United States Patent [19]

Wright

[11] **3,724,714**

[45] **Apr. 3, 1973**

[54] BEVERAGE BOTTLE CARRIER

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[73] Assignee: **The C. W. Zumbiel Company**, Cincinnati, Ohio

[22] Filed: **Apr. 28, 1971**

[21] Appl. No.: **138,050**

[52] **U.S. Cl.** **220/113**

[51] **Int. Cl.** **B65d 75/00**

[58] **Field of Search** 220/113, 115

[56] **References Cited**

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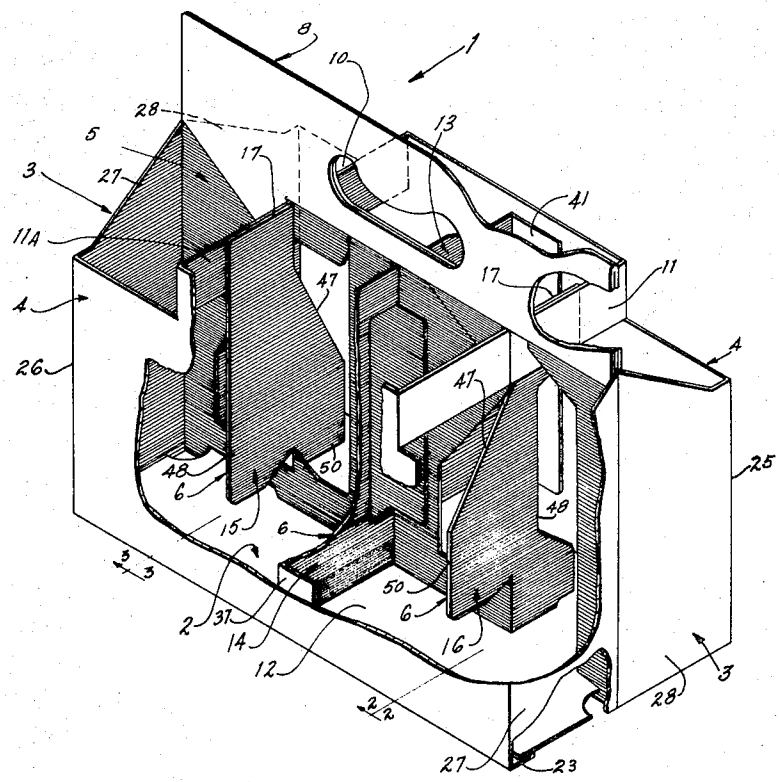
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[57] **ABSTRACT**

A bottle carrier formed from a one-piece paperboard sheet blank in which the bottles are segregated and confined in individual cells to prevent them from contacting one another during transport and handling. The carrier, in general, comprises an open container having a longitudinal centralized partition, rising from its bottom and including an upstanding hand grip portion. The carrier body or container, in which the bottles are confined, includes a central toggle separator which subdivides and reinforces the carrier transversely. Transverse straps extend from opposite sides of the longitudinal partition outwardly to the side walls, with cantilever separators connected to the straps.

The carrier may be furnished in assembled flat condition, the several components being joined by adhesive or the like, with the side walls folded inwardly against the longitudinal partition and with the transverse components folded between the longitudinal partition and side walls for compactness during shipment. Upon assembly, the toggle separator, transverse straps and cantilever separators hingedly swing to the right angular position as the side walls separate, thereby completing the erection of the carrier, such that the carrier is in a condition to be loaded with the bottles for use in handling and transport.

