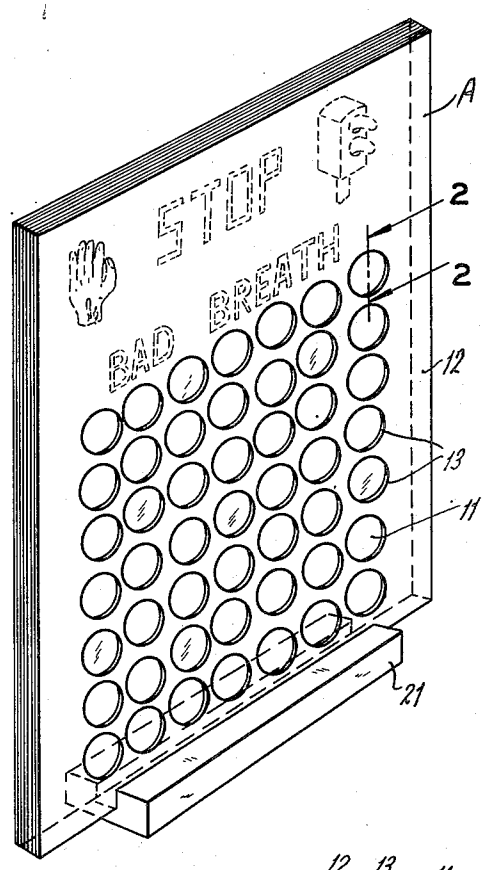


FIG. 1.

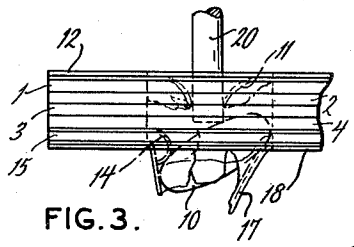


FIG. 3.

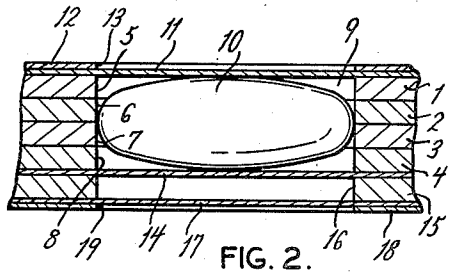


FIG. 2.

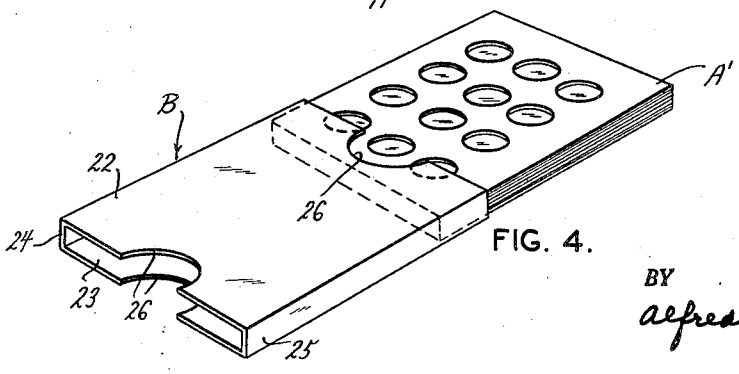


FIG. 4.

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METHOD OF MAKING PACKAGES

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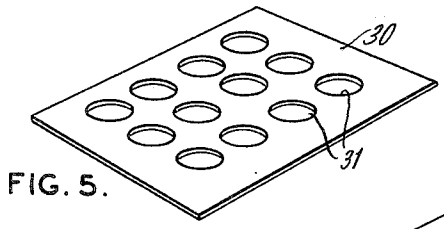


FIG. 5.

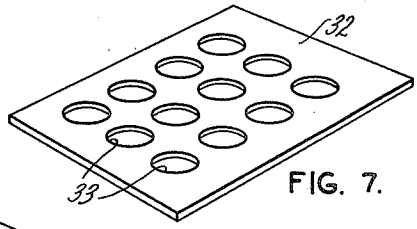


FIG. 7.

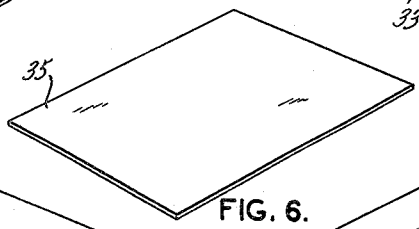


FIG. 6.

