United States Patent

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[54] **DEMOUNTABLE AND REUSABLE SHIPPING CARTON**
1 Claim, 6 Drawing Figs.

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[51] Int. Cl. B65d 9/12, B65d 9/32
[50] Field of Search 220/4; 217/12, 65, 66

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Primary Examiner—Raphael H. Schwartz
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ABSTRACT: A rapidly assembled and demountable shipping carton comprising a plurality of similar wall forming panels, each of said panels having a groove formed adjacent one vertical edge and a tongue at the opposite edge, each of the horizontal edges of such panels having a medial securing means formed thereon and extending less than the full length of such panel; a pair of top and bottom forming members each having a peripheral flange to overlap said wall forming panels when the latter are assembled in square or rectangular hollow form, each of said identical top and bottom forming members having, along each edge, a securing means to mate with the medial securing means of said wall forming panels; all of said parts, when assembled, forming a closed container of square or rectangular shape which may be sealed in closed form by application of a tie such as pressure sensitive tape, gummed tape, or other means which will be readily suggested for this purpose.

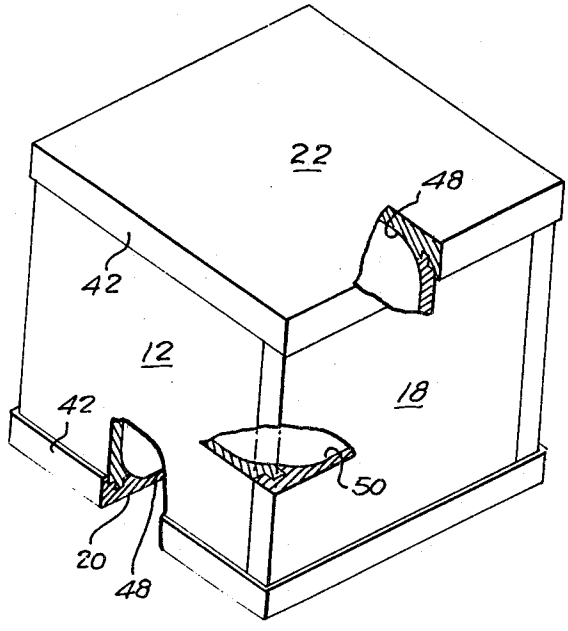


FIG. 1.

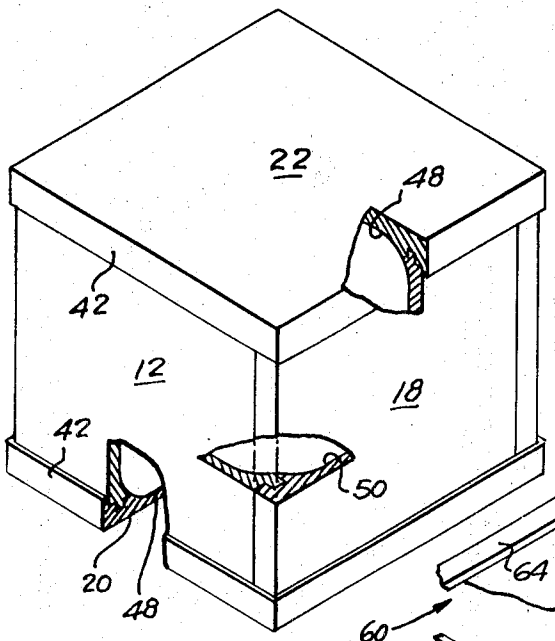
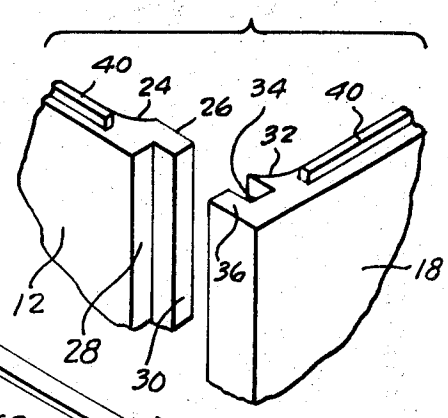


FIG. 4.



