



US 20080296177A1

(19) **United States**(12) **Patent Application Publication**
Cuomo(10) **Pub. No.: US 2008/0296177 A1**(43) **Pub. Date: Dec. 4, 2008**(54) **CARRIER AND METHOD**(75) Inventor: **Angelo V. Cuomo**, Staten Island,
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now Pat. No. 7,267,224, which is a continuation-in-part of application No. 10/939,264, filed on Sep. 10, 2004.

Publication Classification(51) **Int. Cl.**
B65D 75/00 (2006.01)(52) **U.S. Cl.** **206/173; 206/183; 206/175**(57) **ABSTRACT**

The carrier has a central vertical support panel structure, and a pair of foldable receptacles extending outwardly from opposite sides of the vertical support structure. The receptacles have automatically-opening bottom walls with symmetrical bottom panels which overlap to even-out the strength of the bottom walls and minimize areas of reduced strength. At least two opposed bottom panels are shaped to interlock with one another to hold the carrier open once it has been unfolded. Elongated, connected reinforcing flanges strengthen the carrier in the vertical direction. Double and triple-ply reinforcement panels are used to form a four or six-ply handle structure for improved strength.

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NEW YORK, NY 10036 (US)(73) Assignee: **E-Z Media, Inc.**(21) Appl. No.: **12/152,704**(22) Filed: **May 15, 2008****Related U.S. Application Data**

(63) Continuation-in-part of application No. 11/804,147, filed on May 16, 2007, which is a continuation-in-part of application No. 10/737,612, filed on Dec. 16, 2003,

