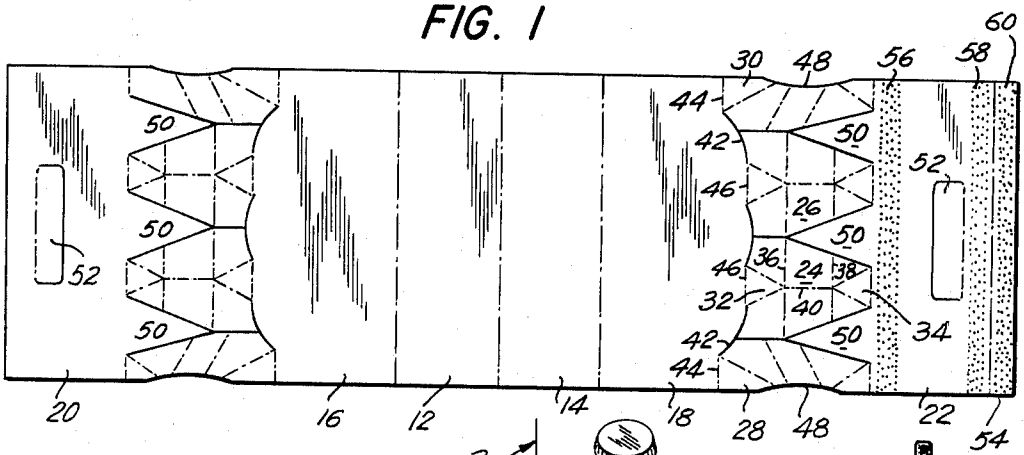
June 14, 1966 S. R. KOOLNIS 3,255,919

EXPENDABLE BOTTLE CARRIER

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FIG. 1



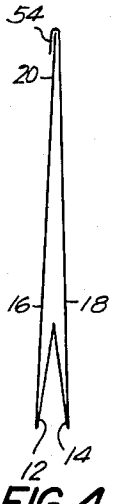


FIG. 4

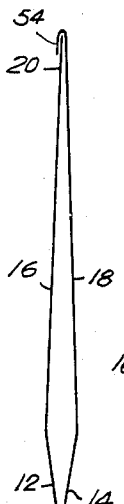
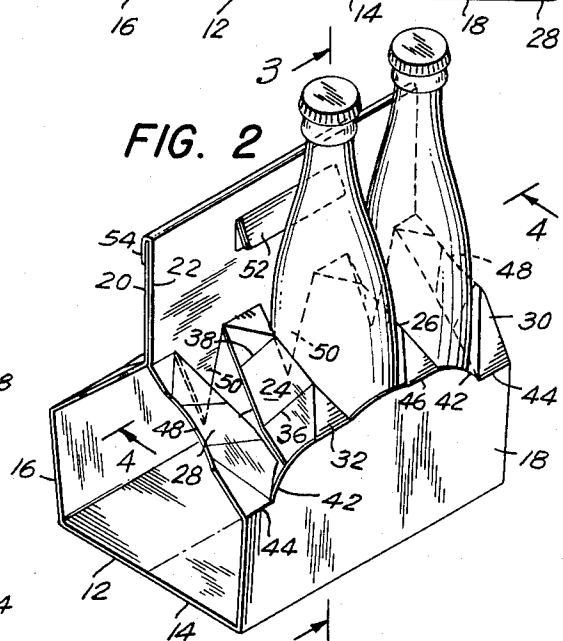
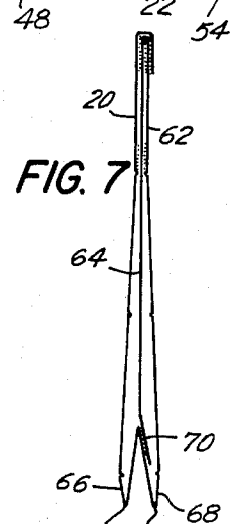
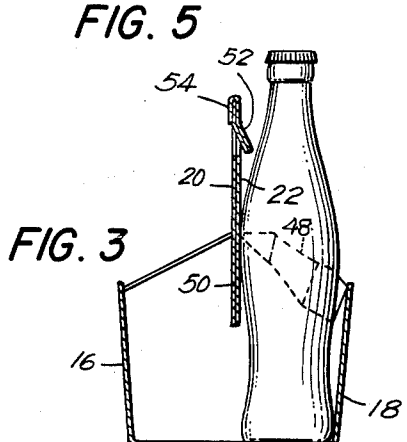
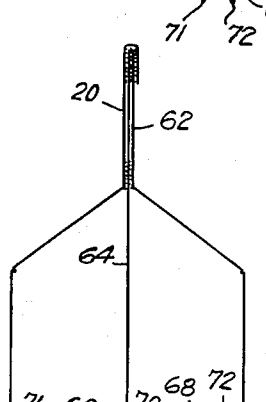


