

United States Patent

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[54] TRANSPARENT PACKAGE

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1969, abandoned.

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229/2.5, 229/14 C

[51] Int. Cl. B65d 5/58, B65d 85/30

[58] Field of Search.....206/45.34, 45.19, 45.14, 65 R;
229/39 B, 2.5; 220/60

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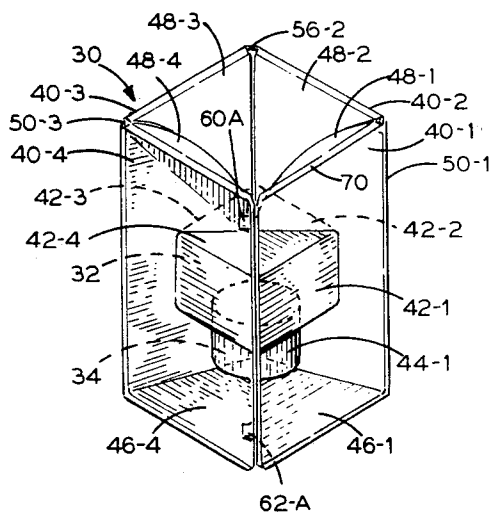
Primary Examiner—William T. Dixon, Jr.

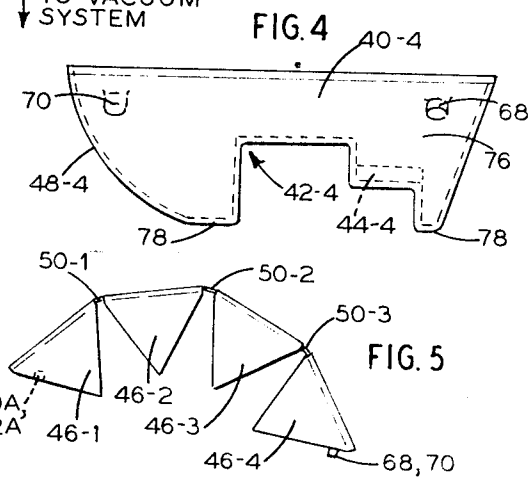
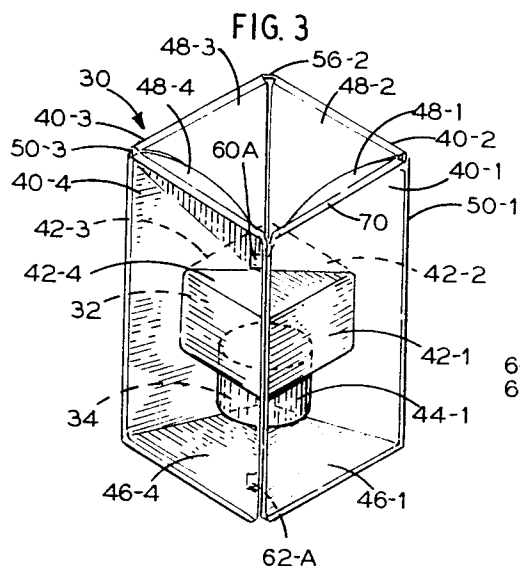
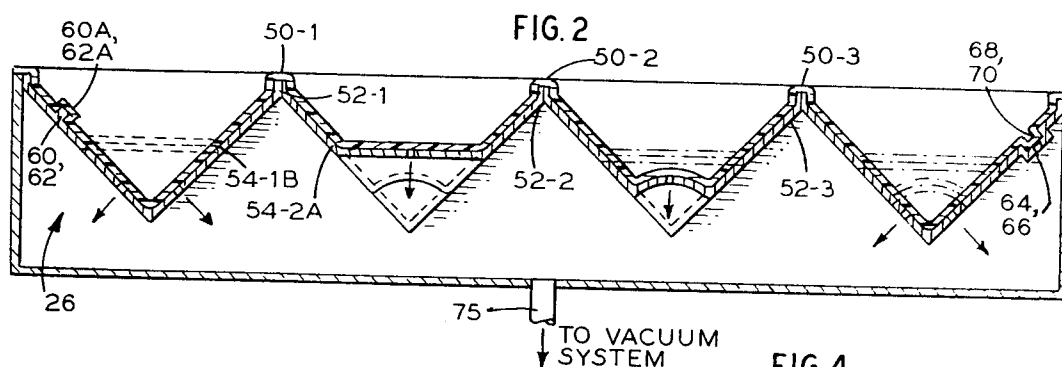
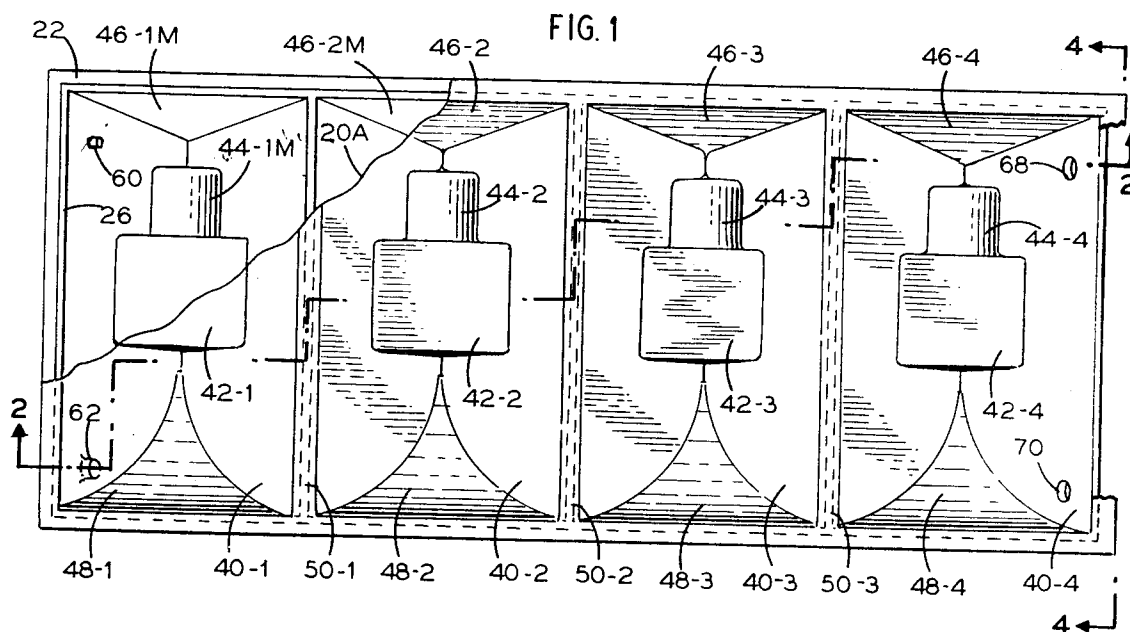
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[57] ABSTRACT

A package device is vacuum formed from a thermoplastic sheet and includes at least three self-hinged outwardly open sector shaped sections closed to form a polyhedral body with the section side walls in juxtaposition and the end sections being joined by fastening means. Cavity delineating inner walls are formed in the inner parts of the sections and join the side walls. The sections may include end walls which delineate the cavity end walls or the inner walls may include cavity end walls joined to the section side and end walls which latter may be curved. Vertical ribs or protuberances may be formed on the end walls or on intermediate shoulders on the cavity walls and outwardly projecting ribs may be formed on vertically extending cavity walls.