7 Claims, 9 Drawing Figures



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SHEET 1 OF 5

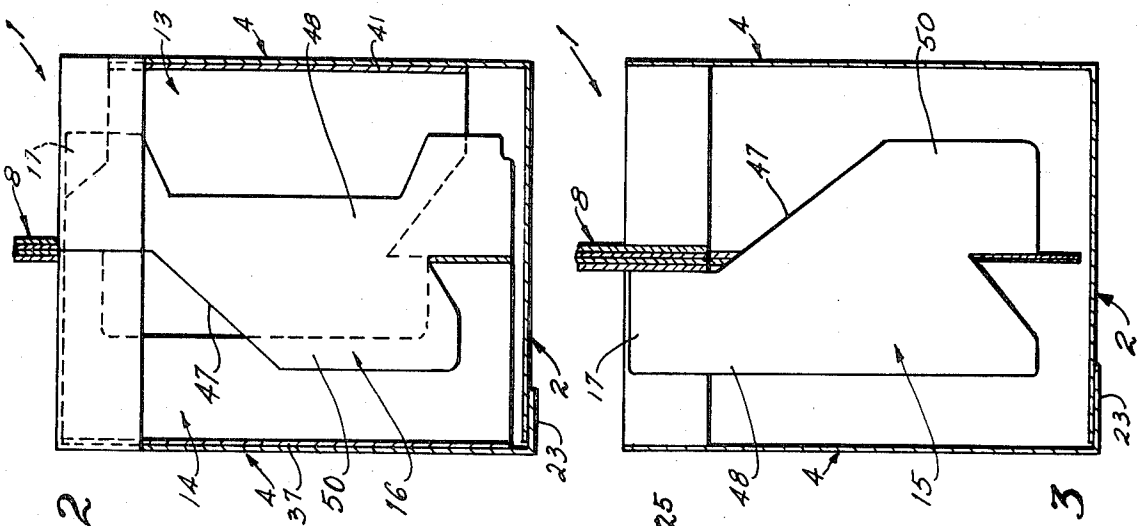


Fig. 2

Fig. 3

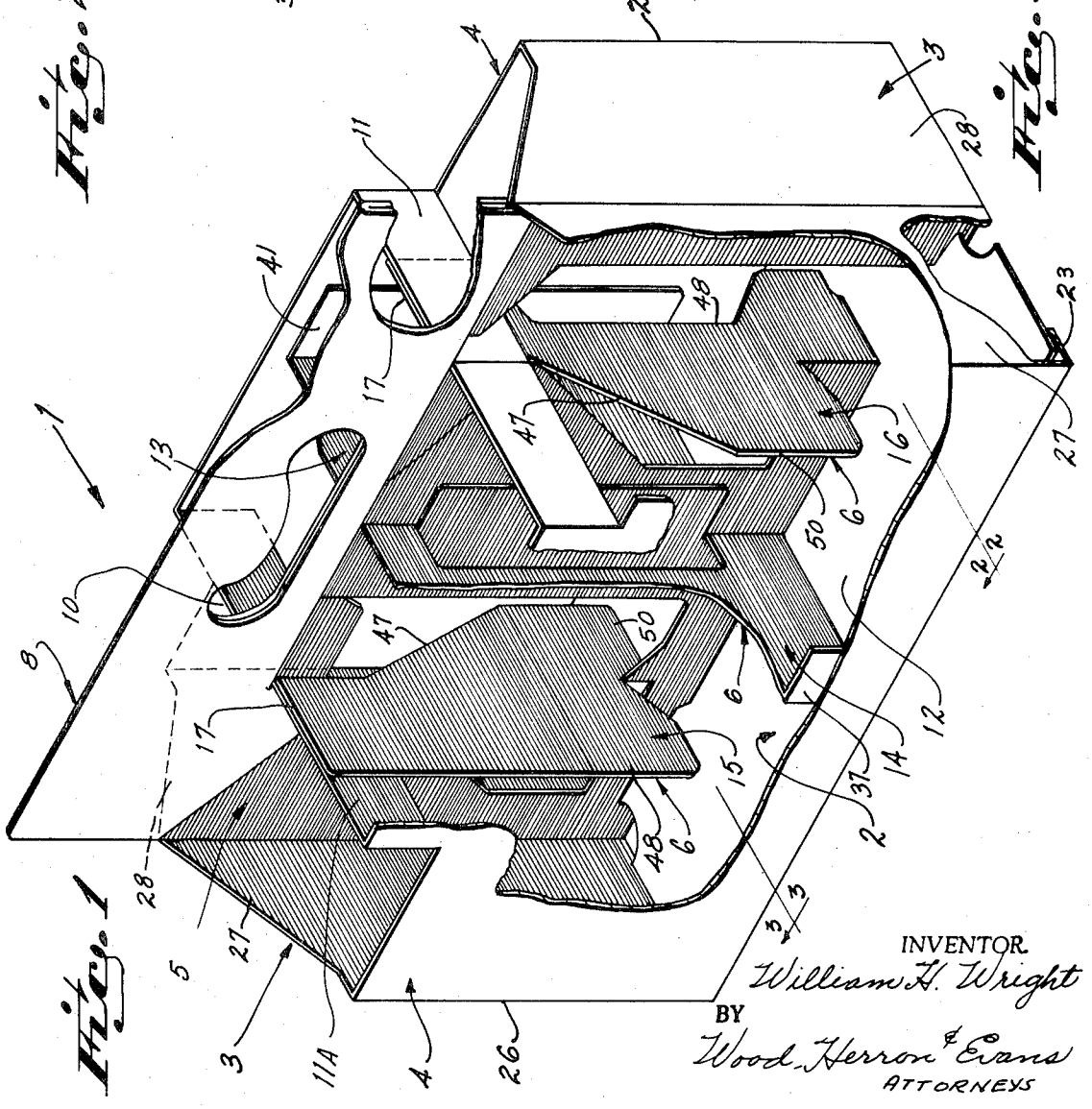


Fig. 1

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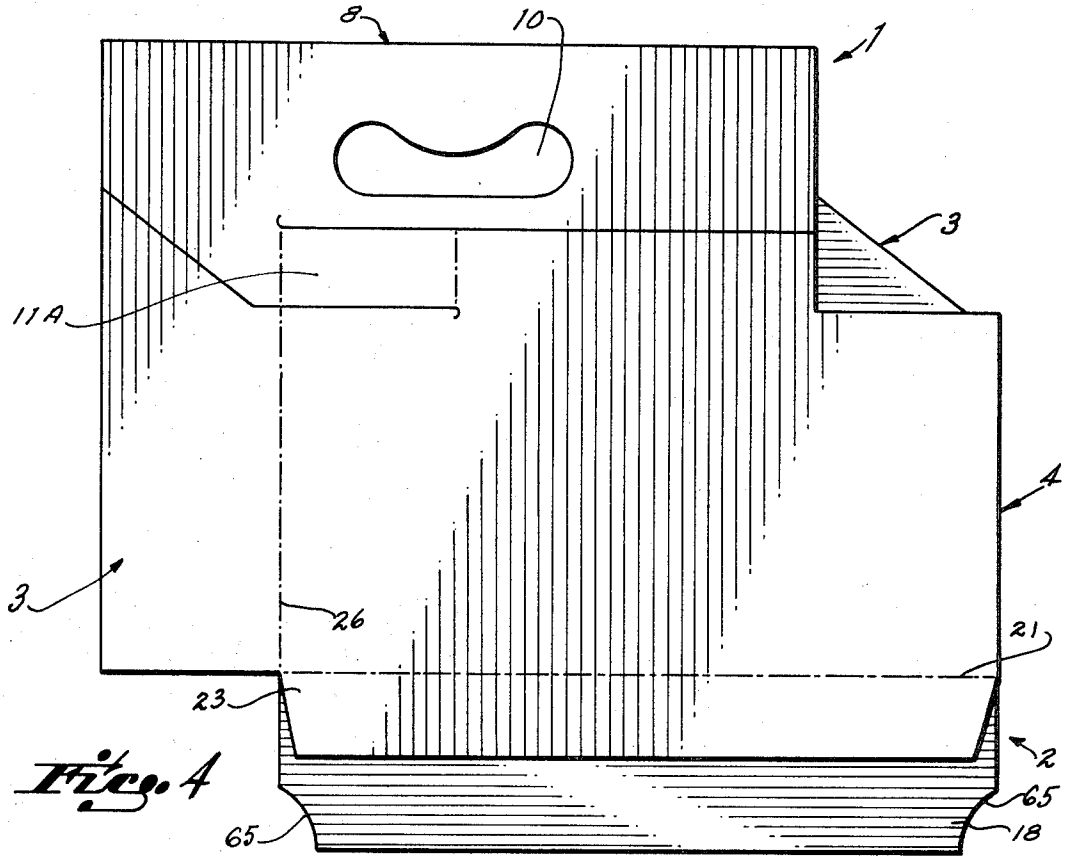