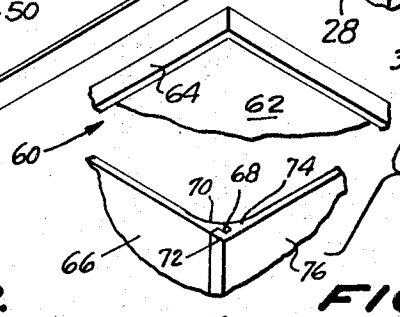


FIG. 6.

FIG. 2.

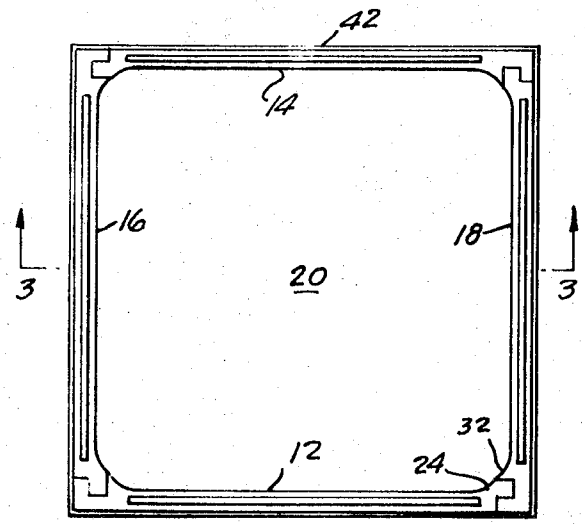
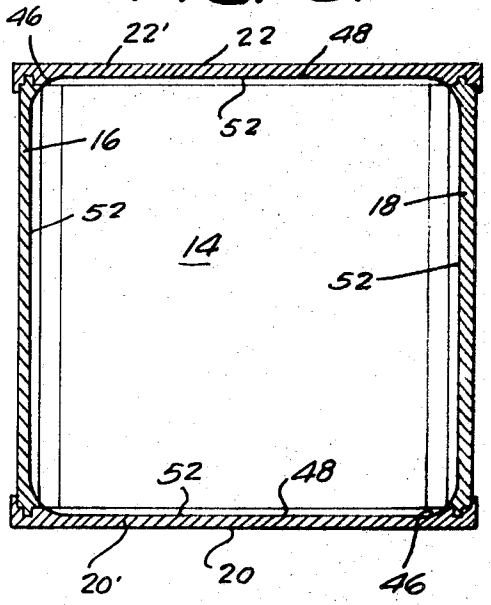


FIG. 3.



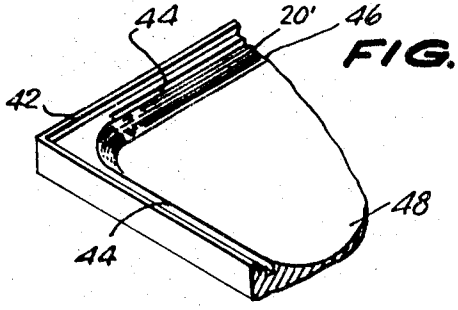


FIG. 5.

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DEMOUNTABLE AND REUSABLE SHIPPING CARTON

It is an object of this invention to provide a mailing or shipping carton made up of a plurality of preformed panels and members which may be assembled into a rigid protective shipping container and may equally readily be separated into individual panels and members which can be bundled and shipped flat on the return trip.

It is an object of this invention to provide a mailing or shipping carton comprised of a plurality of similar preformed interlocking side panels and preformed attaching end members which may be assembled rapidly into a rigid protective shipping container of predetermined size which may equally readily be separated into individual panels and members after use for compact storage or bundled flat for collective shipment.