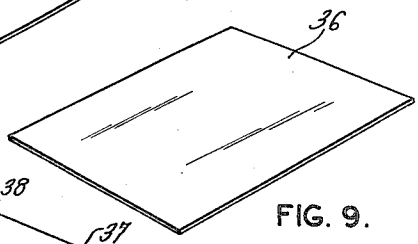


FIG. 9.

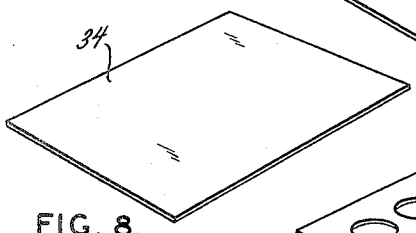


FIG. 8.

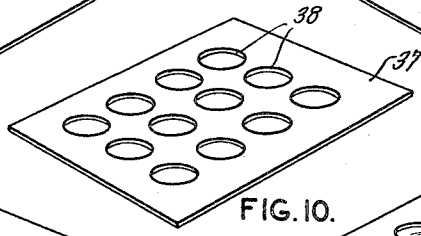


FIG. 10.

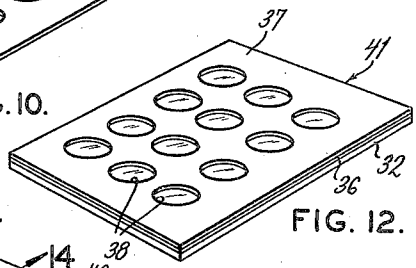


FIG. 12.

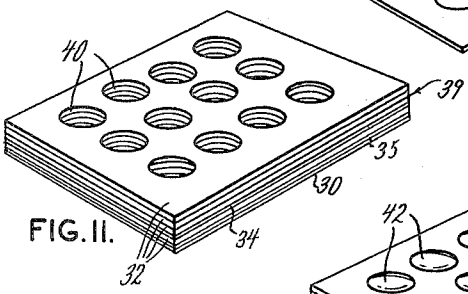


FIG. 11.

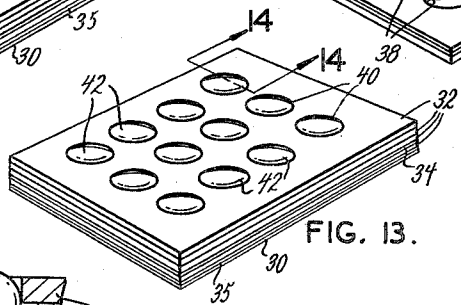


FIG. 13.

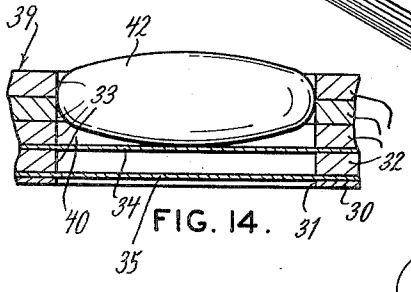


FIG. 14.

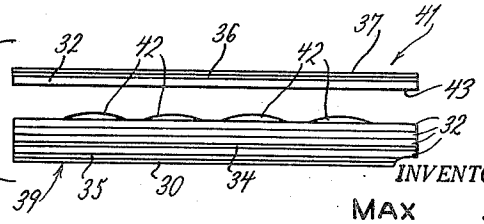


FIG. 15.

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Patented June 29, 1954 2,682,138

UNITED STATES PATENT OFFICE

2,682,138

METHOD OF MAKING PACKAGES

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Application March 22, 1952, Serial No. 277,965

6 Claims. (Cl. 53—11)

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This invention relates in general to certain new and useful improvements in methods of making packages for small discrete particulate objects, such as medicinal pills and the like.

It has long been a conventional practice to package small discrete particulate objects, such as pills and the like, in cardboard boxes, glass or plastic vials, or small hinged sheet metal boxes, but these methods are not entirely satisfactory for a number of reasons. In the first place, many medicinal pills, for example, by reason of the physical nature of the ingredients used, do not have sufficient physical strength to stand the shock and abrading action to which they are subjected when packaged in a box or vial and carried about. Furthermore, conventional containers, after being opened, do not protect the contents from contamination and dirt. In fact, when a user opens a bottle of pills, he customarily shakes several of the pills out into the palm of his hand, returning the remainder to the container for later use. Repetitions of this practice obviously tend to contaminate the pills no matter how careful the user may be. Frequently medicinal pills and similar materials contain ingredients which are adversely affected by moisture and conventional containers do not properly protect hygroscopic materials, particularly after the package has been opened and part of the contents removed.