18 Claims, 18 Drawing Figures





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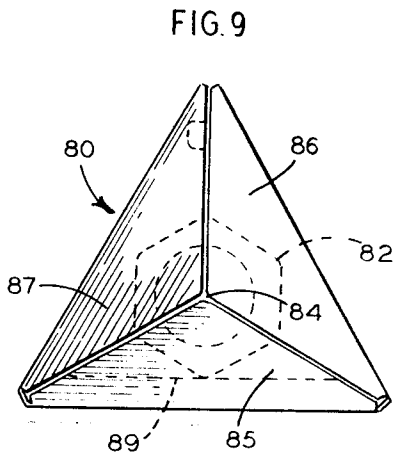
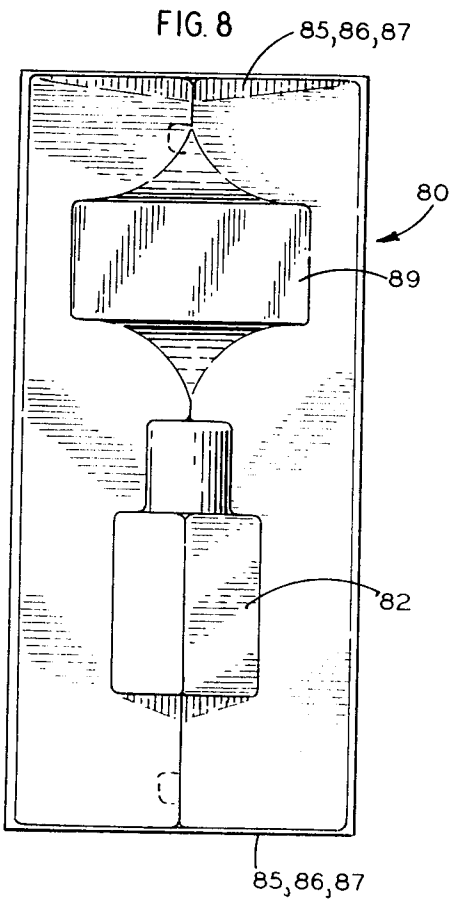
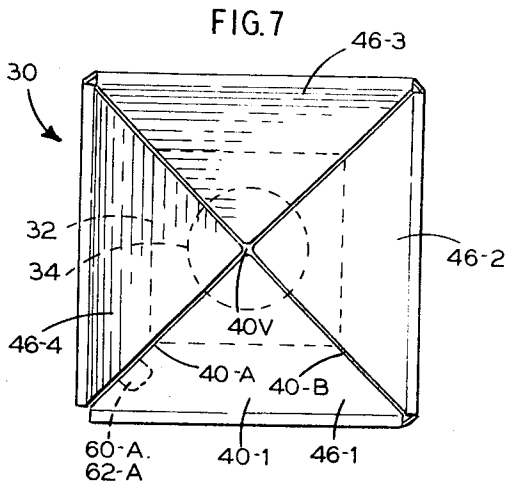
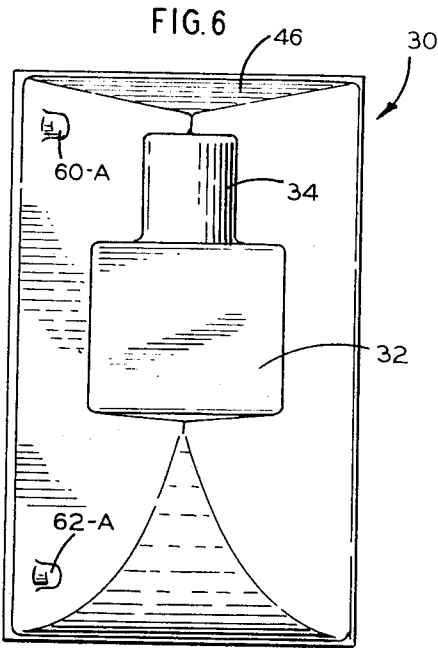


