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(19) **United States**(12) **Patent Application Publication****Roessiger**(10) **Pub. No.: US 2007/0051785 A1**(43) **Pub. Date: Mar. 8, 2007**(54) **COLLAPSIBLE RIGID CONTAINER**

(57)

ABSTRACT(76) Inventor: **Claude Roessiger**, Wolfeboro, NH (US)

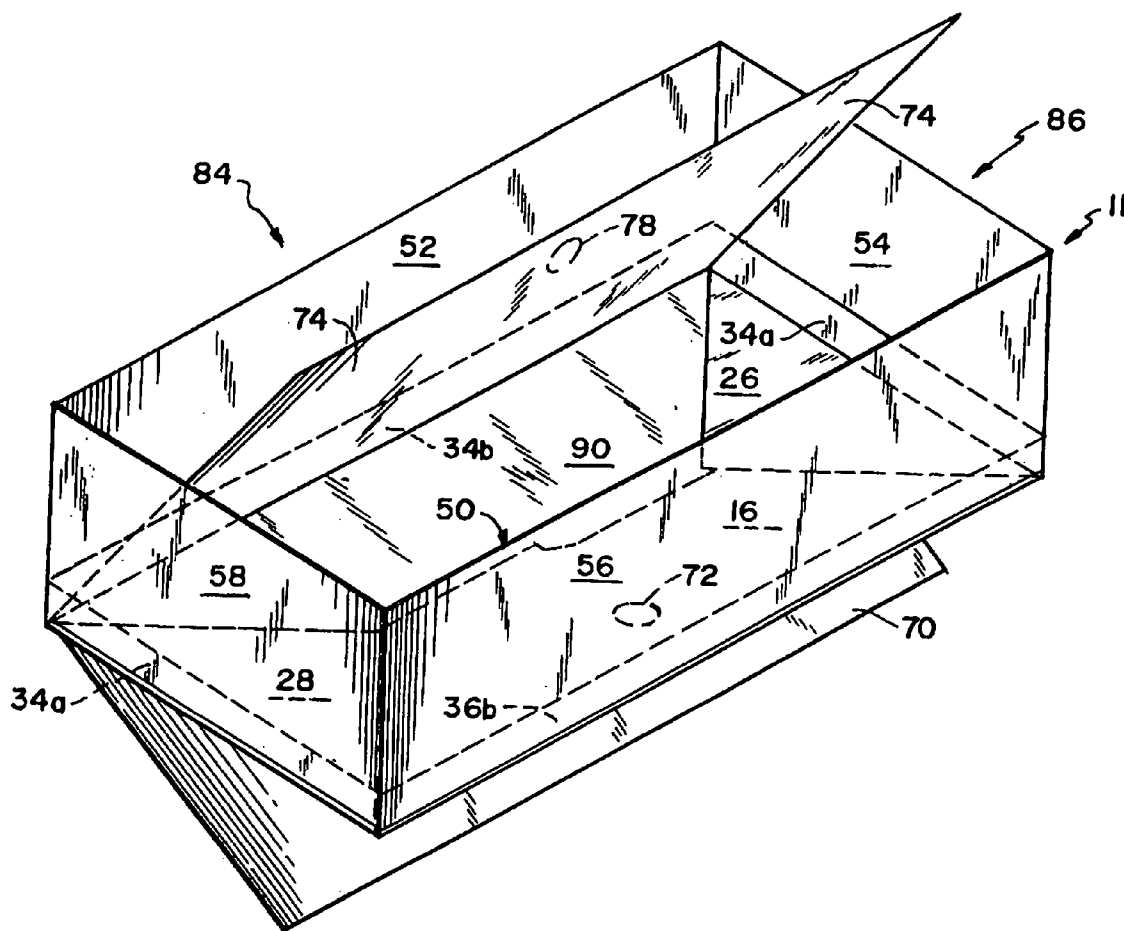
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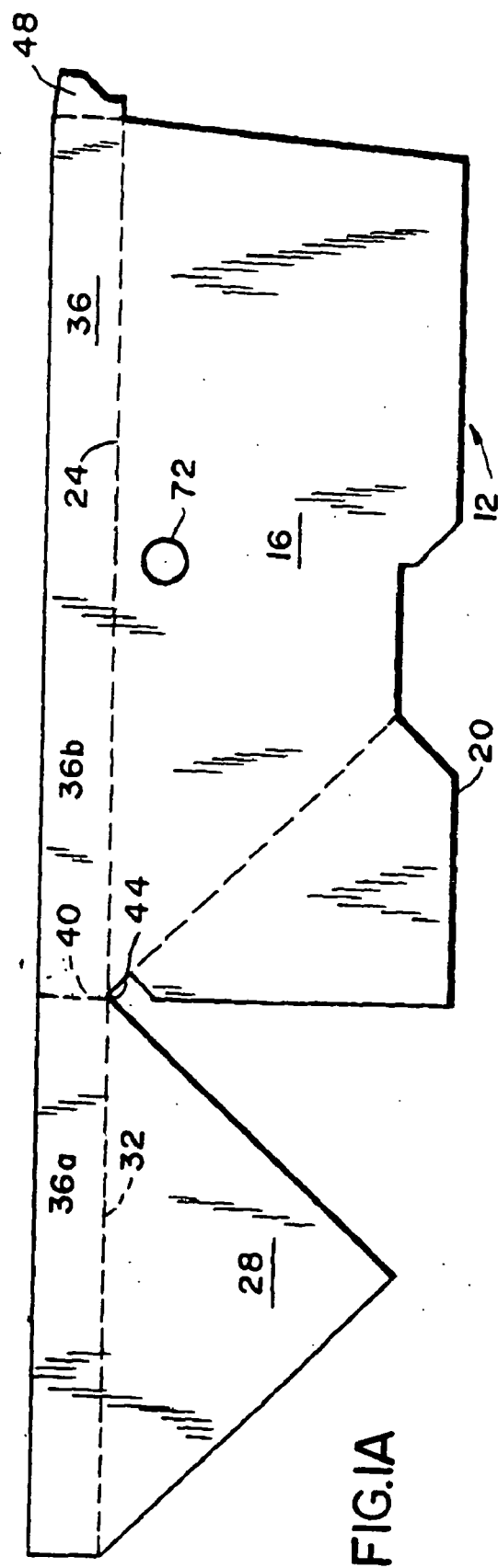
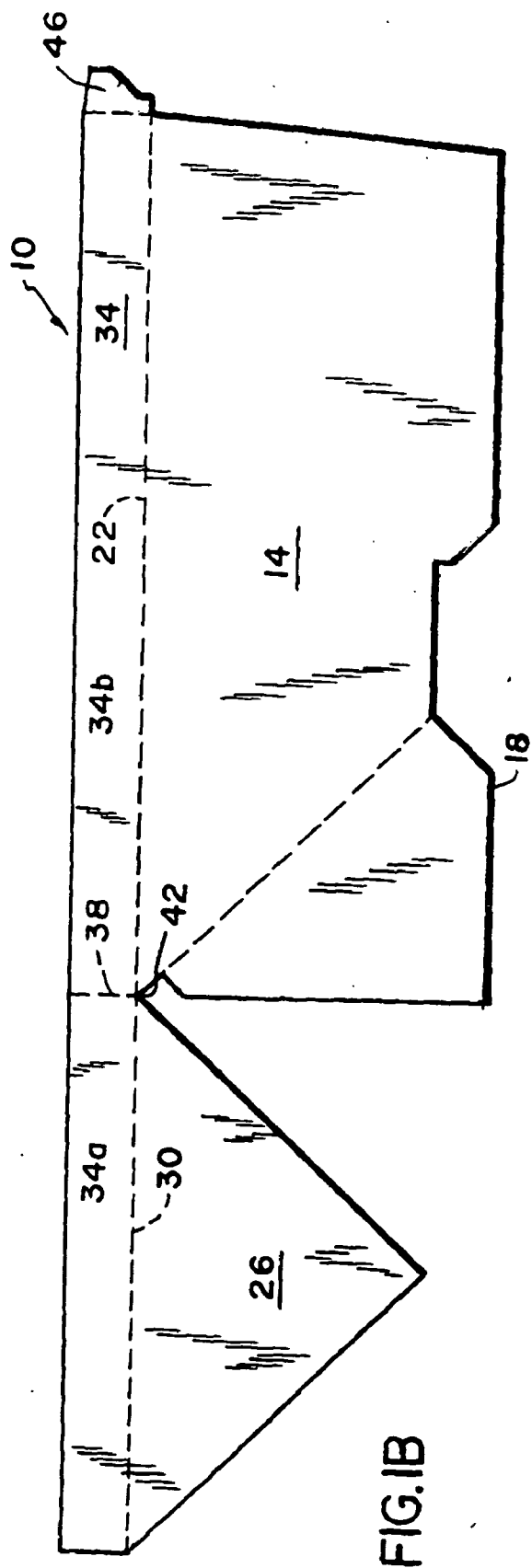
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Disclosed is a collapsible rigid box comprising a rectangular sleeve of rigid chip board and having an exterior panel hingedly connected to the base of the sleeve and dimensioned to fit snugly within the sleeve. An interior shallow tray has a Hymes bottom and integral and overlapping triangular sections which form the base. The blanks for the Hymes bottom have integrally formed marginal wings which are folded to form the shallow tray. An interior panel is hingedly mounted along one side and interior to the tray. One of the blanks making up the Hymes bottom has an aperture therein. One half of a Velcro connector is secured to each of the interior and exterior panels so as to mate through the aperture on opposed sides of the blank. The box is held together by strong cover paper which connects the sleeve side panels. The exterior bottom panel is hingedly connected to the side panel by the cover paper. The interior panel is hingedly secured to one of the bottom blanks of the shallow tray. A rectangular collapsible lid is provided in which sides of the lid are joined to the top by cover paper. A gusset is provided at each edge of the side panels where they meet. The gusset is rectangularly shaped and folds upon itself. Adhesive is used to glue the gusset together to thereby form the sides of the lid.