Fig. 4

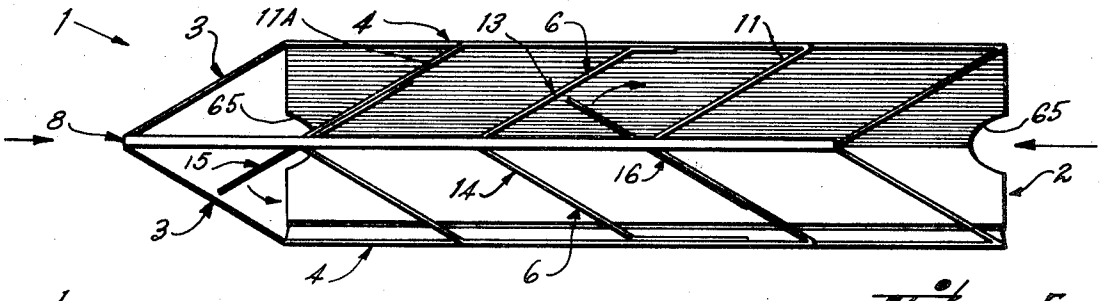


Fig. 5

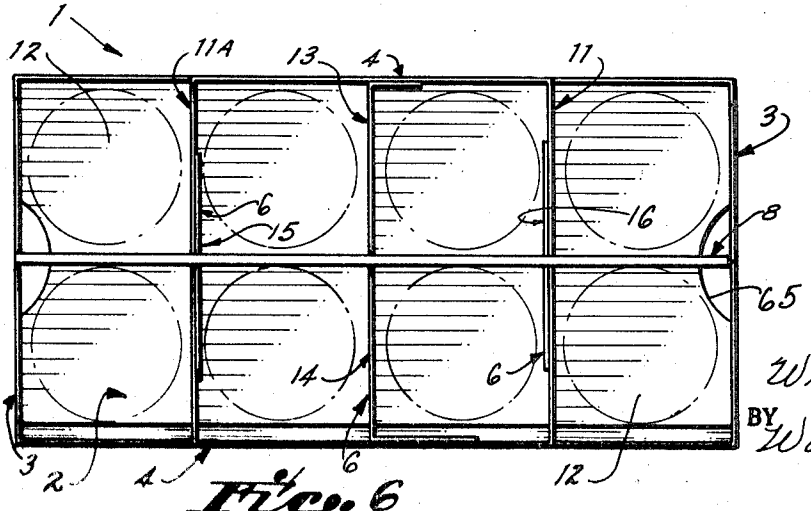


Fig. 6

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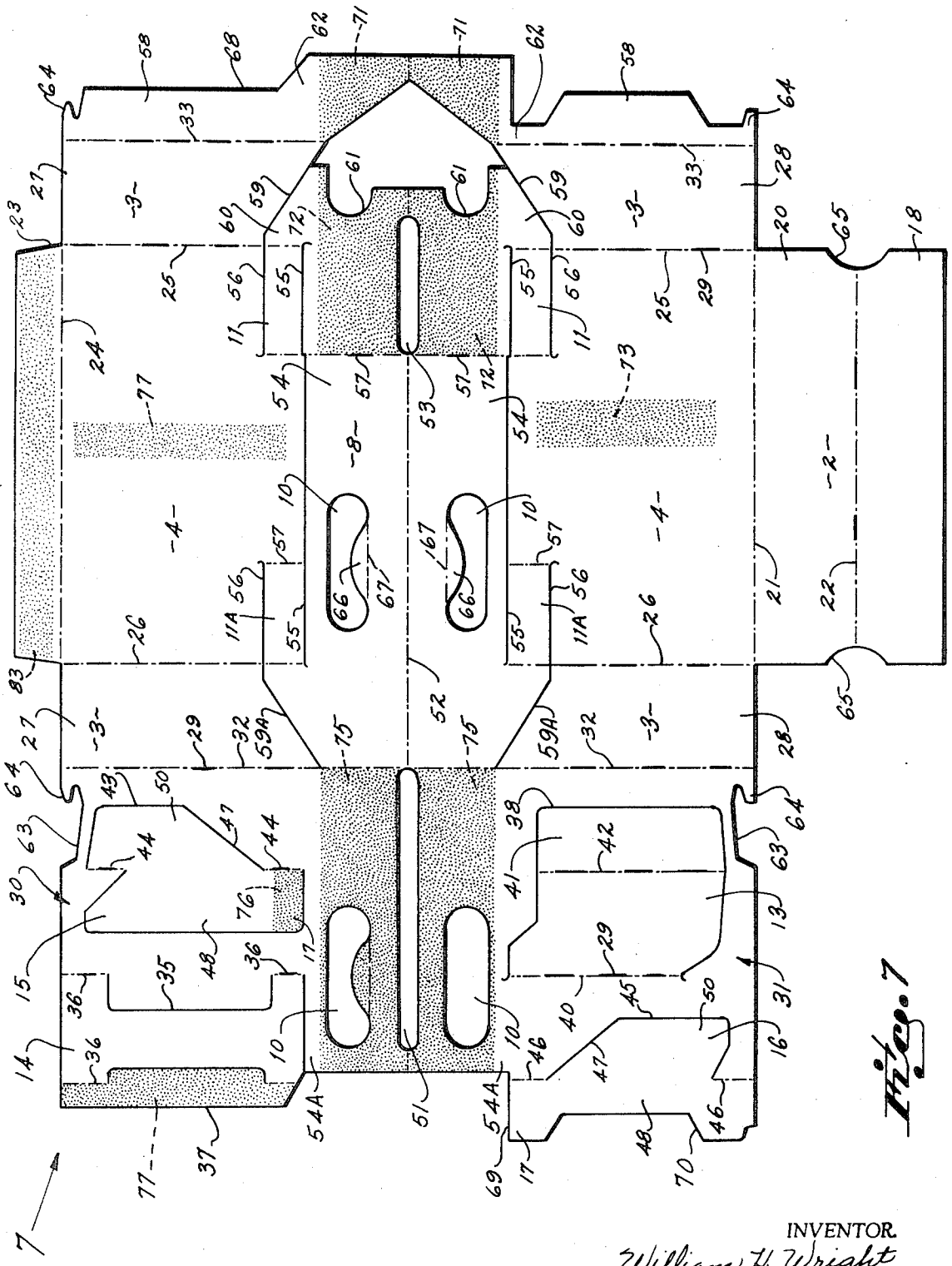
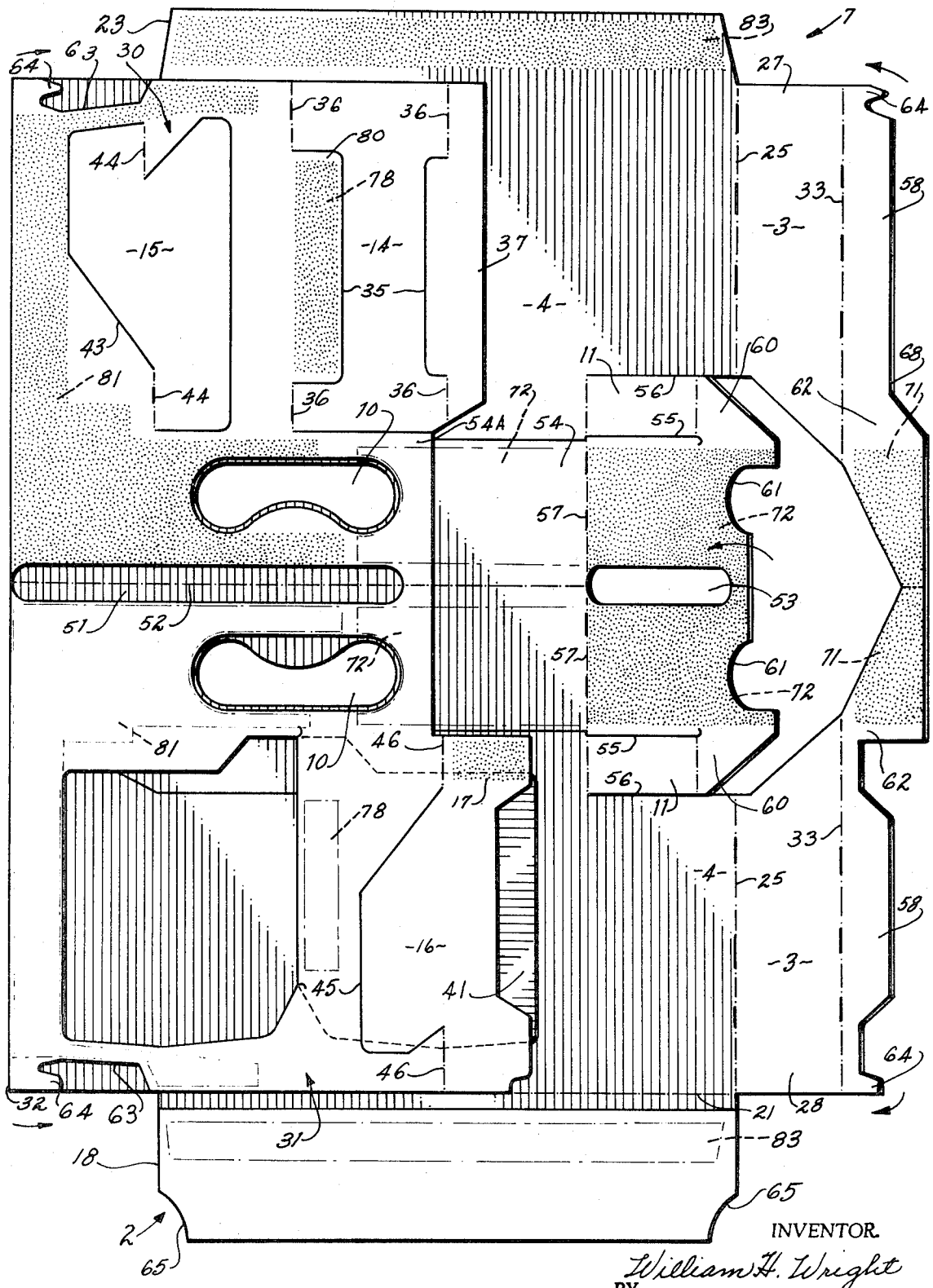