FIG. 10

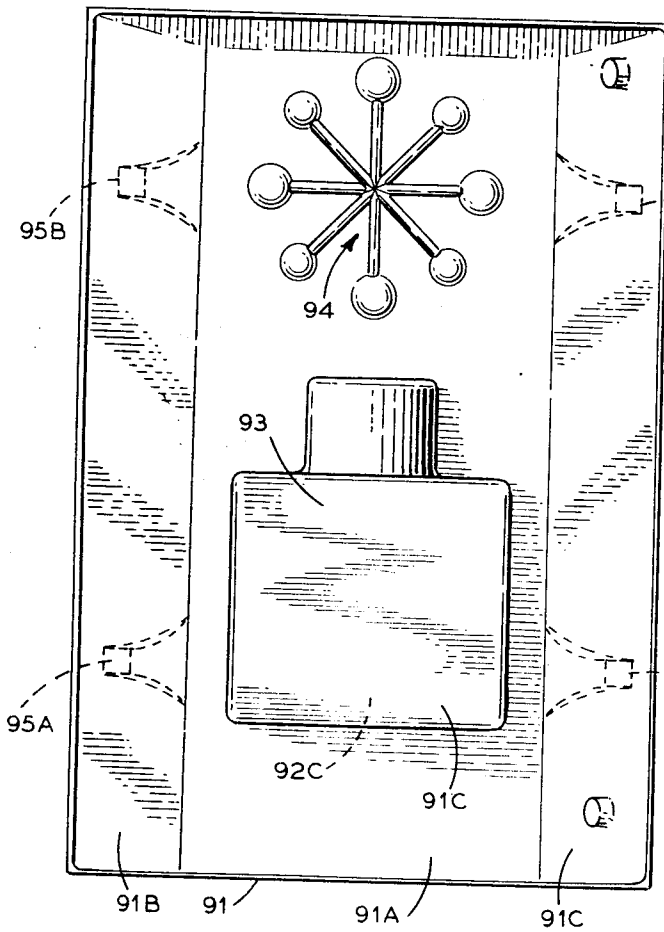


FIG. 11

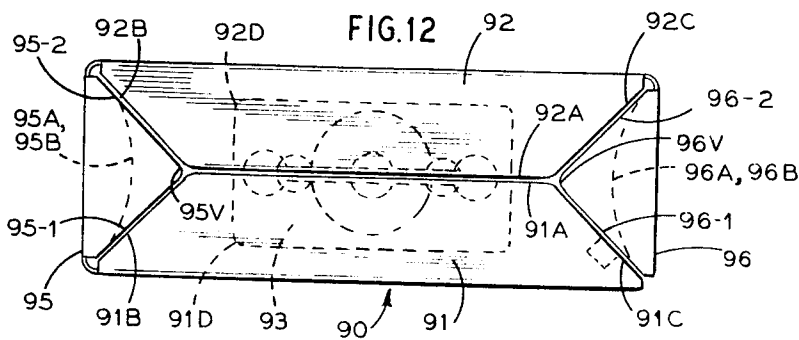
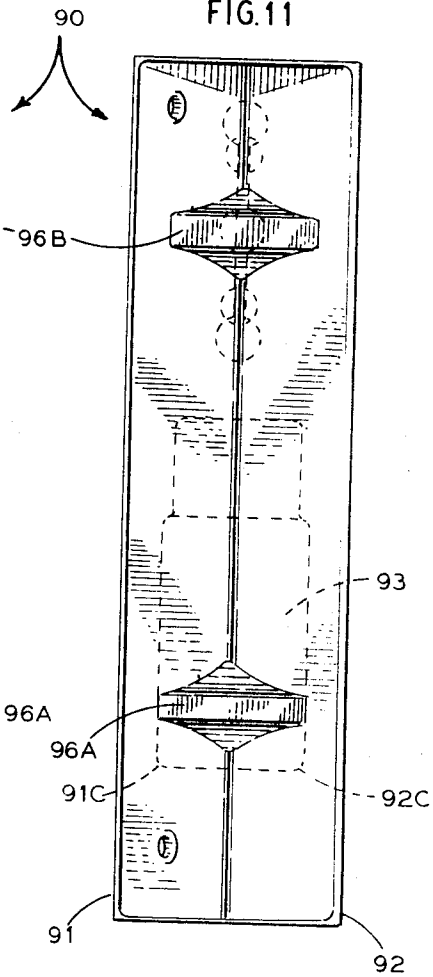


FIG. 13

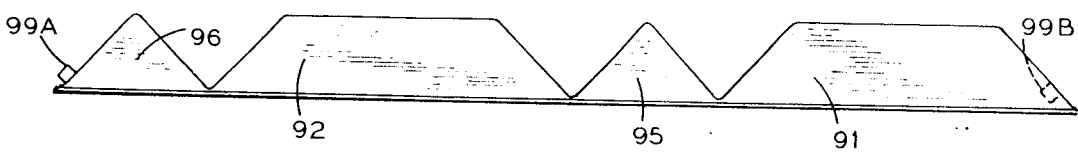


FIG. 14

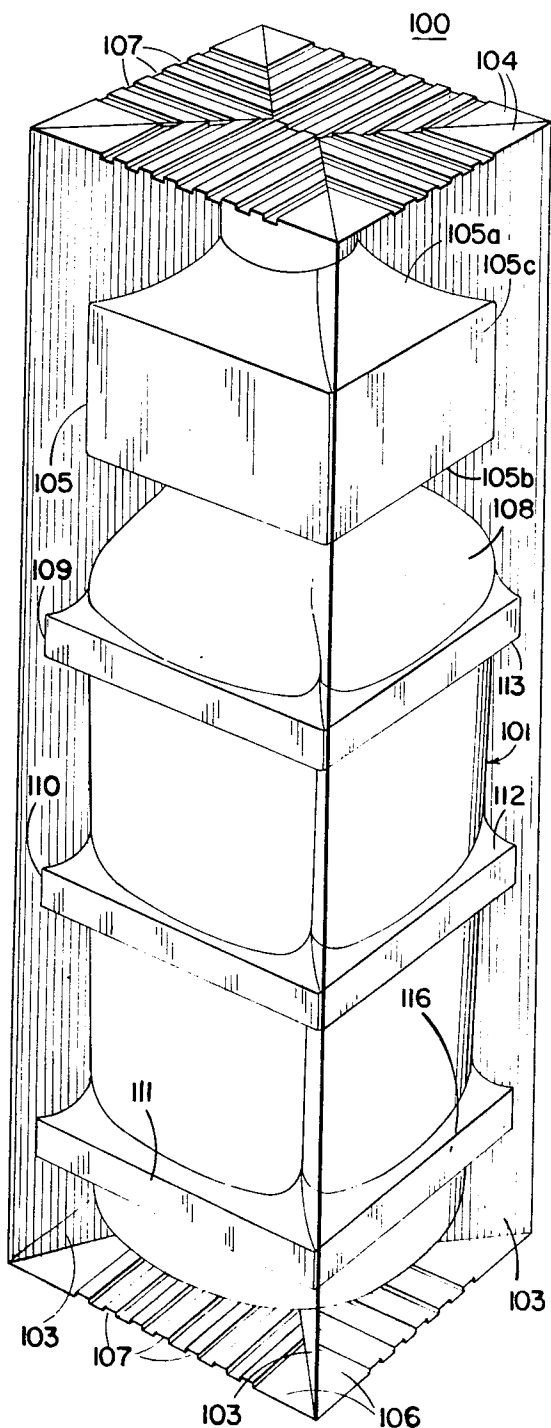
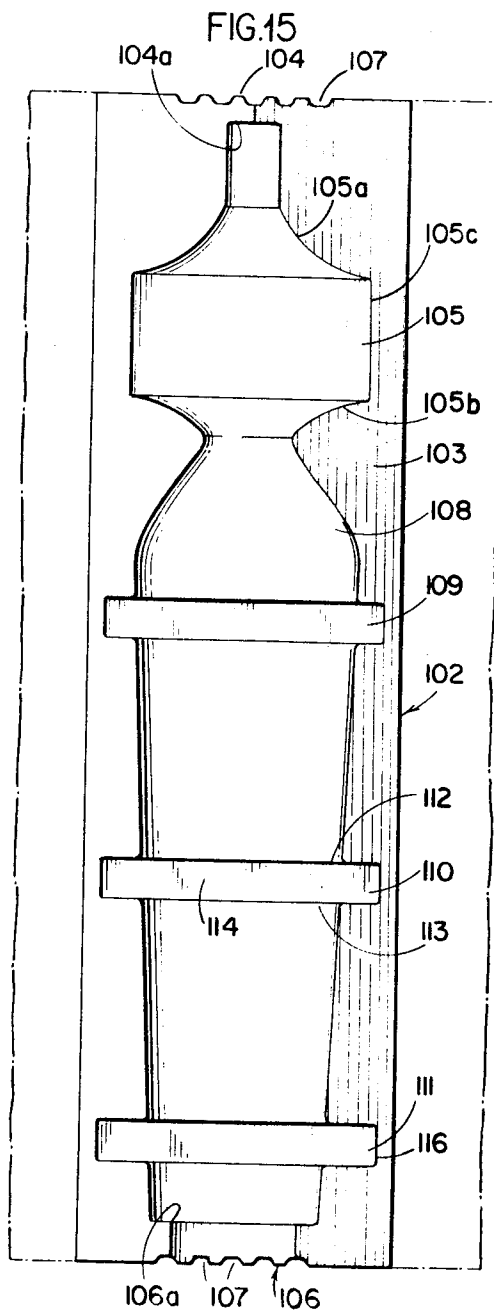


