Jan. 30, 1951 M. I. WILLIAMSON 2,540,065

CARRIER FOR BOTTLES, CANS OR SIMILAR ARTICLES

Filed March 30, 1949 4 Sheets-Sheet 1

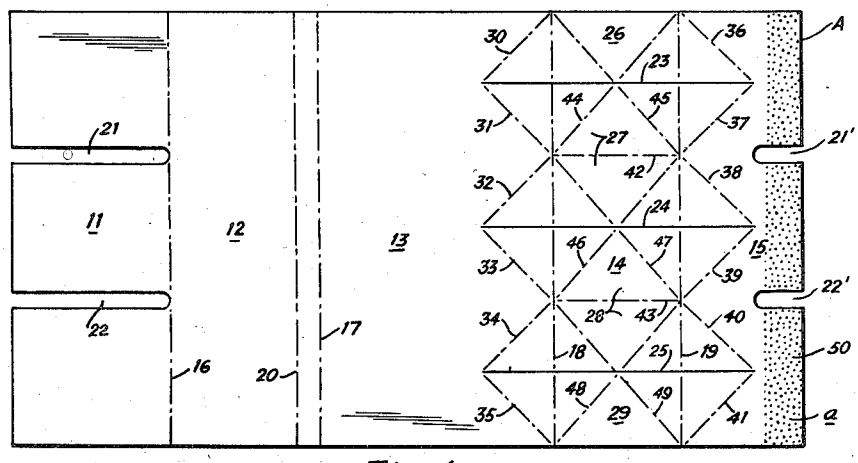


Fig. 1

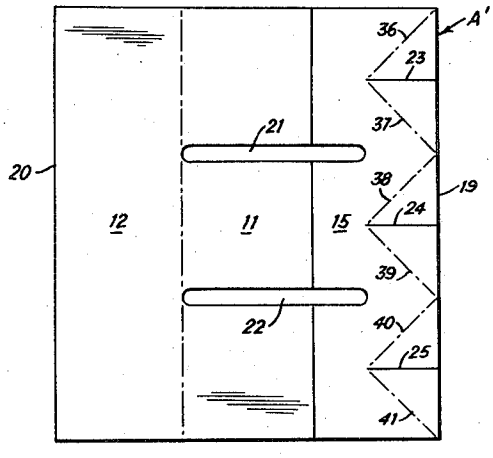


Fig. 2

Marshall I. Williamson
INVENTOR.
by Anson Wilkelm Carlson
per Howard B. Russell
his attorneys

Jan. 30, 1951 M. I. WILLIAMSON 2,540,065

CARRIER FOR BOTTLES, CANS OR SIMILAR ARTICLES

Filed March 30, 1949 4 Sheets-Sheet 2

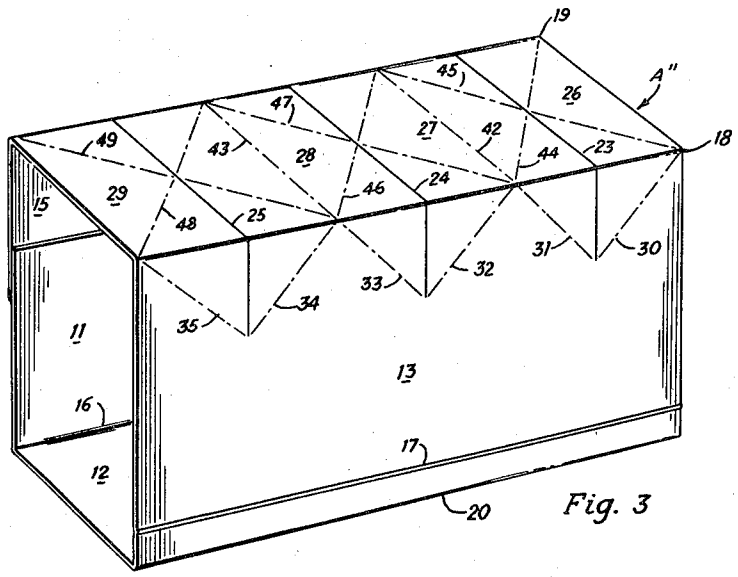


Fig. 3

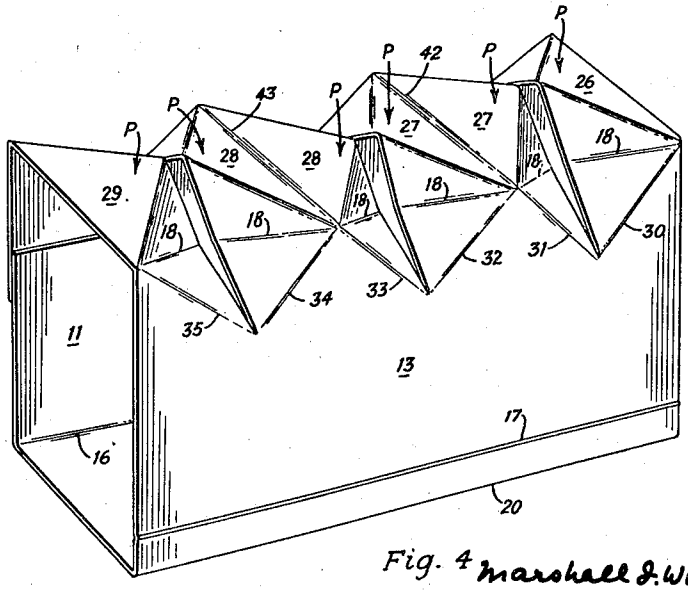


Fig. 4

Marshall I. Williamson
INVENTOR.

