

[54] PLASTIC CARRIER FOR CONTAINERS

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206/427[51] Int. Cl.² B65D 71/00; B65D 85/62[58] Field of Search 206/168, 161, 199, 145,
206/427, 142, 139, 147, 148, 158, 143;
297/87.2; 224/45 AB, 45 A

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[57]

ABSTRACT

The invention disclosed relates to a carrier thermoformed from a thermoplastic sheet and providing individual compartments or cavities for a grouping of a plurality of containers, such as glass bottles. The upper annular segment of the compartment wall includes an undulated form encircling the container beneath an enlarged or bulged portion thereon. The undulated segment forms a bellows or an accordion-like wall terminating at its upper end in an intumed lip and inner annular rim thereon that defines an aperture. The upper bulged portion of the container is inserted through and beyond the aperture, the lip portion of said compartment wall engaging the container on the bulged portion to support the latter in the carrier. Upon removal of the container, the accordion-like segment is compressed by downward pull and a twist motion frees the bulged portion from the rim engagement. The carrier has a lower peripheral skirt encircling the grouping of containers, the peripheral skirt being reinforced by a laterally extending peripheral flange.

9 Claims, 4 Drawing Figures

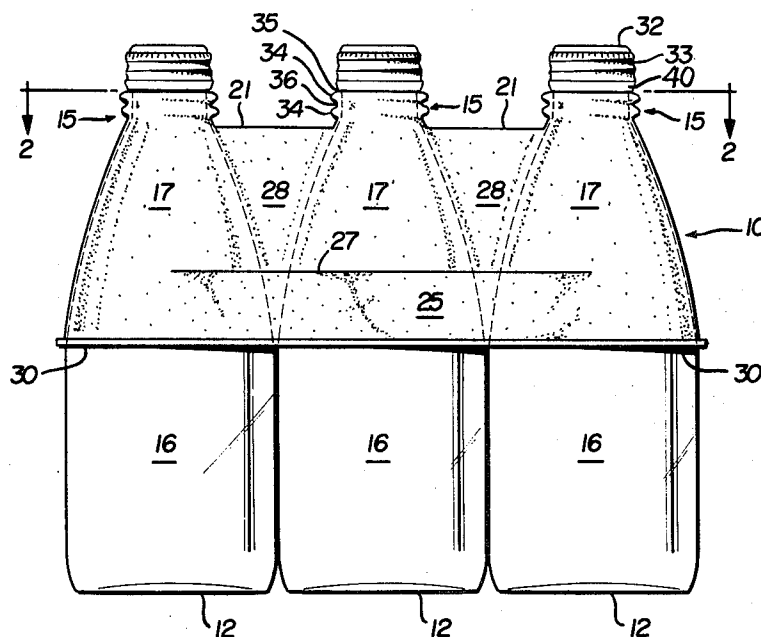


FIG. 2

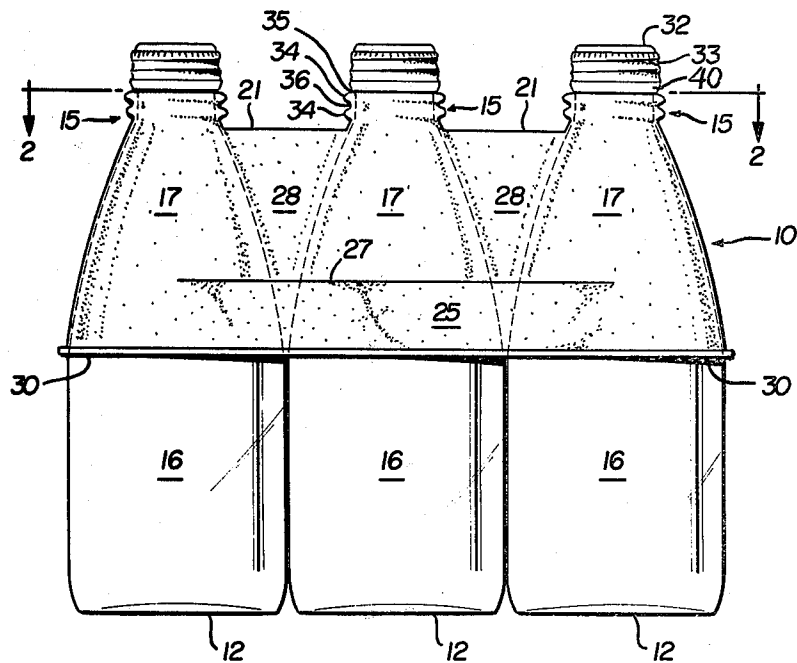
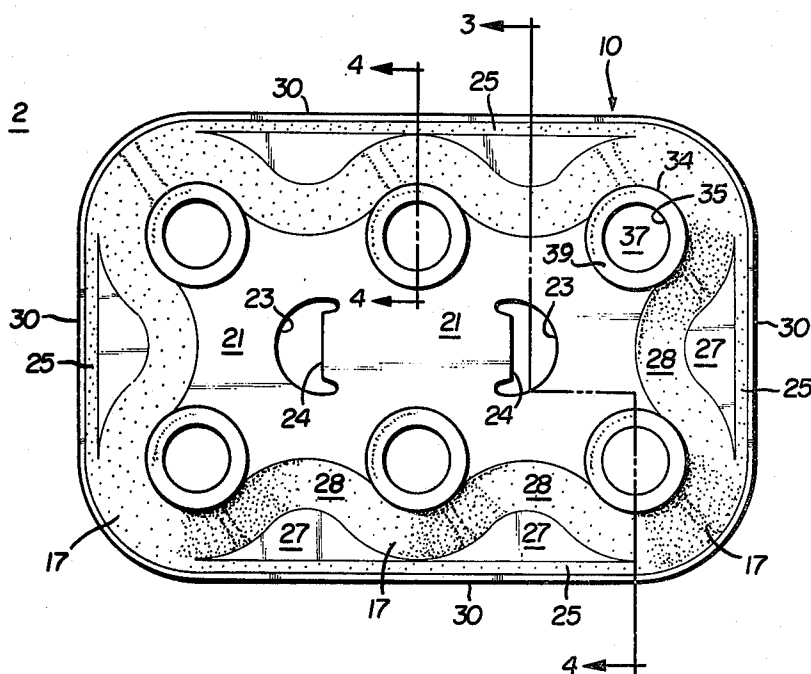