FIG. 15



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FIG.17

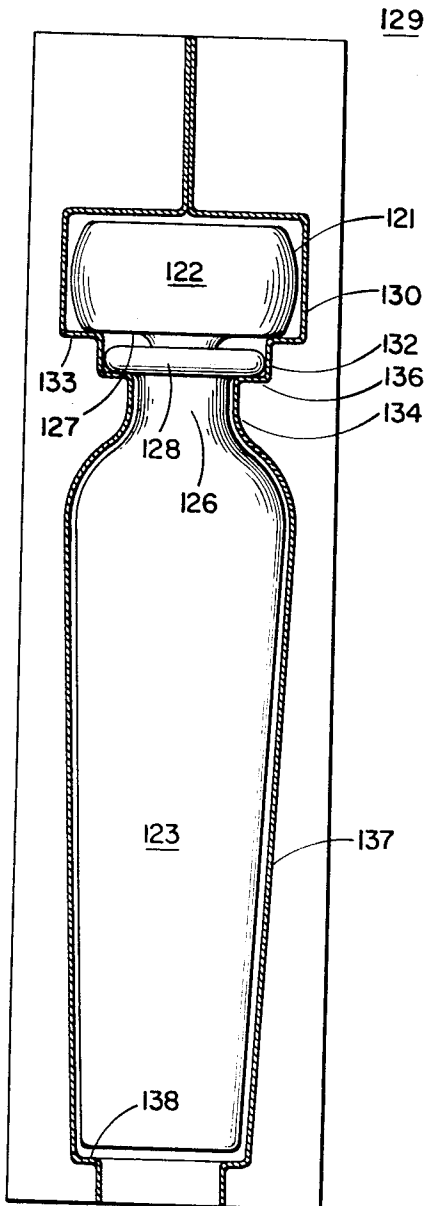


FIG.16

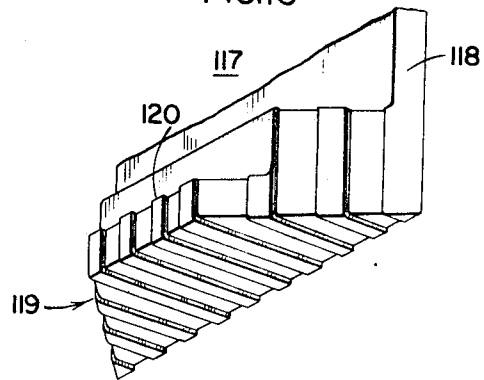
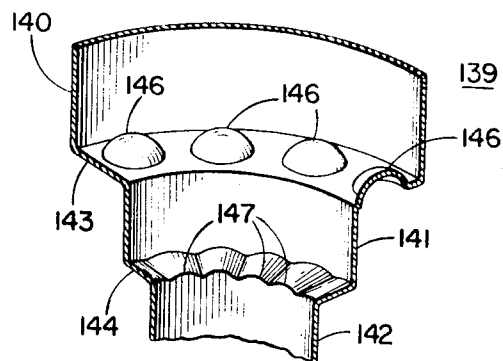


FIG.18



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TRANSPARENT PACKAGE

REFERENCE TO OTHER APPLICATIONS

The present patent application is a continuation-in-part of copending patent application Ser. No. 826,573 filed May 21, 1969, now abandoned.

BACKGROUND OF THE INVENTION

The present invention relates generally to improvements in receptacles and it relates particularly to an improved package for housing, protecting and displaying an article such as a product containing bottle or the like.

In the merchandising of many products as typified by bottled products such as perfumes, liquors, cosmetics and the like, the bottled product should be packaged in a manner which will protect it from damage, facilitate its storage, distribution, vending and display and present a highly attractive appearance. Many forms of packages have been employed and proposed in the packaging and display of fragile articles but these have possessed numerous drawbacks and disadvantages. These packages have generally been expensive and of little versatility and adaptability and represent a compromise among the desired characteristics, being deficient in one or more of these characteristics. Moreover, the dies and equipment required to produce and apply the packages are complex and expensive and their use often necessitates the employment of skilled labor and is highly time consuming.

SUMMARY OF THE INVENTION

It is a principal object of the present invention to provide an improved receptacle and a method of producing the same.

Another object of present invention is to provide an improved receptacle for protectively housing an article.

Still another object of the present invention is to provide an improved article housing and display receptacle which may be vacuum formed from thermoplastic sheets.

A further object of the present invention is to provide an improved receptacle of the above nature characterized by its versatility, adaptability, reliability, low cost, attractive appearance and ease of production and application.

Another object of the invention is to provide a transparent display container, with or without color, and a method of forming it by the vacuum forming technique, that will have a predesigned shape to provide shock protection to the packaged item such as a bottle, for example, and that will provide the display container in polyhedral configuration with many panels of the polyhedral figure arranged to transmit and refract light that passes through the container in such manner that the light will enhance the appearance of the article supported within the transparent display container and establish a particularly esthetic aura about the object supported within the container.

