

June 26, 1951

M. I. WILLIAMSON

2,558,712

BOTTLE CARRIER

Filed Dec. 24, 1949

5 Sheets-Sheet 1

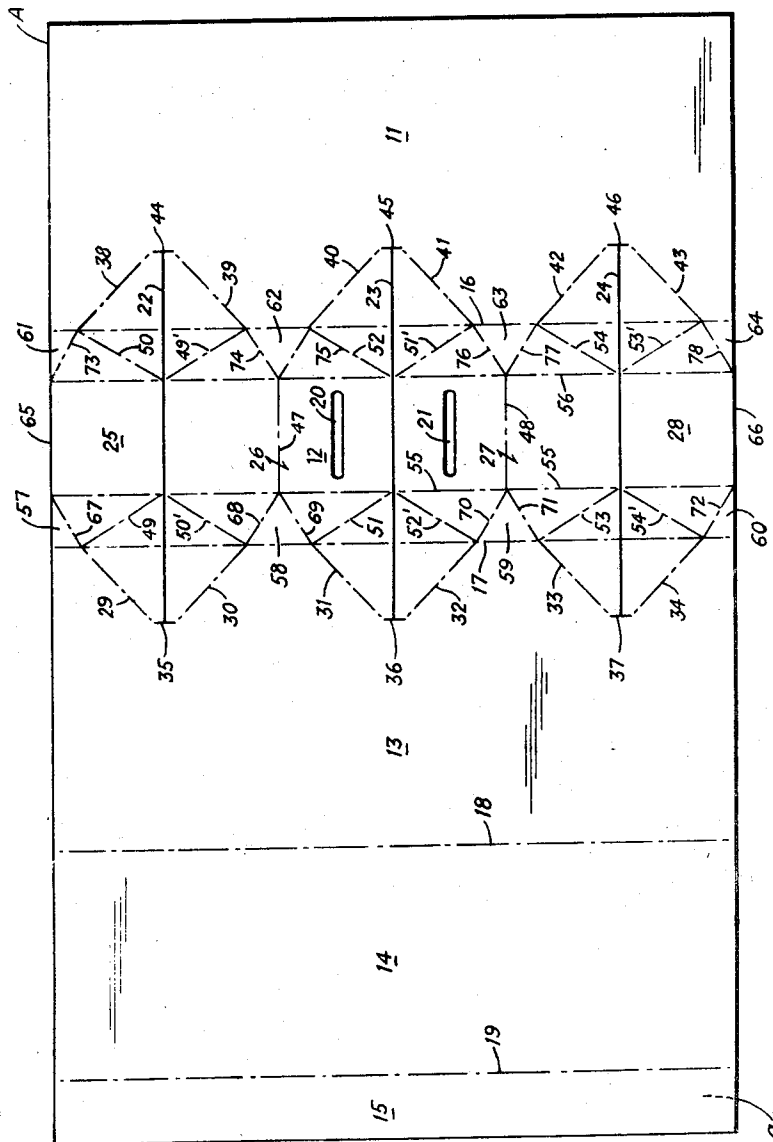


Fig. 1

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5 Sheets-Sheet 2

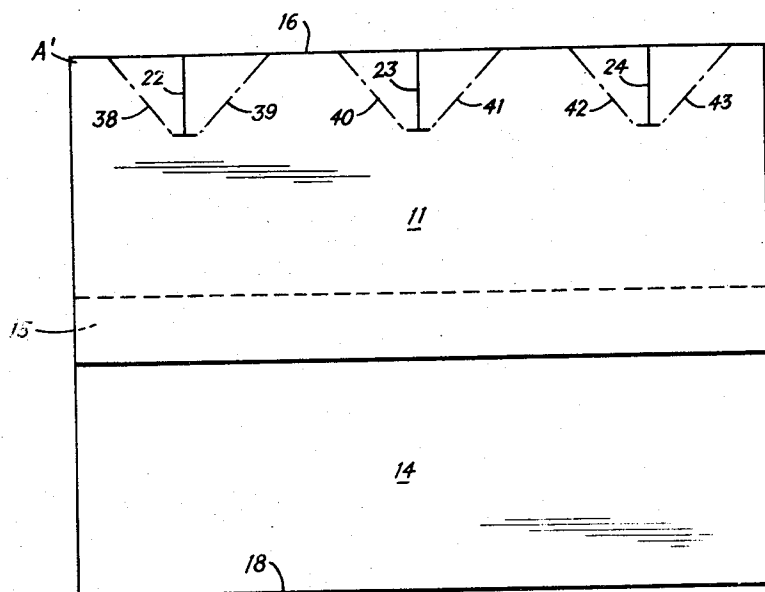


Fig. 2

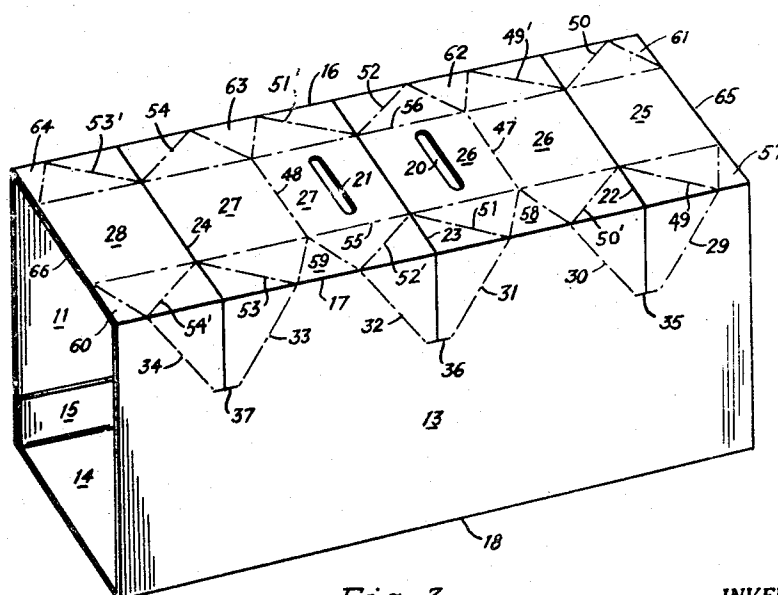


Fig. 3

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5 Sheets-Sheet 3

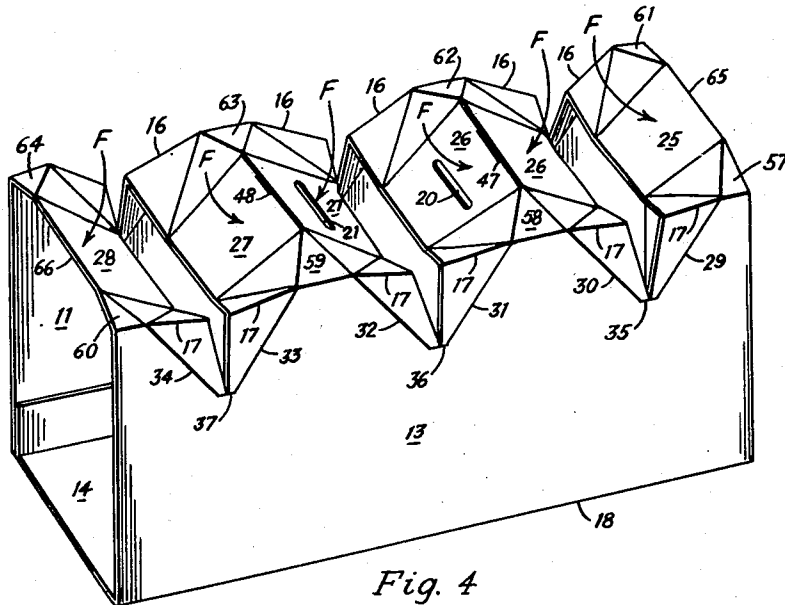


Fig. 4

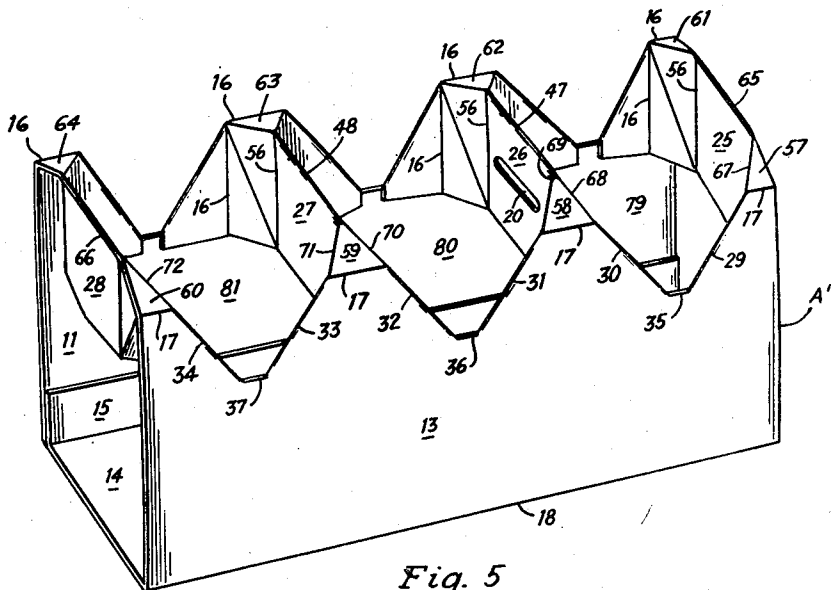


Fig. 5

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5 Sheets-Sheet 4

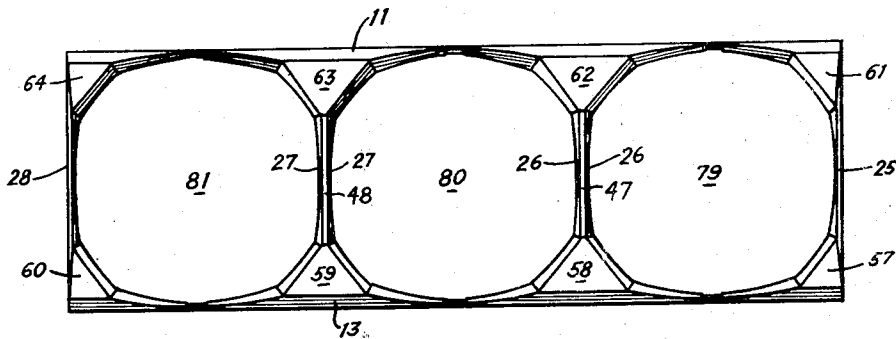


Fig. 6

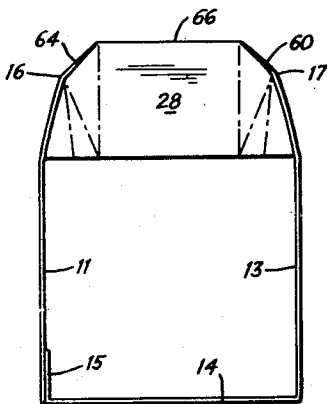


Fig. 7

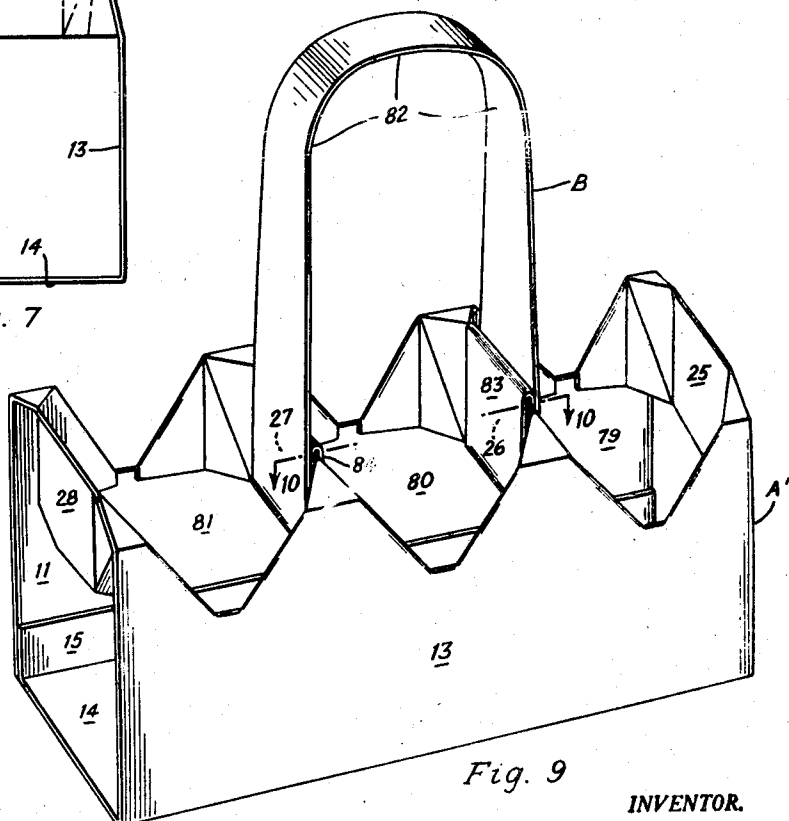


Fig. 9

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5 Sheets-Sheet 5

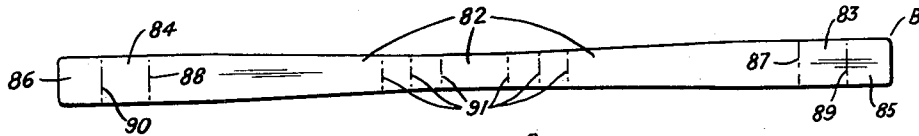


Fig. 8

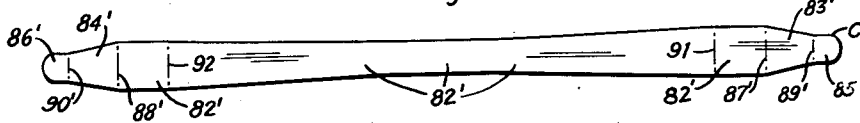


Fig. 11

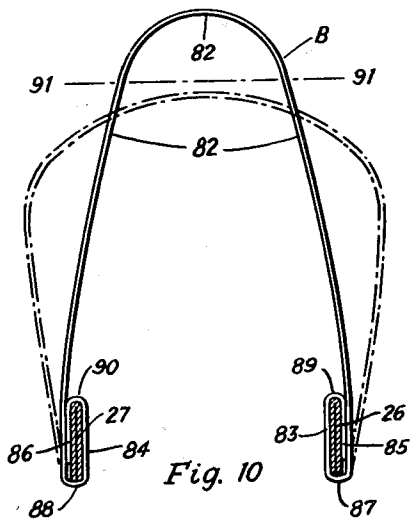


Fig. 10

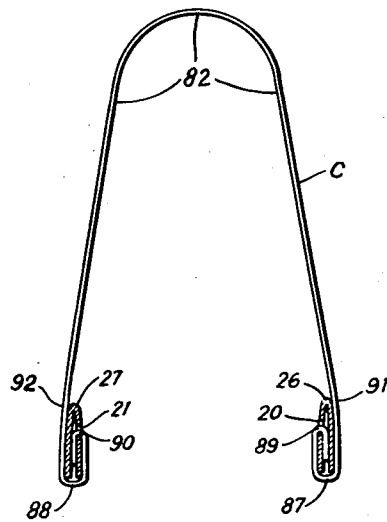


Fig. 12

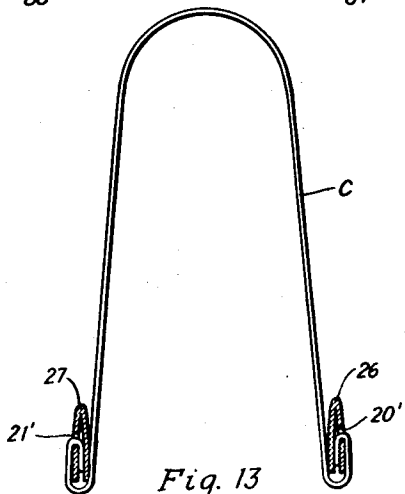


Fig. 13

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2,558,712

BOTTLE CARRIER

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Application December 24, 1949, Serial No. 134,887

4 Claims. (Cl. 224-48)

