

July 29, 1952

M. I. WILLIAMSON

2,605,035

CARRIER FOR BOTTLES AND CANS

Filed Aug. 3, 1950

5 Sheets-Sheet 1

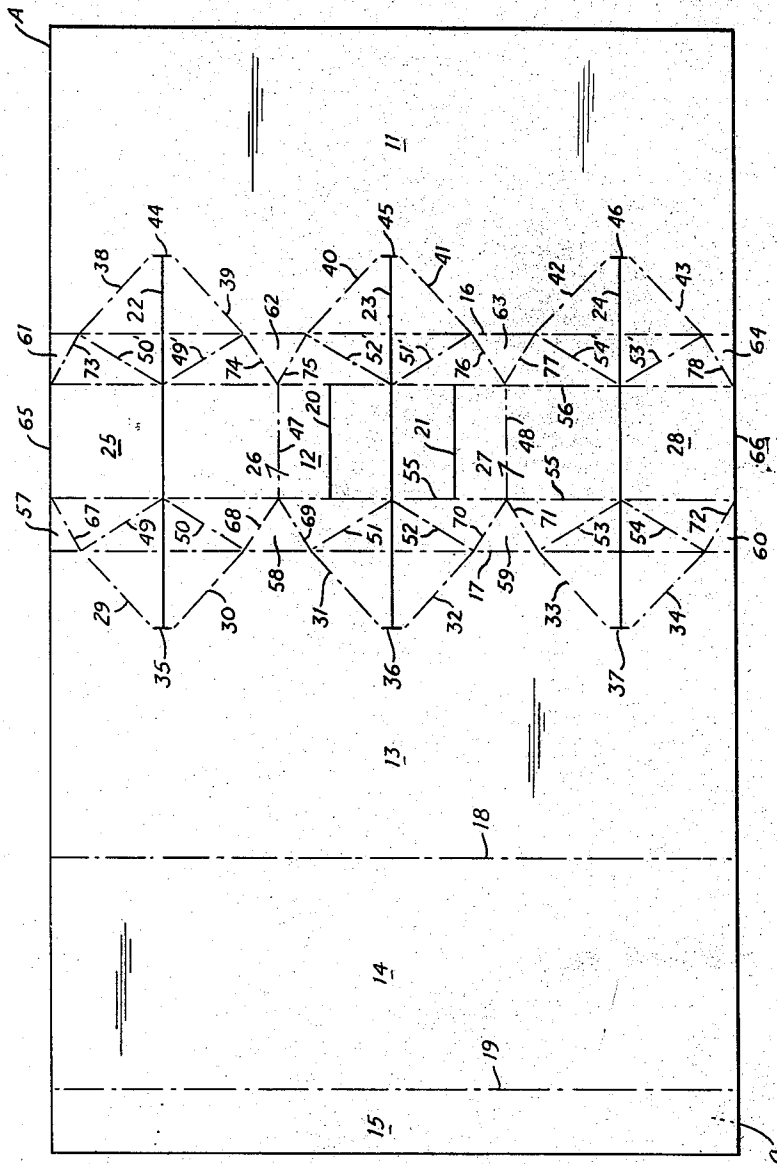


Fig. 1

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5 Sheets-Sheet 2

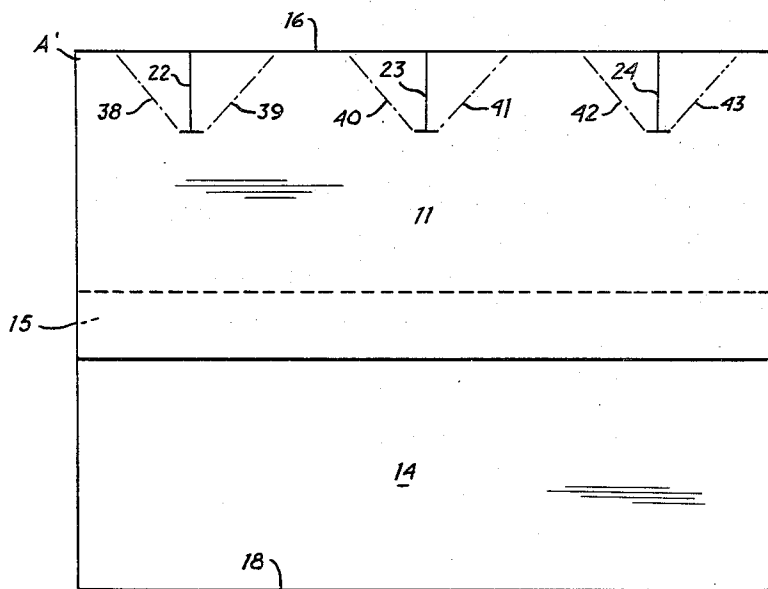


Fig. 2

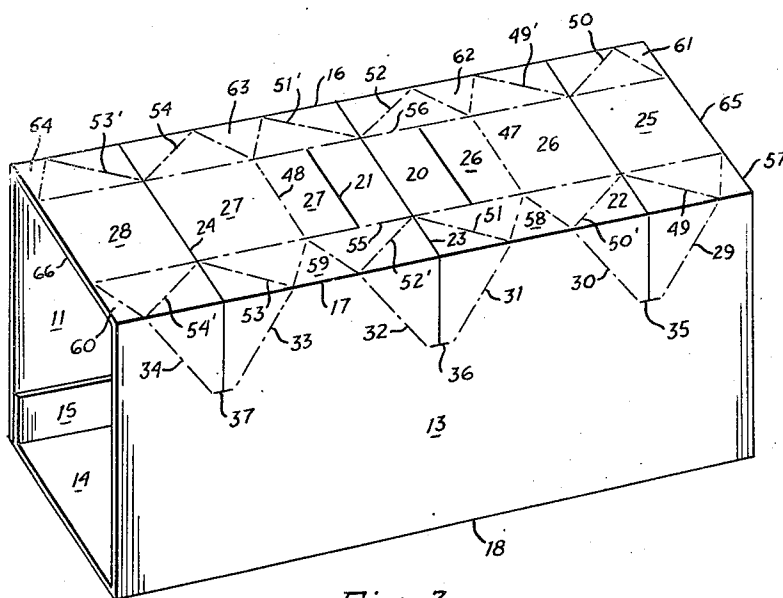


Fig. 3

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5 Sheets-Sheet 3

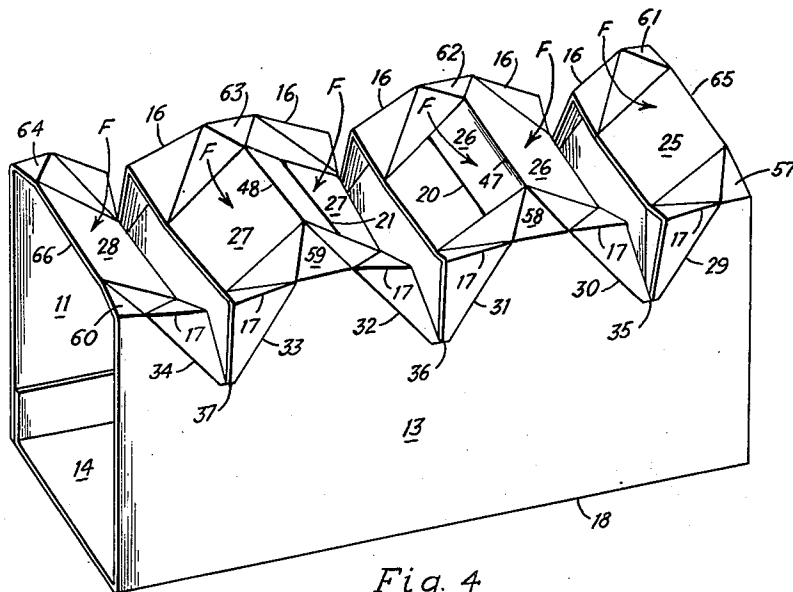


Fig. 4

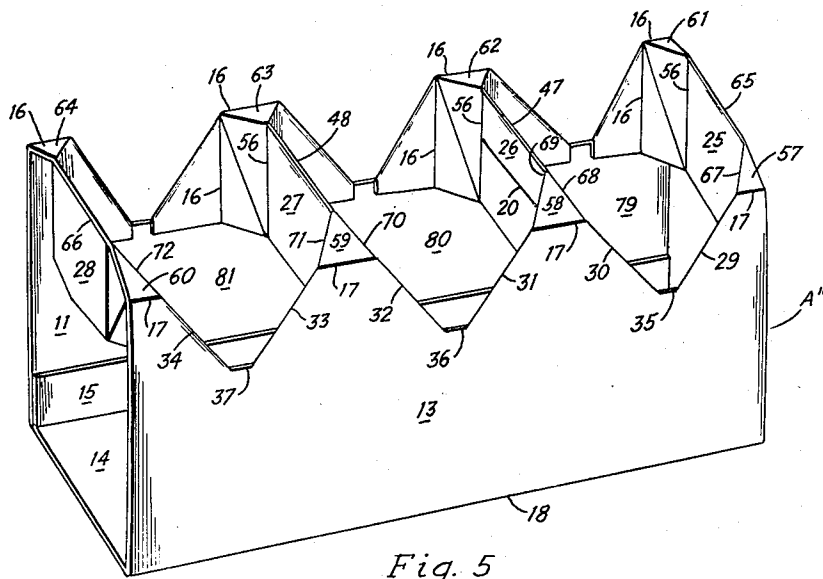


Fig. 5

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5 Sheets-Sheet 4

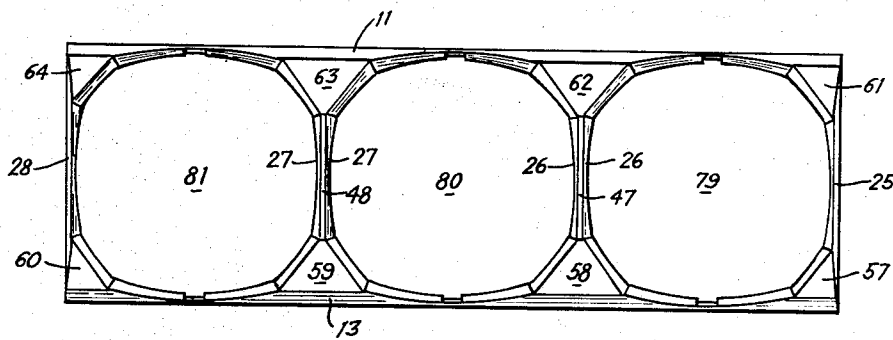


Fig. 6

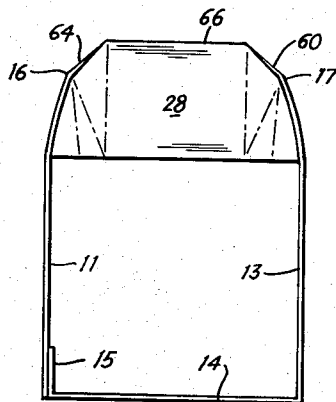


Fig. 7

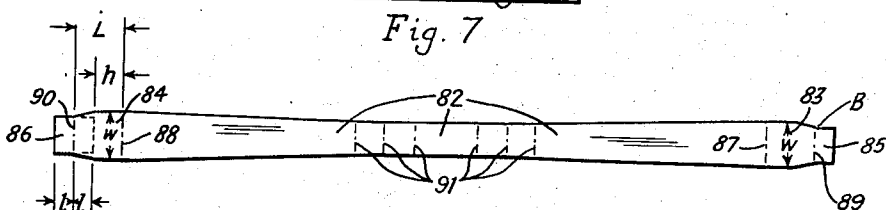


Fig. 8

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5 Sheets-Sheet 5

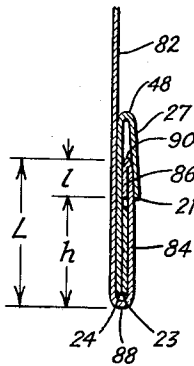