Another object of the invention is to provide a display container that may be easily and economically manufactured, and that may then be easily manipulated to enclose and support the commercial article intended to be supported thereby.

Another object of the invention is to provide a display container which may be easily and readily manipulated to accept an article of merchandise, that is to be displayed therein, and then closed to constitute a closed package for the article, to serve both for packaging and for display purposes, with suitable means provided to be integrally formed in the display container to enable the container to be readily closed, and held closed, while at the same time permitting the container to be opened, when it is so desired, in order to provide access to the article therein.

The above and other objects of the present invention will become apparent from a reading of the following description taken in conjunction with the accompanying drawings which illustrate preferred embodiments thereof.

In a sense the present invention contemplates the provision of a receptacle having a product housing cavity and integrally formed of a unitary sheet of thermoplastic resin comprising a

plurality of sections having adjacent side edges joined by self hinges and including end sections with free outer edges each of said sections including top and bottom end walls and inwardly converging angularly related side walls, the side walls of successive adjacent sections being in juxtaposition and said sections interfitting to form a peripherally closed body member, a plurality of said sections having inner walls joining the respective side walls and outwardly offset from the innermost edges thereof and delineating said product housing cavity.

The closed body member is advantageously of polyhedral configuration and fastener elements are integrally formed with the end sections and may include mating plug and socket members which may be provided with enlarged heads and reduced throats respectively. The top and bottom of the product housing cavity may be defined by the section end walls which may interfit to form completely closed walls or walls having medial openings. In the alternative, the inner walls may include top and bottom horizontally extending end walls which are connected to the section side walls and either directly or indirectly to the section end walls, the cavity end walls being either completely closed or partially open. The section end walls may be horizontally or inwardly inclined and preferably curved to minimize undesirable reflections. The cavity walls may be ribbed for reinforcing and the cavity defining walls may include transversely offset vertically extending sections connected by horizontally extending shoulder defining sections and the shoulders as well as the other cavity walls may be provided with inwardly directed cushioning protuberances.

The improved receptacle is inexpensive, easy to apply to a product, highly protective and reliable, versatile and adaptable, inexpensive and of highly attractive appearance. It is advantageously produced by vacuum or pressure forming molding techniques and hence requires only simple and inexpensive equipment for its fabrication.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view showing a sheet of material disposed on a vacuum forming die or mold to form the appropriate panels for one form of a polyhedral figure;

FIG. 2 is a stepped sectional view looking inward from one side of the mold and sheet in FIG. 1, and taken along the dot-and-dash line 2—2 in FIG. 1, in order to show the manner of formation of different levels of the respective panels of the polyhedral figure in the several loading regions of the vacuum forming mold of FIG. 1;

FIG. 3 is a front perspective view of the polyhedral figure formed from the sheet as vacuum formed in FIG. 1, and is shown in inverted position in order to show better an inwardly curved bottom flange of each panel;

FIG. 4 is a transverse sectional view of the right hand end panel taken along the dot-and-dash line 4—4 in FIG. 1, to show the pocket formation as well as the curved bottom flange referred to in the upturned figure of FIG. 3;

FIG. 5 is a top view of the sheet formed in FIG. 1, to show the disposition and formation of end flanges on the four panels that will fit together to form a relatively closed top, when the four panels are fitted together and closed to form the polyhedral figure;

FIG. 6 is a front elevational view of the polyhedral figure of the sheet in FIG. 1;

FIG. 7 is a plan view of the figure of FIG. 6 as formed upon closure of the open figure shown in FIG. 5;

FIG. 8 is a front elevational view of another modification of a polyhedral figure having a three-panel arrangement with a pocket shown formed in the bottom half of each panel and with one panel shown formed with a land or area near the top of that panel for inscription of suitable indicia such as trade marks or esthetic scrolls or the like;

FIG. 9 is a plan view of the figure shown in FIG. 8 and illustrates the pocket formation of one of the locking snaps in position to hold the polyhedral figure closed;

FIG. 10 is a front elevational view of still another modification showing a four-sided polyhedral figure, and illustrates the provision of selected designs in one or more surfaces or panels of the figure, as well as reinforcing rib or channel formations in certain of the panels;

FIG. 11 is a side elevational view of the polyhedral figure shown in FIG. 10 and illustrates the reinforcing channel structures in the two end walls to maintain the polyhedral figure rigidly positioned, against any normal tendency to warp due to the differentials in dimensions between the side panels and the front and back panels;

FIG. 12 is a bottom view of the polyhedral figure shown in FIG. 10, and illustrates the manner in which the several panels of the figure are put into appropriate position to form the closed box figure, with suitable end flanges formed to provide a closed bottom, relatively planar, for the finished polyhedral figure; and

FIG. 13 is a development of the modification shown in FIGS. 10, 11 and 12 to show the appearance of the original sheet when vacuum formed into configuration that will enable the panels to be placed into juxtaposition to form the polyhedral figure shown in FIGS. 10, 11 and 12;

FIG. 14 is a front perspective view of another embodiment of the present invention illustrated in an assembled condition;

FIG. 15 is an inside plan view of a section of the structure shown in FIG. 14;

FIG. 16 is a fragmentary perspective view of a modified bottom section of the structure of FIG. 14;

FIG. 17 is a fragmentary vertical sectional view of another embodiment of the present invention; and

FIG. 18 is a fragmentary sectional perspective view of a further modification which may be applied to the other embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIG. 1 is shown generally an arrangement for forming a sheet of transparent material 20 for assembly as a transparent container according to the invention. The sheet 20 of plastic material, such as a polyvinyl chloride product, or acetate, or the like, which is transparent, and clear, or colored, is first warmed to a temperature at which it is still self-supporting, in order that it may be easily and readily deformed by normal air pressure. The warm sheet 20 is then placed on a vacuum shaping mold 22 and suitably held along its border edges at the mold border edges 28 so that only a central area and certain portions of the softened plastic sheet will be free to move and be deformed and shaped and positioned in response to normal top surface air pressure when the air in the mold chamber under the sheet is evacuated.

The mold 22 shown in FIGS. 1 and 2 is pre-designed and shaped to provide for the shaping of a single sheet of material into a form that will permit the modified sheet 20 to be folded and formed into the polyhedral figure 30 shown in FIGS. 3, 6 and 7.