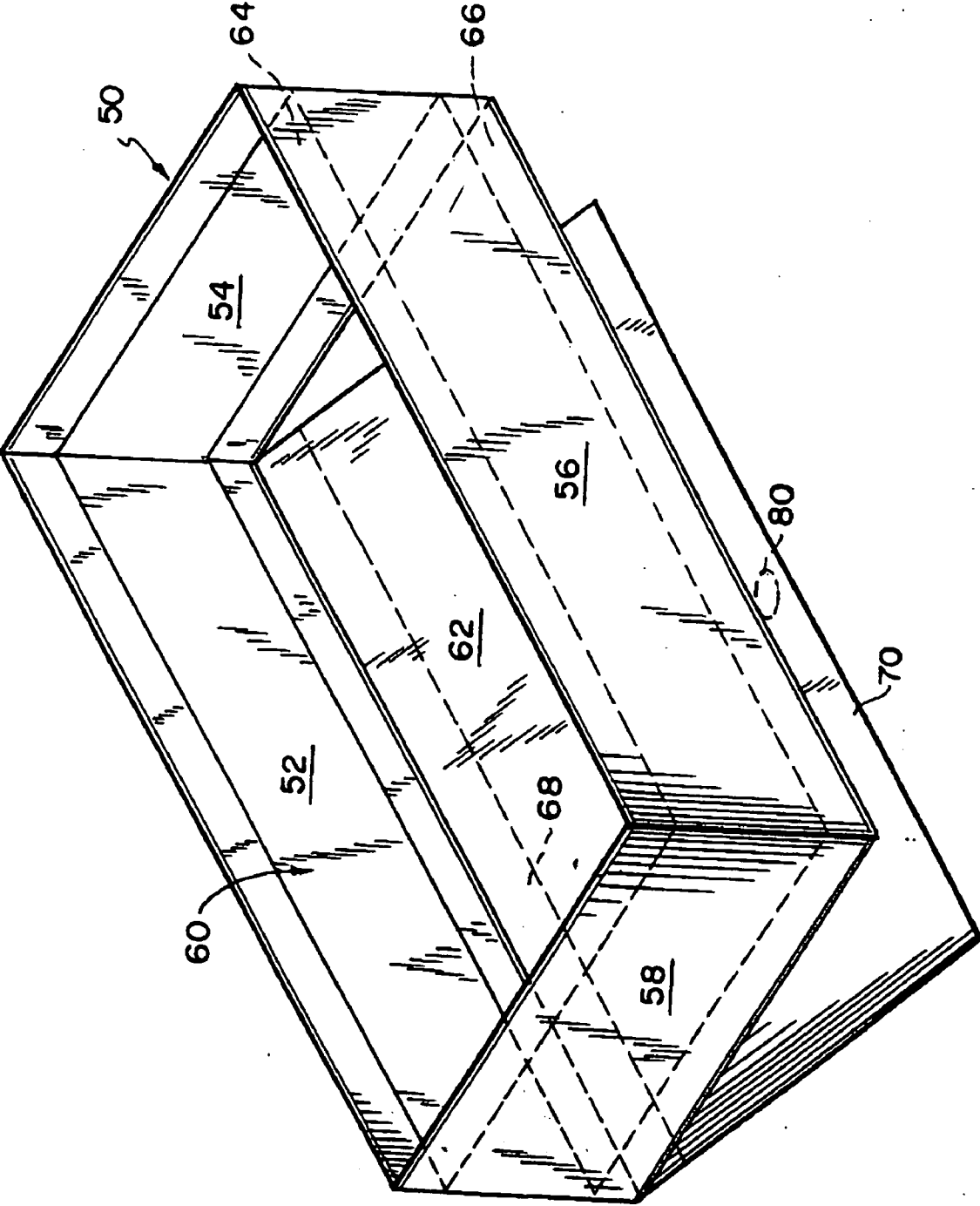


FIG. 2

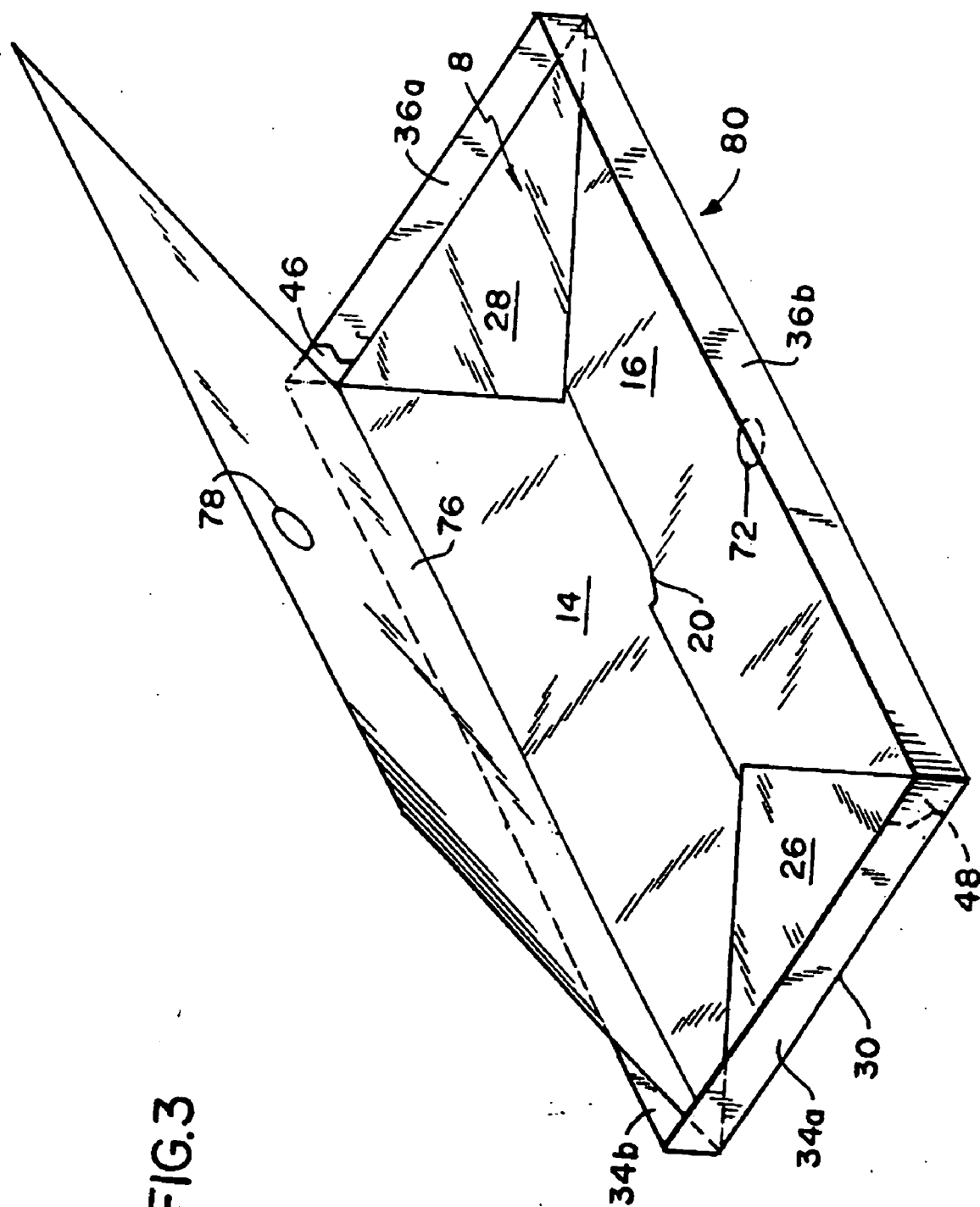


FIG. 3

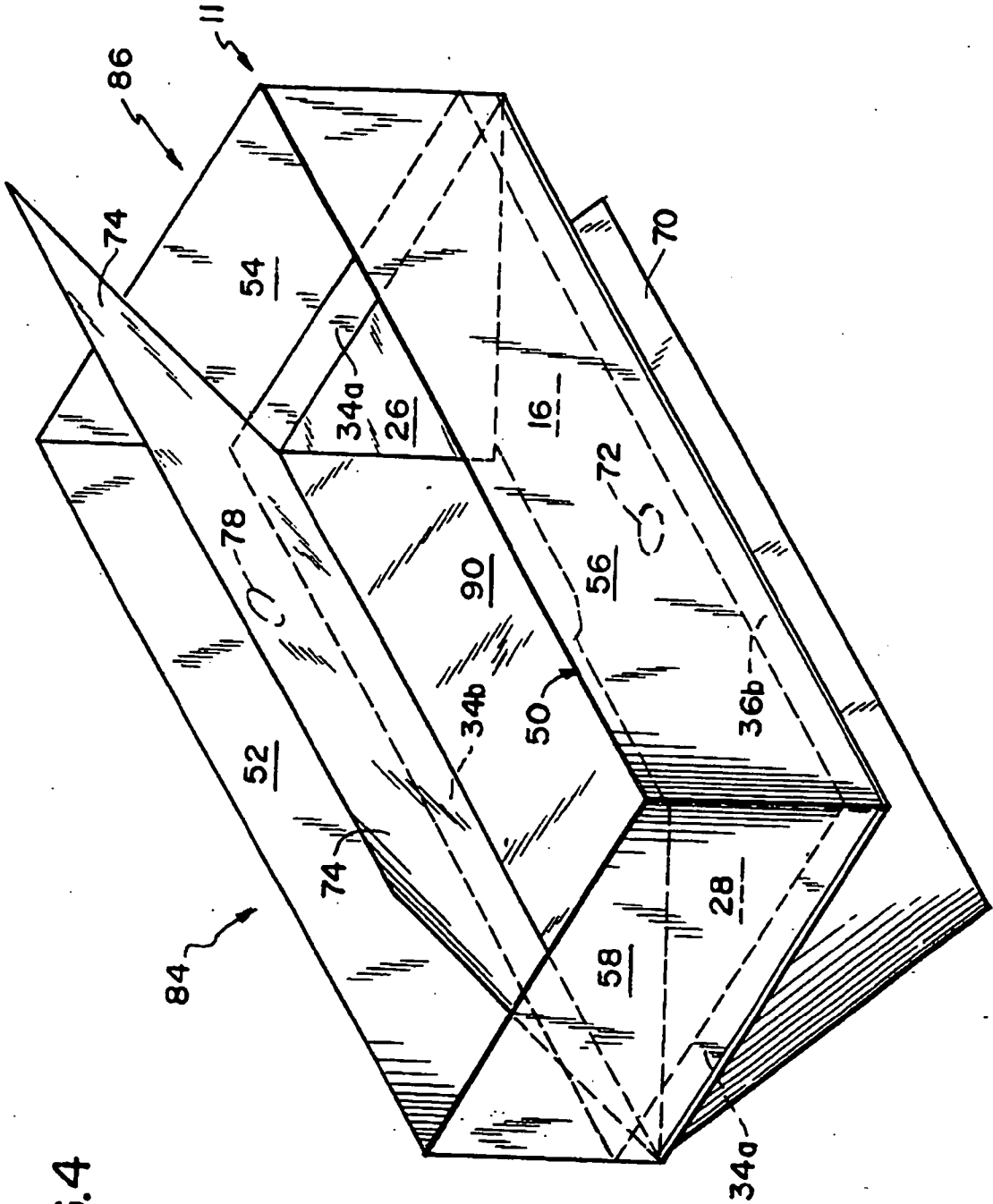


FIG. 4

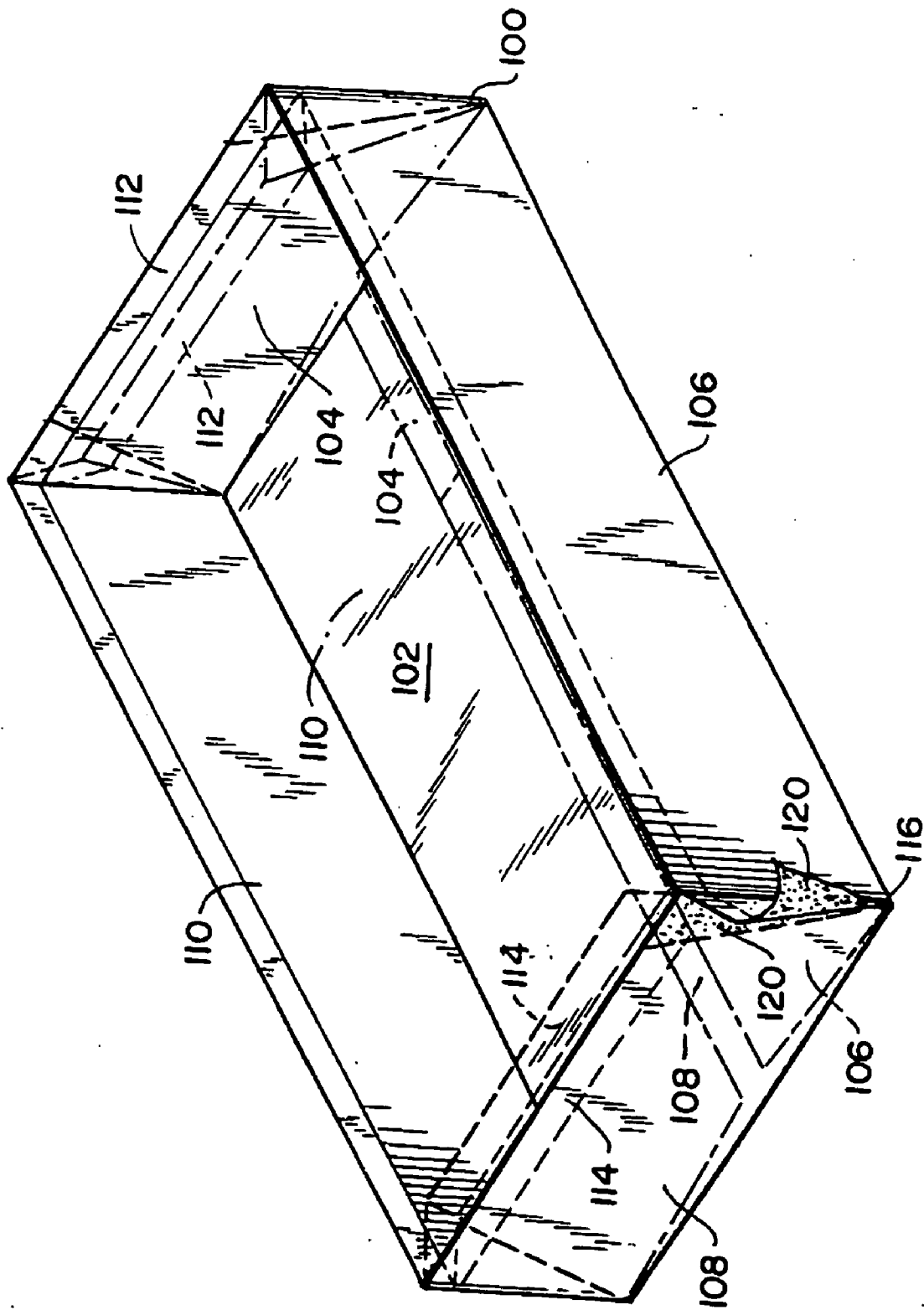