Fig. 10

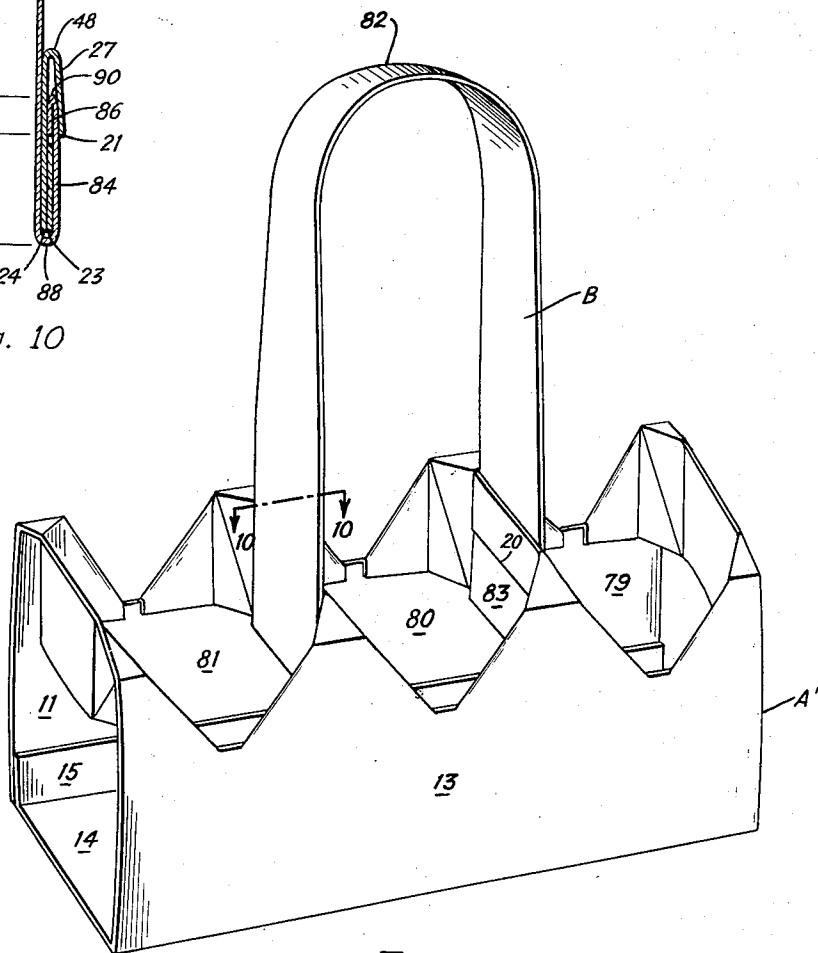


Fig. 9

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UNITED STATES PATENT OFFICE

2,605,035

CARRIER FOR BOTTLES AND CANS

Marshall I. Williamson, New Haven, Conn., assignor to National Folding Box Company, Inc., New Haven, Conn., a corporation of Connecticut

Application August 3, 1950, Serial No. 177,402

3 Claims. (Cl. 224-48)

1

This invention relates to improvement in carriers made from foldable sheet material, such as paperboard, for packaging a plurality of bottles, cans, jars, or similar articles as a unit which may easily be stacked by the dealer, carried home by the consumer and which, in addition, provides protection for the packaged articles.