FIG. 5









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FIG. 8

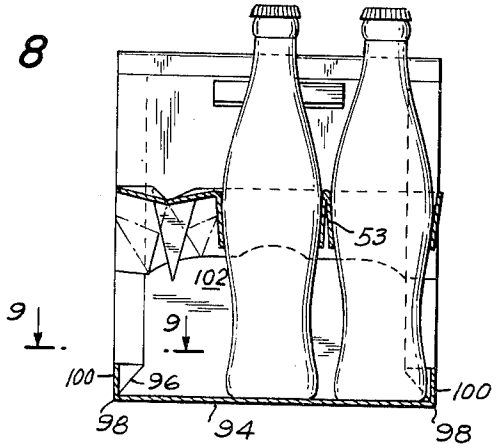


FIG. 9

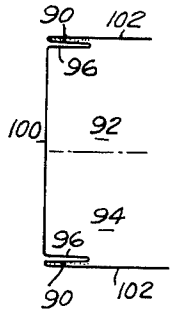
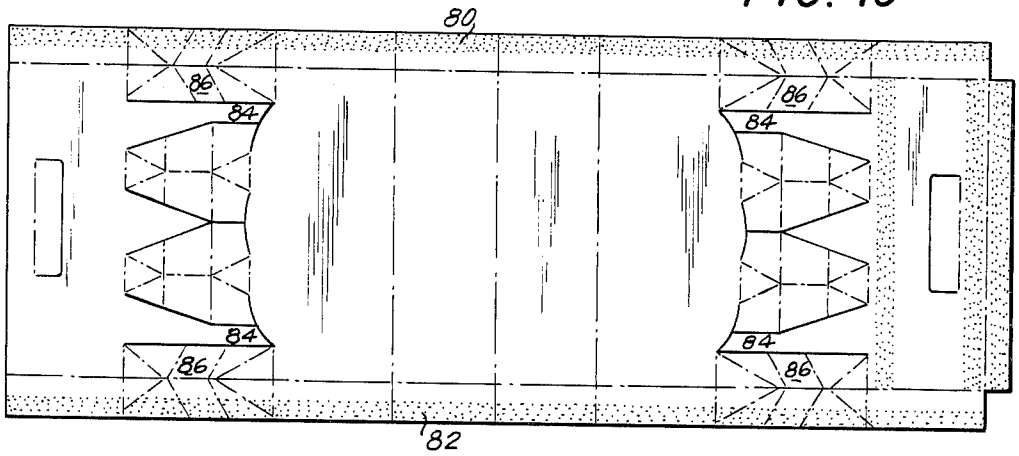