FIG. 5

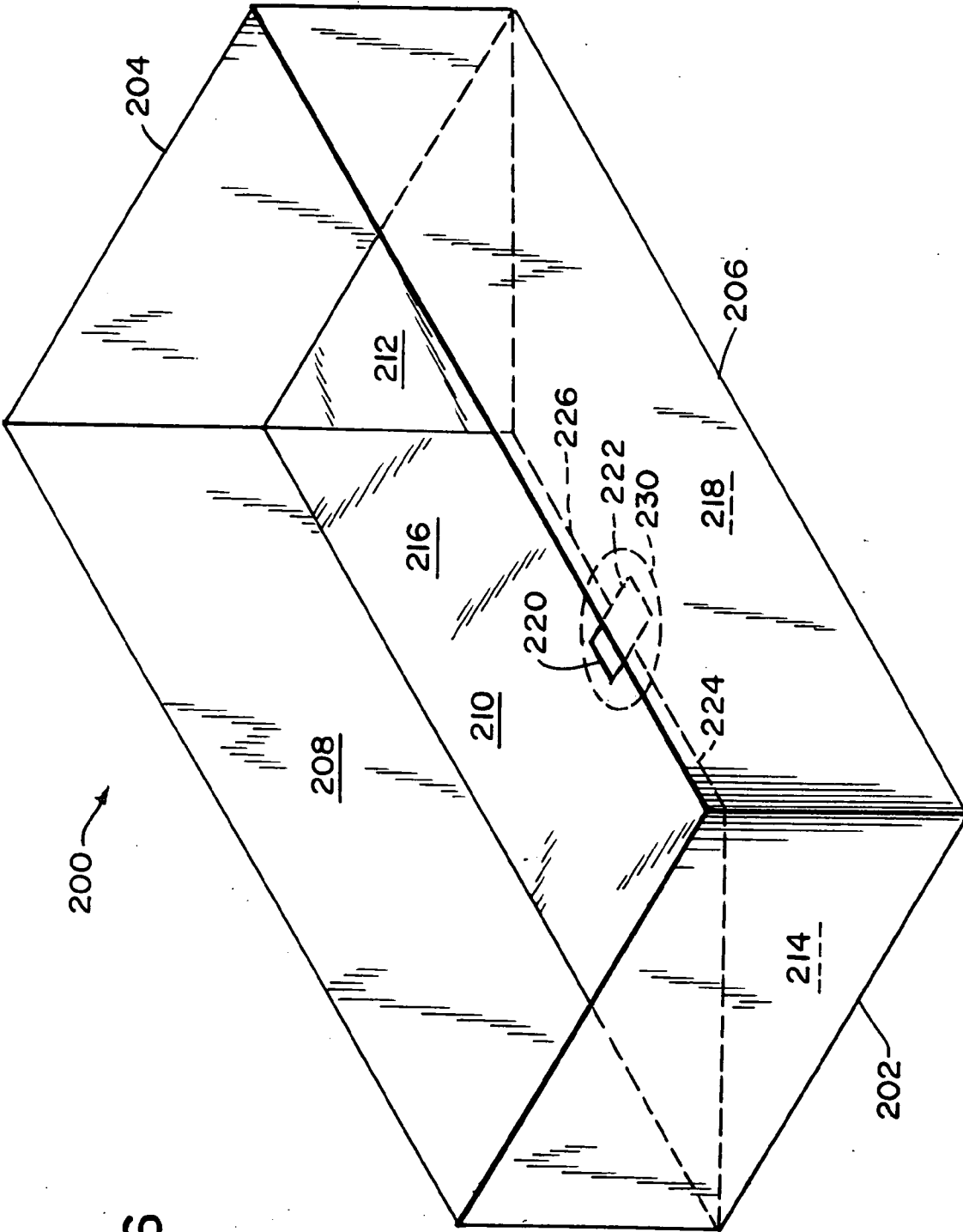
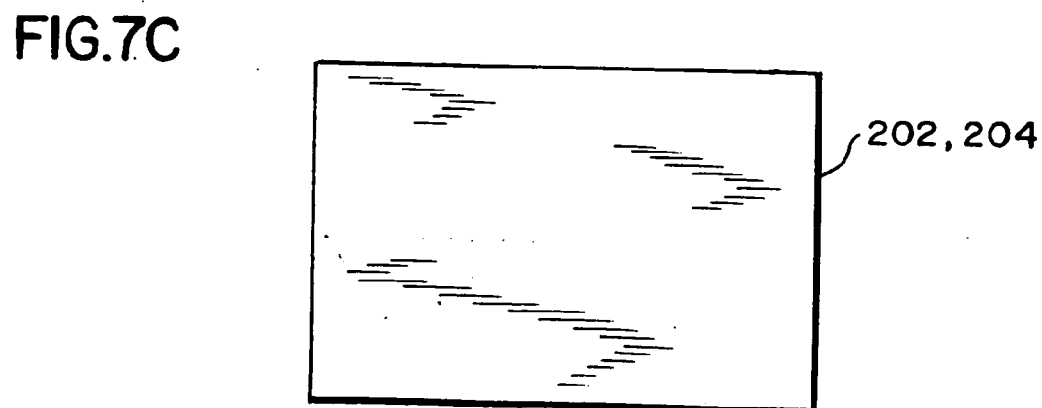
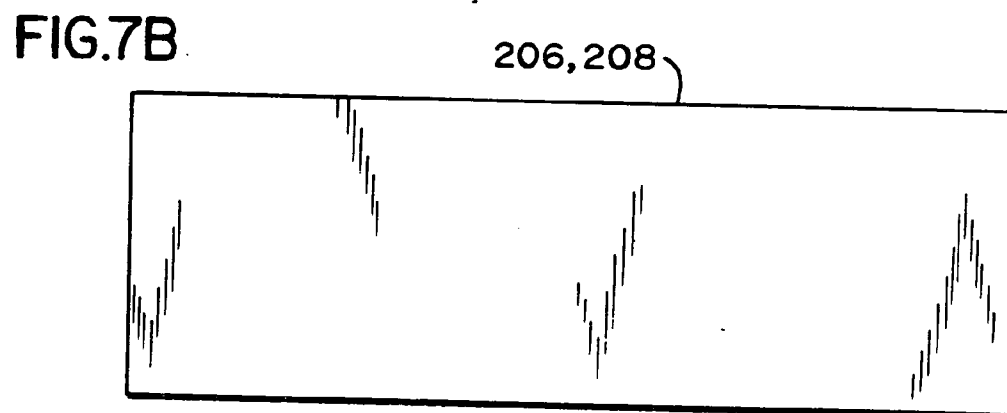
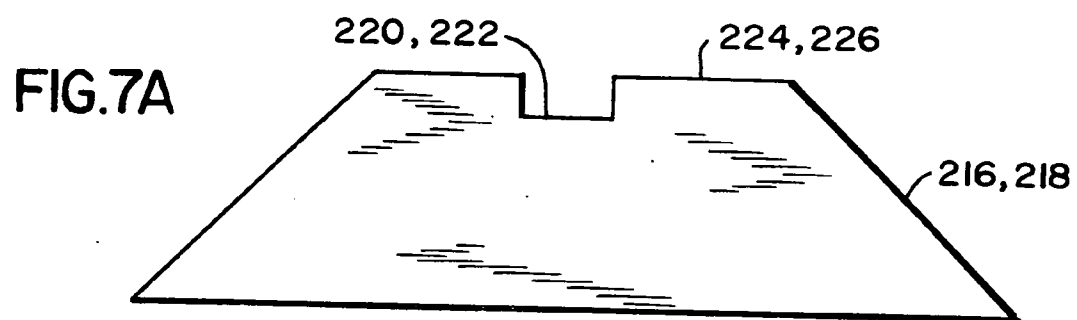