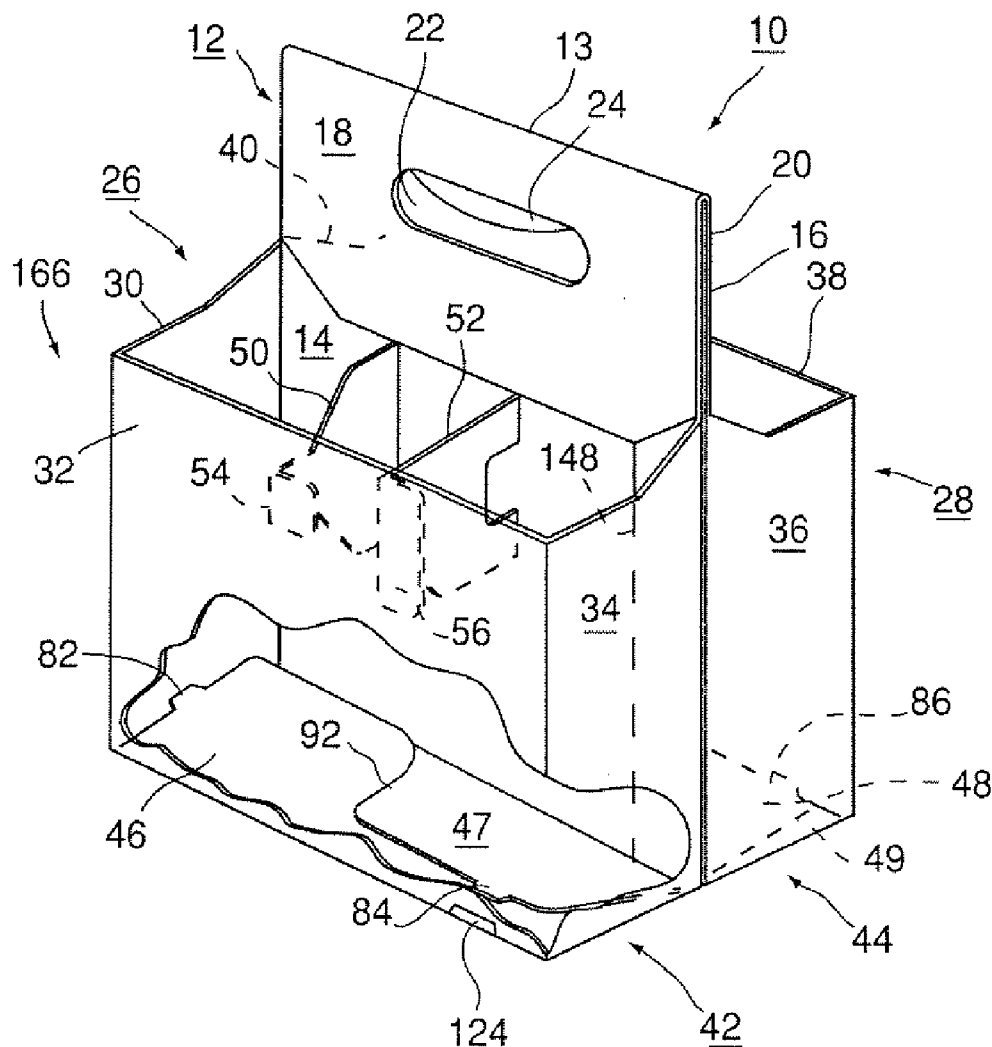


Fig.1

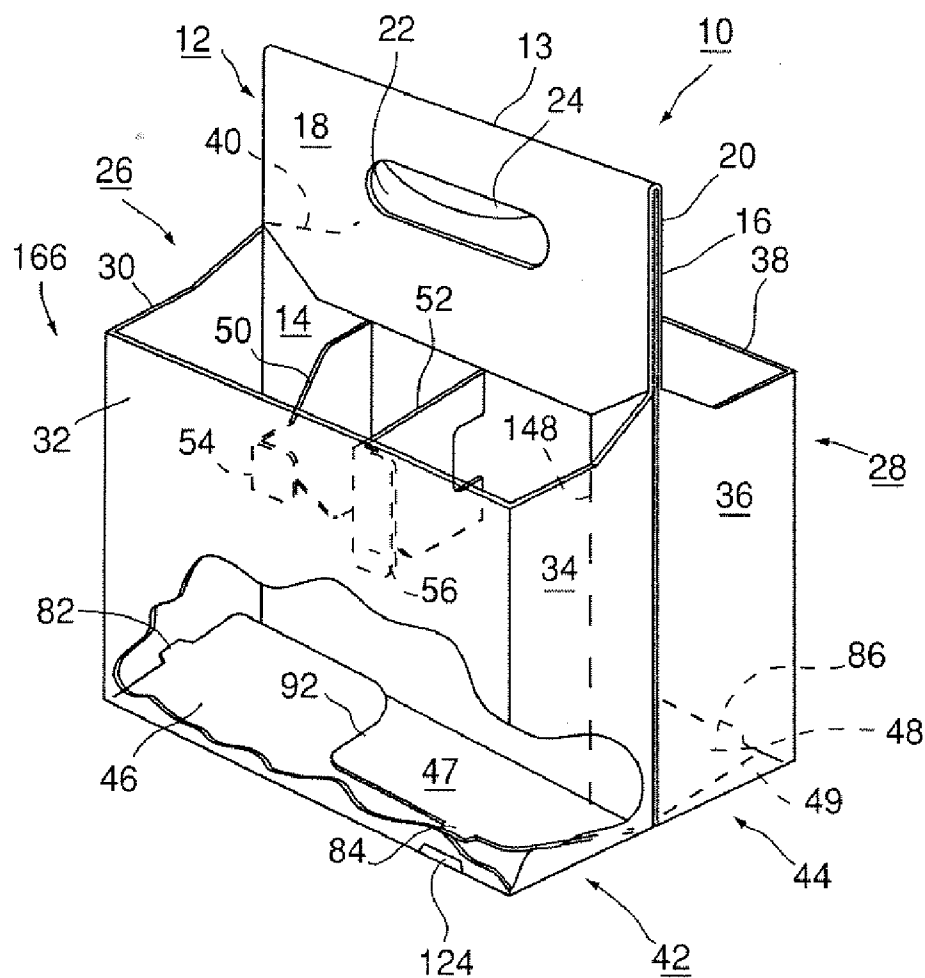


Fig.2