Fig. 7

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Fig. 8

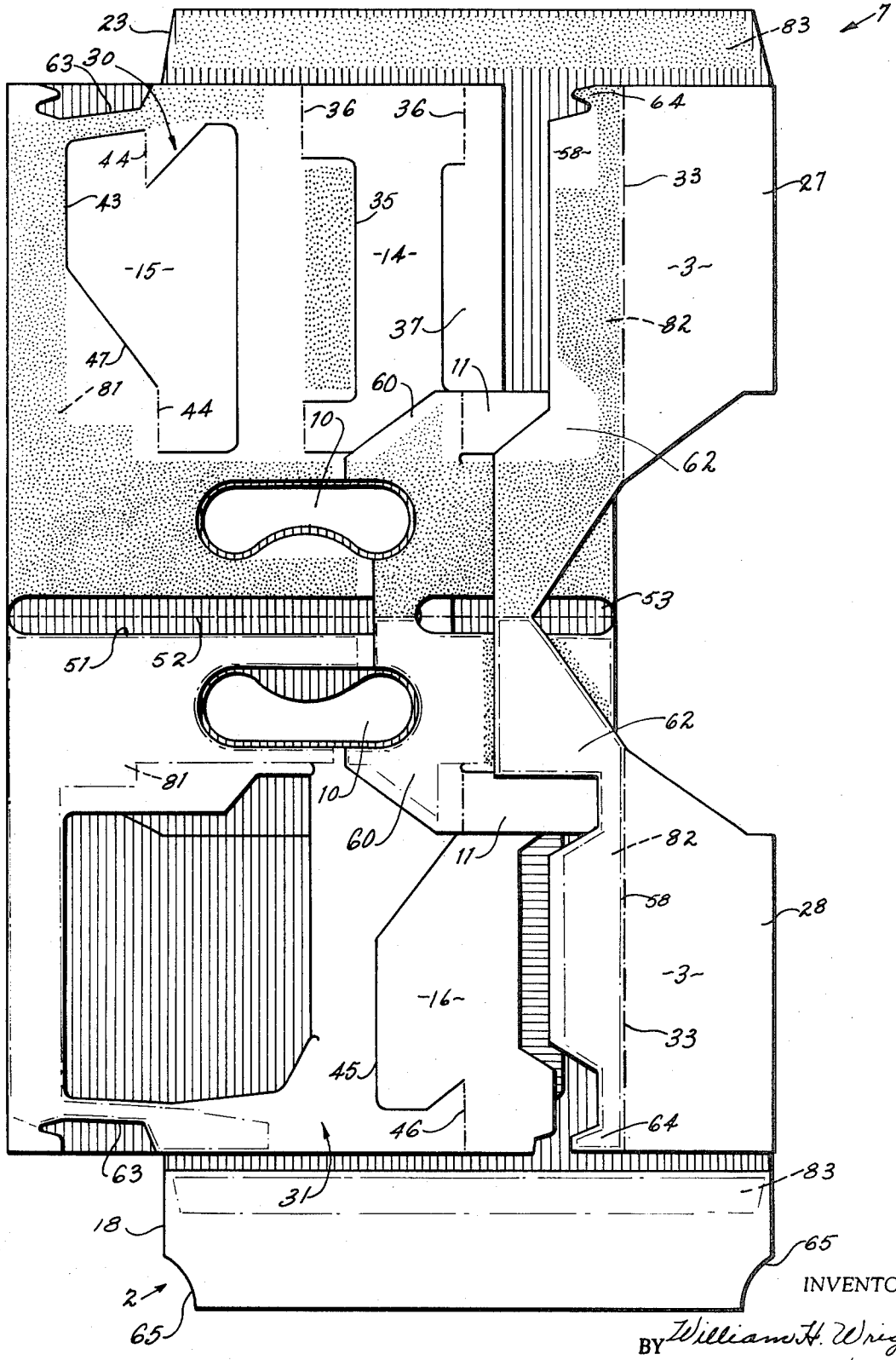


Fig. 9

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BEVERAGE BOTTLE CARRIER

BACKGROUND OF THE INVENTION

Carriers for groups of bottles (usually glass soft drink bottles) of one-piece construction, are well known in the art and are usually referred to as "six-packs" or "eight-packs". Such carriers, as distinguished from cartons, typically comprise a container body having an open top, a longitudinal partition with cross straps connecting the longitudinal partition to the side walls of the container body. In addition, the typical carrier includes a handle portion rising upwardly from the central longitudinal partition and having an opening to serve as a grip for hand transport.

The bottles therefore may be conveniently packed in and removed from the open top of the carrier and, in the use of the carrier for returnable bottles, the customer places the empty bottles in the carrier for return to the retail store or other source of supply.

In the conventional bottle carrier of this type, the longitudinal partition prevents contact between the bottles which are grouped in rows on opposite sides of the partition; however, the cross straps do not. More precisely, the cross straps extend transversely across the top portion of the container body but not downwardly for any substantial distance, thereby leaving the bottles of each individual row free to strike one another with consequent marring and chipping and other damage to the reusable bottles after prolonged usage.

A carrier formed of paperboard having transverse separators are disclosed, for example, in the patent E. L. Arneson U.S. Pat. No. 3,084,831, issued on Apr. 9, 1963. The Arneson carrier is provided with cross straps hingedly connected to the upper portions of the side walls of the carrier body and having their inner ends hingedly connected to a longitudinal partition. This structure is provided with transverse separators extending toward the bottom of the carrier body, each separator having upper end portions adhesively secured to the cross straps so that upon erection of the assembled blank, the cross straps assume their right angular position and swing the transverse separators to a correspondingly right angular position. Other carriers having transverse separators, for example, those used in the brewing industry in packing nonreturnable bottles and cans, are also in use, but differ structurally in a number of respects from the type of carrier here involved.

The present application is directed to a carrier having eight compartments (eight-pack) for confining a group of eight segregated bottles from one another. A carrier having six bottle compartments (six-pack) is disclosed in the copending application of William H. Wright, Ser. No. 121,035, filed on Mar. 4, 1971, to which attention is invited.

One of the primary objectives of the invention has been to provide an eight-pack bottle carrier formed from a one-piece sheet blank having a longitudinal partition dividing the carrier into two longitudinal compartments, and a transverse toggle separator extending across the longitudinal two compartments so as to reinforce the side walls upon erection of the carrier, combined with a plurality of cantilever separators which subdivide the longitudinal compartments, thereby to provide eight cells which segregate the individual bottles from one another.

According to this aspect, the one-piece sheet blank, after its components have been folded and adhesively secured along several score and severance lines, resides in a flat, knock-down state for compact transport or shipment. The carrier includes transverse straps connecting the side walls with the central partition, such that the collapsed carrier may be erected by applying endwise pressure to its opposite ends, whereby the end walls and transverse toggle separator apply pressure outwardly to force the side walls apart from one another, with the transverse toggle separator reinforcing the side walls in an outward direction.