FIG. 6



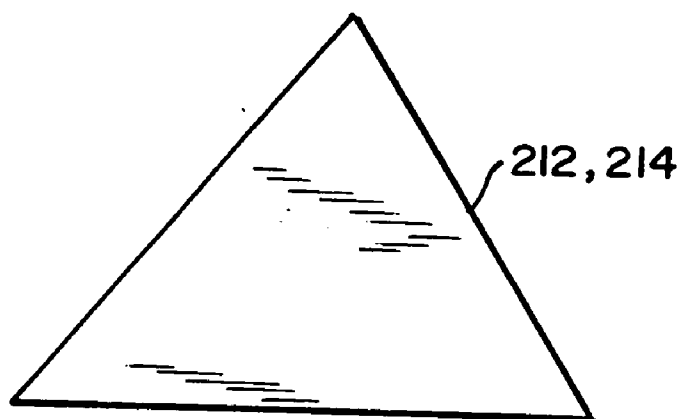


FIG. 7D

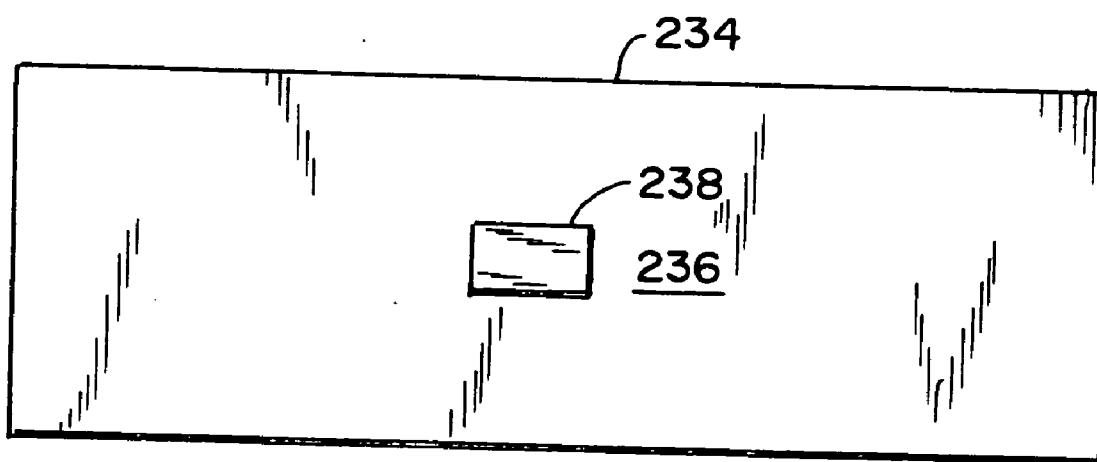


FIG. 7E

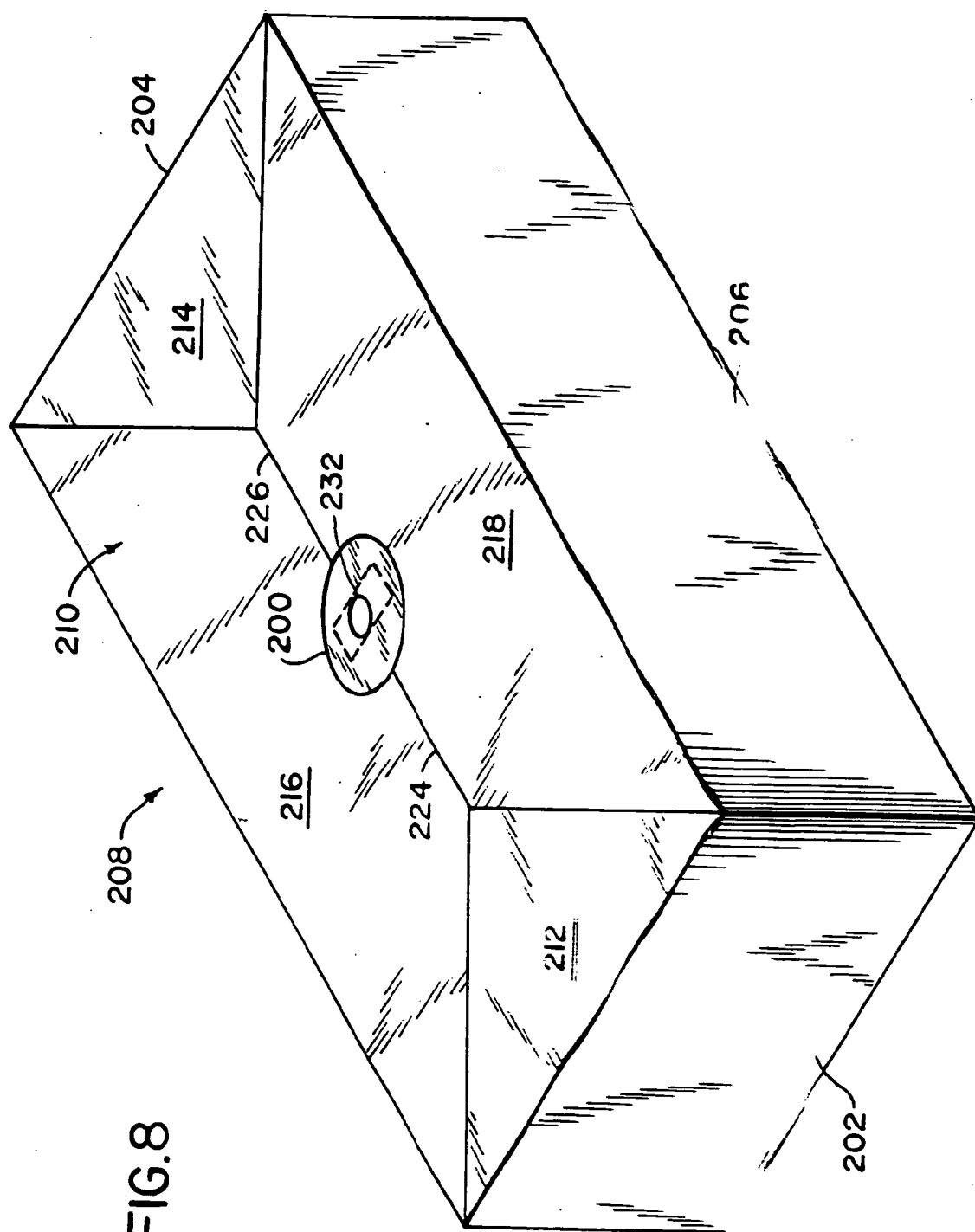
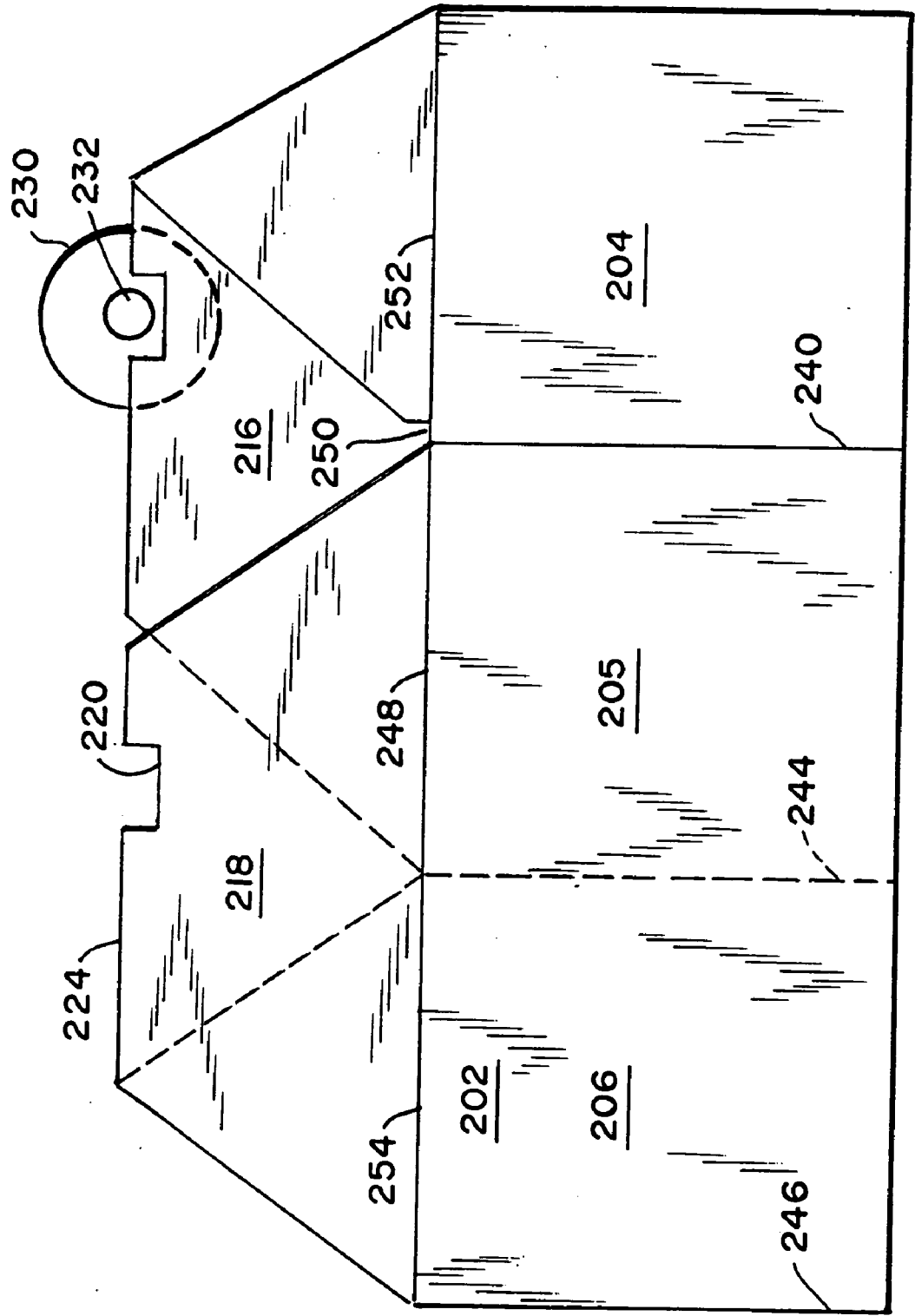