It is, therefore, the principal object of the present invention to provide a package for small discrete particulate objects, such as medicinal pills and the like, which package is simple and economical in construction and which supports each particulate object separately from each other similar object within the package.

It is another object of the present invention to provide a package of the type stated in which the packaged objects are protected from mechanical shock and impact, moisture, contamination, and repeated handling.

It is a further object of the present invention to provide a package of the type stated from which each of the particulate packaged objects may be separately and individually removed in a quick convenient manner without disturbing or exposing any of the other packaged objects within the package.

It is also an object of the present invention to provide a package of the type stated in which the packaged articles are each separately compartmentalized and thus protected from contact with each other.

It is an additional object of the present invention to provide simple and economical methods for making packages of the type above stated and enclosing the packaged materials therein.

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With the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawings (two sheets)—

Figure 1 is a perspective view of a package constructed in accordance with and embodying the present invention;

Figure 2 is a fragmentary sectional view taken along line 2—2 of Figure 1;

Figure 3 is a fragmentary end elevational view illustrating the manner in which a single particulate object may be removed from the package;

Figure 4 is a perspective view of a modified form of package constructed in accordance with and embodying the present invention;

Figures 5 to 13, inclusive, are perspective views illustrating the successive steps in making a package in accordance with the present invention;

Figure 14 is a fragmentary sectional view taken along line 14—14 of Figure 13; and

Figure 15 is an end elevational view showing the package components in superposed relation prior to the final package-assembling operation.

Referring now in more detail and by reference characters to the drawings, which illustrate practical embodiments of the present invention, A designates a package preferably comprising four identically shaped oblong-rectangular sheets or plies 1, 2, 3, 4, stamped, die-cut, or otherwise suitably formed from heavy paper or cardboard, and provided with a plurality of circular apertures 5, 6, 7, and 8, respectively. The sets of circular apertures are so arranged that when the plies 1, 2, 3, 4, are jogged together in precise peripheral alignment, the apertures will fall into marginal registration in the provision of circular pockets 9 diametrally sized for loosely, but snugly, accommodating a discrete particulate object, such as the medicinal pill 10, all as best seen in Figure 2.

Adhesively secured across the upwardly presented face of the ply 1 is a smoothly and tightly stretched sheet of preferably moisture-proof transparent synthetic plastic film 11, such as cellophane, cellulose acetate, a vinyl polymer, Pliofilm, or the like, and adhesively secured in overlying relation upon the upper face of the film 11 is a cover sheet 12 having circular apertures 13 which are of the same diametral size,

and are in registration with, the pockets 9. The cover sheet 12 may be imprinted with any desired advertising message, such as that indicated schematically in dotted lines in Figure 1.

Adhesively secured upon, and extending tightly and smoothly across, the under face of the ply 4 is a sheet 14 formed, for example, from a metallic foil, such as aluminum foil or the like. Adhesively secured, in turn, upon the under face of the foil sheet 14 is another cardboard ply 15 identical in shape and contour to the plies 1, 2, 3, 4, and having circular apertures 16 for marginal registration with the pockets 9. Similarly secured across the under face of the ply 15 is a sheet 17 preferably formed of thin paper, and finally secured across the under face of the sheet 17 is a rear cover sheet 18 formed of heavy paper and provided with a plurality of circular apertures 19 adapted for registration with the pockets 9.

It will be noted by reference to Figure 2 that each pill 10 is snugly housed within its own pocket 9. Furthermore, the combined thickness of the plies 1, 2, 3, 4, is very slightly less than the thickness of the pill, so that the upper and lower surfaces of the pill will contact the interior faces of the film 11 and foil sheet 14 with a slight amount of pressure, this pressure being sufficient to hold the pill 10 snugly as the package is moved about, but nevertheless not great enough to crush or otherwise damage the pill 10. It should be noted in this connection that the sheets 11, 14, and 17 are solid or continuous in the sense that they are non-perforated in the region of the pockets 9 so as to form continuous membranes or closures thereacross. Furthermore, the foil sheet 14 may be made of any suitable moisture-proof material provided its tensile strength is somewhat less than the tensile strength of the film 11. Thus, the pill 10 is housed between two membranes, so to speak, one of which is relatively more easily ruptured than the other. The thin paper membrane 17 should also be more easily rupturable than the film 11, but nevertheless sufficiently strong to afford some protection to the film or membrane 14.