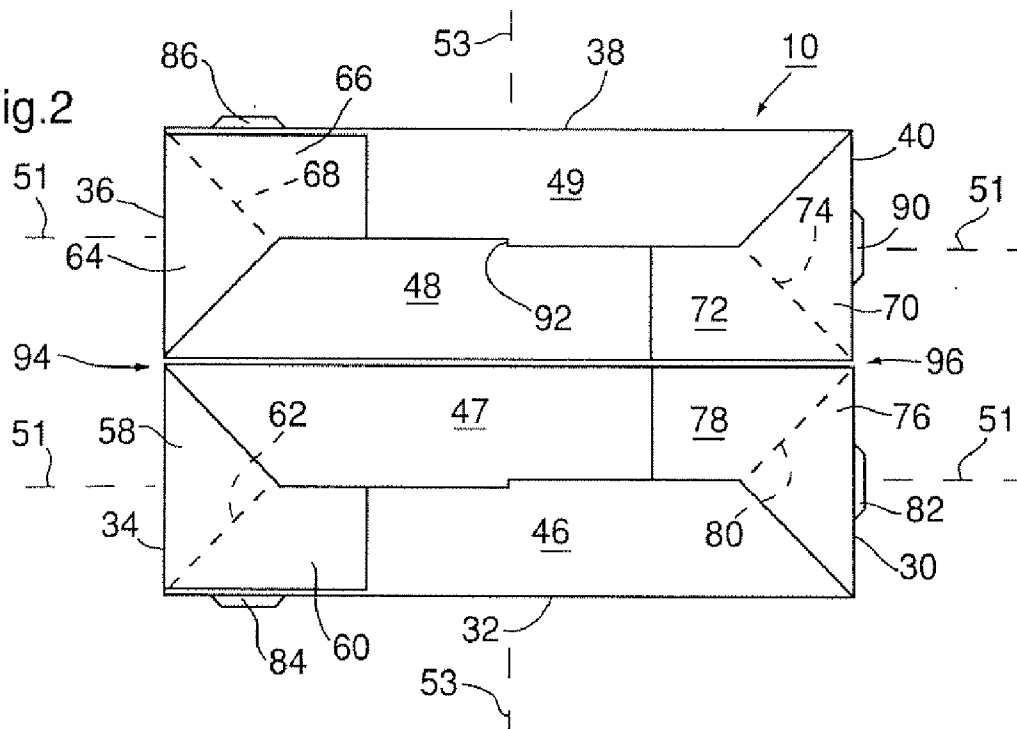


Fig.3

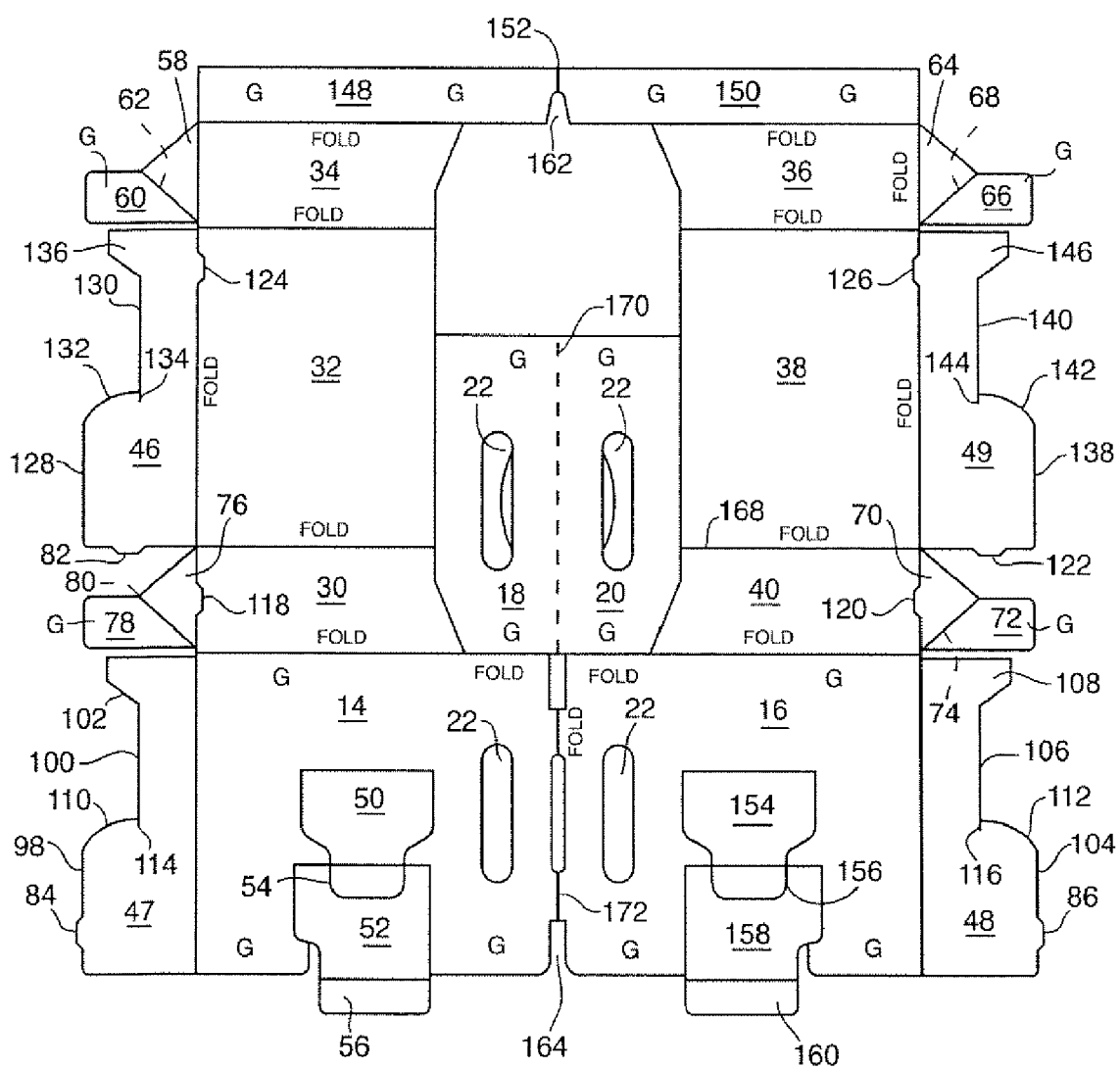
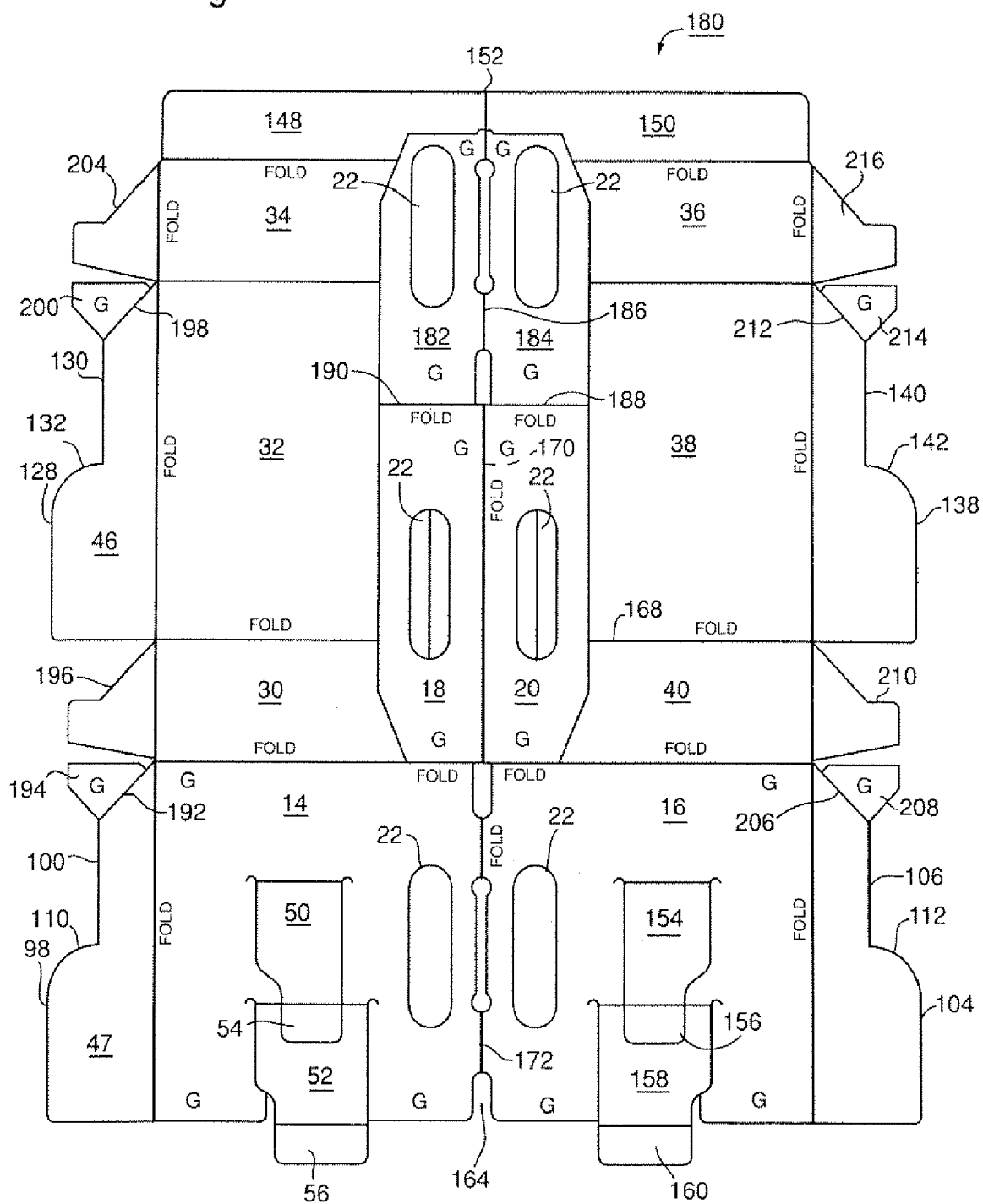