FIG. 9



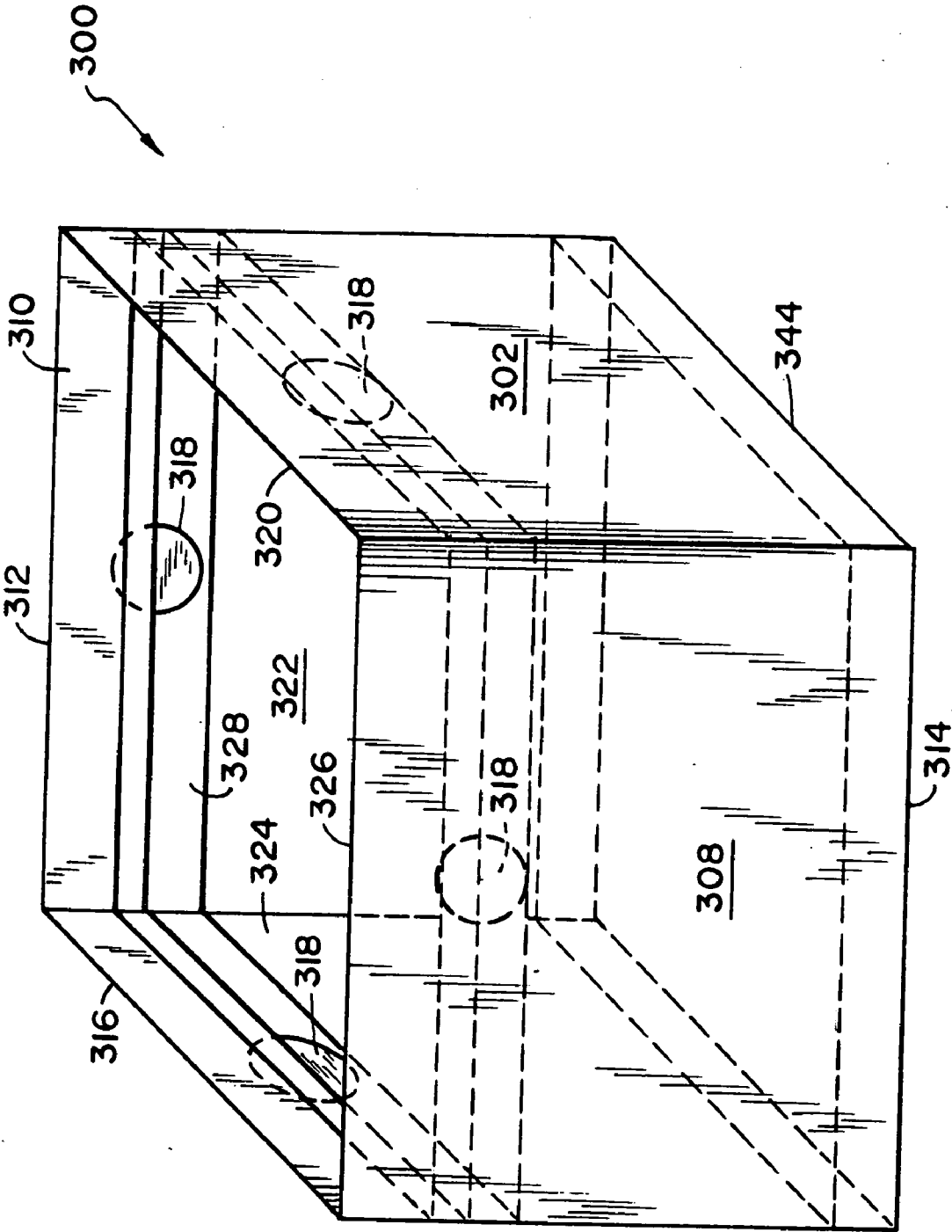


FIG. 10

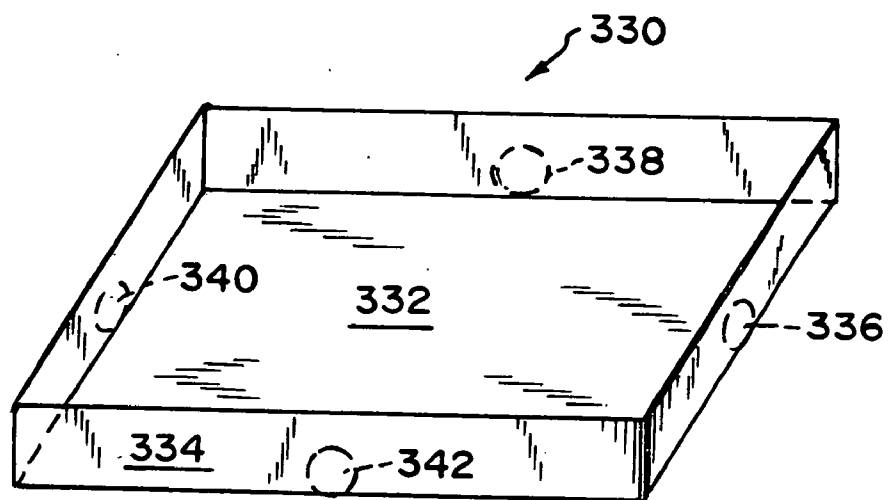


FIG. 11

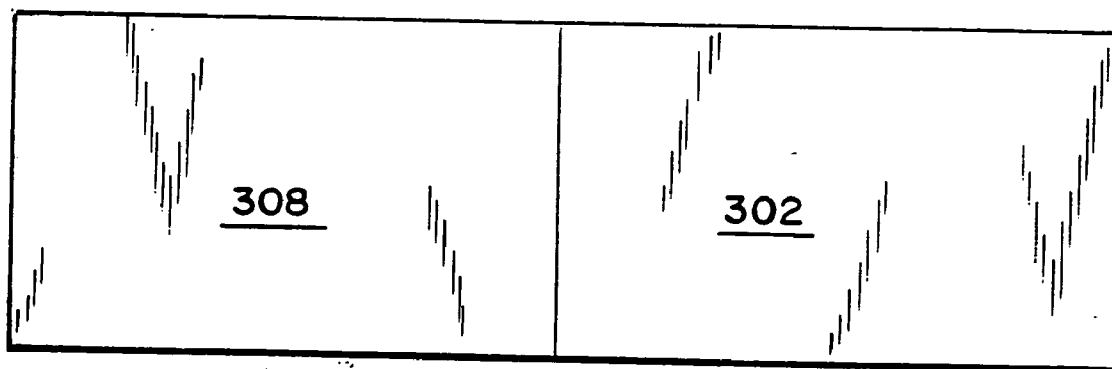


FIG. 12

COLLAPSIBLE RIGID CONTAINER

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention is directed to collapsible rigid containers.

[0003] 2. Description of Related Art

[0004] Rigid containers are every day articles. It is well known to mass manufacture boxes or other containers which, at some point in their manufacture, are comprised of flat members which are then assembled such as that disclosed by Oxley in U.S. Pat. No. 2,544,191. Such containers come in all shapes and sizes.

[0005] Boxes or similar containers which may be constructed of a rigid material, such as cardboard, plastic, or the like, are well known. When manufacturing a rigid container that may be shipped flat and then easily assembled by the user, a compromise must be made in the appearance of the container. Details of the assembly, such as the engaging or interlocking portions of the container walls are usually visible, thereby detracting from the overall appearance from the typical preassembled rigid container, such as, a hat box or the like.

[0006] Most folding boxes or containers are tubular structures with closures at both ends. A smaller proportion of existing folding containers form a box from a tray. These usually consist of a base and a lid or cover. On occasion, the lid may be attached to the tray.

[0007] In a typical rigid box, a sheet of paper board is cut and scored to a specific box size. Depending on the size needed, one or more boxes may be die cut from one sheet of paper board. For example, in manufacture, a sheet of paper board might be sufficiently dimensioned to permit the arrangement therein of a total of six trays, either six bases or lids or, potentially, three bases and three lids. The scored sheet is then broken into individual pieces. A tray may be assembled from one of the blanks and defined by four wings or side panels extending from a rectangle. The four side panels are bent along score lines to right angles with respect to the tray base and stay tape is applied to each of the four corners to form the tray. Cover paper (or wrap) is cut to size from sheets or rolls to the approximate desired size. The cover paper is then miter-cut to be so dimensioned as to permit a smooth fit about the assembled tray. The wrap paper is coated with an adhesive. The erected tray is disposed on the wrap at the desired location. The paper is then wrapped around the paper board tray. The portions of the wrap intended to fold over the edge of the tray the 'turn-in wrap'—enclose all four edges of the tray, the rigid box is complete.

[0008] It is well known for the walls of a container to be held releasably held in place by mating connectors, including magnets as in U.S. Pat. No. 6,688,516 by Ussen. One deficiency of the prior art is that it uses complex means of assembling containers, making it difficult to provide efficient means of assembly and disassembly.

[0009] It is also believed that the prior art fails to teach a box or other container of relatively rigid material which may be readily assembled and, upon such assembly, give the

appearance of being a completely rigid container and which may be easily collapsed, if desired.

BRIEF DESCRIPTION OF THE INVENTION

[0010] It is an object of this invention to provide a container which may be provided in a collapsed state and assembled to form a rigid appearing container.

[0011] It is another object of this invention to provide a container in which the base is formed of interlocking panels and there is provided hingedly secured covers for pivoting so as to cover the base to provide the appearance of a rigid container.

[0012] It is yet another object of this invention to provide a container which may be shipped flat and erected to present a rigid box.