FIG. 1

FIG. 4

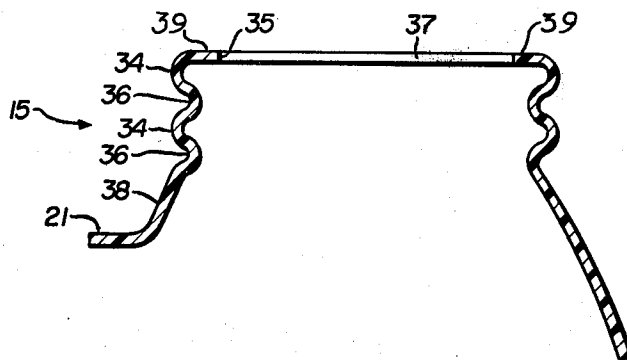
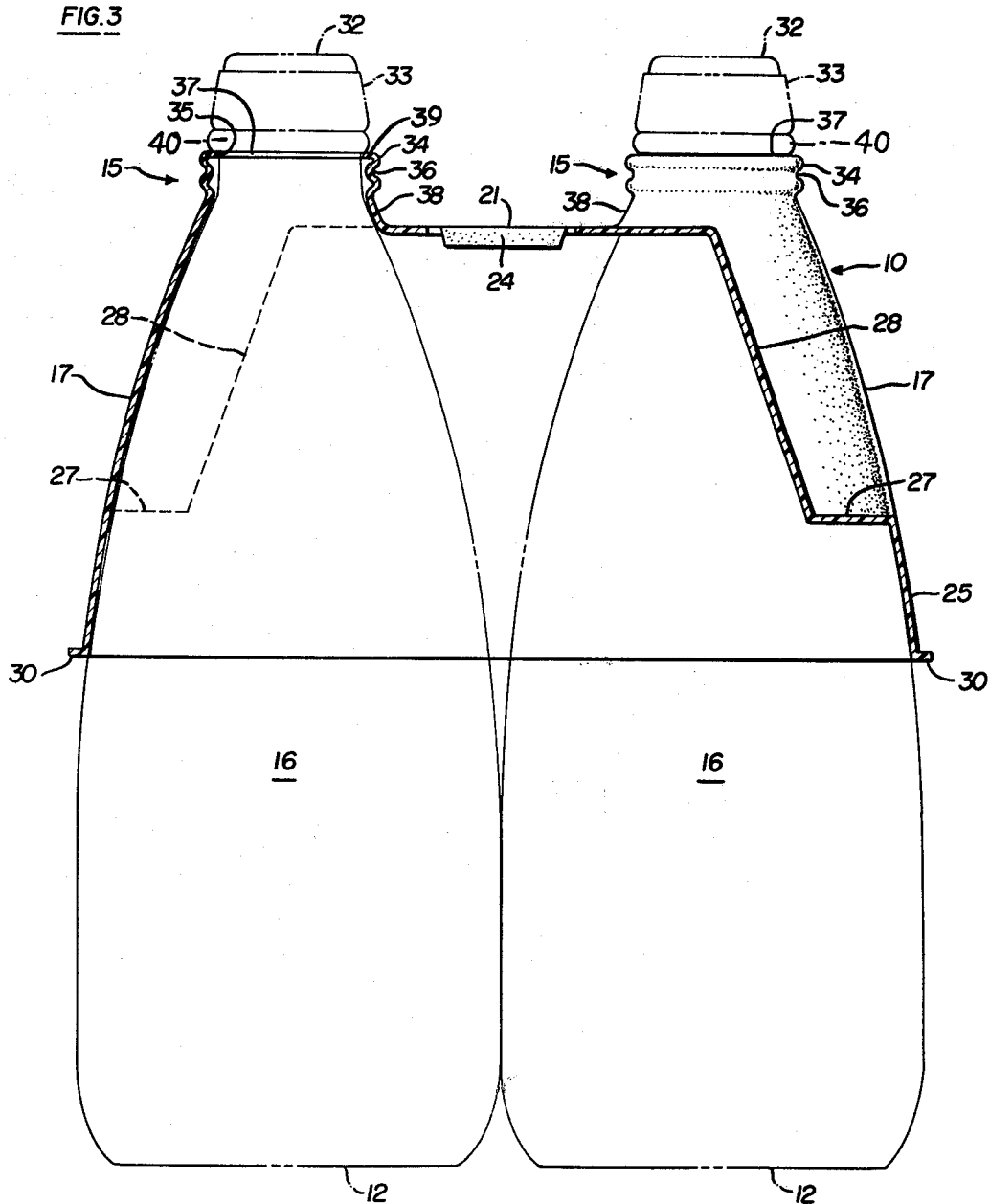


FIG. 3



PLASTIC CARRIER FOR CONTAINERS

The present invention relates to a carrier for a grouping of containers. The carrier is constructed from a pre-molded plastic material in a unitary or single piece construction.

Several prior wrap-around forms of carriers for containers, such as glass bottles, have been utilized. The present invention provides an improvement in the one-piece thermoplastic carrier, such as shown in the pending U.S. Pat. application Ser. No. 141,491 filed May 10, 1971, now U.S. Pat. No. 3,752,305, and owned by the assignee of this application.

SUMMARY OF THE INVENTION

The invention provides an economical jacket-like carrier of formed thermoplastic that is easily applied to a grouping of containers, such as glass bottles, wherein their neck portions are inserted through an aperture in the individual annular compartments of the carrier and tightly engage the side wall of the containers in the group for supporting them. The carrier compartments include an upper end, accordion-like encircling wall and a radially returned lip and rim at the top thereof. The rim defines an aperture of a diameter slightly less than the outside diameter of a bulged portion at the upper end of the glass bottle. Upon movement of the carrier axially downwardly along the bottles in the grouping, the rim yields and snaps over the bulged portion of the bottle. The lip portion of the compartment, extending radially with respect to the center axis of the compartment, supports the weight of the bottle upon engagement with the bulged segment thereof.

Removal of the containers from the compartments is enhanced in the construction of the present invention. The flat lip section of the compartment supporting the bottles when carried will collapse with the side walls folding along the accordioned segment as the bottle is moved downwardly and twisted toward one side or the other of its center line. The undulated side wall segment may be tapered or cylindrical and the number of rings in the accordion or bellows section may be varied to achieve the desired yieldingly folding action upon container removal from the carrier. It is preferred that the undulated portion of the compartment wall contain two or more rings or folds (the combination of a peak and valley comprises a ring) for successful operation.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of the container package of the invention, which includes the novel carrier and a six-bottle grouping (6-pack) of containers;

FIG. 2 is a top plan view of the carrier of the invention;

FIG. 3 is an end sectional elevational view taken along line 3—3 on FIG. 2 with the addition of bottles in phantom outline; and

FIG. 4 is a detailed sectional elevational view taken along line 4—4 on FIG. 2.