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This invention relates to improvements 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 carriers," 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 bottle 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 second group. Also, the desirable feature of having a handle which extends above the tops of the bottles for convenient carrying and which is depressible below the tops of the bottles 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 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 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 a carrier 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 a 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 may be attached to any 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.

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. The carrier body comprises transverse webs constructed 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 improved strap handles provided by this invention are equally useful for carrier bodies in which the transverse webs are of single ply strength as they are for those in which the webs are of double ply strength.

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 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 blanks 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;

Figure 10 is a detailed sectional view taken on line 10—10 of Figure 9 illustrating the handle in carrying position in solid lines and in depressed position in broken lines;

Figure 11 is a plane view of the modified form of blank of a strap handle; and

Figures 12 and 13 are sectional views taken on line 10—10 of Fig. 9 and illustrating two different modes of attachment of the handle to transverse webs of the carriers.

In the following description and in the claims various details will be identified by specific names for convenience. 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, a 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 as shown in Figure 1 may be cut and scored, in multiple, from large rolls or sheets of foldable sheet material such as paperboard, 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. Elongated apertures 20 and 21 may be cut in the top panel 11 for convenient attachment of certain forms of 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 line 16 and 17 as well as 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 and 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 16 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 into final form by a relatively

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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 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 assemblies 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 8 the flat blank B of a 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 length wise 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

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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 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 portion 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 substantially equal to the width of the panels 26 and 27 of the webs, as measured between the fold lines 55 and 56.

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 first flexed into substantially inverted U-shape. The intermediate panel portions 83 and 84 are then folded at their respective fold lines 87 and 88 about the webs 26 and 27, respectively, and the end panel portions 85 and 86 are folded at their fold lines 89 and 90 and inserted between the webs 26 and 27 and the upwardly extending central portions 82 of the handle. The stiffness of the stock keeps the end portions 85 and 86 securely clamped against the webs 26 and 27.