[0013] It is still another object of this invention to provide a lid to a container having top and side panels and which may be provided flat and so connected at its corners as to form a lid with mating sides.

[0014] It is yet another object of this invention to use magnets to releasably join sides so that a rigid container may be easily assembled and disassembled.

[0015] It is a yet a further object of this invention to provide mating panels of a container which are held in position against the shearing force set up by objects within the container by not adhesive engaging tape with a high coefficient of friction therebetween relative to the coefficient of friction of the materials making up the panels.

[0016] In accordance with one embodiment of this invention there is provided a rigid collapsible container which comprises container means. The container means includes flexible base means and container side panel means. The base means and the container side panel means define therebetween a predetermined configuration open at at least one side and closed at one end by the base means so as to define the interior volume of the container. The base means comprises at least a pair of interlocking panels. The exterior base panel means is hingedly connected to the container means so as to fold over and enclose the base means within the container.

[0017] In yet another embodiment there is provided a lid for a container which comprises a cover panel and side panels. There is also provided wrap cover paper secured to the cover and side panels to thereby join the panels together to form a lid with extending sides. There is also provided gusset means for connecting one of the side panels to another of the side panels. The gusset means comprises closure means for making the connection.

[0018] In yet another aspect of this invention there is provided a rigid container of the type of having a collapsed and an erect state. The container comprises housing means including flexible bottom means, and container side panel means. The bottom means and the container side panel means define therebetween a predetermined configuration open at at least one side and closed at one end by the bottom means so as to define therebetween the interior volume of the container when the container is erect. The bottom means comprises at least a pair of bottom panels. There is also provided joining means secured to at least one of said bottom panels and insert panel means for being removably

disposable within the housing and against said bottom. The insert panel comprises engaging means for being connected with the joining means to thereby releasably hold the bottom panel together with the container in the erect state.

[0019] In still another aspect, there is provided a rigid container of the type of being collapsed and an erect state. The container comprises housing means which includes container side panel means. There is also bottom means. The container side panel means together with the bottom means define a predetermined configuration open at at least one side and closed at one end by the bottom means so as to define the interior volume of the container when the container is erect. The bottom means comprises at least one bottom panel. The bottom joining means are secured to the bottom panel. The side joining means are secured to at least one of the side panels for engaging the bottom joining means such that, upon engagement of the bottom and side joining means, the container is substantially locked in the erect state.

[0020] In another embodiment there is provided a container which comprises a housing. The housing has an interior volume and side panels. The side panel interior surfaces define therebetween at least a part of said interior volume. At least one closing panel has surfaces for removably engaging at least a part of the interior surfaces of the side panels. The side panel interior surfaces relative to the engaging surfaces of the closing panel having a first coefficient of friction first means are provided secured to the interior surfaces of the side panels. Second means are secured to the engaging surfaces of the closing panel. Upon the closing panel engaging the side panels, the first and second secured means nonadhesively contact one another and have a second coefficient of friction greater than the first coefficient of friction so as to hold the closing panel to the side panels fixedly in position.

[0021] There is further a method of making a rigid collapsible container which comprises the steps of providing a container with flexible bottom means and container side panel means open at at least one side and closed at one end by said bottom means to define therebetween the interior volume of the container; providing at least a pair of interlocking panels to form the bottom means; providing an exterior bottom panel means; and hingedly connecting the bottom panel means to the container means so as to fold over and enclose the bottom means within the container.

[0022] In another aspect there is provided a method of providing a container having a collapsed and an erect state, the method comprises providing housing means including bottom means, and container side panel means which together define a predetermined configuration open at least one side; closing one end with the bottom means to define therebetween the interior volume of the container when the container is erect; providing joining means to be secured to the bottom means; providing closure panel means that is removably positionable within the housing and against the bottom means; and providing insert panel means which includes engaging means for releasably connecting with the joining means so that the insert panel means releasably and rigidly holds the bottom means and the container side panel means such that container is in the erect state.

[0023] In yet another embodiment there is provided the method of making a container comprising providing a housing with an interior volume and side panels, the side

panel interior surfaces defining therebetween at least a part of the interior volume; providing at least one closing panel having surfaces for removably engaging at least a part of the interior surfaces of the side panels; providing the side panel interior surfaces relative to the engaging surfaces of said closing panel with a first coefficient of friction; providing first means secured to the interior surfaces of the side panels; providing second means secured to the engaging surfaces of the closing panel; and bringing the first and second secured means into contact upon the closing panel engaging the side panels, and providing the contacting first and second secured means with a second coefficient of friction greater than the first coefficient of friction so as to hold the closing panel to the side panels fixedly in position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] FIGS. 1A and B are plan view of the bottom panels, including a Hymes bottom constructed in accordance with the teachings of the invention;

[0025] FIG. 2 is a perspective of an exterior sleeve constructed in accordance with the teachings of the invention; and

[0026] FIG. 3 is a perspective view of an interior tray; and

[0027] FIG. 4 is a perspective view of an assembled container; and

[0028] FIG. 5 is a perspective view of a cover for the container; and

[0029] FIG. 6 is a top perspective view of another embodiment of the container of this invention; and

[0030] FIGS. 7A-73 are side views of the panels of the container of FIG. 6; and

[0031] FIG. 8 is a bottom perspective view of the embodiment of FIG. 6; and

[0032] FIG. 9 is a side view of the box of FIG. 6 in a collapsed or folded state; and

[0033] FIG. 10 is a bottom perspective view of another embodiment of the side walls of the device of this invention; and

[0034] FIG. 11 is a top perspective view of the bottom section of the container of FIG. 10; and

[0035] FIG. 12 is a side view of the device of FIG. 10 in a collapsed state.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0036] Turning to FIGS. 1A and B there is shown two interlocking planar members which may be made out of any suitable material such as relatively flexible cardboard blanks 10 and 12 to form a bottom 8 (FIG. 3) of the box 11 (FIG. 4). The blanks 10 and 12 are identical mirror images of one another and comprise a substantial rectangular portion 14 and 16, respectively. A marginal longer dimensioned edge 18, 20 of each blank 10, 12, respectively, may define the interlocking parts 18, 20 of a Hymes bottom. A crease or score line 22, 24, defines the longer dimensioned side of each rectangular portion 14, 16, respectively, which is opposed to the Hymes bottom lock 18, 20, respectively. To one side of each rectangular portion 14, 16 may be provided

a triangularly shaped section 26, 28, respectively. The base 30, 32 of each triangle 26, 28 is an extension of the crease or score line 22, 24. Each triangle 26, 28 may be joined to the rectangular portion 14, 16 by means of an integrally formed substantially rectangular panel 34, 36. A crease line 38, 40 in each panel 34, 36, where an apex 42, 44 of the triangular portion 26, 28 contacts a corner 42, 44 of each respective rectangular portion 14, 16, divides each respective rectangular panel 34, 36 into two rectangular parts, 34a, 34b, and 36a, 36b. Each rectangular panel 34, 36 has an extending flap 46, 48. (Any other type of known interlocking bottom may be used, such as, a Houghland bottom.) While cardboard, paper board, and chip or white board are referred to throughout, it will be understood that any material, such as plastic or wood, may be used.

[0037] Four chipboard panels 52-58, may be joined together to thereby define a rectangular sleeve 50 (FIG. 2) open at the top 60 and bottom 62. The panels 52-58 may be joined or held together by any convenient means, such as by forming from a continuous panel which may be folded or scored. Here, the four rectangularly shaped panels 52-58, which may be made of chip or white board, may be held together by tape, other joining means, including a strong wrap or cover paper which is turned over as, for example at 64, 66 along the top and bottom defining edges 60, 62.

[0038] One extending panel 68 (shown in phantom) of the cover paper is, however, not folded over its respective side 52. An exterior bottom rigid panel 70, which may be made of the same material as the side panels 52-58 of the sleeve 50 may be wrapped in the same covering wrap. The bottom panel 70 is so dimensioned as to fit snugly within the sleeve 50. The panel 68 of the wrap paper may be connected to the exterior bottom panel 70 by adhesive or similar means (in the same way that the wrap paper is adhered to the side panels 52-58) so as to hingedly connect the exterior panel 70 to the sleeve 50 so as to present a rigid appearing bottom integral with the remainder of the container.

[0039] One panel 16 of the Hymes bottom lock has an aperture 72 therethrough. An inside panel 74 (FIG. 3) which may be made of cardboard or the like, may be secured to the other part 14 of the Hymes lock as by, for example, clear tape 76 so that when the Hymes lock is assembled, the inside panel 74 moves hingedly to cover and thereby hide from view the Hymes bottom. Matching connectors 78 (FIG. 3) and 80 (FIG. 2), which may for example be Velcro®, are secured respectively to the interior panel 74 and exterior panel 70 by well known means and so positioned as to mate with one another through the aperture 72 on opposed sides of the Hymes lock bottom panels 16 and 18.

[0040] In assembly (FIGS. 1A, B, 3, and 4), the rectangular panels 34, 36 are each folded upwardly along the crease lines 22-30, 32-24 and then along vertical crease lines 38 and 46 and 40 and 48. Placed in Hymes bottom engagement, the upstanding panels 34, 36 form the sidewalls of a shallow tray 82 (FIG. 3). The extending flaps 46, 48 may be secured, as by glue or the like, to the respective mating walls 34a and 36a to thereby form the shallow tray 82. Upon engaging the Hymes bottom lock 16, 18, the triangular part 26, 28 of each blank fold to complete the bottom 90 (FIG. 4). The shallow tray 82 is so dimensioned as to fit snugly within the bottom 62 of the sleeve 50 (FIG. 4). The shallow tray 82 may be attached to the sleeve 50 by any known means as by glue or the like.

[0041] In operation, with the Hymes bottom engaged and the bottom 90 formed, the inside panel 74 and the exterior panel 70 are each hingedly connected along the same edge defined by the bottom edge 84 of one side 52 of the sleeve 50 and the crease line 24 of the shallow tray 80. As indicated, the Velcro connectors 78, 80 mate through opposing sides of the aperture 72 in the Hymes bottom. When fully assembled, the rigid exterior panel 78 combines with the sleeve 50 to form a rigid box. Opening the exterior panel exposes the aperture 72 in the Hymes bottom. By pushing through the aperture 78, the inside panel 74 is pivoted upwardly (FIG. 4). The Hymes bottom lock 16, 18 may then be disengaged in a well known manner and the box 86 collapsed by folding sides 56, 58 upon sides 52, 54 or sides 56, 54 upon sides 52, 58, forming a flat but easily assembled rigid appearing box.