As will be seen upon reference to FIGS. 3, 6, and 7, the polyhedral structure 30 is shaped to provide the support for, and to enclose, a small bottle having a cube-shaped hollow body and a cylindrical neck, the body to be received in a pocket 32 of cubic shape with a coaxially related circular compartment 34 to receive the cylindrical neck of the bottle. To form the cubic space 32, four co-fitting cavities are provided, one in each of the four panels formed in the sheet 20. As shown in FIG. 1, the sheet 20 will be formed into four v-shaped panels 40-1, 40-2, 40-3, and 40-4, and in each panel a square channel will be formed, identified in FIG. 1 as channels 42-1, 42-2, 42-3 and 42-4, respectively. FIG. 4 shows one of those channel, 42-4. Each channel is transverse to the apex of the -v-. These four channels 42-1 to 42-4 are disposed in their respective panels so they will fit together in the finally assembled polyhedral 30 to constitute the cubic space 32 for the body of the bottle. When so fitted together, the four -v-s or apexes of the four panels substantially engage along the longitudinal axis of the polyhedron.

In similar manner an arcuate quarter-circle recess 44-1, 44-2, 44-3 and 44-4, respectively, is formed in each of the four panels 40-1 through 40-4, respectively, recess 44-1 not being seen in FIG. 1, due to sheet 20 being torn away. Those four quarter-circular recesses 44-1 through 44-4, respectively, when combined by the folding and closure of the formed sheet into the polyhedral form shown in FIG. 3, serve to constitute the circular or cylindrical pocket 34 as seen in FIG. 3.

In order that the polyhedral structure in FIG. 3 may constitute a relatively closed structure, with top and bottom surfaces relatively closed, each of the panels 40-1 through 40-4, is provided with a triangular top flange 46-1, 46-2, 46-3 and 46-4, respectively, fitting between the top end edges of the V-shaped panels to the apex of the -v-. The upper triangular flange 46-1 is not visible in FIG. 1 since that portion of the sheet 20 is shown as torn away. However, the mold surface 46-1M is identified and visible as a surface against which that corresponding upper flange of the first panel will be formed in the vacuum forming process. In similar manner, a portion of the upper flange 46-2 is shown with a portion of the corresponding surface of the mold 46-2M visible where the sheet is shown torn away. The upper flanges 46-3 and 46-4 are shown on their respective v-shaped panels 40-3 and 40-4.

In order to provide an additional esthetic feature in the polyhedron of FIG. 3, each panel, 40-1 to 40-4, is provided with an inwardly and upwardly flaring bottom flange, identified in FIG. 1, as 48-1 through 48-4, respectively. In FIG. 3, these bottom flaring flanges 48-1 to 48-4 are visible at the top of the polyhedron FIG. 30, which is shown inverted in FIG. 3 for this purpose. These flaring bottom flanges also extend between the two sides of the v-shaped panel and a point on the apex of the -v-.

In order to permit each panel of the polyhedron to be folded or turned angularly with respect to each adjacent panel to form the polyhedral Figure in FIG. 3, narrow hinge elements 50-1, and 50-2 and 50-3 are formed, as shown in more detail in FIGS. 1 and 2, to be available between the panels 40-1, 40-2, 40-3 and 40-4, respectively, so these several panels can be easily turned about these hinged elements in appropriate position to close the polyhedron. As may be seen in FIG. 2, these hinged elements 50-1, 50-2 and 50-3 are formed on supporting wall ribs 52-1, 52-2 and 52-3, in the vacuum forming mold 23, between the adjacent side walls defining the cavities into which the sheet is to be drawn to form the respective panels. For example, hinge 50-1 is formed at the top of the rib 52-1 between side wall 54-1-b for the first panel cavity and side wall 54-2-a for the second panel cavity. In similar manner, the hinges 50-2 and 50-3 are formed along the associated ribs 52-2 and 52-3 shown in FIG. 2 and indicated in FIG. 1.

At the two opposite ends of the vacuum forming mold 26, the mold is provided with two pins 60 and 62 to permit the formation of two cavities or hollow bosses 60-A and 62-A, in panel 40-1, to receive with a snap fit two appropriately formed bosses 64 and 66, as formed on panel 40-4 at the other end of the sheet. As seen in FIGS. 1 and 2, the mold 26 is provided at its right-hand end, with two small cavities and 70, shown vented, to receive the sheet material to form the two hollow bosses 64 and 66 for respectively fitting into one of two hollow bosses 60-A and 62-A formed on the first panel 40-1 by formation on the pins 60 and 62 in the mold. As seen in FIG. 2, the boss 62-A is shown formed on the left-hand section of panel 40-1. That boss 62-A serves as a hollow snap-fastening element to receive the bead 70 formed on panel 40-4 at the other end of the mold. Similarly, bead 68 snap fits into boss 60.

In order to impart a certain amount of rigidity to the panels along their edges, for a stable polyhedron as a supporting box, it is desirable to provide narrow edge flanges along the border edges of the panels, as indicated to a slight degree by the flanges 70 along the edges of the narrow sides of the panels in FIG. 3. Those flanges may be provided for by an appropriately shaped border plate for initially pressing the edges of the sheet

around the rim of the mold to form those edge flanges before the mold is subjected to the vacuum operation. The connection to the vacuum system for the mold is indicated by the pipe 75 in FIG. 2 which communicates with the wall of the mold 26. The walls of the mold are provided with suitable vent holes to permit the vacuum action to be effective.

FIG. 4, taken along the line 4-4 of FIG. 1, shows one side face 76 of the v-shaped panel 40-4, and shows the channel 42-4 transverse of the -v- or apex line 78; and also shows the arcuate recess 44-4, which co-operates with the other arcuate recesses to define the cylindrical space for the bottle neck.

FIG. 6 shows a front elevational view of the polyhedron 30 of FIG. 3, closed and standing in upright position. The total cavity 32, 34 is shown for receiving a correspondingly shaped bottle.

FIG. 7 shows a top view of the polyhedron, and shows how the polyhedron is held closed by the bead elements 68 and 70 in the snaps 60A and 62A.

FIG. 7 also shows how each panel is shaped as a v-shaped panel with two side faces 40-A and 40-B, perpendicular to each other, and with the -v- or apex line 40-V positioned along the axis of the polyhedron. The top flanges joining those two side faces of each panel, are also shown, and identified as 46-1 through 46-4.

FIGS. 8 and 9 show another modification, of a display container 80, as a three-panel polyhedron. This container 80 shows a three-section cavity 82 to accommodate a bottle. The three panels are v-shaped with an internal angle of 120°, so the apex lines of the three panels will position themselves substantially along the axis 84 when the sheet is folded to closed form, as in FIGS. 8 and 9. The top flanges 85, 86 and 87, and similar bottom flanges, are appropriately dimensioned to fit between the end edges of the related side faces of each panel. In FIG. 8, the front panel shows a frame area 89 which may be formed and provided to carry a design, or a message, such as a trademark or slogan.