When the user desires to remove a pill, it may be pressed downwardly and outwardly with the finger or a somewhat blunt stylus-like rod 20 in the manner shown in Figure 3. If the rod 20 is manipulated in one hand, the other hand can be cupped beneath the particular pill 10 which is being punched out, so that as it leaves the pocket 9 it will drop into the hand. Obviously, none of the other pills 10, which are housed in the other pockets 9, will be disturbed or affected by such removal of a single pill 10. If desired, the package A may be supported edgewise in a suitable slotted pedestal 21 by a conventional easel or in any other conventional manner to provide a counter display, so that a customer may buy one pill at a time. Counter displays of this type are particularly useful in taverns, bars, filling stations, lunch wagons, small restaurants, roadside diners, and the like for displaying and selling individual doses of headache tablets, sleep-combating caffeine tablets, indigestion-relieving antacid tablets, or breath-sweetening deodorant tablets.

It is also possible to provide a modified form of package, as shown in Figure 4, comprising a rectangular container element A', which is in all respects substantially identical with the previously described container A except that it is smaller and contains a lesser number of tablets or pills. Provided for snug-fitting slidable disposition around the container element A' is an open-ended cover-slide B having spaced parallel top and bottom walls 22, 23, marginally connected by side walls 24, 25. For convenience, the top and bottom walls 22, 23, are provided centrally of their transverse margins with finger-cuts 26 to facilitate sliding insertion and removal of the container element A'.

The method or process of manufacturing containers in accordance with the present invention is schematically illustrated in Figures 5 to 15, inclusive, and comprises the following sequence of operations. A back member or sheet 30 is die-cut or otherwise formed from a suitable piece of paper and a plurality of circular apertures 31 are stamped therein. Depending upon convenience, the sheet 30 can be blanked out or cut to size in one operation and the apertures 31 stamped out in a second operation, or the blanking and aperture-forming can be combined in a single operation. Similarly, the series of intermediate plies 32 having circular apertures 33 may be formed from cardboard or other similar material. The plies 32 are the same size and shape as the back sheet 30 and the apertures 33 are sized and positioned for precise registration with the apertures 31. In making the type and size of containers previously described, it is, of course, necessary to provide five such plies. In addition, a non-perforated sheet of foil 34, a non-perforated sheet of thin paper 35, and a non-perforated sheet 36 of the transparent film, such as moisture-proof cellophane, are also cut out to the same peripheral size as the back sheet 30 and plies 32. Finally, a cover sheet or front member 37 is cut, stamped, or otherwise formed from a suitable grade of paper having circular apertures 38 and conforming both in peripheral contour and aperture-location to the back sheet 30. These various components are shown in Figures 5 to 10, inclusive.

Thereupon, two of the cardboard plies 32 are each surface-coated upon a single face with an adhesive either by hand or by being fed through a suitable glue-spreading machine, and, when adhesively coated, are brought together with their adhesive-coated faces touching and jogged into precise marginal registration. Thereupon, one of the exposed faces of one of the cardboard plies 32 is coated with a suitable adhesive having an affinity for metallic foil and the foil sheet 34 applied in smooth overlying marginally registering relation thereon. Thereupon, another cardboard ply 32 is similarly coated with an adhesive having an affinity for metallic foil and applied upon the then exposed face of the foil sheet 34. The thin paper sheet 35 and the back sheet 30 are surface-coated with adhesive and applied in successive order upon the last-mentioned cardboard ply 32. Finally, the assembled plies 32, foil sheet 34, paper sheet 35, and back sheet 30 are placed in a suitable jig or fixture and pressed until dry or, at least, firmly consolidated into a container back-assembly or unit 39 having a plurality of circular pockets 40.

Two cardboard plies 32 are similarly assembled with the cellophane sheet 36 and the cover sheet 37 to form a container top-element 41, as shown in Figure 12.