A further objective has been to provide a carrier which includes respective cantilever separators, each having an upper portion joined to one of the cross straps, such that, upon erection of the assembled carrier from its knock-down state, as above noted, the cross straps swing, in combination with the toggle separator, to a right angular position, and thereby hinge or flip the cantilever separators to their right angular positions to delineate four individual bottle confining cells on each side of the longitudinal partition.

According to this concept, the carrier is provided with two transverse cantilever separators which are severed from the longitudinal partition and having hinged fold lines connecting them to the partition. The cantilever separators (and the toggle separators) extend from the upper portion of the longitudinal partition downwardly toward the bottom portion of the carrier body, the arrangement being such that the upper and lower portions of the individual bottles are separated or segregated from one another by the longitudinal partition and transversely by the cantilever separators and toggle separator, with the toggle separator reinforcing the entire assembly when the carrier is erected.

Described more explicitly, each cantilever separator section is severed from one of the panels of the longitudinal partition and is hinged to the partition along a fold line. The cantilever separators are reversely positioned, that is to say one separator has an upper portion adhesively secured to a cross strap at one side of the partition, while the second cantilever separator has an upper portion secured to the cross strap on the opposite side of the partition. Thus the free portions of the cantilever separators are hinged to their transverse positions by their respective cross straps as the assembled carrier is erected.

In order to assure that the carrier assumes a squared, bottle-receiving position upon erection, the free upper edge of each cantilever separator is upwardly inclined to provide a camming action with respect to the bottom of the bottles as they are inserted. In other words, as each bottle is inserted, its bottom portion slides along the inclined upper edge; therefore, if the carrier is not completely square, the carrier is forced to its properly squared state with the cantilever and toggle separators, disposed in a right angular position relative to the side walls and longitudinal partition.

The flat sheet blank material, such as paperboard, plastic or other material, preferably is cut to its outline configuration by suitable blanking machinery. At the same time, the several scored hinge lines and severance lines for the components of the carrier are also formed. Thereafter, the completed blank may be folded and glued or otherwise secured by appropriate gluing and

folding machinery such that the assembled blank is furnished by the carrier manufacturer in its flat knock-down state for compactness in shipment and handling, as noted, to be erected in a simple manner by the ultimate user.

A further objective has been to conserve sheet material in the formation of the sheet blank by configurating the opposite ends of the blank to a mating configuration, whereby the opposite ends of the blank are reversely symmetrical and thus interfit one another to be cut from a continuous strip with no loss of material and whereby the separators require no additional material, being simply delineated in the blank, as explained later.

The flaps which form the cantilever separators, above noted, are symmetrically opposite in design and are located at diametrically opposite sides of the sheet blank. The toggle separator, which is formed in two sections extending outwardly from the longitudinal partition, is also located on diagonally opposite sides of the blank so as to assume their mid-point relationship longitudinally of the carrier body upon erection. These and the remaining components of the carrier are provided with appropriate glue areas which automatically fall into registry as the flat blank is folded and refolded upon itself, thereby to form the assembled carrier.

Various other objectives and advantages will be more fully apparent to those skilled in the art from the following description detailed in conjunction with the drawings.

DRAWINGS

FIG. 1 is a perspective view of an eight-pack carrier in erected condition, with parts broken away to show the construction more clearly.

FIG. 2 is a cross-sectional view, taken along the line 2—2 of FIG. 1, further illustrating the internal construction of the carrier and particularly one of the transverse cantilever bottle separators.

FIG. 3 is a cross-sectional view taken along the line 3—3 of FIG. 1, illustrating a second transverse cantilever bottle separator which is generally similar to the one illustrated in FIG. 2 but reversed in position.

FIG. 4 is a side view of a completed carrier as formed from the one-piece blank, with the several panels and other components adhesively secured but in a flat, knock-down state prior to erection into carrier formation as previously shown in FIG. 1.

FIG. 5 is a top plan view of the carrier as projected from FIG. 4 partially erected from its flat state.

FIG. 6 is a top plan view of the carrier in completely erected and squared position, as taken from FIG. 5.

FIG. 7 is a plan view of the pre-formed one-piece blank, as viewed from the inside surface, showing the pattern of adhesive areas and the cut-out sections and score lines prior to the folding operations.

FIG. 8 is a view generally similar to FIG. 7, showing the first step in folding the hinged components of the blank to provide the adhesively secured interfaces and also illustrating certain of the adhesive areas on the outer surface of the blank.

FIG. 9 is a view generally similar to FIG. 8, showing the second step in the folding and adhesively securing the flaps and other foldable components of the blank, leading to the formation of the knock-down carrier of FIG. 4 ready for erection as a completed carrier.

EIGHT COMPARTMENT CARRIER (EIGHT-PACK)

In general, the carrier, constructed according to the principles of the invention, is indicated at 1 (FIGS. 1 - 6). Speaking generally, the assembled carrier 1 comprises a bottom, indicated at 2 of composite construction, with a pair of composite end walls 3 — 3 having their lower edges latched to the bottom 2 as explained later. Side walls, indicated at 4-4 are connected to the composite bottom 2 along score lines, as described later and are also connected to the panels of the end walls 3 along score lines, also to be explained later.

The various score lines, also called "fold lines" or "hinge lines" in the specification provide lines of weakening impressed in the paperboard blank 7 (FIG. 7), preferably at the time it is cut to shape, so as to delineate the various panels, tabs and other components which make it possible to erect the complete carrier from the one-piece blank by the application of adhesive and by folding and refolding the various components during erection.

In addition, the flat paperboard blank 7 (FIG. 7) is also provided with lines of severance by means of which the various flaps and other components are in the form of cut-outs to permit the severed portions to be swung angularly with respect to the blank about fold lines which hingedly connect them to the blank.

As noted, the carrier, which has been selected to illustrate the principles of the invention, is arranged to confine and segregate a group of eight bottles, four on each side of a longitudinal partition 5, utilizing the end walls and three transverse separators. The separators are non-uniform and are designated generally at 6 at this point but are described in detail later. The several separators 6 are equidistantly spaced apart along opposite sides of the longitudinal partition 5. The arrangement, as described in detail later, divides the carrier proper into eight individual cells or bottle compartments arranged to keep the individual bottles from contacting one another with attendant marring or chipping of the surfaces of the bottles where they would normally come into contact with one another during transport and handling.

The longitudinal partition 5 and the transverse separa-tors 6 are delineated in the sheet blank 7 by the score or hinged lines and lines of severance and thus form a one-piece carrier by folding and refolding blank 7 and adhesively securing the several components of the blank to one another, as explained later.

Referring again to FIG. 1, a handle 8 of composite construction forms a part of the longitudinal partition 5 and projects upwardly above the upper edge of the carrier 1. The handle includes a hand grip opening 10 for transporting the carrier.

The carrier 1 includes transverse straps 11 and 11A which extend at right angles from the upper edges of the side walls 4 to the longitudinal partition 5 or to the handle 8, as described later. The straps 11 and 11A are spaced apart longitudinally to delineate space for two bottles on each side of the partition 5. The spacing between the straps 11 is subdivided by intermediate toggle separators 6 so as to provide two bottle cells on each side of the partition, leaving a pair of cells delineated by the end walls 3 and endwise cantilever separators 6 on opposite sides. The individual bottle cells thus provided, are indicated at 12 in FIGS. 1 and 6.

As noted earlier, the intermediate toggle separator **6** serves as a reinforcement element to tie the side walls **4-4** to the longitudinal partition **5**.