DESCRIPTION

Referring to FIGS. 1 and 2, the package 10 embodying the invention comprises a plastic carrier containing a plurality of container receiving compartments 17 having a top end aperture 37 through which the enlarged upper end of the containers 16 extend. The container 16 has a bottom end wall 12 supporting it in up-

right position. Contiguous with the bottom wall is a glass body wall which tapers upwardly into a neck portion (FIGS. 1 and 3). At the upper end of the neck portion is an annular rim of the glass bottle defining its upper end opening enclosed by the closure 32. The closure 32 extends over the rim and threads of the bottle neck. The closure 32 in one form is comprised of an aluminum and rolled over the threads of the bottle finish thereby sealing the bottle opening. The upper end of the closure 32 covers the mouth opening of the bottle. Thus, closure 32 provides an enlarged annular region on the upper end of the bottle. The container 16 is supported in the carrier just below the thread region 33 of the closure in a manner to be presently described.

Containers 16 may include a sleeve-like body covering in the form of a shrunken plastic jacket overlying the body wall of the bottle. The covering may be formed from a shrunken thermoplastic material, such as a plastic film or a foamed thermoplastic layer.

The bottle carrier is comprised of plastic and is most conveniently thermoformed from a sheet or web of thermoplastic, such as a high density polyethylene material. Other suitable compositions which may be employed to produce a semi-rigid carrier are polyethylene of the medium density composition, polypropylene, and polyvinyl chloride.

The plastic sheet in the form of a high density polyethylene is selected at about 0.025 inches in thickness. This sheet is placed in a vacuum forming mold and thermally shaped therein to include the several individual cavities or cell-like compartments 17 open at their upper axial ends. In the formation of the carrier from the polyethylene, just indicated, the compartment wall is preferably not reduced below 0.010 inches in thickness. It is preferable to maintain the 0.010 wall thickness of the compartment to the thinnest section. The compartments 17 are each defined by the upright tapered annular wall that corresponds generally to the shape of the upper neck portion of the bottle 16. The tapered, shape conforming construction is preferred. However, a more or less cylindrical form of compartment could be utilized in the present invention.

The containers 16 are shown in place on FIGS. 1 and 3 with the closures 32 extending upwardly through the respective compartment apertures 37. As the containers are assembled into a grouping of the selected number, such as six or eight in two longitudinal rows of three or four each, the plastic carrier is brought over the leading edge of the group of bottles and thereafter relatively, telescopically axially moved (pressed downwardly) into engagement with all the bottles such that the closures 32 distend the relatively limited, yieldable apertures 37 formed by the rims 35 of the compartments. The rim 35 is the innermost aperture defining surface and dependent radially outwardly therefrom is a lateral or horizontal annular lip section 39. The threaded or a bulged portion of the bottle, indicated generally at 40, rests upon the lip 39 and is supported thereby. Although the closure 32 is illustrated as the known rolled-on threaded variety (often referred to as a roll-on pilfer proof closure), various other known types of closures may be utilized. One such other example is the well-known crown closure commonly used on soda and beer bottles.

Integral with the annular upright walls 17 of the carrier is a vertical, peripheral skirt wall 25 which encircles the grouping of the containers 16 around their

body portion below the wall of the compartments 17. The vertical or nearly vertical wall 25 blends smoothly and integrally with the adjacent portion of the compartment wall 17 of the several peripherally arranged compartments of the carrier. The depth or axial extent of the skirt wall 25 is selected to meet one or more functional objectives: (1) the perimeter wall 25 should be of a depth to encircle the bodies of the grouping of containers and closely and snugly lash them together, restraining their lateral movement relative to each other as a group, and (2) the vertical or height dimension of the skirt wall should be selected to provide the desired protection for the side wall of the glass containers against contact between them and with outside surfaces. In this latter regard, the covered containers 16 may have the mentioned plastic sleeves extending along the major body portion thereof (not shown). In this instance, the vertical skirt wall could be abbreviated to save on the amount of material going into the carrier. In the event the containers 16 are not plastic covered (bare glass bottles), the vertical skirt wall 25 should extend downwardly overlying the region of the glass bottles that represent their larger body diameter. This will prevent sidewise or lateral contact with adjacent bottles in other packages or contact with external surfaces, such as vertical walls, guides, etc.