It is a further object of this invention to provide a container as aforesaid which may be readily molded of either thermoplastic or thermosetting material, or cast or manufactured of light metal or of any light rigid material which can be shaped to provide interlocking formations at each edge of four vertical wall panels to enable each to form a corner structure by mating with any other panel.

It is a further object of this invention to provide a container as aforesaid in which two identical members of said material are used for top and bottom and in which either may be made top or bottom, mating interchangeably with horizontal edges of side panels, without regard to considerations of right-hand or left-hand assembly.

It is a further object of this invention to provide a demountable container as aforesaid which may be varied from square to rectangular shape by substitution of two identical opposite side panels of greater length than the adjacent side panels and by substitution of conforming top and bottom members, thus providing versatility in formation of shipping cartons of varied sizes.

It is a further object of this invention to provide inexpensive rapidly assembled rigid mailing cartons in multiple predetermined sizes to facilitate rapid packaging and handling of uniform mailing parcels.

Another object of this invention is to provide a rapidly assembled, demountable mailing or shipping container comprising interchangeable side panels and interchangeable top and bottom members in multiple predetermined sizes to permit replacement of individual lost or damaged members without loss of use of the other members or replacement of the entire container.

The above and other objects will be made clear from the following detailed description taken in connection with the annexed drawing, in which:

FIG. 1 is a perspective view partly in section showing a fully assembled carton;

FIG. 2 is a plan view of FIG. 1, with the top panel removed;

FIG. 3 is a section on the line 3–3 of FIG. 2;

FIG. 4 is a perspective view detailing the corner structure for the vertical walls;

FIG. 5 is a fractional perspective view illustrating the corner structure of either a top or a bottom member; and

FIG. 6 is an exploded perspective view showing the lid and corner structure when the wall panels are extruded.

Referring now to FIGS. 1 and 2, the container is made up of front and rear vertical panels 12 and 14 with vertical side panels 16 and 18. A bottom panel 20 is provided and a similar top panel 22 is also provided.

FIG. 3 shows the relationship between side walls 16 and 18, bottom member 20 and top member 22, as well as the rear wall 14.

Referring now to FIG. 4, a corner joint is illustrated between front wall 12 and side wall 18. It is to be kept in mind that each of the four corner joints is identical so that the description of FIG. 4 applies to each of the corner joints.

The front wall 12 adjacent its vertical edge has an outwardly beveled portion 24 which in effect enlarges the cross section of its vertical edge. An extension 26 lies parallel to the outer surface of the front wall 12. Adjacent the extremity of the portion 26 is formed a vertical shoulder 28 which, with the portion 26, defines a vertical tongue 30.

On the interior of the side wall 18 is formed a beveled portion 32 to provide a thickened portion in which is formed a groove 34 to receive the tongue 30 of the front wall 12. The formation of the groove 34 leaves an endwise rib 36 which, when the joint is assembled, bears on the shoulder 28 of the front wall 12 to provide a smooth coplanar exterior surface. When the tongue 30 is fully engaged in the groove 34 the beveled portion 24 of the front wall 12 and the beveled portion 32 of the side wall 18 come into alignment and form a coplanar beveled section, as best seen in FIG. 2.

Each of the vertical walls 12—18 has on each of its horizontal sides a tongue 40 medially located with reference to the thickness of the several walls and terminating longitudinally at the start of the beveled portions 24 and 32. These tongues 40 are for engagement with mating grooves in the top and bottom members 20 and 22, as will be hereinafter described.