Fig.4



CARRIER AND METHOD

[0001] This application is a continuation-in-part of U.S. patent application Ser. No. 11/804,147, filed May 16, 2007, which is a continuation-in-part of U.S. patent application Ser. No. 10/737,612, filed Dec. 16, 2003 and of Ser. No. 10/939,264, filed Sep. 10, 2004. The disclosures of those patent applications are incorporated herein by reference.

[0002] The carriers described in the above-identified pending U.S. applications are superior in many respects to other carriers used or proposed in the past. They can support relatively large loads, they have relatively large areas available on which to place advertising, they have bottom walls which open automatically when the side edges of the folded carrier are pressed together, and they have means for holding the carrier in its open, unfolded condition automatically, without using the hand or a machine element.

[0003] Furthermore, the carriers are economical to manufacture, requiring less material than many prior carriers, and, when folded, occupy less surface area than many prior carriers so as to minimize packaging size and shipping costs when the carriers are shipped in folded form.

[0004] Despite the superior features of the foregoing carriers, it is an object of this invention to provide a carrier, a method of manufacturing the carrier, and a blank from which to fabricate the carrier which has improved strength, ease of fabrication and use, and is possible to manufacture even more economically.

[0005] In accordance with the present invention, the foregoing objects are satisfied by provided a carrier with a central support structure comprising at least one vertical support panel, a pair of foldable receptacles extending outwardly from opposite sides of the central support structure when the carrier is unfolded, and an automatically opening bottom wall in each of the receptacles.

[0006] Preferably, the central support structure has two vertical support panels each of which has an upper handle section which extend above the foldable receptacles by a substantial distance and has a hand hole near the upper edge. Each vertical support panel has at least one, and preferably two foldable reinforcement panels which are folded over onto and secured to each of said upper sections.

[0007] Preferably, the vertical support panels are joined together along a fold line at their upper edges.

[0008] The reinforced vertical support panels preferably are secured to one another back-to-back. This gives a central support structure with a two-ply thickness in the lower portion, and has a four-ply, and preferably six-ply thickness in the upper handle section, which makes the carrier very strong.

[0009] Advantageously, the reinforcement panels are formed from material which otherwise would be scrap or waste material, so that the reinforcement is provided without increasing the amount of material used to make the carrier, and without extra fabrication steps in the process of making the carrier.

[0010] Each bottom wall preferably includes flanges extending from the lower edge of each of four side-walls for each of the receptacles, with two opposed flanges, being shaped to interlock with the other panel to hold the carrier open after it has been unfolded.

[0011] Preferably, each of the two flanges has a lateral edge which engages a lateral edge on the other during the unfolding

of the bottom structure whereby the two lateral edges engage one another to hold the carrier open.