Carriers of the aforementioned type are popularly referred to as "bottle carrier," and this term will be used hereinafter for convenience, although it is plain that a carrier for bottles is equally useful for the packaging of cans, jars, and similar articles of merchandise.

The commonly known carriers may be divided into two groups, a first group comprising those carriers in which the handle forms an integral, or non-detachable, part of the carrier body, and a second group comprising those carriers in which the handle constitutes a separate element which may be attached to, or detached from, the carrier body.

Carriers equipped with an integral handle generally have the disadvantage of requiring more stock than carriers within the second group. Also, the desirable feature of having a handle which extends above the tops of the bottles or other articles for convenient carrying and which is depressible below the tops of the bottles or articles to permit stacking of loaded carriers complicates the construction and increases the cost of the carrier.

Carriers with a detachable handle have become popular in recent years because of certain advantages. Firstly, less stock is required for the carrier body and, secondly, the assembly of the carrier body is generally simpler and less expensive than the assembly of a carrier body with an integral handle. Prominent among carriers with a detachable handle are those in which the handle is formed from a piece of bent wire. Wire handles are sturdy and have the advantage of being salvagable for reuse with a new carrier body, after the initial carrier body wears out, or is discarded by the bottler. Another advantage of the wire handle is the ease with which the handle can be made to telescope to move out of the way for the purpose of stacking loaded carriers.