Thereupon, medicinal pills 42 are manually or otherwise suitably inserted into the pockets 40. As will be seen by reference to Figure 14, the pills 42 are substantially thicker than the pockets 40 of the back-assembly 39 and, therefore, protrude

upwardly therefrom. The interior face 43 of the top-assembly 41 is then surface-coated with a suitable adhesive and placed down over the top of the back-assembly 39 in precise marginal registration therewith, as shown in Figure 15, and the assembly thus formed is then placed under suitable pressure until dry or firmly consolidated to form the finished package in which each medicinal pill 42 is securely sealed within its own separate compartment. In this connection, it should be pointed out that the adhesive used in this final assembly operation should be carefully applied, preferably by a roller or other suitable means, so that there will be no substantial excess of adhesive to be squeezed into the pockets and onto the pills. However, since it is always possible that a slight amount of adhesive may contaminate a few or more of the pills 42 as a result of careless workmanship or sloppy technique, it is highly desirable that the adhesive used in this final operation be edible, so that it will have no damaging effects in the human system. It is also possible to avoid this difficulty irrespective of the chemical constituency of the adhesive by applying the adhesive in carefully defined areas by means of printing rollers, printing plates, or similar means.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the package and in the steps of its production may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. The method of making a container for housing small discrete objects which comprises forming a plurality of plies having identical marginal contour and identical pocket-forming apertures, laminating said plies together to form a bottom blank, applying a rupturable membrane tightly across the under face of the blank as a bottom closure for the apertures, laminating a plurality of plies together to form a top blank, said blanks together having slightly less thickness than the object to be contained, applying a rupturable membrane tightly across the upper face of the top blank to form a closure across the apertures thereof, placing a small discrete object within each of the apertures of the bottom blank, pressing the top blank on the bottom blank, and adhesively securing the top blank upon and over the filled bottom blank so that the objects are sealed each within its own compartment and tightly engaged between the membranes.

2. The method of making a container for housing small discrete objects which comprises forming a plurality of plies having identical marginal contour and identical pocket-forming apertures, laminating some of said plies together to form a bottom blank, applying a rupturable membrane tightly over one face of the bottom blank as a closure for the apertures so as to form therewith a series of individual pockets, laminating some of said plies together to form a top blank having the same peripheral contour as the bottom blank and having its apertures respectively located for registration with the apertures of the bottom blank when the top and bottom blanks are in marginal registration with each other, said blanks having a combined thickness slightly less than the thickness of the object to be contained, applying a rupturable membrane tightly across the outer face of the top blank as a closure for the apertures thereof so as to form a plurality of individual pockets, applying a cover sheet over the outer face of the membrane on the top blank, said cover sheet having apertures located in marginal registration with the pocket-forming apertures of the top blank, placing one of the discrete objects to be packaged in each of the pockets of the bottom blank, superimposing the top blank upon the filled bottom blank so that the margins and pocket-forming apertures thereof are respectively in registration with each other, pressing the top blank onto the bottom blank and adhesively securing the bottom blank and top blank together so that each of the objects is tensioned within its compartment by the membranes.

3. The method of making a container for housing small discrete objects which comprises forming a plurality of plies having identical marginal contour and identical pocket-forming apertures, laminating some of said plies together to form a bottom blank, applying a rupturable membrane tightly over one face of the bottom blank as a closure for the apertures so as to form therewith a series of individual pockets, laminating some of said plies together to form a top blank having the same peripheral contour as the bottom blank and having its apertures respectively located for registration with the apertures of the bottom blank when the top and bottom blanks are in marginal registration with each other, said blanks having a combined thickness slightly less than the thickness of the object to be contained, applying a rupturable membrane tightly across the outer face of the top blank as a closure for the apertures thereof so as to form a plurality of individual pockets, applying a cover sheet over the outer face of the membrane on the top blank, said cover sheet having apertures located in marginal registration with the pocket-forming apertures of the top blank, placing one of the discrete objects to be packaged in each of the pockets of the bottom blank, superimposing the top blank upon the filled bottom blank so that the margins and pocket-forming apertures thereof are respectively in registration with each other, pressing the top blank onto the bottom blank and adhesively securing the bottom blank and top blank together so that each of the objects is tensioned within its compartment by the membranes with a non-toxic adhesive.