In the present structure, the intermediate toggle separator **6** comprises disparate sections **13** and **14** located between the straps **11** on opposite sides of the longitudinal partition **5**. Each toggle section **13** and **14** has its opposite inner ends secured to the longitudinal partition **5**, and its outer ends secured to the side walls **4—4**. The composite toggle (sections **13** and **14**) acts positively in separating and spacing the walls **4—4** during erection. Moreover, this construction makes it possible to form the entire eight-pack carrier from the one-piece sheet blank and to conserve material.

The cantilever separators **15** and **16** have upper portions **17** adhesively or otherwise secured to the transverse straps **11**. These separators are each of one-piece construction hinged to the longitudinal partition **5** and joined to the longitudinal partition **5** along hinge or fold lines. Therefore, upon erection of the carrier from the collapsed state shown in FIG. **5**, the cantilever separators **15** and **16** which are otherwise severed from the blank spring or flip outwardly to a transverse position with opposite ends projecting into the carrier to form the bottle segregating cells **12**.

The intermediate toggle separator sections **13** and **14** and the cantilever separators **15** and **16**, in assuming their right angular positions, form the individual bottle segregating cells **12** and permit the carrier to be erected from its flat collapsed state of FIG. **5** to that of FIG. **6** in a convenient manner.

As explained in detail later, the construction provides a substantial saving sheet blank material; the arrangement of the cantilever separators **15** and **16** and intermediate toggle separator sections **13** and **14** makes the carrier easier to erect from its flat blank condition; and the construction also eliminates certain gluing and folding operations and thereby reduces the cost of manufacturing the carrier.

CARRIER BLANK (EIGHT-PACK)

Referring to FIG. **7**, the paper board blank **7** includes the bottom **2** which is of composite construction, being made up of the bottom panels **18** and **20** joined to the body of the blank along the score line **21**. The panels **18** and **20** are delineated by the intermediate score line **22**. This permits the blank to be folded and glued ready for erection (FIG. **4**) with the bottom panels folded outwardly, as shown.

An adhesive flap **23** delineated by a score line **24** extends from the opposite side of the blank **7**. As explained later, during the folding of the blank in forming the carrier, the glue flap **23** is adhesively secured to the edge portion of panel **18** to form the composite bottom **2**.

The side walls, previously indicated at **4—4** in FIG. **1**, rise from the bottom **2** along the score lines **21** and **24**. The corners of the carrier are delineated by the fold lines **25** and **26** located at opposite end portions of the paper board blank.

The end walls **3—3** (FIG. **1**) each comprise complementary end wall panels **27** and **28** hinged to the side wall panels along the scored hinged lines **25**, thus joining the end walls to the side walls **4** along the score lines **25** and **26** which form the four corners of the carrier. The scored hinge lines used throughout the blank each include a series of spaced break lines **29** which weaken the score lines and facilitate folding the several components of the blank during the gluing and securing operation of the parts.

It will be noted in FIG. **7** that the composite longitudinal partition **5** is made up essentially of two panels **30** and **31** joined to the body of the blank along the scored hinge line **32**. The panels **30** and **31** are asymmetrical in configuration, since the panel **30** includes, as a cut-out, one section **14** of the toggle separator **6**, while the companion panel **31** includes, as a cut-out, the toggle section **13**.

The panels **30** and **31** further include the cantilever separators **15** and **16**, which are diagonally located with reference to the panels **30** and **31** but which are non-uniform in configuration.

The transverse toggle separator section **14** is configurated in the panel **30** by severance lines **35** and scored fold lines **36 — 36**. The toggle separator section **14** further includes a glue flap **37** at its outer edge also delineated by a severance line **35** and a pair of fold lines **36**. The glue flap **37**, upon erection, is adhesively secured to the side wall panel **4**.

The toggle separator section **13**, is severed from the panel **31** along the severance line **38** and is joined to the panel by a fold line **40**. A glue flap **41** (adhesively coated on its outer surface) is delineated by a fold line **42**, the glue flap **41** being attached to the opposite side wall panel **4** upon erection.

The cantilever separator **15** is severed from the panel **30** along the lines **43** which forms the outline configuration of the separator and permits it to pull loose to the transverse partition upon erection of the carton, as explained later. The cantilever separator **15** is hingedly joined to the panel **30** along the scored hinge lines **44-44** to permit it to swing to its right angular position. As noted earlier, the upper end portions **17** of the separators **15** and **16** are adhesively secured to the respective cross straps **11 — 11** to force them to their right angular position upon erection.

The transverse cantilever separator **16** which is formed at the edge portion of the panel **31** is, generally speaking, symmetrically opposite to the separator **15** when the carrier is erected. Separator **16** is severed from the blank along the line **45** and is hingedly joined to the blank along the score lines **46**. The upper end portion **17** of separator **16** is also adhesively secured to one of the transverse straps **11** to hinge the separator **16** to its transverse cantilever position upon erection.

It will be noted in FIGS. **1 - 3** that the upper edges **47** of the separators **15** and **16** are angulated to provide a camming action with respect to the bottles as they are inserted. In other words, if the carrier is not completely squared in its erected position, the bottom portion of the bottle acts upon the upper edge **47** of the transverse separator as a cam to square up the separator and the entire carrier.

It will also be noted that each transverse cantilever separator **15** and **16** constitutes two sections, indicated at **48** and **50** such that the sections **50** swing in cantilever fashion on diagonally opposite sides of the longitudinal partition upon erection, the portions **48 — 48**, also diagonally located, being secured to the straps **11**, as noted earlier.

The longitudinal partition, previously indicated at 5, is formed by the two panels 30 and 31 (FIG. 7) which are doubled upon themselves and secured together by gluing. It will also be noted, at this point, that the panels 30 and 31 include not only the cantilever separators 15 and 16, but also include the intermediate toggle separator 13 and its coacting counterpart 14, which project from opposite sides of the longitudinal separator.

The longitudinal separator panels 30 and 31 are separated from one another by the longitudinal slot 51 and its coextensive fold line 52 which leads to a second longitudinal slot 53 delineating the handle section (FIG. 7).

The handle section 8 comprises the two panels 54 — 54 cut from the blank by the severance lines 55 — 55 and subdivided by the fold lines previously indicated at 52. Complementary handle panels 54A register with the panels 54 when the blank is folded, as explained later. The panels 54 and 54A each include the hand grip openings 10 which register with one another upon erection. At this point, it will be understood that during the first folding operation, the panels 30 and 31 are hinged along the scored lines 32 to overlie the side wall panels 4 — 4 with the openings 10 in registry with one another to form the multiple ply handle structure, as described in detail later.

In addition, the side wall panels 4 — 4 include severance lines 56 — 56 joined by transverse fold lines 57 — 57. The severance lines 56, combined with the fold lines 25 and 57, delineate the first pair of transverse straps 11 which extend outwardly from the longitudinal partition 5 to the side wall 4 (FIG. 7). The opposite edge portions of side wall panels 4 — 4 include similar severance lines 56 — 56 and fold lines 57 — 57. The severance lines 55 and 56 combined with the fold lines 26 and 57 delineate the second pair of transverse straps 11, which for identification, are designated at 11A.

The end walls 3 — 3 are foldable relative to the side walls 4 of the blank (FIG. 7) along the hinge lines 25 and 26, as described earlier. Each end wall panel 3 includes a glue flap 58 — 58 (delineated by score line 33) which are turned in toward one another and secured together. This arrangement provides the composite end walls 3 shown in FIG. 1.