[0012] Preferably, each of the two interlocking flanges is, at its widest, substantially as wide as the bottom in each receptacle, so that the wide part of each flange extends substantially up to the opposite side-wall, thus providing increased strength for the bottom wall.

[0013] Preferably, the two flanges are symmetrical with respect to one another to give a bottom of more nearly uniform strength over the entire surface of the bottom wall.

[0014] Also, the two flanges are of complementary shape; that is, one is wide where the other is narrow, etc.

[0015] In another aspect, the invention resides in a bottom wall structure for a carrier, in which two opposed bottom flanges, shaped to interlock with one another, are connected to other bottom flanges which pull the two panels together to interlock them and hold the carrier open when it is unfolded.

[0016] Preferably, the opposed flanges are of complementary shape, overlap one another and form an upper surface for the bottom wall in which the strength is distributed over the surface of the bottom wall.

[0017] Also preferably, the bottom wall structure includes two other flanges which are interconnected with one another so that the bottom wall structures unfold automatically when the carrier is unfolded, and the carrier can be fully opened by a single opening movement.

[0018] Also in accordance with the invention, a blank is provided for use in fabricating the carrier from a single piece of sheet material. Preferably, the blank has a pair of vertical support panels hinged together along a fold line at the top edge, with three serially-connected receptacle wall sections connected at one edge of each vertical support panel.

[0019] Each vertical support panel has a width substantially greater than the receptacle wall sections secured to it, thus leaving at least one, and preferably two additional panels secured to one edge of each vertical support panel in its upper handle-hole containing section.

[0020] Each additional panel is foldable onto one of the upper handle-hole containing sections and has a handle hole to match the handle hole in the upper section of the vertical panel when folded over on it, thereby forming a multi-layer reinforced hand-hold structure when the additional panels are secured together with the vertical panels, preferably with adhesive.

[0021] Extending from the outermost edge of the last panel in the series is an elongated attachment flange which is approximately as long as the vertical support panels. The attachment flanges are connected together at one end along a fold line.

[0022] When the carrier is fabricated, preferably, the wall sections are folded relative to one another along fold lines parallel to the vertical edges of the support panels, and the elongated attachment flanges are secured to the panels along edges to reinforce the panels and provide improved vertical lift strength for the carrier.

[0023] The vertical support panels can be hinged together along a fold line at the upper edges of the panels, and are left free from one another so the panels can be swung apart. Preferably, the panels are glued together back-to-back.

[0024] The invention also contemplates the provision of a carrier using such elongated attachment flanges for connecting the vertical support panels together, as well as reinforcing them.

[0025] The foregoing and other objects and advantages of the invention will be set forth in or apparent from the following description and drawings.

IN THE DRAWINGS

[0026] FIG. 1 is a perspective view, partially broken-away, of a carrier constructed in accordance with the present invention;

[0027] FIG. 2 is a bottom plan view of the carrier shown in FIG. 1;

[0028] FIG. 3 is a top plan view of a blank used to fabricate the carrier shown in FIGS. 1 and 2, and

[0029] FIG. 4 is a top plain view of another blank used to fabricate another preferred carrier like that shown in FIGS. 1 and 2.

GENERAL DESCRIPTION

[0030] The carrier 10 shown in FIGS. 1 and 2 includes a central support structure 12 comprising two vertical support panels 14 and 16 hinged together along their top edges 13, and either adhered together back-to-back, or, alternatively, left free to swing apart from one another. Panel 16 is shown only in FIG. 3. Reinforcement panels 18 and 20 are glued to the upper portions of the support panels 14 and 16. A handle hole 22 with a guard member 24 is located in the center of each of the upper portions of the panels 14 and 16 to form a handle structure for lifting and carrying the carrier and its contents.

[0031] A pair of foldable receptacles 26 and 28 extend outwardly from opposite sides of the central support structure 12. Each receptacle has four walls, one of which is formed by one of the vertical support panels 14 or 16. The receptacle 26 has a series of side-wall panels 30, 32, and 34 connected together along fold lines and extending outwardly from the panel 14 when the carrier is unfolded. Similarly, receptacle 28 has a series of side-wall panels 36, 38, and 40 extending outwardly from the panel 16.

[0032] Each of the receptacles has a bottom wall structure 42 or 44 which opens automatically when the folded-up carrier is pressed together at the sides in the directions of the arrows 94 and 96 shown in FIG. 2 so as to quickly open and prepare the carrier for receiving objects to be carried.

[0033] The carrier is shown in FIG. 1 in the position it takes after the single motion pushing the edges of the folded blank together. The bottom wall structure 42 or 44 is only partially unfolded.

[0034] Each of the bottom wall structures 42 and 44 includes four flanges, each secured to the lower edge of one of the four side-walls of each of the two receptacles 26 and 28.

Bottom Structure

[0035] It is particularly advantageous that two opposed ones of those flanges, such as the uppermost flanges 46 and 47 are recessed in one section and are shaped to overlap and interlock with one another so as to hold the carrier in the unfolded condition shown in FIG. 1 without the use of one's hands or mechanisms.