However, the cost of wire handles is so high as to make their use prohibitive for one-trip carriers, and often uneconomical for carriers which make only a few round trips between the bottler and the consumer. In addition, the cost of each wire handle mounts, in effect, every time it must be detached from a used carrier body and reassembled with a new carrier body. Another factor

2

influencing the average cost of the wire handle is the fact that a certain percentage of handle equipped carriers are not returned, but are lost.

The present invention provides an improvement falling within the second of the aforementioned groups. The principal feature of the invention is the provision of a strap handle offering the same advantages as the conventional wire handle, but having the additional advantage of costing only fraction of the cost of a wire handle. Strap handles incorporating the present invention are conveniently made from paperboard. The board may, but need not necessarily, be reinforced with fabric or other reinforcing material, if the handle is to support an unusually great load or is to be used under unusually unfavorable conditions.

The idea of equipping a bottle carrier with a strap handle is basically not novel. Strap handles made from paperboard have previously been proposed for bottle carriers. However, the known strap handles, as far as can be ascertained, were constructed in such a form and were attached to the carrier body in such a way, as to become detached too easily.

The present invention is based on the recognition that the strength of the board used in a strap handle must be utilized in a most advantageous manner, if the handle is to remain securely attached to the carrier body, not only under ordinary conditions of use, but also under conditions of abuse, to which bottle carriers are frequently subjected. The strap handle provided by the present invention is particularly suited for use with a carrier body equipped with a plurality of transverse bottle separating top webs extending from one side wall of the carrier body to the other side wall, or from one side wall to a center partition and thence to the other side wall. The engagement of the strap handle provided by the present invention with the top webs is such that the strap handle engages the webs along the bottom edge of the webs, the handle being folded at the bottom edge and so constructed that unfolding under the load of the body is prevented. Likewise accidental disengagement of the handle from the carrier body when not loaded is prevented.

The invention will be specifically explained by reference to a particularly advantageous form of carrier body forming the subject matter of a separate copending application for Letters Patent of Marshall I. Williamson, Serial Number 157,195, filed April 21, 1950 now Patent 2,558,715. The carrier body comprises transverse webs con-

structed in such a way as to provide truss structures of extraordinary strength capable of distributing the total load evenly over the entire side walls of the carrier, and preventing concentration of the load at isolated transfer points to the handle, in distinction from conventional carriers equipped with wire handles which provide a point-to-point type of engagement between handle and body, rather than an engagement of the edge-to-surface type.

The various features, objects and advantages of the invention will appear more fully from the detailed description which follows accompanied by drawings showing, for the purpose of illustration, preferred embodiments of the invention as applied to an illustrative form of carrier body. The invention also consists in certain new and original features of construction hereinafter set forth and claimed.

Although the characteristic features of the invention which are believed to be novel will be particularly pointed out in the claims appended hereto, the invention itself, its objects and advantages and the manner in which it may be carried out may be better understood by referring to the description in which:

Figure 1 is a plan view of a flat blank from which a carrier body may be made;

Figure 2 is a plan view of a blank of Figure 1 after an initial gluing and folding operation resulting in a flat collapsed tubular structure;

Figure 3 is a perspective view of the blank of Figure 2 after expansion into hollow form;

Figure 4 is a perspective view of the expanded blank of Figure 3 in the process of formation of its cellular top web structures;

Figure 5 is a perspective view of the completed carrier body after formation of its top web structures;

Figure 6 is a plan view of the completed carrier body shown in Figure 5;

Figure 7 is an elevational side view of the carrier body shown in Figure 5;

Figure 8 is a plan view of a flat blank from which a strap handle may be made;

Figure 9 is a perspective view of the strap handle of Figure 8 attached to the carrier body of Figure 5; and

Figure 10 is a detailed sectional view taken on line 10-10 of Figure 9 illustrating the manner in which the handle engages the web of the carrier body.

In the following description and in the claims various details will be identified by specific names for conveniences. The names, however, are intended to be as generic in their application as the art will permit. Corresponding reference characters refer to corresponding parts in the several figures of the drawings.

In the drawings accompanying and forming part of this specification certain specific disclosure of the invention is made for the purpose of explanation of broader aspects of the invention, but it is understood that the details may be modified in various respects without departure from the broad principles of the invention and that the invention may be applied to other structures than the ones shown.