[0042] A lid 100 (FIG. 5) may be constructed to also be collapsed. Such a cover may comprise a top rectangular panel 102 and four side panels 104-110. The side panels 104-110 may be joined to the top panel 102 as by a wrap paper 112 adhered by an adhesive to the exterior side of the panels 102-110. A rectangular gusset 114 may be formed at each end 116 of the sides 104-110 of the lid 100. Each gusset may be folded upon itself to define hinged triangular sections 118, 120. One of the triangular sections 120 may have adhered thereto double-sided tape with a piece of release paper covering it as is well known. The lid may be disposed flat by folding the sides 110-114 flat with the top panel 102. To assemble, the release paper (not visible) is removed and the triangular sections 118, 120 of each gusset 114 adhered to one another to form the lid 100. If it is desired to permit the lid 100 to be erected and collapsed, the corners 116 may be connected by such closure means as Velcro or the like.

[0043] While the rigid box herein has been described as comprised of a tray insertable within a sleeve, it is to be understood that the same device can be constructed in other ways, as by, for example, the locking bottom being integrally formed with the sleeve sides and made from one or more appropriately scored blanks.

[0044] In another aspect of this invention there may be provided a container 200 (FIGS. 6, 8) which may comprise four sides 202, 204, 206, 208. This is but one example. However, other shapes are contemplated, such as containers with a square cross section and other symmetrical or asymmetrical configurations. Containers of different dimensions or having a different number of sides are contemplated. In the example shown, the container 200 is rectangularly shaped with two sides 206, 208 being longer than the other two sides 202, 204. Each pair of sides 202, 204 (see also FIG. 7c) and 206, 208 (see also FIG. 7B) may have identical dimensions for ease of assembly. The bottom 210 of the container 200 may be comprised of triangularly shaped pieces 212, 214 (see also FIG. 7D) and two identically dimensioned isosceles trapezoids 216, 218 (see also FIG. 7A). In the shorter dimensioned side 224, 226 of the trapezoids 216, 218, may be an opening. In the example shown, this opening may be a notch 220, 222. The shape if the opening 220, 222 is one of choice and, in the drawing, is shown as a rectangular cross section.

[0045] The bottom 210 (FIGS. 6, 8) may comprise the abutting and mating edges of the triangular 212, 214 and the isosceles trapezoids 216, 218.

[0046] The notches 220, 222 in the short side 224, 226, respectively, will, upon assembly mate to form an opening

or aperture in the bottom where the two isosceles trapezoids meet (**224**, **226**). The opening or aperture defined between abutting sides may have any desired symmetrical or asymmetrical configuration.

[0047] Joined to the bottom side **228** of one of the isosceles trapezoids **216** may be a magnet receptor **230** which may be of any well known material, such as a ferrous medallion (as shown). The receptor **230** may have any desired shape, such as circular, as shown. The magnet **230** may be secured to the exterior bottom wall **228** of the container **200** by any means, such as glue or the like. The receptor **230** may be so positioned such that, when the two edges **224**, **226** of the shorter dimensioned sides **224**, **226** of the isosceles trapezoids mate, the receptor **230** covers the meeting notches **220**, **222**.

[0048] A closing panel **234** (FIG. 7E), may be so dimensioned as to fit in the interior of the box and abut the bottom wall **210**. In the example shown, the closing wall **234** may be a rectangularly shaped planar member which is dimensioned to conform to the interior dimensions of the container **200** and abut the interior bottom wall **210**. A magnet **238** may be secured to the side **236** of the bottom wall **210** that abuts or contacts the interior surface **232** of the bottom wall **210**. The magnet **238** may be affixed by any well known means, as by glue or tape. The magnet **238** may be attached to the closing panel **234** so as to be in registry with the aperture **220**, **222** when the closing panel **234** positioned against the bottom wall **210** of the container **200**.

[0049] In assembly, the abutting sides **240** of two of the sidewalls **206** and **204** (FIG. 9) may be joined or attached to one another. In like manner, the abutting sides or edges **242** of the adjacent two sidewalls **204**, **208** may be secured or joined to one another. The remaining side **202** may be joined at its abutting edge **244** with the sidewall **208** and abutting edge **246** with the wall **206**. The isosceles trapezoids **216**, **218** may be secured at their longer-dimensioned parallel abutting edges **248**, **250** to the respective bottom edges **248**, **250** of the side walls **206**, **208**. The triangular sections **212**, **214** of the bottom wall **210** may have one side **252**, **254** joined to the respective side walls **204**, **206**. In this way, the completed blank may be collapsed flat (FIG. 9). When opened, the bottom wall **210** forms easily. The individual sides **202**, **204**, **206**, **208** may be joined along abutting edges **240**, **242**, **244**, **246**, **248**, **250**, **252**, **254** as by tape or wrapping paper (not shown). The wrapping paper, when covering all surfaces of the container, gives the appearance of a unitary rigid container.

[0050] As indicated above, the shape of the container may be geometrically symmetrical or asymmetrical. In general, the geometry of the sections making up the bottom wall of the container will change with the shape of the container. If, for example, the container were to have a square cross section, the bottom walls may comprise four mating frustro-triangles (not shown). The apices of the mating triangles may be defined by the frusto ends thereby defining an aperture. A magnetic receptor, such as a ferrous medallion of any desired shape may be secured to one of the triangles and engages the aperture in the same way as the above embodiment. As before, a removable bottom planar member is insertable within the housing of the container and may have a magnet in registry with the aperture and the base magnet.

[0051] In operation, the attached and folded blank is erected into the shape of the container **200**. The receptor **230**

mates with the magnet **238** on opposed sides of the aperture **220**, **222** to hold the container **200** rigidly in position. To collapse the container, all that need be done is to remove the closing panel **234** to return the container to its folded blank condition. As in the first embodiment, cardboard, paper board, and chip or white board may be used construct the container. However, it will be understood that any material, such as plastic or wood, may be used.

[0052] Wherever a magnet or receptor is described above (and below) it will be understood that the position of the receptor and magnet are interchangeable or that oppositely poled magnets may be used in place thereof.

[0053] In yet another embodiment, a container **300** (FIG. 10) may be formed from individual planar members. As before, chip or white board is provided in this example, but any material, as indicated above may be used. In the example shown, the container (shown with the bottom upper most) may have a square cross section and be formed of four individual planar members **302**, **304**, **306**, **308**. (Any desired shape—to form a geometrically symmetrical or asymmetrical container may be used.) In this example, the four sides **302**, **304**, **306**, **308** may, as with the other embodiments, present a unitary rigid appearance by the use of wrapping paper **310** placed over the outer surfaces of the members **302**, **304**, **306**, **308** and secured thereto as by glue. The wrapping paper **310** may be folded over the marginal edges **312**, **314** of the assembled sides **302**, **304**, **306**, **308** with a relatively small skirt **316** to be folded over the marginal edges **312**, **314** and attached by glue or similar means. Prior to gluing, magnets (or magnetic receptors) **318** may be attached to the interior walls **320**, **322**, **324**, **326** of the sides **302**, **304**, **306**, **308**, respectively. As an example, the magnets **318** may be small disks. The small skirt **316** may be disposed over the magnets **318** to assist holding them in place. The magnets **318** may be held in place by the addition of tape, which may be, for example, clear cellophane tape **328**. Any other suitable means of attachment may be used as well. Further, the size and shape of the magnet **318** is one of choice and will be, as will be more apparent from the discussion above and below, a function of the desired strength of the magnet.

[0054] A bottom closure lid **330** (FIG. 11) may be in the shape of a typical cover, with a bottom wall **332** and upstanding sides **334**, **336**, **338**, **340**. These may be, again, of ordinary chipboard or cardboard or other structural material, held together by a wrapping paper. Under the wrapping papers and attached to the outer surfaces of the sides **334**, **336**, **338**, **340**, may be magnets **342** (shown in phantom in FIG. 11). The bottom cover **330** is so dimensioned to be slidably into the container **300**.

[0055] In assembly, the bottom cover **330** is oriented so that its bottom wall **332** will define the bottom wall of the completed container, with the marginal walls **334**, **336**, **338**, **340** inside the container. The magnets **342** and **318**, when aligned for a strong bond and define the rigid container. To assist in moving the bottom cover **330** from the top of the open container downward until the magnets **318**, **342** mate, a strip of material, such as PVC tape (not visible) may be disposed about the outside of the marginal walls **334**, **336**, **338**, **340**. Similar tape may be secured to the interior walls of the container **300** (not visible).

[0056] The resulting container **300** is rigid or locked in position when erected from the collapsed state. The closure

lid 330 may be slid into place from the top of the open container. The engaged magnets in the closure lid 330 and side walls 302, 304, 306, 309 serve to position the walls with respect to one another. However, magnetic fields may not be sufficiently strong to overcome the shearing forces set up when objects are placed in the container. When the closure lid 330 is in position in the base of the container 300, the PVC tape secured to the interior walls of the side walls of the container 300 may be in registry with the PVC secured to the outer surface of on the upstanding walls 334, 336, 338, 340 of the closure lid 330. The mating PVC tape like material exhibits a higher coefficient of friction than exists between the cardboard or other material making up the panels. (Of course, any other material exhibiting a mating higher coefficient of friction than the panels may also be used.) In such circumstances, the mating surfaces of the tape prevents the closure lid from separating from the container side walls under the shearing forces set up by objects placed in the container. The mating tape surface form a rigid container which may be easily disassembled since they are not adhesively joined. Thus, the mating surfaces are not permanently affixed as by glue or similar substantially permanent joining means.

[0057] A top cover or lid of typical construction and well known in the art may be so dimensioned as to fit over the top 344 of the container. With the top and bottom covers removed, the walls may be easily folded upon themselves (FIG. 12) for storage or shipment.

[0058] While certain novel features of this invention have been shown and described and are pointed out in the annexed claims, the invention is not intended to be limited to the details above, since it will be understood that various omissions, modifications, substitutions, and changes in the forms and details of the device illustrated and in its operation can be made by those skilled in the art without departing in any way from the spirit of the present invention.

What is claimed is:

1. A rigid collapsible container comprising:

a) container means including

i) flexible bottom means, and

ii) container side panel means;

b) said bottom means and said container side panel means defining therebetween a predetermined configuration open at at least one side and closed at one end by said bottom means to define therebetween the interior volume of the container;

c) said bottom means comprises at least a pair of interlocking panels; and

d) exterior bottom panel means hingedly connected to said container means so as to fold over and enclose said bottom means within the container.