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 in the carrier, the height of the bottles being indicated by a line 91 in Figure 10. Pressure on the top of the handle causes the handle to become deformed substantially into the shape shown in broken lines in Figure 10. This deformation, however, does not cause the handle to become disengaged from the transverse webs 26 and 27. The end portions of the handle 85 and 86 are maintained in their handle securing position not only by the stiffness of the stock of the handle but also by the pressure of bottles or other articles within the pockets 79, 80 and 81 bearing against the handle portions 82, 84 and 83, 85, respectively. The pressure of the bottles makes it obviously impossible to disengage the handle from the carrier body. This is a particular safety feature of the handle construction.

As will be shown, the ends of the handle may be secured in other ways. Figures 11, 12 and 13 illustrate a suitable modification of the handle construction and assembly. Primed reference numerals are employed to identify corresponding blank portions.

The handle blank C comprises a central handle panel 82', intermediate panels 83' and 84', and end panels 85' and 86', hingedly connected to one another along fold lines 87', 88', 89' and 90'. The length of the end panels 85' and 86' is preferably less than the length of the intermediate panels 83', and 84', and the intermediate panels, in turn, are shorter than the height of the webs of the carrier body the handle is to engage. This relationship is more particularly apparent from Figures 12 and 13.

Auxiliary fold lines 91 and 92 may be provided within the central hand grip portion to facilitate

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assembly of the handle with the carrier body. These auxiliary fold lines may be spaced from the fold lines 87' and 88' a distance substantially equal to the height of the webs 26 and 27, but the spacing may be greater or less.

The assembly of the handle with the carrier body is evident from Figure 12. The handle blank is first fixed into substantially U-shape and the ends of the blank are then folded at their respective fold lines 87' and 88' to engage the webs 26 and 27, and the end of the blank 85' and 86' are folded back and inserted into the apertures 20 and 21 to rest between the two plies of the webs. It is apparent that if the engaged webs were only of single ply strength the ends 85' and 86' will rest between the plies of the webs and the upwardly extending central portion of the handle in assembled position. Insertion of the ends 85' and 86' into the apertures 20 and 21 is facilitated by folding the blank at the auxiliary fold lines 91 and 92. Subsequent upward pull at the central portion then causes the handle to assume the position shown in Figure 12, and the handle to straighten out at the auxiliary fold lines.

Figure 12 illustrates an assembly in which the handle passes through the outer cells of the carrier and the ends of the handle blank extend upwardly within the central cell. It is evident that the handle may also extend with its central portion through the central cell so that its ends fold upwardly within the space of the outermost cells. This arrangement is shown in Figure 13, in which the same handle blank C is used, the carrier body differing only in one detail, namely in the position of the apertures 20' and 21' which are found in the outer plies of the webs 26 and 27.

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 provides 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 bottle carrier comprising, a carrier body consisting of a sheet of foldable material and including a bottom wall, side walls, and bottle separating top webs extending substantially at right angles with respect to the side walls and to the bottom wall; and a handle consisting of a separate strip of foldable sheet material, said

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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 about one of said top webs, so that the web rests between the central portion and the folded back intermediate portion, and an end portion articulated to each of said intermediate portions and foldable back upon said intermediate portion about at least a portion of said webs to hold said handle in place.

2. A bottle carrier comprising, a carrier body consisting of a sheet of foldable material and including a bottom wall, side walls, and bottle separating top webs extending substantially at right angles with respect to the side walls and to the bottom wall, certain of said webs having a slit therein extending substantially parallel to the bottom wall; 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 about one of said top 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 to hold the handle in place.

3. A bottle carrier comprising, a carrier body consisting of a sheet of foldable material and including a bottom wall, side walls, and bottle separating top webs extending from one side wall to the other and forming with the side walls a plurality of pockets in which bottles may be seated in single file, said webs including a main portion extending substantially at right angles to the side walls and to the bottom wall; 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 about the main portion of one of said top webs, so that the main portion of the web rests in the fold between the central portion and the folded back intermediate portion, and an end portion articulated to each of said intermediate portions and foldable back upon said intermediate portion about at least a portion of said main web portion at a point where the bottles bear against said main web portion, whereby the handle is held in place.

4. A bottle carrier comprising, a carrier body consisting of a sheet of foldable material and including a bottom wall, side walls, and bottle 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 two-ply thickness, the plies being folded face-to-face about a top fold line, certain of the webs having a slit in at least one of the plies; and a handle made from 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 por-

tion and about one of said top 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 to hold the handle in place.

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