The blank A is shown in Figure 1 and may be cut and scored, in multiple, from large rolls or sheets of foldable sheet material such as paper-board, on automatic cutting and scoring machines. The several constituent parts of the blank are set apart by fold or crease lines. The blank comprises a side wall panel 11, a top wall

panel 12, a further side wall panel 13, a bottom wall panel 14 and a glue lap 15 hingedly interconnected along fold lines 16, 17, 18, and 19, respectively. Slits or apertures 20 and 21 are cut in the top panel 11 for convenient attachment of the handle, as will later appear.

The top panel 12 and adjoining portions of the side wall panels 11 and 13 are cut and scored to provide a cellular web structure forming individual compartments for bottles or other forms of merchandise. Cuts 22, 23 and 24 extend at right angles to the fold lines 16 and 17. These cuts separate the stock into webs 25, 26, 27 and 28 which after appropriate folding form article receiving cells as will later appear.

The webs are foldable at a plurality of fold lines. These fold lines include diagonal or oblique fold lines 29, 30, 31, 32, 33 and 34 extending from short terminal cuts 35, 36 and 37 to the transverse fold line 17 at an angle. Similar diagonal fold lines 38, 39, 40, 41, 42 and 43 extend from similar short terminal cuts 44, 45, and 46 to the transverse fold line 16 and preferably include between themselves the same angle as the fold lines 29, 30, 31, 32, 33 and 34. The webs 25 and 28 constitute terminal webs since they lie at the outer edges of the blank. The webs 26, and 27 constitute intermediate webs. These intermediate webs comprise ridge fold lines 47 and 48 to provide for double ply thickness of the intermediate webs, as will later appear.

Folding of the web structure is facilitated by a plurality of crease lines 49, 49', 50, 50', 51, 51', 52, 52', 53, 53' and 54, 54'. These crease lines subdivide the several webs into individual web portions. It is evident that the angles at which these crease lines intersect, as well as their outline, depends on the width of the panel 12, measured between the fold lines 16 and 17, as well as on the depth or height of the respective webs in the finished carrier body.

Further transverse fold lines 55 and 56 extend across the blank to facilitate folding of the webs as will later become apparent.

Triangular panels 57, 58, 59, 60, 61, 62, 63 and 64, extend with their apexes from either end of the ridges of the webs. These ridges, as will later appear, are formed by the ridge fold lines 47 and 48 and by the outer edge portions of the outer edges 65 and 66 of the blank A. The triangular panels are bounded by the transverse fold lines 17 and 16, respectively, forming the bases of the triangles, and by further fold lines 67, 68, 69, 70, 71, 72 and 73, 74, 75, 76, 77 and 78, forming the sides of the triangles.

The assembly of the carrier body from the blank A may proceed as follows:

Adhesive *a* is first applied to the terminal glue lap 15 and the blank is folded about the fold line 18 to bring the panel 14 face-to-face with the panel 13. Thereafter the blank is folded about the fold line 19 and the terminal portion of the panel 11 is pressed into adhesive engagement with the glue lap 15. The resulting tubular structure A' is shown in Figure 2 and is ready for expansion into hollow form. Flat tubular blanks may be stored and shipped to the user in flat collapsed condition, requiring a minimum of space and may be set up in expanded form by a relatively simple assembly operation which may be performed at the bottling plant. These operations will now be described.

The tubular blank A is first squared to assume a substantially rectangular shape as shown in Figure 3. Article receiving cells 79, 80 and 81 are

5

then formed, and the blank is fixed in expanded position by exertion of force in the direction of arrows F against the several web panels 25, 26, 27 and 28. This force causes the web panels to move towards a vertical position with respect to the bottom panel 14. Simultaneously the ridges 65, 47, 48 and 66 are raised and the triangular panels 57, 58, 59, 60 and 61, 62, 63 and 64 assume a slanting position as shown in Figure 4. Further pressure against the web panels and supplementary pressure against the tilting edges 16 and 17 causes the web panels to assume their final vertical position which they then automatically maintain due to a peculiar behavior inherent in the illustrated structure which may be compared to the action of the commonly known over-center spring which snaps into one or the other of two extreme positions after being forced past its center position. A center position is encountered in the present assembly between the positions of the edges 16 and 17 in Figures 4 and 5 respectively, and the aforementioned supplemental pressure exerted against these edges causes the web assembly to snap into the position shown in Figure 5.