FIG. 10



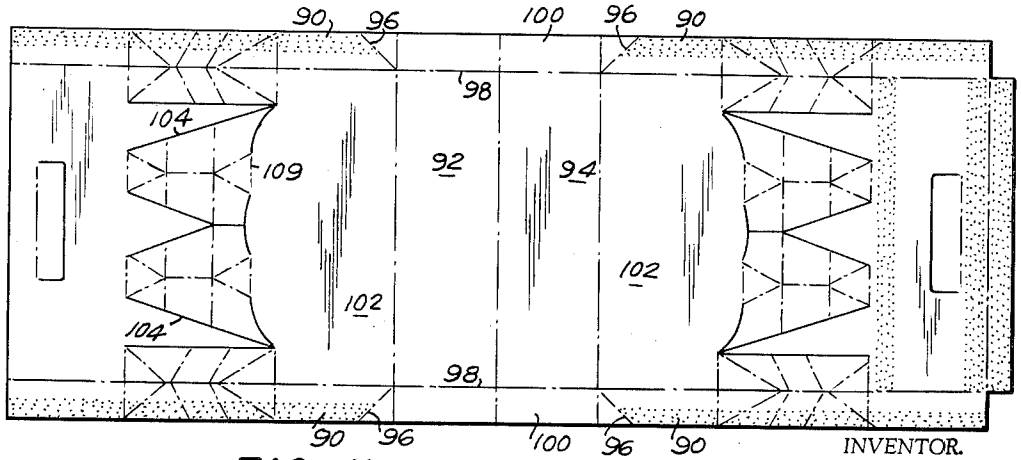


FIG. 11

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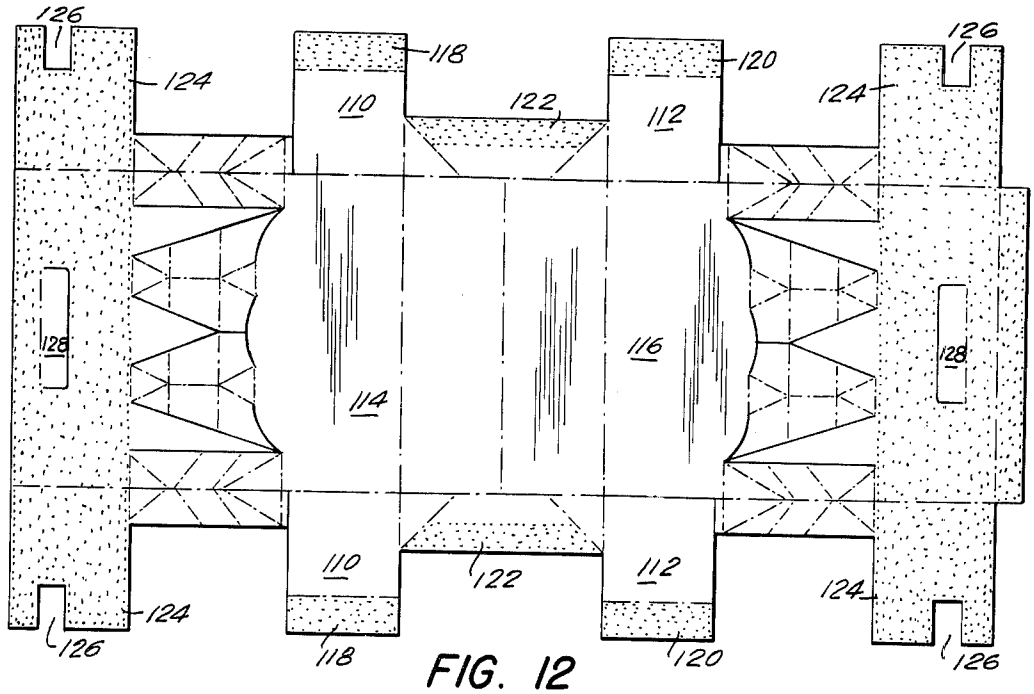


FIG. 12

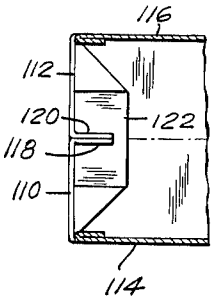
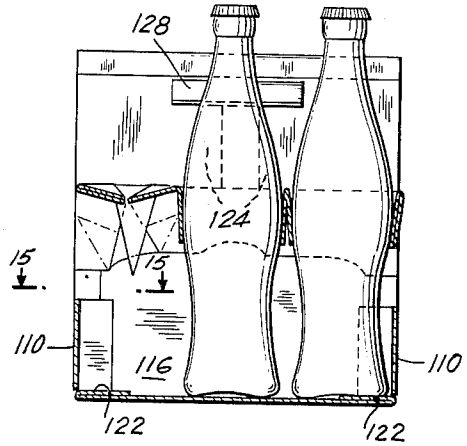