The carrier shown on FIGS. 1-3 includes the several annular walls 17 which define the individual container compartments. The compartments correspond substantially with the configuration of the neck portion of the containers and their upper end closure 32. Near the top of the compartments is provided for each an annularly disposed radially inwardly projecting yieldable means and an accordion-like or bellows segment, indicated generally at 15, adjacent said yieldable means. The compartment may be provided as an annular rim 35 defining an aperture 37. The rim 35 is the inner radial extension of a lateral or horizontal lip segment 39 which blends in with the accordioned wall segment 15, the latter being comprised of the adjacent corner radius at ring 34 (FIG. 3), the undulated valley segment 36 and the next enlargement ring therebelow of about the same diameter as the first ring 34. The undulated or accordion-like segment 15 at the top of the compartment is joined with the lower annular portion 38 that is contiguous with the remainder of the compartment wall 17 (see FIG. 3, left hand side). The inner annular wall portion 38 blends with a horizontal wall 21. The wall 21 joins the several compartment walls 38, their contiguous portion 17 just below the accordion segment 15 and the other contoured connector walls 28 to provide rigidity to the top and central portion of the carrier. Also in wall 21 is provided a means for grasping and carrying the carrier and containers held thereby at the horizontally spaced finger holes 23, each including a downturned pad 24 (see FIG. 2). The finger holes may be partially cut circles and fingers inserted at the time of use will fold the pad portion 24 vertically downwardly and inwardly providing a larger cushioned edge as a bearing support for the fingers in carrying the package 10.

Extending downwardly from and integrally with compartment walls 17 and horizontal wall 21 is the upwardly tapered and contoured connector walls 28 which blend with compartment walls 17. A second horizontal wall 27 is disposed below the level of the first or upper wall 21. The second wall 27 is integrally con-

nected with the first wall 21 by the vertical wall portions 28 and their compartment wall segments 17. The lower wall 27 lends structural support between the lower reaches of the compartments and the curved vertical walls 28 interconnecting the lower and upper wall structures to lend rigidity to the carrier 10. By locating the axial centers of the compartments in the carrier construction, containers 16 of a given size are substantially in wall-to-wall abutting contact at their assembly grouping. Perimeter or skirt wall 25 confines the grouping and prevents the sidewise movement of the containers individually within the carrier. The perimeter of the skirt wall 25 will relatively tightly fit the outer surfaces of the body walls of the containers in their grouping and encompass the grouping of containers to the extent the lower margin 30 of the skirt 25 will at least meet or overlap with any composite container coverings on the bottles 16.

The lower marginal edge of the perimeter skirt wall 25 is directed outwardly and laterally from the downward extent of the wall 25. This lateral flange portion 30 around the perimeter of the carrier provides several features: (1) the flange 30 is formed by the trim point in the die and is a convenient severing point on the die for trimming the carrier, (2) the flange 30 provides a reinforcement and adds "hoop" strength to the skirt of the carrier, (3) the flange 30 increases rigidity of the package in handling, and (4) the flange 30 provides a lateral surface for feeding the carrier from a magazine during machine assembly onto the grouped containers.

The yieldable means for retaining the containers by their neck bulged portion is shown best on FIG. 4. The lip or ledge 39 supports the vertical weight of the container in the compartment. The accordion-like segment through the wall sections 34, 36 provide a wall segment that is compressible by downward pulling force. Upon removal of a container from the carrier, the bottle is pulled down, compressing somewhat the bellows section, indicated generally at 15. The downward pulling force is first applied and then the bottle is cocked or twisted off its center line causing the bellows segment to compress more on one side of bottle engagement than on the other; whereupon the bottle bulge 40 will slide past a part of the carrying lip 39 and rim 35 at some point about the periphery. The lip 39 and rim 35 will then yield until the bottle bulge 40 and closure 32 are free of the carrier. This completes the bottle removal. In the carrying position, as long as the pull by the bottle weight on the carrier lip 39 is vertical and somewhat axial of the bottle center line, the bottle bulge portion 40 rides on the lip 39 on the compartment. When the downward force of the bulge 40 on lip 39 exceeds appreciably the weight of the filled bottle, the bellows section 15 yields downwardly. By downwardly compressing bellows 15 and applying twisting motion to the bottle relative to the center of bellows 15 of the compartment, easy removal of the container from the carrier is effected.