The carrier body thus formed is extremely rigid and resistant to deformation due to the truss-like construction of the webs dividing the cells 79, 80 and 81 from one another.

Figures 6 and 7 show the completed carrier body in plan view and in end view respectively. It is apparent from both figures that the side walls 11 and 13 have a tendency of sloping inwardly at about the height of the webs, and this inward slope then continues, in the manner of a mansard roof, in the triangular panels from whose apexes the horizontal ridges 65, 47, 48 and 66 extend.

The resulting carrier body possesses a surprising amount of strength and rigidity to a lifting force applied at the lower edges of the bottle separating webs, particularly to the webs 26 and 27 which are of double ply thickness. This peculiarity makes the carrier body admirably suited for use with a strap handle which will now be described.

Referring to Figure 3 the flat blank B of the strap handle consists of a central hand grip portion 82, intermediate portions 83 and 84 and end portions 85 and 86. The intermediate portions 83 and 84 are hingedly connected to the central portion 82 along fold lines 87 and 88, and the end portions 85 and 86 are articulated to the intermediate portions 83 and 84 in a similar manner along fold lines 89 and 90. The central portion 82 of the strap handle blank may include a plurality of scores 91 to facilitate subsequent flexing of the handle into U-shape. However, the scores 91 are not indispensable and may be omitted.

The blank B is made from paperboard, preferably board having substantial tear strength. Kraft is suitable stock for the handle and the grain should preferably run lengthwise of the handle. Ordinarily it can be used in single ply strength without reinforcement. However, if the handle is to be used under particularly unfavorable conditions, if the load is exceptionally great, or if it is desired to use stock of lower grade for the handle, the blank B may be made of laminated stock particularly stock including a fabric ply.

The shape of the blank B is optional. It may be made of equal width throughout, or, as shown in Figure 8, the central portion may be made

6

progressively narrower for more convenient gripping of the strap by hand. In the latter case the handle blanks may suitably be laid out in a continuous strip of board in such a way that the wider end portions of two handle blanks lie adjacent the narrow portion of an adjacent handle blank. It is preferable, although not necessary, to make the intermediate portions 83 and 84 of a width w substantially equal to the width of the panels 26 and 27 of the webs, as measured between the fold lines 55 and 56.

The length L of the intermediate portions 83 and 84 is less than the length of the panels 26 and 27, as measured between the fold line 47 and the edges 22, 23 and, with respect to panel 27, measured between the fold line 48 and the edges 23 and 24. The length l of the end portions 85 and 86 is so dimensioned that in folded-over position indicated in Figure 8 in dotted lines, the terminal edge of the end portions 85 and 86 is at a distance h from the fold lines 87 and 88. This distance h should be equal to, or slightly more than, the distance of the cuts 20 and 21 from the edges 23. The relative dimensions are also shown in Figure 10 in which the end of the handle is illustrated inserted into the web 27.

The assembly of the strap handle B with the carrier body A' is simple and may be performed as follows:

The blank B of the handle is flexed into substantially inverted U-shape. The intermediate panel portions 83 and 84 are folded at their respective fold lines 87 and 88, and the end panel portions 85 and 86 are folded at their fold lines 89 and 90. Thus folded the ends of the handle are inserted into the slits 20 and 21 far enough to cause the terminal edges of the end portions 85 and 86 to snap past the lower edges of the cuts 20 and 21, as shown in Figure 10.

The assembled handle is shown in perspective in Figure 9. The handle is very secure, and comparable in strength and load carrying capacity to the best conventional wire handles in spite of its far lower cost. For convenience of stacking loaded carriers the handle may be depressed into a position below the tops of bottles, cans, jars, or other articles in the carrier. Pressure on the top of the handle deforms the handle slightly. This deformation, however, does not cause the handle to become disengaged from the transverse webs 26 and 27. The portions 83 and 84 of the handle are maintained in locked position by the end flaps 85 and 86 which engage with their terminal edges the edges formed in the webs 26 and 27 by the cuts 20 and 21.

Even if, in depressing the handle as mentioned above, the terminal edges of the flaps 85 and 86 do not engage the edges of the web cuts 20 and 21, the handle still will not disengage from the carrier body since the stiffness of the handle material at the fold line 90 causes the flaps to pass inside—not outside—the cuts in the webs.