FIG. 15

FIG. 14



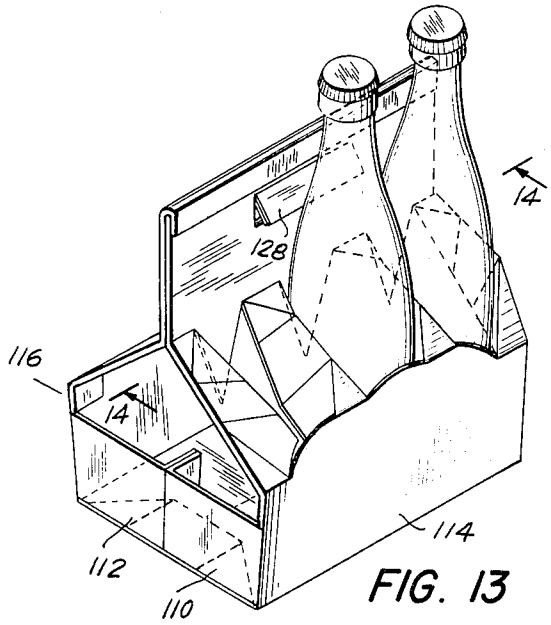


FIG. 13

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EXPENDABLE BOTTLE CARRIER

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Filed Dec. 5, 1963, Ser. No. 328,336
4 Claims. (Cl. 220—114)

This invention relates to bottle carriers, and more particularly to expendable, collapsible bottle carriers made of paperboard.

The general object of the invention is to improve such bottle carriers. Another general object is to provide such a bottle carrier which opens easily from collapsed condition to working condition.

A further object is to provide such a carrier which is made of a single piece of paperboard; which uses a minimum amount of paperboard; and which in preferred form (though not in all forms) may be folded and glued at high speed in a conventional straight-line gluing machine.

Still another object is to provide a bottle carrier having bottle-separating connectors between the sides and the handle, which connectors preferably act further as yieldable or cushioning separators between the bottles. In accordance with an ancillary object, the lifting of the carrier itself helps expand the separators.

Another object is to provide a variant form of bottle carrier in which there is an additional center support extending directly downward from the handle to the bottom. In still other variant forms, the bottle carrier is provided with retainer flanges or with panels at the ends to additionally hold the bottles in the carrier.

To accomplish the foregoing general objects, and other more specific objects which will hereinafter appear, my invention resides in the bottle carrier elements and their relation one to another, as are hereinafter more particularly described in the following specification. The specification is accompanied by drawings in which:

FIG. 1 shows a cut and creased blank from which the bottle carrier is formed;

FIG. 2 is a perspective view of a carrier for six bottles, with two bottles in the carrier;

FIG. 3 is a transverse section taken approximately in the plane of the line 3—3 of FIG. 2;

FIG. 4 is a schematic view showing the carrier in collapsed condition;

FIG. 5 is a similar schematic view showing the carrier collapsed in somewhat different fashion;

FIG. 6 is a schematic section through a bottle carrier, but showing a modification with an upright center support partition between the handle and the bottom;

FIG. 7 is a schematic view like FIGS. 4 and 5, showing the bottle carrier of FIG. 6 in collapsed condition;

FIG. 8 is a longitudinal section through another form of bottle carrier, having marginal reinforcement and having retainer flanges at the ends of the bottom;

FIG. 9 is a fragmentary schematic section taken in the plane of the line 9—9 of FIG. 8;

FIG. 10 shows a cut and creased blank for a bottle carrier with edge reinforcement;

FIG. 11 is a similar view of a blank for a modification in which a flange portion at the bottom turns to erect position to act as a bottle-retaining flange;

FIG. 12 shows a cut and creased blank for a modified bottle carrier having panels to reinforce the handle portion and to provide end walls for the carrier;

FIG. 13 is a perspective view of a bottle carrier assembled from the blank shown in FIG. 12;

FIG. 14 is a longitudinal section through the bottle carrier of FIG. 13; and

FIG. 15 is a fragmentary horizontal section taken approximately in the plane of the line 15—15 of FIG. 14.