[0036] The recesses are in opposite sections so that the flanges overlap one another and each has a lateral edge. The lateral edges are positioned so that they engage with one another such as at the location 92 shown in FIG. 1 when the flanges 46 and 47 are interlocked. This prevents the fiber-board material of which the carrier is made from folding up and thus returning to its folded condition. This holds the

receptacles open to allow beverage bottles or other objects to be loaded into the carrier and press the bottom panels downwardly to flatten them.

[0037] Preferably, the flanges are symmetrical with respect to one another, with respect to a longitudinal center line 51 and a transverse center line 53 (FIG. 2) of each bottom wall. This helps to even-out the bottom strength and minimize weak spots.

[0038] The bottom wall structures 42 and 44 are shown in FIG. 1 with the bottom panels, such as 46, 47, in an intermediate position to which they are automatically pulled by the interconnection of the bottom flanges to unfold the bottom wall structures automatically. Thus, the panels 46 and 47 are shown in positions above their lower-most positions which they will attain when a beverage bottle is deposited on top of the panels.

[0039] Dividers 50 and 52 (as well as dividers for the other receptacle 28, which are not shown in FIG. 1), are provided to divide each receptacle into three compartments so that each receptacle holds three bottles or other containers. Each of the dividers 50, 52 has a glue tab 54 or 56 which is glued to the surface of the panel 32 or 38 opposite the central support structure.

[0040] The carrier 10 shown in FIGS. 1 and 2 is particularly well suited for use as a six-pack carrier for beverage containers such as bottles, etc., and is highly advantageous for use in bottling plants where the carriers are filled with beverages to be shipped to stores for sale.

Carrier Blank

[0041] Now referring to FIG. 3, as well as to FIGS. 1 and 2, each of the four recessed flanges 46, 47, 48, and 49 has a tab extending outwardly from one edge. The flanges 46 and 49 have a tab 82 or 122 extending from the short side edge of the flange.

[0042] The flanges 47 and 48 have tabs 84 and 86, respectively, extending out of a longer side edge.

[0043] As it can be seen in FIG. 1, as well as FIG. 3, the tab 84 in the flange 47 fits into a slot 124 in the panel 32 near the bottom edge of the panel, and the tab 82 fits into a slot 118 in the bottom edge of the panel 30 when the panel 46 is pressed to its lower-most position. Thus, the tabs on the flanges 46, 47, 48, and 49 fit into slots in the side-walls which hold those panels downwardly when beverage containers or other objects are loaded into the carrier and depress the panels downwardly. This helps hold the bottom wall down solidly and minimize the chance that the carrier will accidentally close after being opened.

Interlocking Flanges

[0044] As it is shown best in FIG. 3, each of the bottom flanges 46-49 has an outermost edge 98, 128, 104, or 138, and an inner recessed edge 100, 130, 140, or 106. The corner of the recess is rounded, and the recess forms a lateral edge 110, 132, 142, or 112. At the opposite end of each flange a truncated triangular extension 102, 136, 146, or 108 is provided for extra strength.

[0045] Extending from the lower edge of each of the shorter side-wall panels 30, 34, 36, and 40 is a triangular flange 76, 58, 64, or 70 with an attached glue tab 78, 60, 66, or 72 secured to the first flange along a fold line 80, 62, 68, or 74.

[0046] As it is shown in FIG. 2, the glue tabs 60, 66, 72, and 78 are glued, respectively, to the flanges 49, 46, 47, and 48.

Advantageously, the glue tab is elongated, preferably to equal the width of the widest portion of each of the flanges 46-49 so as to extend as far as possible along the flange to which it is attached, thereby strengthening the bottom structure of each receptacle, without using excess material.

[0047] Optionally, a slit 134, 114, 144, or 116 can be provided at the junction between the lateral edge and the inner edge of each of the four flanges 46-49 to provide for more positive locking engagement between the edges of adjacent panels.

[0048] As it is shown in FIG. 3, dividers 154 and 158 with glue tabs 156 and 160 are provided for the receptacle 28 but are not shown in either of FIGS. 1 and 2. Each of the dividers 50 and 154 is "nested" with another divider 52 or 158 to save material.

[0049] In FIG. 3, fold lines are indicated with the letter "F", and areas to be glued, in one embodiment of the carrier, are marked with the letter "G".

[0050] In accordance with another feature of the present invention, elongated attachment flanges 148 and 150 are secured to the outermost edge of the panels 34 and 36, respectively. The flanges 148 and 150 are attached together along the fold line 152, with a notch 162 being cut in the material adjacent the fold line 152 to match with the notch 164 at the upper edges of the vertical support panels.

[0051] Since the flanges 148 and 150 are relatively wide, and are approximately as tall as the vertical support panels, and are secured together at 152, they provide exceptional reinforcement of the edges of the vertical support panels, as well as secure anchors for the ends of the side-wall panel series forming the side-walls of the carriers. This further increase the load carrying capability of the carrier.

[0052] The bottom construction of the carrier 10 is very advantageous. Because the flanges 46, 47, and 48, 49 overlap one another, are symmetrical and extend completely across the bottom wall of each receptacle, the strengthening added by the flanges is well distributed over the bottom wall so as to minimize any points of weakness in the bottom wall.