The invention thus provides a strong and efficient handle for carriers comparable in strength to the best wire handles heretofore proposed. The improved strap handle can be produced at a fraction of the cost of a wire handle, and rests in the hand of the user more comfortably than a wire handle because of its larger grip surface. It has the advantage over the wire handle of engaging the carrier blank along the extended bottom edges of the webs rather than at isolated points of engagement as would be the case if a wire handle were used.

The carrier is considerably more reliable than

any paperboard carrier with strap handle heretofore proposed in that its strength is not affected by swinging or rocking the loaded carrier about the point at which the handle is gripped by the user. The strength of the handle in this respect arises from the fact that the load is carried at creases of the handle and not at interlocks, cut edges, or projections which provide an edge-to-edge rather than an edge-to-surface engagement. This is a critical difference over known carriers which are extremely sensitive to such rocking which tends to disengage lock tabs at the ends of the strap handle from the carrier body. The present design avoids this weakness by critical changes of design without complicating the assembly of the carrier and handle or increasing their cost.

What is claimed is:

1. A merchandise carrier comprising, a carrier body consisting of a sheet of foldable material and including a bottom wall, side walls, and merchandise separating top webs extending substantially at right angles with respect to the side walls and to the bottom wall, at least two of said top webs being of double thickness, the two plies being folded face-to-face about a ridge fold line, one of said plies of the two top webs having a substantially horizontal slit therein; and a handle consisting of a separate strip of foldable sheet material, said handle including a central hand grip portion flexed substantially in the shape of an inverted U, an intermediate portion articulated to either end of the central portion and foldable back upon the central portion, and an end portion articulated to each of said intermediate portions and foldable back upon said intermediate portion to lie between said intermediate portion and said central portion, said intermediate portions and said end portions being insertable through the slit in each of the two top webs in folded-back position, with the respective top webs lying between the intermediate portion and the central portion of the handle, the terminal edge of the end portions lying in edge-to-edge abutting relation with the lower edge formed in said two webs by each of said slits, thereby preventing withdrawal of the handle from said slits in a downward direction when the handle is depressed.

2. A handle, particularly for use with a merchandise carrier body of the type consisting of a sheet of foldable material and including a bottom wall, side walls, and merchandise separating top webs extending substantially at right angles with respect to the side walls and to the bottom wall, two of said webs being of double ply thickness and having substantially horizontal slits in one thickness; said handle consisting of a separate strip of foldable sheet material, said handle including a central grip portion bendable substantially in the shape of an inverted U, an intermediate portion articulated to either end of the central portion and foldable back upon the central portion, and an end portion articulated to

each of said intermediate portions and foldable back upon said intermediate portion to lie between said intermediate portion and said central portion, the distance of the terminal edge of the folded-back end portion from the line of articulation between said central portion and said intermediate portion being not less than the distance of the slit from the bottom edge of the web containing the slit, said handle being insertable with its intermediate and end portions through said slits into the space between the double plies so that the bottom edge of the two ply web of the carrier rests in the space between the central portion and the folded-back intermediate portion when the carrier is lifted up by the handle, withdrawal of the handle being prevented by an edge-to-edge abutment between said end portions and the lower edge formed by each of said slits.

3. A merchandise carrier comprising, a carrier body consisting of a sheet of foldable material and including a bottom wall, side walls, and merchandise separating top webs extending substantially at right angles with respect to the side walls and to the bottom wall, certain of said webs being of double thickness and having a slit in one of the two thicknesses; and a handle consisting of a separate strip of foldable sheet material, said handle including a central hand grip portion bendable substantially in the shape of an inverted U, an intermediate portion articulated to either end of the central portion and foldable back upon the central portion and about one of said double thickness webs, so that the web rests in the fold between the central portion and the folded-back intermediate portion, the length of said intermediate portion being less than the height of the web it engages, and an end portion articulated to each of said intermediate portions, said end portion being foldable back upon the intermediate portion and insertable into said slit, the length of said end portion being sufficiently short that its terminal edge lies above said slit when the web rests in the fold between the central and the intermediate portion, the terminal edge preventing withdrawal of said handle from said slit by edge-to-edge abutment with the lower edge formed by said slit.

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