Referring to the drawing, and more particularly to

FIGS. 1 and 2, the bottle carrier comprises a single piece of paperboard which is cut and creased and glued, as shown in FIG. 1, and then folded to form a carrier shown in FIG. 2. The carrier comprises a bottom **12, 14** and two sides **16** and **18** for two rows of bottles. Usually the carrier is designed for six bottles, with three in each row, but the same construction may be used for a carrier for four bottles, or eight bottles, etc., there being an even total of bottles in two rows. The carrier further comprises an upright handle portion of double thickness **20, 22**, and bottle-separating connectors **24** and **26**, and also end connectors **28** and **30**.

As will be seen from the drawing, the connectors are so cut and creased that they fold yieldingly downward as a bottle is inserted, and then serve as separators between adjacent bottles in a row of bottles. The connectors are initially wide, and in fact occupy the full width of the blank, as will be seen in FIG. 1. After insertion of a bottle they tend to expand and thus serve as cushioning separators between adjacent bottles. Considered more specifically, connector **24** (FIG. 1) has a triangular junction portion **32** at its lower end and another triangular junction portion **34** at its upper end. These are defined or outlined by crease lines. There are additional crease lines **36, 38**, and **40**. The solid lines represent cut lines around the connector.

The arrangement is such that the sides of the connector readily fold downward on crease line **40**, and on the crease lines defining the junction triangles **32** and **34**, and yet they have a tendency to return outward to the extent permitted by the bottles. Lengthwise tension applied to the connectors, as when carrying the bottles, tends to expand the connectors between the bottles.

The end connectors **28** and **30** are preferably made somewhat longer than the intermediate connectors **24** and **26**. For this purpose the cut line **42** extends downward to a crease line **44** which is located lower than the crease lines **46** of the intermediate connectors. This somewhat reduces the stress or load applied to the end connectors. It may be noted that the junction at **46** is wider than the junction at **44**. In the specific case illustrated, the connection lines **46** are about one inch long, and the connection lines **44** are about three-fourths inch long. The end connectors are three-fourths inch longer than the intermediate connectors. Of course, these dimensions are given solely by way of example, and are not intended to be in limitation of the invention.

I find it desirable to cut away the outer edge of the end connectors **30**, as indicated by the curved lines **48**. This reduces the strain on the outer edge when the end connector is turned or twisted downward by insertion of a bottle.

In FIG. 3 it will be seen that there are partitions **50** depending from the sides **20** and **22** of the handle. These partitions separate the bottles of the two rows, and are formed from material struck away between the connectors. In this case the partition material is triangular, as indicated at **50** in FIG. 1 and in FIG. 2.

The handle is formed by excising rectangular pieces from the sides **20, 22** of the handle portion. These pieces are shown at **52** in FIG. 1, and are somewhat sidewardly displaced in FIGS. 2 and 3. When the package is actually carried, they are displaced further, and help form a broadened carrying surface bearing against the fingers inserted through the handle opening. The opening is wide enough for all four fingers.

The particular carrier here shown is intended for bottles which may range in size all the way from six ounces or even smaller, up to thirty-two ounces or even larger. Of course, the dimensioning of the carrier is varied for bottles of different size. It may also be varied for bottles of different shape when handling bottles hav-

ing an unusual shape. In the case of thirty-two ounce bottles, the rows may be reduced all the way down to one bottle each, that is, the carrier may be designed to carry only two large bottles, one on each side of the handle. It will be noted that the handle comes beneath the tops of the bottles, which is desirable for stacking of loaded carriers one above the other, but the separation between the necks of the two rows of bottles is adequate to comfortably receive the hand of the user.

The handle structure may be additionally held together and strengthened by a reversely folded flange **54** which is shown in FIGS. 1, 2, and 3. FIG. 1 shows glue lines **56** and **58** in addition to the glue line **60** on flange **54**. It will be evident that the glue lines **56** and **58** would alone hold the sides of the handle portion together, and that the glue line **60** locks the flange **54** in its reversely folded position. If desired there could be two flanges, one at each end of the blank, and both folded over, to provide four thicknesses at the top.