The structure just described provides a secure carrier for containers, such as bottles, and also provides an easy and convenient structure for hand removal of a selected container from the carrier for use without disturbing other containers in the carrier.

Having shown and described a preferred form of the invention, other forms and variations should occur to those persons skilled in the art. It is the purpose of this

disclosure to limit the scope of coverage of the invention only by the appended claims.

I claim:

1. A carrier for retaining an array of containers comprised of at least a pair of adjacently positioned containers arranged in upright, side-by-side relationship, comprising a one-piece cover element formed of a thermoplastic material having an endless upright perimeter wall adapted to extend around the array of containers for covering at least a portion of their axial length, individual cell-like compartments defined by a wall extending above and integral with said upright perimeter wall, each compartment being annular and adapted to correspond to and nest over the top of a container of said array, flexible container retaining means comprising a top segment of each said compartment wall encircling the upper part of a container, said encircling top segment wall being axially undulated to define an annular axially compressible and expansible accordion-like segment of said compartment wall terminating in a yieldable top lip and rim on the top of said compartment wall, said accordion-like segment comprising two or more undulated, annular, accordion folds along the wall adjacent said top lip thereof, the rim defining an aperture thereat slightly less in diameter than a top end annular bulged portion of the container, said top lip engaging the container to secure it in said compartment and suspend it for handling support by said cover element, and means formed in said cover element for hand grasping and carrying the carrier and contents in the compartments thereof.

2. The carrier of claim 1, wherein the undulated encircling top segment wall is of a diameter greater than the diameter of said aperture defined by said rim.

3. The carrier of claim 1, wherein the thermoplastic comprises a high density polyethylene.

4. The carrier of claim 3, wherein the wall thickness thereof is in the range 0.010 to 0.025 inches.

5. The carrier of claim 1, wherein the upright perimeter wall includes a laterally extending flange at the lower free edge thereof.

6. The carrier of claim 5, wherein said lateral flange extends in endless, peripheral fashion for the annular extent of the upright perimeter wall.

7. A carrier for retaining a grouped plurality of containers in side-by-side substantially abutting relation, each having annular enlargements at one end, and comprising a one-piece plastic member having upright walls defining cell-like compartments whose vertical axes correspond with the axes of said plural grouped containers, a horizontal wall integrally joined intermediate all of said upright walls, an annular lip having an

aperture defining, annular rim at the top of each said compartment, the inner diameter of said rim being slightly less than the outer diameter of the enlargement portion at the one end of the container to be received in said compartment, the lip being yieldable to receive the container through the aperture and engage and support the container beneath the enlargement portion, a vertical skirt wall encircling the grouped containers, the vertical skirt wall being integral and extending below the compartment upright walls, an annular portion of upright wall of each compartment extending above the horizontal wall and undulated in an axial extent to define an axially yieldable, annular accordion-like segment of the compartment wall integral with and adjacent said top lip and rim, said accordion-like segment of each upright compartment wall comprising two or more undulated annular accordion folds along said wall adjacent the annular rim.

8. In combination, a grouping of plural containers in upright position and in close wall-to-wall engagement, each of the containers including a bottom wall, body wall and an annular upper end portion, and a one-piece carrier for said grouping of containers, said carrier being integrally formed of a thermoplastic and including plural upright annular walls defining individual upright compartments for receiving at least the upper end of said containers, the top segment of each said annular compartment wall being undulated and yieldable in an axial extent to define a bellows portion thereof, said bellows portion comprising at least two undulated, annular, accordion folds, yieldable projection means extending radially inwardly of each of said compartments adjacent the top end of the bellows portion of the compartment wall engaging said annular upper end portion of each container for supporting each container in its respective compartment and including a terminal rim defining an upper aperture in the compartment wall for receiving the top end of the container by friction fit over a bulged end portion of the container, a vertical skirt wall in surrounding engagement with the body walls of the grouping of containers restraining the containers against substantial lateral movement in the compartments and with respect to each other, and a horizontal wall connecting each of said upright annular walls above said vertical skirt wall for structurally interconnecting said compartments and reinforcing said carrier.

9. The combination defined in claim 8, wherein the lower edge of said vertical skirt wall includes a horizontally extending portion disposed peripherally thereof for structurally reinforcing said skirt wall.

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