2. A rigid collapsible container as recited in claim 1 wherein said bottom means further comprises inside panel means hingedly secured to said bottom means for covering said interlocking panels on the inside of said container.

3. A rigid collapsible container as recited in claim 2 further comprises closure means secured to said inside panel and said bottom panel for releasably locking said inside and bottom panels together when both panels are disposed against opposite sides of said interlocking panels.

4. A rigid collapsible container as recited in claim 3 wherein said bottom panel means comprises a tray; said tray comprises said two interlocking panels, each of said interlocking panels comprise foldable side panels so that upon folding said interlocking panels are joined to one another to define said tray.

5. A rigid collapsible container as recited in claim 4 wherein said tray side panels being so dimensioned as to fit snugly within said container side panels to thereby form the bottom of the container.

6. A rigid collapsible container as recited in claim 5 wherein said container side panels and said tray are rectangular.

7. A rigid collapsible container as recited in claim 6 wherein said container side panels are constructed of chip board.

8. A rigid collapsible container as recited in claim 7 wherein said interlocking bottom comprises a Hymes bottom.

9. A rigid collapsible container as recited in claim 8 wherein said interlocking bottom further comprises each panel being a mirror image of the other and comprises a triangular panel section joined to said Hymes bottom such that a complete bottom is formed from said interlocking panels.

10. A rigid collapsible container as recited in claim 9 wherein said interior panel is hingedly connected to said tray along one interior side thereof and said exterior panel is hingedly connected to said sleeve along the corresponding side of said sleeve.

11. A rigid collapsible container as recited in claim 10 wherein one of said interlocking panels having therethrough an aperture; said closure means comprises mating connectors secured respectively to said interior and exterior panels so as to releasably engage one another through said aperture.

12. A rigid collapsible container as recited in claim 13 further comprises cover paper to hold said panels of said container together and having at least one extending paper panel; and wherein said container side panels and said exterior panels comprises individual rectangular panels and said exterior bottom panel is hingedly connected to said sleeve by said extending cover paper panel.

13. A rigid collapsible container as recited in claim 12 upon pivoting outwardly said exterior panel and pivoting said interior panel by pushing through said aperture, the container being collapsible against said side panels.

14. A rigid container of the type of having a collapsed and an erect state, said container comprising:

a) housing means including

i) bottom means, and

ii) container side panel means;

b) said bottom means and said container side panel means defining therebetween a predetermined configuration open at at least one side and closed at one end by said bottom means to define therebetween the interior volume of the container when the container is erect;

c) joining means secured to said bottom means;

d) closure panel means for being removably positionable within said housing and against said bottom means; and

e) said insert panel means comprising engaging means for releasably connecting with said joining means so that

said insert panel means releasably and rigidly holds said bottom means and said container side panel means such that container is in the erect state.

15. A rigid container as recited in claim 14 wherein said joining means comprises at least a joining magnet or magnet receptor and said bottom engaging means comprises at least an engaging magnet or magnet receptor.

16. A rigid container as recited in claim 15 wherein said bottom means comprises a bottom wall of said container; said bottom wall comprises at least two substantially planar panels which, together with said container side panel means, define said container in the erect state; said bottom wall having an aperture therethrough; said engaging magnet or magnet receptor secured to the outer side of said bottom wall of at least one of said panels; said joining magnet or magnet receptors magnetically coupling to said engaging magnet or magnet receptor to hold the container erect.

17. A rigid container as recited in claim 16 wherein said closure panel means comprises a substantially planar panel for being insertable into said housing and abutting said bottom wall when the container is erect; said joining magnet or magnetic receptor being joined to the side of said closure panel that abuts said bottom wall.

18. A rigid container as recited in claim 17 further comprises tape means for joining said panels and said bottom panels together.

19. A rigid container as recited in claim 18 wherein said tape means comprises adhesive tape.

20. A rigid container as recited in claim 18 wherein said tape means comprises wrapping paper.

21. A rigid container as recited in claim 18 wherein each of said container side panel means comprises a multiplicity of substantially planar members, each one of said planar members foldably connected to at least one adjoining one of said substantially planar members.

22. A rigid container as recited in claim 21 wherein said container side panel means comprises four side panels two of which two are square and two are rectangular, said bottom members comprise two triangular panels and two isosceles trapezoids; the shorter parallel side of said isosceles trapezoids having therein a notch; said notches mating said bottom aperture; the longer parallel side of each of said isosceles trapezoids being secured to a marginal edge of said rectangular side panels; one side of each of said triangular panels being secured to a marginal edge of each one said square side panels.

23. A rigid container as recited in claim 21 wherein said container side panel means comprises four equally dimensioned side panels; said bottom means comprising four frusto triangular members; a side of each triangular members being pivotally secured to a marginal edge of one of said side panels; upon said triangles contacting one another along adjacent sides, said bottom being defined; said triangles upon coming together to define said bottom, said frusto ends defining therebetween an aperture in said bottom wall means; said joining magnet or magnet receptor being affixed to the outside surface of one of said triangles.

24. A rigid container of the type of having a collapsed and an erect state, said container comprising:

- a) housing means including container side panel means;
- b) bottom means; said container side panel means together with said bottom means defining a predetermined configuration open at at least one side and closed

at one end by said bottom means to define the interior volume of the container when the container is erect;

c) said bottom means comprises at least one bottom panel;

d) bottom joining means secured to said bottom panel;

e) side joining means secured to at least one of said side panels for engaging said bottom joining means such that, upon engagement of said bottom and side joining means, the container is substantially locked in the erect state.

25. A container as recited in claim 24 wherein said joining means comprises magnets or magnetic receptors.

26. A container as recited in claim 25 wherein said side panel having attached proximate the end thereof for being joined to said bottom panel having said side wall magnet or magnet receptor secured to said side panel and said bottom magnet or magnet receptor being secured to said bottom.

27. A container as recited in claim 26 wherein each of said side panels has secured at least one magnet or magnetic receptors; said bottom comprising a closure lid having upstanding side walls; said base magnet or magnet receptors being affixed to said upstanding sides and in registry with each of said side panel magnets or magnet receptors to thereby magnetically lock said bottom to said sides.

28. A container as recited in claim 27 further comprises surface adhering means secured to the interior walls of said housing and adhering means secured to said closure upstanding walls such that adhering means mating with a higher coefficient of friction

29. A container comprising:

a) a housing having an interior volume and side panels, said side panel interior surfaces defining therebetween at least a part of said interior volume;

b) at least one closing panel having surfaces for removably engaging at least a part of said interior surfaces of said side panels;

c) said side panel interior surfaces relative to said engaging surfaces of said closing panel having a first coefficient of friction;

d) first means secured to interior surfaces of said side panels;

e) second means secured to said engaging surfaces of said closing panel; and

f) upon said closing panel engaging said side panels, said first and second secured means nonadhesively contacting one another and having a second coefficient of friction greater than said first coefficient of friction so as to hold said closing panel to said side panels fixedly in position.

30. The container as recited in claim 29 further comprises magnetic means secured to said side panels and said closing panel means, with said first and second secured means in engagement, said magnetic means magnetically engaging one another to position said closing panel with respect to said side walls.

31. The container as recited in claim 29 wherein said first and second secured means comprises PVC tape.

32. The container as recited in claim 30 wherein said magnetic means comprises magnetically coupleable magnets or magnetic receptors in registry with one another in said side panels and said closing panel.

33. The container as recited in claim 32 wherein said closing panel comprises a lid structure with upstanding walls; said upstanding walls contacting said interior surfaces of said side panels; said magnetic receptors and said magnets comprise disk-like elements adhered respectively to said interior surface of said side panels and to said closing panel.

34. A method of making a rigid collapsible container comprising:

- a) providing a container with flexible bottom means and container side panel means open at at least one side and closed at one end by said bottom means to define therebetween the interior volume of the container;
- b) providing at least a pair of interlocking panels to form the bottom means; and
- c) providing an exterior bottom panel means
- d) hingedly connecting the bottom panel means to the container means so as to fold over and enclose the bottom means within the container.

35. The method as recited in claim 34 wherein the step of providing a bottom panel comprises providing a tray with two interlocking panels; providing the container with side panels; fitting the tray and fit snugly within said container side panels to thereby form the bottom of the container.

36. The method of claim 35 further comprises providing the interlocking panels with an aperture; attaching mating connectors secured respectively to said interior and exterior panels so as to releasably engage one another through either side of the aperture.

37. A method of providing a container having a collapsed and an erect state, the method comprising:

- a) providing housing means including bottom means, and container side panel means which together define a predetermined configuration open at least one side;
- b) closing one end with the bottom means to define therebetween the interior volume of the container when the container is erect;
- c) providing joining means to be secured to the bottom means;
- d) providing closure panel means that is removably positionable within the housing and against the bottom means; and
- e) providing insert panel means which includes engaging means for releasably connecting with the joining means so that the insert panel means releasably and rigidly

holds the bottom means and the container side panel means such that container is in the erect state.

38. The method of claim 37 wherein the step of providing joining means joining means comprises providing a joining magnet or magnet receptor and the step of providing the bottom engaging means comprises providing an engaging magnet or magnet receptor; the step of providing the bottom means comprises providing a bottom wall of the container with at least two substantially planar panels which, together with the container side panel means, define the container in the erect state; providing the bottom with an aperture therethrough; securing the engaging magnet or magnet receptor to the outer side of the bottom wall of at least one of said panels; providing the closure panel means comprises providing a substantially planar panel insertable into the housing and abutting the bottom wall when the container is erect; positioning the joining magnet or magnetic receptor to the side of the closure panel that abuts the bottom wall.

39. The method of making a container comprising:

- a) providing a housing with an interior volume and side panels, the side panel interior surfaces defining therebetween at least a part of the interior volume;
- b) providing at least one closing panel having surfaces for removably engaging at least a part of the interior surfaces of the side panels;
- c) providing the side panel interior surfaces relative to the engaging surfaces of said closing panel with a first coefficient of friction;
- d) providing first means secured to the interior surfaces of the side panels;
- e) providing second means secured to the engaging surfaces of the closing panel; and
- f) bringing the first and second secured means into contact upon the closing panel engaging the side panels, and providing the contacting first and second secured means with a second coefficient of friction greater than the first coefficient of friction so as to hold the closing panel to the side panels fixedly in position.

40. The method as recited in claim 39 wherein providing PVC tape as the first and second secured means; providing the closing panel with a lid structure having upstanding walls; contacting the interior surfaces of the side panels with the lid upstanding walls; providing magnetic receptors and magnets adhered respectively to the interior surface of said side panels and to said closing panel to position the closing panel with respect to the side panels.

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