In FIG. 1 the glue lines are parallel to one another and to the main crease lines of the carrier. This is important for economical high-speed manufacture, because the blanks may be glued and folded in a "straight-line" gluing machine. Such a machine operates at maximum speed, compared to a more complicated "right-angle" gluing machine.

The glued carrier is stacked in collapsed condition for shipment to and storage by the bottler making use of the same. FIG. 4 schematically shows the carrier in nearly but not fully collapsed condition, and with the glue lines omitted. The handle portion **20**, the connectors, and the sides **16** and **18** are flat, with the bottom **12, 14** turned inward. Alternatively, the carrier may be collapsed as shown in FIG. 5, the only difference being that the bottom **12, 14** is turned outward. When collapsed as in FIG. 4 the bundle is smaller in area but thicker, and when collapsed as in FIG. 5 the bundle is larger in area and thinner. In practice the inward fold shown in FIG. 4 is preferred because the carrier may be opened or spread into working condition more expeditiously.

FIG. 6 shows a modification of the carrier in which the material of the handle portion **62** is extended or prolonged for a substantial distance, and is reversely folded downward as shown at **64**. It extends all the way to the bottom **66, 68**, and is secured to the bottom, as by means of a glue flap **70** which is folded sideward and glued to the bottom portion **68**. This carrier requires more paperboard but has a number of advantages. The most important is that it provides an additional center support for the bottom. There is a three-line instead of a two-line support of the bottom, with no tendency to sag at the middle. Another advantage is in providing a full large-area partition between the two rows of bottles. A third advantage is that the handle portion of the carrier has three thicknesses, with additional srtength and finger comfort. Another advantage is that the carrier has greater stiffness when inserting the bottles. This is helpful when all bottles are inserted simultaneously by machine.

FIG. 7 shows the carrier of FIG. 6 in collapsed condition. The folding of the carrier differs slightly from that previously described because of the discrepancy between the length of the center support **64**, on the one hand, and the sides on the other. Because of this, two extra crease lines are provided in the bottom, these being indicated at **71** and **72** in FIG. 6. The package then folds as shown in FIG. 7, with the crease lines **71** and **72** at one end of the collapsed package.

Reference is next made to FIG. 10 of the drawing. This shows a blank differing somewhat from that shown in FIG. 1. A main difference is that extra marginal strips **80** and **82** are provided along the long edges of the blank. These are glued and reversely folded to provide a reinforced and strengthened edge or hem for the package. The provision of these glued hems for the blank necessitates the use of a right-angle gluing machine, which somewhat increases the cost of the carrier.

Another difference in the blank shown in FIG. 10 is that the intermediate and end connectors are separated by a space indicated at **84**. The end connectors **86** now are of double thickness and therefore stronger. They may be made narrower, and are not cut at their outer edges (as at **48** in FIG. 1). The extra cut away material at **84** then forms part of a partition which depends from the handle portion between the two rows of bottles.

If a folded marginal edge is provided, a part of it may be utilized to provide bottle-retaining flanges at the ends of the package. The blank for such a carrier is illustrated in FIG. 11, the main difference being that the glue line **90** is limited to the handle and connector and side portions, and is omitted at the bottom **92, 94**. There are also diagonal crease lines **96**, and the glue is stopped short of these crease lines. The marginal portions are folded on the broken line **98**.

When the carrier later is opened for use, the free or unglued hem portions turn upward to erect position, as shown at **100** in FIG. 8, thus providing bottle retainer flanges at the ends of the bottom of the carrier. In the schematic showing in FIG. 9, the side walls are shown at **102**, the glued folds or hems are shown at **90**, and the diagonal reverse fold to the upstanding retainer flange **100** is shown at **96**.

The blank illustrated in FIG. 11 has another slight difference from that shown in FIG. 10, in that the outer edges **104** of the intermediate connectors are extended diagonally all the way to the end connectors. Differently expressed, the space therebetween is triangular, there being no parallel-sided part corresponding to the part **84** in FIG. 10. The junction line **109** is the same as before. Such minor changes in the configuration of the connectors may be made without departing from the main feature, which is that although wide, they are so cut and creased that they fold yieldingly downward as a bottle is inserted, and serve as cushioning separators between adjacent bottles.