In the modification of FIGS. 8 and 9, the cavity for the body of the bottle bears a relation to the shape of the bottle body. For example, since the bottle body has six side faces, the three-panel container provides for symmetry in the pocket 82 in the three panels. Thus, each panel is shaped to embody a recess with two sides to accommodate two sides of the bottle body, and with appropriate space in the recess to accommodate one-third of the volume of the bottle body.

FIGS. 10 to 13 show still another modification 90 of a display container of this invention. In this case the front and rear panels 91 and 92 have a central face 91A and 92A, and two side faces 91B and 91C, and 92B and 92C, with the two side faces mitered to the central face in each panel. Each central panel 91A and 92A is formed to embody a rectangular cavity 91D and 92D, which jointly provide a pocket 93 to accommodate an intended bottle of a corresponding size, as indicated in FIG. 10, 11 and 12. Above the pocket 93, in FIG. 10, a design 9A is shown as a further illustration of the esthetic touches that may be added to the display package of this invention.

The two side panels 95 and 96 are shown provided with strengthening channel ribs, 95A and 95B, and 96A and 96B, formed as channels transverse to the -v- line or apex line 95-V or 96-V of each of the panels 95 and 96. The two side faces 95-1 and 95-2 of the side panels 95 are respectively mitered to the related side faces 91B and 92B. Similar side faces 96-1 and 96-2 are mitered to the side faces 91C and 92C of the front and back panels 91 and 92.

FIG. 13 shows an end elevational view of the formed sheet structure of the polyhedron 90, and shows the end snap elements 99A and 99B locking the structure 90 closed.

Referring now to FIGS. 14 and 15 of the drawings which illustrate another embodiment of the present invention, the reference numeral 100 generally designates the improved receptacle which is shown by way of example, as housing and displaying a whiskey bottle 101. The receptacle 100, as in the first described embodiment, comprises four sections 102 ini-

tially vacuum formed in side by side relationship and connected by self hinges from a relatively still thermoplastic sheet, for example, polyvinyl chloride, saran, or other suitable advantageously, but not necessarily transparent polymeric resins. The opposite end sections are provided on the outer side walls thereof with mating plug and socket connectors having enlarged heads and restricted throats respectively and being in mutual engagement when the sections 102 are in a closed condition enclosing bottle 101, as shown in FIG. 14.

Each of the receptacle sections 102 is of generally prismatic shape, open at the outer base thereof and including side walls 103 symmetrically converging inwardly at a dihedral angle of 90° and substantially similarly shaped top and bottom end walls 104 and 106, respectively, which are approximately right angle triangles with the inner opposite apices of a pair of upper and a pair of lower end walls being frustrated. The end walls 104 and 106 of the closed receptacle interfit to form closed end walls of the receptacle bottle housing cavity. Transversely spaced parallel ribs and channels 107 are formed in each end wall 104 and 106 perpendicular to the respective outer edges thereof to reinforce the end walls 104 and 106 and the resulting cavity end walls. The end walls 104 and 106 may be generally flat or may be stepped to provide respectively downwardly and upwardly offset shoulders 104a and 106a.

Formed in the inner apex of each receptacle section 102 is an inner wall 108 which joins along its side edges, sidewalls 103 which are correspondingly cut out, and extends to end walls 104 and 106, the wall 108 being shaped to substantially mate a corresponding quarter section of the surface of the bottle 101 so that when the sections 102 are locked in a peripherally closed condition the walls 108 delineate a cavity which substantially mates and houses the bottle 101.

In order to transversely or laterally reinforce the bottle housing receptacle 100, a plurality of horizontal relatively deep channel shaped ribs, in the illustrated embodiment upper, lower and intermediate ribs 109, 110 and 111 respectively are formed in each section 112 and a vertically spaced parallel lower web 113 which extend from the inner wall 108 and delineate a corresponding transverse opening 114 therein. The side edges of webs 112 and 113 join section side walls 103 and extend to points short of the outer edges of side walls 103. The outer edges of rib webs 112 and 113 are joined by a vertical web 116 which may be decorated or bear any desirable information which may be embossed therein, such as during the vacuum forming of sections 102, printed or otherwise applied thereto. It should be noted that the various dimensions of the different ribs may vary and that the webs 112 and 113 need not be parallel. A relatively high rib 105, corresponding to ribs 109, 110 and 111 is located above rib 109 and is delineated by curved top and bottom webs 105a and 105b joined by an outer vertical panel 105c.

The assembly and use of the receptacle 100 is clear from the above.

In FIG. 16 of the drawings there is illustrated an end wall structure which may be substituted for that shown in FIGS. 14 and 15 and differs therefrom in that the end walls of the interfitting receptacle sections, particularly the bottom end walls, do not form a composite imperforate wall but provide a central opening. Specifically, each of the sections 117 which interfit to form the receptacle includes converging side walls 118 which terminate at their bottoms in end walls 119 having inwardly extending parallel ribs 120 formed therein. Each of the end walls 119 is of similar trapezoidal shape which may be stepped, as illustrated, or flat so that the end walls 119 in the locked closed receptacle form a product cavity base having a rectangular medial opening. In all other respects the receptacle is similar to that shown in FIGS. 14 and 15.

As illustrated by the structure shown in FIG. 17 the product housed by the improved receptacle may be provided with one or more downwardly facing peripheral shoulders which rest on complementing shoulders formed in the receptacle cavity to support the product above the cavity or receptacle bottom wall. For example, the housed product may be a bottle 121 or

other container including a stopper enlarged upper section 122 having a downwardly facing peripheral shoulder 127, a main body or enlarged lower section 123 and a throat or inter-connecting intermediate section 126 or reduced transverse cross section delineated from upper section 122 by a peripheral lip or shoulder 128 formed on intermediate section 126 and located below shoulder 127 and including a downwardly facing shoulder.