4. The method of making a container for housing small discrete objects which comprises forming a plurality of plies having identical marginal contour and identical pocket-forming apertures, laminating some of said plies together to form a bottom blank, aplying a rupturable membrane tightly over one face of the bottom blank as a closure for the apertures so as to form therewith a series of individual pockets, laminating some of said plies together to form a top blank having the same peripheral contour as the bottom blank and having its apertures respectively located for registration with the apertures of the bottom blank when the top and bottom blanks are in marginal registration with each other, said blanks having a combined thickness slightly less than the thicknes of the object to be contained, applying a rupturable membrane tightly across the outer face of the top blank as a closure for the apertures thereof so as to form a plurality of individual pockets, applying a cover sheet over the outer face of the membrane on the top blank, said cover sheet having apertures located in marginal

registration with the pocket-forming apertures of the top blank, placing one of the discrete objects to be packaged in each of the pockets of the bottom blank, coating the uncovered face of the top blank with an adhesive, superimposing the adhesive-coated top blank upon the filled bottom blank in marginal registration therewith, and pressing the two blanks together so as to cause them to form a unitary package assembly in which one of the objects to be packaged is snugly held and sealed within the compartments formed by each set of marginally registering apertures of the top and bottom blanks.

5. The method of making a container for housing small discrete objects which comprises forming a plurality of plies having identical marginal contour and identical pocket-forming apertures, laminating some of said plies together to form a bottom blank, applying a rupturable membrane tightly over one face of the bottom blank as a closure for the apertures so as to form therewith a series of individual pockets, laminating some of said plies together to form a top blank having the same peripheral contour as the bottom blank and having its apertures respectively located for registration with the apertures of the bottom blank when the top and bottom blanks are in marginal registration with each other, said blanks having a combined thickness slightly less than the thickness of the object to be contained, applying a rupturable membrane tightly across the outer face of the top blank as a closure for the apertures thereof so at to form a plurality of individual pockets, applying a cover sheet over the outer face of the membrane on the top blank, said cover sheet having apertures located in marginal registration with the pocket-forming apertures of the top blank, adhesively applying an additional ply upon the outer face of the rupturable membrane of the bottom blank, said last-named ply being in marginal registration with the other plies of the bottom blank and having its apertures respectively in marginal registration with the pocket-forming apertures of the bottom blank, adhesively applying an additional rupturable membrane across the outer face of said last-named ply to form a closure across the apertures thereof, placing one of the discrete objects to be packaged in each of the pockets of the bottom blank, superimposing the top blank upon the filled bottom blank so that the margins and pocket-forming apertures thereof are respectively in registration with each other, pressing the top blank onto the bottom blank and adhesively securing the bottom blank and top blank together so that each of the objects is tensioned within its compartment by the membranes.

6. The method of making a container for housing small discrete objects which comprises forming a plurality of plies having identical marginal contour and identical pocket-forming apertures, laminating some of said plies together to form a bottom blank, applying a rupturable membrane tightly over one face of the bottom blank as a closure for the apertures so as to form therewith a series of individual pockets, laminating some of said plies together to form a top blank having the same peripheral contour as the bottom blank and having its apertures respectively located for registration with the apertures of the bottom blank when the top and bottom blanks are in marginal registration with each other, said blanks having a combined thickness slightly less than the thickness of the object to be contained, applying a rupturable membrane tightly across the outer face of the top blank as a closure for the apertures thereof so as to form a plurality of individual pockets, applying a cover sheet over the outer face of the membrane on the top blank, said cover sheet having apertures located in marginal registration with the pocket-forming apertures of the top blank, adhesively applying an additional ply upon the outer face of the rupturable membrane of the bottom blank, said last-named ply being in marginal registration with the other plies of the bottom blank and having its apertures respectively in marginal registration with the pocket-forming apertures of the bottom blank, adhesively applying an additional rupturable membrane across the outer face of said last-named ply to form a closure across the apertures thereof, adhesively applying a backing sheet over and across said last-named rupturable membrane, said backing sheet being in marginal registration with the plies of the bottom blank and having apertures respectively in marginal registration with the pocket-forming apertures of the bottom blank, placing one of the discrete objects to be packaged in each of the pockets of the bottom blank, superimposing the top blank upon the filled bottom blank so that the margins and pocket-forming apertures thereof are respectively in registration with each other, pressing the top blank onto the bottom blank and adhesively securing the bottom blank and top blank together so that each of the objects is tensioned within its compartment by the membranes.

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