The bottle carrier illustrated in FIGS. 8–11 folds to collapsed condition exactly as previously described, that is, it folds as shown in FIG. 4 of the drawing, and it could be folded as shown in FIG. 5.

Another form of bottle carrier embodying features of my invention is illustrated in FIGS. 12–15 of the drawing. Referring to FIG. 12, the blank has oppositely extending panels **110** from side **114** and similar oppositely extending panels **112** from side **116**. The ends of the panels have crease lines defining glue flaps which are coated with glue, as indicated at **118** and **120**. When the carrier is folded and glued, the flaps **118** and **120** are brought together, and the panels **110** and **112** then make up an end wall for the carrier, as shown in FIG. 13. The fragmentary horizontal section of FIG. 15 also shows how panels **112** and **110** are brought together at **118** and **120** to provide the desired end wall which extends between and connects the side walls **116** and **114**. The reversely folded marginal portion **122** is optional, and if used is left free on diagonal crease lines so as not to interfere with the folding of the panels toward one another when the carrier is collapsed.

If desired, additional panels may be provided to thicken and strengthen the handle portion of the carrier. In FIG. 12, such panels are shown at **124**. They are coated with glue and are folded inward, so that the handle is built up to quadruple thickness. Slots may be cut away, as indicated at **126**. These register with the handle openings **128**, so that only two thicknesses of material are pushed aside by the fingers as they are passed through the handle opening, even though the handle portion has four thicknesses.

The carrier shown in FIG. 12 has certain advantages but is more costly. It uses additional paperboard, and must be glued and assembled in a right-angle gluing machine, instead of being run at high speed through a

straight-line gluing machine, as is done with the carriers shown in FIGS. 1–7.

The carrier shown in FIGS. 12–15 folds much as previously described, that is, as shown in FIG. 4, or alternatively as shown in FIG. 5, but with the difference that the end panels **110** and **112** also fold together as the carrier is collapsed. Looking at FIG. 15, the glued flaps **118–120** move to the right and come into alignment with the panels **110** and **112**, which in turn pivot inward as the sides **114** and **116** come together. In such case it is preferable to collapse the package with the bottom folded outward, as shown in FIG. 5, instead of inward as shown in in FIG. 4, thereby avoiding possible interference between the bottom fold and the end folds. Alternatively, the bottom may fold upward, as shown in FIG. 4, and the panels **110**, **112** may be folded outward instead of inward.

It is believed that the construction and method of manufacture, as well as the method of use and the advantages of my improved bottle carrier, will be apparent from the foregoing detailed description.

The carrier employs a minimum of paperboard. In its simpler forms it is adapted for straight-line gluing and folding in a high-speed machine. The bottles in a single row are separated by connectors which provide a good separation. There are depending partitions to separate the bottles of one row from those of the other row. The end connectors may be lengthened for reduced stress, and all connectors are much more than adequate in strength for the load to be carried. A center support and full center partition may be provided, if desired. End retainer flanges, or large retainer panels may be provided. In all cases the blank is a non-piece blank, and the carrier is collapsible for storage and shipment, and is easily opened for use. It is inexpensive and expandable, yet is strong enough to be reused many times, if returned as it usually is with deposit bottles.

It will be apparent that while I have shown and described the invention in several preferred forms, changes may be made in the structures shown without departing from the scope of the invention, as sought to be defined in the following claims. In the claims, the term "paperboard" is used for convenience, and is not intended to exclude other suitable sheet materials such as fiberboard, cardboard, plasticized board, flexible plastics, or laminated materials of various kinds.