The first set of cross straps 11 — 11 is formed in the flaps 60 — 60 (FIG. 7) which are cut from the blank by the severance lines 56 — 56 and the parallel severance line 55 — 55, previously noted. The parallel severance lines 55 and 56 join with angular severance lines 59, which are congruent with corres-ponding severance lines 59A at the opposite edge of the blank (FIG. 7). Upon folding the blank, as described later, the divided flaps 60 overlie the panels 54 — 54 so as to provide the pair of transverse straps 11 — 11 which extend across the carrier body.

It will be noted that the upper edge of the flaps 60 — 60 each include a semi-circular recess 61 each having the same radius as the end portions of the hand grip openings 10 so as to mate with the openings 10 upon erection, as described later.

It will also be noted that the flaps 58 — 58 of the end wall panels 3 include handle connector panels 62 — 62. Upon folding of the blank, these flaps are secured together and reside between the composite sections of the handle 8 so as to tie the end walls to the handle for support.

The panels 30 and 31 each include cut-out portions 63 delineating spurs 64 — 64. The flaps 58 of the end walls also include spurs 64 — 64 at the opposite edge of the blank. When erected, the spurs reside in registry at the lower edges of the end walls and provide a snap engagement with the semi-circular portions 65 formed in the central portion of the composite bottom 2. The snap engagement of the spurs 64 hold the bottom panels in their erected state and hold the carrier in erected position as shown in FIG. 1.

The several hand grip openings 10, which are formed in pairs and arranged to register with one another, as noted earlier, include reinforcing flaps 66 delineated by score lines 67. In the folded and erected state, the flaps 66 are disposed in face to face relationship. Upon placing the carrier in use, the flaps are turned angularly along the fold lines to provide a more comfortable purchase for the person handling the carrier.

In order to conserve material, simplify blanking and avoid the waste of material, the left edge (FIG. 7) of each blank interfits the right edge portion of the blank from which it is severed. In other words, the glue flap 37 corresponds in shape to the configuration 68 at the right edge of the blank. The contour of the connector panels 62 — 62 correspond to the cut-out configuration 69 at the left edge of the blank; and one of the glue flaps 58 at the right of the blank registers with the cut-out contour 70 at the left edge of the blank. Thus each blank may be severed from a continuous strip with a single cutting stroke without excessive loss of material and in a very simple manner.

ADHESIVE AREAS OF INNER FACE OF SHEET BLANK

The blank shown in FIG. 7 represents the inner face of the carrier and is coated with adhesive in certain areas as indicated by the stippling. Thus, starting at the right of the blank, the handle connecting panels 62 — 62 are coated with adhesive 71; the flaps 60 — 60 are similarly coated as at 72 and one of the side walls 4 includes a coating 73 for attachment of the glue flap 41 of the toggle separator 13.

The inner portions of the panels 30 and 31, which overlie the handle panels 54 — 54, include adhesive areas 75 — 75. The upper portion 17 of the cantilever separator 15 includes an adhesive area 76 for attachment to one of the transverse straps 11. The glue flap 37 at the edge of the blank is provided with an adhesive area 77 for attachment to the side wall 4 upon folding.

The outer face of the blank is provided with adhesive areas which are described in relation to the folding and refolding of the blank as shown in FIGS. 8 and 9.

FIRST FOLDING OPERATION

The sheet blank (FIG. 8) is shown on an enlarged scale for convenience in illustrating the folding operations. As shown in FIG. 8 (first folding operation) the panels 30 and 31 are shown folded over along the score line 32 (as indicated by the arrows) so that the panels lie upon the internal surface of the body of the blank. In this position, the endwise glue flap 37 is adhesively secured to the side wall panel 4 (adhesive area 77) and

the handle forming panels 54 and 54A, (as delineated by the slot 51 and hinge line 52) are also adhesively secured in face-to-face relationship (adhesive sections 75) on the inner side of the blank. The two pairs of hand grip openings 10 — 10 thus fall in registry with one another.

When the longitudinal partition panels 30 and 31 are thus folded over upon the body of the blank (side walls 4 — 4) the glue flap 41 of the intermediate toggle separator 13 is folded inwardly so that the flap 41 is adhesively secured to the adhesive area 73 (FIGS. 7 and 8) formed on the lower side wall panel 4. When the longitudinal partition panels are thus folded over, the glued areas on the outer face of the sheet blank are exposed. The adhesive areas are shown by stippling on the component and by phantom lines on the mating components (FIGS. 8 and 9). The phantom lines are indicated by numerals corresponding to the adhesive areas forming the interfaces in assembly.

Described in some detail (FIG. 8), the outer surface of the blank includes an adhesive area 78 on the tongue portion 80 (severance 35) which forms a part of the section 14 of the transverse toggle separator 6. The outer face of the panel section 30 also includes an adhesive area 81 which will be adhesively secured to the panel 30 by a similar adhesive area 81 when panels 30 and 31 (delineated by slot 51 and fold line 52 during the second folding operation).

It will be understood, at this point, that the outer faces of panels 30 and 31 have now been folded over upon the body of the blank during the first folding operation, as illustrated. At the same time, the panels 27 and 28, and their glue flaps 58, which form the composite end walls 3, are shown as being overfolded upon the inner surface of the side wall panels 4 — 4, together with the handle forming panels 62 with their transverse straps 11.

The first folding operation in erecting the carrier from its blank state therefore comprises the sequential overfolding of the longitudinal partition panels 30 and 31, followed by the overfolding of the flaps 60 and straps 11. Thereafter, the panels 27 and 28, which form the end wall 3, together with their handle connecting panels 62 are overfolded. The bottom panel 18 is now overfolded upon bottom panel 20.

SECOND FOLDING OPERATION

After the first folding operation is completed (FIG. 8), the composite, overfolded sections are folded over upon one another as shown by the arrows in FIG. 9. Panels 27 and 28, which form one composite end wall 3 are folded over upon the panels or flaps 60 — 60 so that the handle connecting flaps 62 — 62 overlie the flaps 60 in facial contact and are adhesively secured.

By this arrangement, the flaps 62 are interposed between the sections of handle 8 so as to connect the panels of end wall 3 to the handle for support at the right hand end of the carrier (FIG. 1).

It will be noted in FIG. 9 that the outer surfaces of the glue flaps 58 include adhesive areas 82 — 82 and that the outer face of the end wall panels 27 and 28, which include the spurs 64, are provided with adhesive areas 82 (FIG. 9). The glue flap 23, which connects the panel 18 to form bottom 2, also includes adhesive areas 83 — 83. The second folding operation is now completed and the blank is ready for the final folding and gluing operation to form it to the assembled flat state shown in FIG. 4.

THIRD FOLDING OPERATION

The sheet blank, after completion of the second fold (FIG. 9) is now folded along the score line 52 and elongated slots 53 so as to double the blank upon itself. The bottom panel 18 has been overfolded upon bottom panel 20 so as to bring the outer surface of panel 18 into facial contact with the adhesive surface 83 of the glue flap 23, thus completing the bottom 2. At this point, the glue flaps 58 of the side wall panels 27 and 28 also will have been brought into facial engagement so as to form an adhesive interface with the end wall 3 at one end of the carrier by the adhesive areas 81 and 82. At the same time, the end walls 3 at the opposite ends of the carrier are joined, matching and securing the individual spurs 64 at the lower ends of the composite end walls 3 — 3.