The structure and function of top and bottom members 20 and 22 will appear clearly in FIGS. 1, 3 and 5. The two members are identical so that only one need be described in detail. Each of the members 20 and 22 has a peripheral flange 42 overlying each of the adjacent vertical walls 12—18 and when in place the flange prevents separation of the joints illustrated in FIG. 4. The main body portion 20′ of the member 20 and 22′ of the member 22 have grooves 44 formed in their inner surfaces adjacent the flange 42, the grooves being sized to accommodate tongues 40 of each of the adjacent wall panels. When the container is completely assembled, as in FIG. 1, it is only necessary for absolute securement to apply a form of tie of which pressure-sensitive tape or gum tape are preferred examples, but wire tie, steel band, etc., may be used for larger shipping cartons, preferably overlying two or more of the vertical walls 12—18 and the main surface of both panels 20 and 22 in strips. The resultant structure is rigid in the extreme and has great durability. The simple task of opening the container for removal of the contents, after cutting or removing the tie, disassociates the parts which then may be separated and stored for reuse with minimum bulk.

Referring now to FIG. 6, a lid (or bottom) member is generally designated 60 and comprises a main panel 62 surrounded on all sides by a flange 64 of uniform thickness. If desired, the flange 64 may be of the same or greater or lesser thickness than that of the lid 62.

A wall panel 66 has on one edge a tongue 68 connected with the panel 66 by a beveled portion 70. The tongue 68 mates with a groove defined by a tongue 72 and a beveled portion 74 formed at one edge of an adjacent wall panel 76. These panels (66 and 76) are of uniform thickness except on two parallel edges, hence may be cut from a continuous extrusion. The assembly is precisely the same as described in connection with the preceding FIGS.

Any of a variety of plastics which may be either thermoforming, thermosetting, or otherwise pressure-formed are preferred materials from which the container may be made and description is particularly applicable to unitary plastic wall or panel structures. Such panels, however, could be molded or formed from light metals such as aluminum, or fabricated from various wood and fiber products, or wood.

Obviously, greater thickness is required at the intersecting corners of the vertical panels 12—18 but the presence of the tongues 40 may require along the horizontal edges of said panels a greater thickness than the strength requirements of the panel as a whole would dictate. The same thing is true around the edges of the top and bottom members 22 and 20. Accordingly, the interior of each of the panels may be cut away as indicated at 46 for members 20 and 22 to provide a major area of reduced thickness 48. A similar cutaway 50 is provided in each of the vertical panels 12—18 to provide each with a major portion of reduced thickness 52. The term "cutaway" is used simply as graphically descriptive If the various panels are made of plastic, the reduced thickness portions and the "cutaway" portions simply would be part of the mold from

which the panels are formed. In addition to a saving of material and a reduction in tare weight, these portions provide pockets for the easy reception of such cushioning materials as rubber or resilient plastic foam which have proved invaluable in meeting shipping problems incident to relatively delicate products.

Another optional method of construction of said invention would be with elimination of the medial securing means formed on the horizontal edges of the wall panels, enabling thinner construction of said panels except for the corners, permitting the four assembled walls to be held in position simply by the wall panel joints and the peripheral flanges on the top and bottom securing members. This would be particularly appropriate for small packages. This carton would also be finally sealed by strips of pressure-sensitive tape applied as a tie circumferentially around the carton securing top and bottom members in place.

No doubt this disclosure will suggest to those skilled in the art various modifications in the structural details herein disclosed. This invention, therefore, is not to be limited to the precise disclosure but only as set forth in the subjoined claims.

I claim:

1. A rapidly assembled and reusable shipping carton comprising side wall panels each having a thickened portion adjacent each margin; each wall panel also having a groove adjacent one vertical edge and a tongue adjacent the opposite vertical edge, the tongue of one wall being sized and located to mate with the groove of an adjacent wall, and the adjacent thickened portions of said walls abutting to form a rounded internal corner; each of said wall panels having a central tongue projecting vertically from each of its horizontal edges; top and bottom panels each having having a projecting vertical flange adapted to surround and fit the adjacent side walls; each inner margin of said top and bottom panels having a groove to mate with the tongue of an adjacent side wall, the adjacent thickened portions of said walls and said top and bottom panels abutting to form rounded internal corners and pressure-sensitive means engaging said top and bottom panels to connect the same with certain of said side walls.