I claim:

1. A collapsible bottle carrier comprising a single piece blank of paperboard cut and creased and glued to provide a bottom and two sides for two rows of bottles, an upright handle portion of two or more thicknesses, and bottle-separating connectors and end connectors extending angularly upward from the sides to the handle portion, the connectors being wide but so cut and creased that they fold yieldingly downward as a bottle is inserted and tend to expand to serve as cushioning separators between adjacent bottles in a row of bottles, the intermediate connectors having triangular junction portions at their upper and lower ends, said junction portions being defined by three fold lines in triangular relation with no cut lines, each intermediate connector having a link portion between its junction portions, said link portion being downwardly folded to provide two sides, the widest portions of the connectors occupying substantially the entire width of the blank, each of the bottle separating connectors being so shaped that when pulled lengthwise by lifting of a loaded carrier by means of its handle the connector tends to expand sideward, a center partition between the two rows of bottles, said partition being connected at its lower end to the bottom and being connected at its upper end to the handle, and the bottom of said carrier having two additional fold lines between the sides and the center partition to afford collapsing of the carrier to flat condition when not in use.

2. A collapsible bottle carrier comprising a single piece blank of paperboard cut and creased and glued to provide a bottom and two sides for two rows of bottles, an upright handle portion of two or more thicknesses, and bottle-separating connectors and end connectors extending angularly upward from the sides to the handle portion, the connectors being wide but so cut and creased that they fold yieldingly downward as a bottle is inserted and tend to expand to serve as cushioning separators between adjacent bottles in a row of bottles, the intermediate connectors having triangular junction portions at their upper and lower ends, said junction portions being defined by three fold lines in triangular relation with no cut lines, each intermediate connector having a link portion between its junction portions, said link portion being downwardly folded to provide two sides, the widest portions of the connectors occupying substantially the entire width of the blank, each of the bottle separating connectors being so shaped that when pulled lengthwise by lifting of a loaded carrier by means of its handle the connector tends to expand sideward, a center partition between the two rows of bottles, said partition being connected at its lower end to the bottom and being connected at its upper end to the handle, said partition being formed as an extension of one end of the blank, and the bottom of said carrier having two additional fold lines between the sides and the center partition to afford collapsing of the carrier to flat condition when not in use.

3. A collapsible bottle carrier comprising a single piece blank of paperboard cut and creased and glued to provide a bottom and two sides for two rows of bottles, an upright handle portion of two or more thicknesses, and bottle-separating connectors and end connectors extending angularly upward from the sides of the handle portion, the connectors being wide but so cut and creased that they fold yieldingly downward as a bottle is inserted and tend to expand to serve as cushioning separators between adjacent bottles in a row of bottles, the end connectors being longer than the intermediate connectors, the intermediate connectors having triangular junction portions at their upper and lower ends, said junction portions being defined by three fold lines in triangular relation with no cut lines, each intermediate connector having a link portion between its junction portions, said link portion being downwardly folded to provide two sides, the widest portions of the connectors occupying substantially the entire width of the blank, each of the bottle separating connectors being so shaped that when pulled lengthwise by lifting of a loaded carrier by means of its handle the connector tends to expand sideward, a center partition between the two rows of bottles, said partition being connected at its lower end to the bottom and being connected at its upper end to the handle, and the bottom of said carrier having two additional fold lines between the sides and the center partition to afford collapsing of the carrier to flat condition when not in use.

4. A collapsible bottle carrier comprising a single piece blank of paperboard cut and creased and glued to provide a bottom and two sides for two rows of bottles, an upright handle portion of two or more thicknesses, and bottle-separating connectors and end connectors extending angularly upward from the sides to the handle portion, the connectors being wide but so cut and creased that they fold yieldingly downward as a bottle is inserted and tend to expand to serve as cushioning separators between adjacent bottles in a row of bottles, the end connectors being longer than the intermediate connectors, the intermediate connectors having triangular junction portions at their upper and lower ends, said junction portions being defined by three fold lines in triangular relation with no cut lines, each intermediate connector having a link portion between its junction portions, said link portion being downwardly folded to provide two sides, the widest portions of the connectors occupying substantially the entire width of the blank, each of the bottle separating connectors being so shaped that when pulled lengthwise by lifting of a loaded carrier by means of its handle the connector tends

to expand sideward, a center partition between the two rows of bottles, said partition being connected at its lower end to the bottom and being connected at its upper end to the handle, said partition being formed as an extension of one end of the blank, the bottom of said carrier having two additional fold lines between the sides and the center partition to afford collapsing of the carrier to flat condition when not in use.

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