As the third folding operation is carried out, the transverse straps 11 will have established an adhesive interface with the upper end portions 17 of the cantilever separator 15. This will cause the cantilever separator to be hinged or flipped to its right angular position as indicated by the arrows (FIG. 5) as the carrier is erected. At the same time, the handle connecting panels 62 will be interposed between and adhesively connected to the handle section 8 to establish a load-supporting connection between the handle and body of the carrier as shown in the right hand end of the carrier (FIG. 1). The end walls at the left hand end of the carrier, as noted, form a part of the handle section 8 and longitudinal partition 5, such that the connecting flaps 62 are omitted.

During the third folding of the blank, the tongue 37 of the transverse toggle separator section 14 establishes an adhesive interface with the side wall panel 4. As noted, flap 41 of separator section 13 also establishes an adhesive interface with adhesive area 73 of side wall panel 4. As noted, the spurs 64 — 64 mate with one another to support the bottom 2 during final erection of the carrier (FIG. 1) and lock it in the erected state.

After completion of the second folding operation, the several panel flaps and other components are adhesively secured and the partially erected blank assumes the condition shown in FIG. 4, the adhesively assembled blank. In its flat condition, (FIG. 4) may be packaged and shipped in this condition for compact transport to the ultimate user.

The flat blank is shown in FIG. 5 in a partially expanded state for bringing out the construction of the flat blank more clearly and represents a top view projected from FIG. 4. Thus, the composite end walls 3 — 3 are partially expanded and reside angularly relative to one another and are disposed in the same direction, with the side walls 4 — 4 parallel with one another. The transverse straps and the toggle separator sections are also angularly related and are parallel with the end walls 3.

The assembled blank (FIG. 5) is erected to its square carrier formation by applying pressure against its opposite ends, as shown in FIG. 5, whereby the angulated sections of the end walls 3 and the toggle separator sections 13 and 14 hinge in a toggle fashion toward a right

angular position. The cross straps **11** also exert a toggle action to spread the side walls **4**. Since the upper ends **17** of the cantilever separators **15** and **16** are secured to the transverse straps, the cantilever separators also hinge about the score lines and assume their transverse position.

In the fully erected position (FIG. **6**), the end wall sections **3**, the cross straps **11** and **11A**, the intermediate toggle separator sections **13** and **14** and the cantilever separators **15** and **16** will have shifted to their right angular position, thereby to delineate the individual cells of the bottle carrier.

During erection of the carrier from the position of FIG. **5** to that of FIG. **6**, the bottom panels **18** and **20** will also have been pulled in toggle fashion from the overfolded position (FIG. **4**) to the flat state. The composite bottom is now secured by the two-ply spurs **64** and engaged in the semicircular notches to support the bottom and also to lock the carrier in its erected state. As noted, the angular upper edges **47** of the cantilever separators **15** and **16** provide a camming action with respect to the bottles in the event they have not completely sprung to their right angular position upon erection. Thus as the bottles are placed in the compartments delineated by the transverse separators, the bottom portion of the bottles first contact the downwardly inclined upper edge and naturally force the cantilever separators to the correct right angular position to delineate the compartments.

It will be noted that the lower portions of the transverse separators and of the toggle separator sections extend downwardly a sufficient distance toward the bottom **2** to prevent contact between the bottom portions of the bottles. The upper portions of the toggle and cantilever separators prevent contact between the upper or shoulder portions of the adjacent bottles, thus segregating each bottle in its individual cell.

Having described my invention I claim:

1. In a collapsible carrier of the type having cells for segregating bottles and similar articles from one another, the carrier having a bottom, a pair of side walls and a pair of end walls rising from the bottom, and a longitudinal partition rising from the bottom of the carrier and extending medially of the carrier between said end walls, the improvement comprising

at least two pair of foldable cross straps, one strap of each pair being connected between said longitudinal partition and one side wall and the other strap of each pair being connected between said longitudinal partition and the other side wall, the straps of each pair lying in a common plane and extending transversely from said longitudinal partition when the carrier is in the fully erected attitude,

at least two one-piece cantilever separators defined by fold and severance lines in said longitudinal partition, each cantilever separator cooperating with one pair of said straps, each cantilever separator having one section secured to one strap of said pair on one side of said longitudinal partition and having another section adapted to cooperate with and to swing free relative to the other strap of said pair on the other side of said longitudinal partition, the two sections of each cantilever separator lying in the plane of said longitudinal partition when the carrier is collapsed and lying in the plane of its associated pair of straps when the carrier is erected, and the two sections of each cantilever separator being non-foldable relative one to the other,

the interconnection of each cantilever separator's one section with the one strap of its associated pair of straps causing said cantilever separato's other section to move between the plane of said longitudinal partition and the plane of the other strap of its associated pair of straps as the carrier is moved between fully collapsed and fully erected attitudes so as to subdivide the carrier into individual bottle segregating cells on opposite sides of the longitudinal partition, and

a toggle separator defined by fold and severance lines in said longitudinal partition, said toggle separator being comprised of two sections each of which has an inner end hingedly connected to said longitudinal partition and an outer end secured to a side wall, the two sections of said toggle separator lying in the plane of said longitudinal partition when the carrier is collapsed and lying in a transverse plane intermediate said cantilever separators when the carrier is erected, thereby reinforcing the side walls intermediate the end walls on both sides of said longitudinal partition between said cantilever separators.

2. The improvement for a collapsible carrier as set forth in Claim **1** wherein each cantilever separator's sections pivot about a fold line that is vertically oriented in said longitudinal partition relative to said bottom when the carrier is moved toward the fully erected attitude from the fully collapsed attitude.

3. The improvement for a collapsible carrier as set forth in Claim **1** wherein the other section of each cantilever separator includes an upper edge that angles downwardly toward its associated side wall from said longitudinal partition, said edge cooperating with the bottom portion of a bottle inserted into the erected carrier to cam that other section to a right angular position relative to said longitudinal partition if said other section has not been established in the plane of the other strap of its associated pair of straps upon erection of the carrier.

4. The improvement in a collapsible carrier as set forth in claim **1** wherein said end walls comprise panels joined to said side walls, said end wall panels having glue flaps connected to the end wall panels adjacent the free edges thereof, and said end wall glue flaps being secured to said longitudinal partition, and including

a handle portion rising above and connected with said longitudinal partition, said handle portion being of at least two-ply construction and embracing the opposite sides of said longitudinal partition, and said end wall glue flaps being disposed between the handle portion's plys and secured thereto, such allowing the carrier's weight load to be supported by the handle portion and transmitted thereto by said end wall glue flaps so as to relieve said cross straps and toggle separator of the carrier's weight load.

5. The improvement in a collapsible carrier as set forth in Claim **4** in which said cross straps are defined by severance lines and fold lines formed in the plys of said handle portion and side walls.

6. The improvement in a collapsible carrier as set forth in Claim 1 wherein said improvement is embodied in a sheet blank from which the carrier is adapted to be constructed.

7. The improvement in a collapsible carrier as set forth in Claim 1 in which there is provided one cantilever separator located on each side of said toggle separator, said cantilever separators being reversely disposed relative to one another such that the first of said cantilever separators is secured to a cross strap on one side of said longitudinal partition and the second of said cantilever separators is secured to a cross strap on the opposite side of said longitudinal partition, the freely swinging sections of said cantilever separators thereby projecting in opposite directions from said longitudinal partition when said carrier is erected.

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