[0053] Furthermore, when the bottom panels 46, 47 and 48, 49 lock together edge-to-edge, this creates an extremely stable structure to hold the carrier open and prevent it from relapsing in the direction of the arrow 166 in FIG. 1 to fold up again due to the natural resilience of the fiberboard material.

[0054] The tabs on the bottom panels and the slots near the bottom edges of the side-walls of the receptacles help in holding the bottom panels down and preventing the bottom from unfolding.

[0055] It should be understood that additional or differently placed tabs and slots can be provided as desired instead of, or in addition to, the tabs and slots shown in the drawings.

[0056] It should be understood that the carrier construction described herein, with minor modifications, can be used highly advantageously for carrying out food from a vending establishment, such as a concession stand in a sports arena, a fast food restaurant, etc. Carriers specially adapted for such use are shown in my above-identified co-pending patent applications, and it is unnecessary to describe them in detail here. However, in general, the modifications usually would be to enlarge the compartments receiving the beverage containers to receive large cups, reduce the number of compartments, increase the height of the vertical support panels, and supply top trays with slots in the bottom to receive the vertical support panels, to enable the carrying of solid foods in the top trays, using only one hand to carry everything.

[0057] As it is noted above, the vertical support panels 14, 16 can be secured together back-to-back with glue, as indicated by the "G" markings in FIG. 3. Alternatively, the vertical support panels 14 and 16 and their reinforcing panels 18, 20 can be secured together only along fold lines 172, 170 so that the inside walls of the panels 14, 16 can bear advertising, promotional materials, etc., which the customer can access by simply swinging the two receptacles apart. This is a type of carrier sometimes referred to as a "saddlebag" carrier.

[0058] If the saddlebag type of construction is selected, the flange 148 is glued to the back side of panel 14, and the flange 15 is glued to the back side of panel 16. The flanges 150, 148, remain attached at the fold line 152.

FIG. 4 EMBODIMENT

[0059] FIG. 4 shows another embodiment of the invention. It is shown in the form of a blank 180 like the blank shown in FIG. 3, with changes. The same parts bear the same reference numerals as in FIG. 3.

[0060] A significant change in the blank 180 is the addition of further reinforcing panels 182 and 184 made out of scrap material shown in FIG. 3 at the ends of the reinforcing panels 18 and 20. These further reinforcing panels do not add any materials costs since they are made out of material which otherwise would be scrap.

[0061] The panels 182 and 184 are secured to the ends of panels 18 and 20, respectively, along fold lines 188 and 190. The further reinforcing panels also have elongated hand holes 22 of the same size as the holes 22 in panels 14, 16 18 and 20. They are positioned so as to align with the hand holes in panels 14, 16, 18 and 20 so as to form a single hand-hold for the carrier.

[0062] The additional reinforcement panels 182 and 184 are folded over onto panels 18 and 20 and glued thereto, and then the combination is folded over onto the upper portions of the vertical support panels 14 and 16.

[0063] The vertical support panels 14 and 16 are folded along a fold line 172 securing them together at their top edges.

[0064] Similarly the reinforcement panels 18, 20, 182 and 184 are folded respectively, along lines 170 and 186.

[0065] The result of this change is a handle structure of six-ply thickness. This supplies extraordinary strength where it is very much needed, thus effectively enabling the carrier to withstand both wet-tests and dry tests for strength while holding very large loads.

[0066] Additional differences between the blank shown in FIG. 4 and that shown in FIG. 3 are the use of glue tabs 194, 200, 208 and 214. These glue tabs are foldable along fold lines 192, 198, 206 and 212, respectively.

[0067] The narrow side walls 34 and 36 have semi-triangular shaped extending flaps 204 and 216 respectively, and the side walls 30 and 40 have similarly shaped flaps 196 and 210. The four glue tabs are glued to their adjacent flaps during the manufacturing process, to form a strong, automatically opening bottom for each of the carrier receptacles.

[0068] The resulting carrier looks substantially the same as the carrier shown in FIGS. 1 and 2 but is even stronger than that carrier, made so without any additional cost of materials.

[0069] The above description of the invention is intended to be illustrative and not limiting. Various changes or modifications in the embodiments described may occur to those skilled in the art. These can be made without departing from the spirit or scope of the invention.

What is claimed is:

1. A carrier comprising
 - a central support structure including two vertical support panels, each having a lower portion and an upper portion with a handle structure,
 - a pair of foldable receptacles, each extending outwardly from said lower portion of one of said vertical support panels on opposite sides of said central support structure when said carrier is unfolded,
 - each of said receptacles having four side-walls, with one of said side-walls of each being formed by said lower portion of one of said vertical support panels,
 - said upper portions of said vertical support panels extending a substantial distance above said receptacles,
 - a bottom wall structure for each of said receptacles, said bottom wall structure comprising a flange extending outwardly from the lower edge of each of said four side-walls and being secured thereto along fold line,
 - one of said side-walls being parallel to but spaced from said central support structure,
 - said flanges being interconnected with one another so as to fold flat inside of said four walls of said receptacle, and unfold automatically when said side-walls are spread apart to unfold said carrier,
 - one of the first and second ones of said flanges extending from said one side-wall and the other extending from one of said vertical support panels,
 - each of said first and second flanges having an outer edge and a recess,
 - said first and second flanges being shaped to interlock with one another when said carrier is unfolded, and
 - at least one reinforcing panel overlying and adhered to said upper portion of each of said vertical support panels.
2. A carrier as in claim 1 in which said reinforcing panel is formed from an adjacent portion of the material forming one of said vertical support panels and extending from one edge of said upper portion.
3. A carrier as in claim 1 including a second reinforcing panel overlying and adhered to said upper portion of each of said vertical support panels.
4. A carrier as in claim 3 in which each of said reinforcing panels is formed of an adjacent portion of the material forming one of said vertical support panels.
5. A carrier as in claim 1 in which each of said recesses forms a lateral edge transverse to said outer edge, said recesses being formed in opposite portions of said first and second flanges, with said lateral edges being located to engage one another when said carrier is unfolded, and in which first and second flanges overlap one another.
6. A carrier as in claim 1 in which each of said outer edges extends to the side-wall opposite the wall to which the flange is secured.
7. A carrier as in claim 1 in which the third and fourth ones of said flanges each has a base flange area with a glue tab secured thereto along a diagonal fold line, with said diagonal fold lines being located at opposite corners of the bottom structure, with each of said tabs being secured to one of said first and second flanges, and in which each of said glue tabs extends outwardly to approximately the same length as the width of said bottom wall structure, and has approximately the same width as the width of the side wall portion to which it is secured.
8. A carrier as in claim 1 in which each of said outer edges has a substantially curved corner at the beginning of said

recess to ease the passage of said corners over one another during unfolding of said carrier.

9. A carrier as in claim 1 in which said side-walls of said receptacles are folded so as to bias said third side-wall towards said side edge of said second flange when said carrier is unfolded.

10. A carrier as in claim 1 in which each of said receptacles contains a pair of dividers to divide the receptacle into compartments, said dividers being fold-out flaps cut from said vertical support panels, one of said flaps being wider than the other, and the tip of the other flap extending into the material of said wide flap to nest the flaps.

11. A carrier comprising

- first and second vertical support panels, said support panels being secured to one another, each having an upper portion with an upper edge and a handle structure, and a lower portion positioned below said upper edge,
- first and second series of side-wall panels, each connected to one of said lower portions of said vertical support panels along fold lines,
- each of said series forming, in combination with the one of said vertical support panels to which it is connected, a side-wall structure for a receptacle,
- a bottom wall structure for each of said receptacles, said bottom wall structure comprising a plurality of flanges extending from the lower edges of said side-walls and said vertical support panels,
- said flanges being interconnected with the other of said flanges so that said bottom wall structure unfolds automatically when said carrier is unfolded,
- said flanges including, in each of said bottom wall structures, two flanges shaped and positioned to interlock with one another when said carrier is unfolded so as to hold said carrier unfolded,
- and a reinforcement panel structure comprising, for each of said vertical support panels, a number of reinforcement panels selected from the group consisting of one and two, each secured to one of said upper portions of one of said vertical support panels.

12. A carrier as in claim 11 in which each of said reinforcement panels being formed from material of which said vertical support panels are made, and in which said number of reinforcement panels is two, said reinforcement panels being secured to said upper portion along fold lines.

13. A carrier as in claim 11 in which said reinforcement panels are connected to one another along fold lines and are formed from the same material as the remaining parts of said carrier.

14. A carrier as in claim 10 in which said two flanges overlap one another and at least a portion of each extends all the way across said bottom wall structure, said two flanges being shaped symmetrically with respect to a common centerline.

15. A blank for making a foldable carrier, said blank comprising a single sheet of material forming:

- a pair of vertical support panels each having elongated side edges aligned with one another, and an upper area and a lower area,
- a pair of side-wall structures each comprising a series of side-wall panels, each being secured to one another, each side-wall structure being secured to a side edge of said lower area of one of said vertical support panels,
- a bottom flange extending from the bottom edge of each of said side-wall panels and said vertical support struc-

tures, said bottom flanges being formed so as to enable them to be secured together in an automatically-opening, inwardly folding bottom structure for each of said sidewall structures,

There being at least one panel secured to one edge of each of said vertical support panels is said upper area thereof, between the upper edges of said side wall panels for use as reinforcement panels for said vertical support panels,

Automatic-opening bottom flaps extending from the bottom edges of said side wall panels and said vertical support panels and being connectable to one another to open automatically when the carrier is unfolded,

said bottom flaps for each bottom structure being shaped so that opposed long flaps extend across the bottom in one half and substantially less than that in the other half to form two central edges to engage one another when the carrier is unfolded to hold the carrier in its unfolded state.

16. A blank as in claim **15** in which there are two of said reinforcing panels, one joined end-to-end with the other and formed from the material between said upper edges of said side-wall panels.

17. A blank as in claim **15** including a side-wall securing flange extending outwardly from a side edge of an end panel in each of said series of side-wall panels and having a height substantially the same as that of said vertical support structures to secure said sidewalls to said vertical support structures,

said sidewall securing flanges being secured to one another at a top end which is positioned adjacent the upper edges of said vertical support structures when said carrier is assembled.

18. A blank as in claim **15** including a pair of divider flaps cut out of each of said vertical support panels adjacent one side edge thereof, said divider flaps being nested within one another, said side-wall securing flange being securable to one of said side edges of one of said vertical support panels to reinforce said one side edge.

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