The receptacle 129 for housing bottle 121 is of generally similar construction to those earlier described and comprises cavity delineating inner wall defined by the inner walls of the sections which are closed to form the receptacle. The product housing cavity wall includes an enlarged upper section 130, surrounding stopper 122 above shoulder 127, an upper intermediate section 132 which surrounds the lower part of stopper 122 as well as the flange 128 and is delineated from wall upper section 130 by a peripheral shoulder 133 which may engage the bottle stopper shoulder 127; a lower intermediate section 134 surrounding that section of bottle intermediate section 126 below flange 128 and delineated from wall section 132 by a peripheral shoulder 136 which engages the bottom face of flange 128; and an enlarged main lower section 137 which surrounds the bottle body section 123. The distance between the bottom of bottle flange 128 and the bottom of bottle body section 123 may be equal to or less than that between shoulder 136 and upper face of the cavity base wall or shoulder 138, in the latter case, the bottle 121 is supported above the base of the bottle housing cavity so as to relieve the bottom of vertical impact by the bottle.

In order to further reduce impact or shock transmittal between the receptacle and the housed product, those areas of the receptacle which support the product may be provided with upwardly or inwardly directed cushioning elements. Thus, as shown in FIG. 18 the receptacle 139 includes a stepped cavity delineating wall provided with upper, intermediate and lower sections 140, 141 and 142 respectively of successively smaller transverse cross section, upper and intermediate sections 140 and 141 being separated by a peripheral shoulder 143 and intermediate and lower sections 141 and 142 being separated by a peripheral shoulder 144. A plurality of peripherally spaced, upwardly projecting, resilient cushioning protuberances or bosses 146 are integrally formed with shoulder 142 and the shoulder 144 is of undulate shape to provide peripherally spaced radially extending upwardly directed, convex resilient cushioning ridges 147. The product which is housed in the receptacle 139 includes shoulders which rest on protuberances 146 and ribs 147 contribute to the cushioning of the product against impact stresses.

The construction shown lends itself to hermetic sealing. The adjacent panels, surfaces and flanges may readily be pressed to engagement along adjacent parallel lines, and heat sealed along those lines, after the package container has been filled and closed to position to be held by the gripping beads.

The package may also be utilized for materials to be sterilized, without employing autoclaving operations. Suitable packaging material may be employed to permit sterilization by appropriate ray energy, or by ultrasonics, with minimum production of heat and temperature rise in the packaged items.

Thus it is evident that the invention may be utilized to form packages and display items, for bottles of any shape or size, or for jewelry, or for valuable electronic parts, medical equipment or the like, from clear, opaque or colored sheets, with esthetic designs or markings, from polyvinyl chlorides, acetates, butyrates, propanates, styrenes, or any thermal-forming sheet plastic. Obviously, variations may be made without departing from the spirit and scope of the invention.

For example, while plug and socket types of fasteners are provided for holding the sections in a receptacle closed condition with the successive suction side faces in juxtaposition, other fastening means may be employed such as foldover taps and buttons, snaps, interlocking die cut slits, tongue and groove splines, bar snaps or the like and hermetic lock seals

may be effected in many manners such as by dielectric or direct heating, or ultrasonic bending. Moreover, reinforcing ribs and shock absorbing protuberances and projections may be formed in different areas depending on the configuration of the packaged product and the desired end result.

What is claimed is:

1. A receptacle having a product housing cavity and integrally thermoformed of a unitary sheet of thermoplastic resin comprising at least three sections having adjacent side edges joined by self hinges and including end sections with free outer edges, each of said sections including top and bottom end walls and inwardly converging angularly related side walls, the side walls of successive adjacent sections being in juxtaposition and said sections interfitting to form a peripherally closed body member, a plurality of said sections having inner walls joining the respective side walls and outwardly offset from the inner most edges thereof and delineating said product housing cavity and cooperating fastening means at said end sections within the periphery of said side walls for connecting said end sections with the respective outer side walls thereof in substantial juxtaposition.

2. The receptacle of claim 1 wherein said body member is of substantially polyhedral configuration.

3. The receptacle of claim 1 wherein said fastening means comprises a socket member formed in one of said outer side walls and a plug formed in the other of said outer side walls and engaging said socket with said outer side walls in juxtaposition.

4. The receptacle of claim 1 wherein each of said cavities walls includes a horizontally extending section proximate an end thereof between corresponding side walls.

5. A receptacle having a product housing cavity including an upwardly facing horizontal product supporting surface and integrally thermoformed of a unitary sheet of thermoplastic resin comprising at least three sections having adjacent side edges joined by self hinges and including end sections with free outer edges, each of said sections including top and bottom end walls and inwardly converging angularly related side walls, the side walls of successive adjacent sections being in juxtaposition and said sections interfitting to form a peripherally closed body member, a plurality of said sections having cavity inner walls joining the respective side walls and outwardly offset from the inner most edges thereof and a horizontal cavity wall joining said inner walls and sidewalls and having a top face defining a product supporting surface, said cavity walls delineating said product housing cavity.

6. The receptacle of claim 5 wherein said resin sheet is transparent and at least some of said end walls are inwardly inclined and curved.

7. The receptacle of claim 5 wherein said cavity delineating inner walls include vertically extending upper walls, vertically extending lower walls and shoulder defining horizontally projecting walls and defining said horizontal walls extending between said upper and lower walls and adapted to engage a shoulder above the bottom of a housed article.

8. The receptacle of claim 7 wherein said shoulder defining wall projects inwardly from said upper inner wall to said lower inner wall.

9. The receptacle of claim 8 including peripherally spaced upwardly projecting protuberances formed in said shoulder defining wall.

10. The receptacle of claim 5 wherein said cavity horizontal wall is inwardly vertically spaced from said end walls and defines the bottom of said cavity.

11. The receptacle of claim 10 wherein said cavity bottom walls converge to form a substantially imperforate cavity base wall.

12. The receptacle of claim 11 including vertically extending walls joining the corresponding edges of said cavity bottom walls and said section bottom end walls.

13. The receptacle of claim 10 wherein said cavity bottom walls have transversely spaced inner edges delineating a cavity base wall having a medial opening.

14. The receptacle of claim 10 including transverse end walls positioned between the side walls of respective sections and vertically extending walls joining the edges of said cavity bottom walls to corresponding edges of said section bottom end walls.

15. The receptacle of claim 5 wherein said bottom end walls have vertically projecting inwardly extending integral ribs formed therein.

16. The receptacle of claim 15 wherein said bottom end walls converge to form a substantially imperferate cavity base

17. The receptacle of claim 15 wherein said bottom end walls have transversely spaced inner edges delineating a cavity base wall having a medial opening.

18. The receptacle of claim 5 wherein said cavity delineating inner wall includes a vertically extending section and comprising a pair of vertically spaced panels projecting outwardly from said vertically extending section and connected at their outer edges and separated along their inner edges.

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