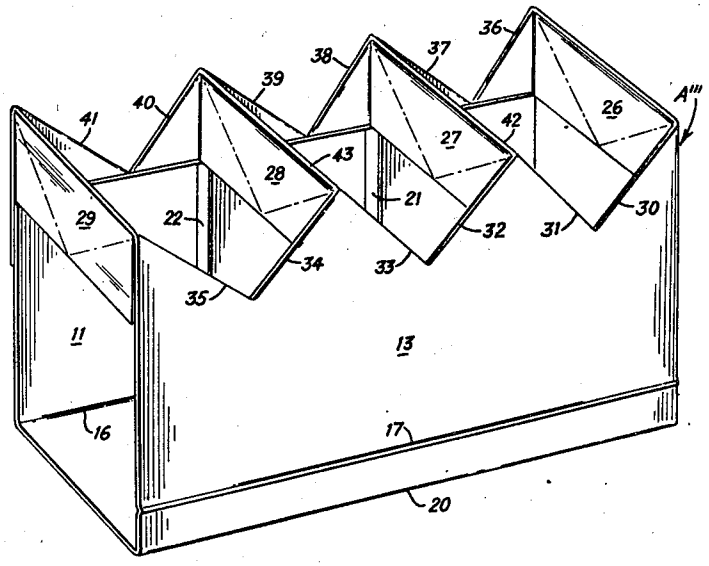
by Austin Wilhelm & Carlson
per Howard G. Russell
his attorneys

Jan. 30, 1951 M. I. WILLIAMSON 2,540,065

CARRIER FOR BOTTLES, CANS OR SIMILAR ARTICLES

Filed March 30, 1949 4 Sheets-Sheet 3

Fig. 5



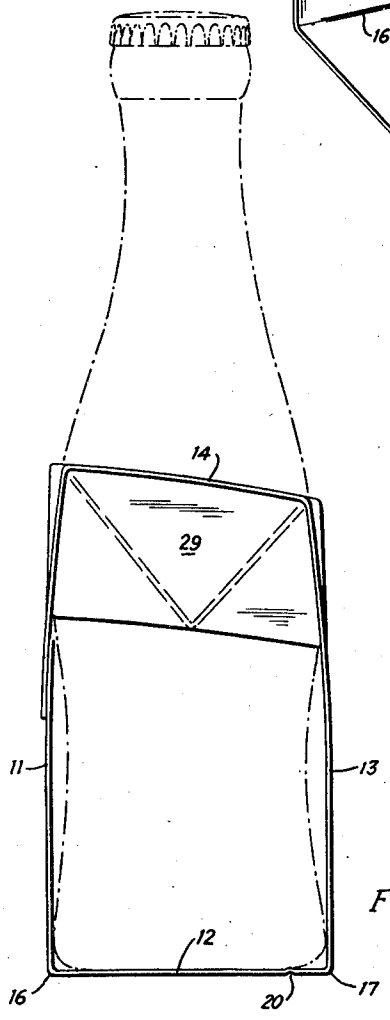


Fig. 8

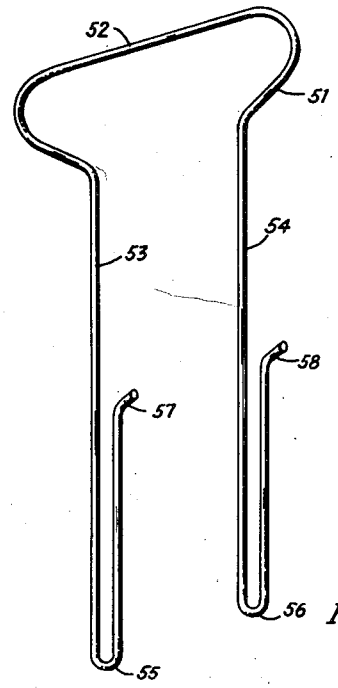


Fig. 6

INVENTOR.

Marshall I. Williamson

by Austin Wilhelm + Carlson

per Howard B. Russell

his attorneys

Jan. 30, 1951 M. I. WILLIAMSON 2,540,065

CARRIER FOR BOTTLES, CANS OR SIMILAR ARTICLES

Filed March 30, 1949 4 Sheets-Sheet 4

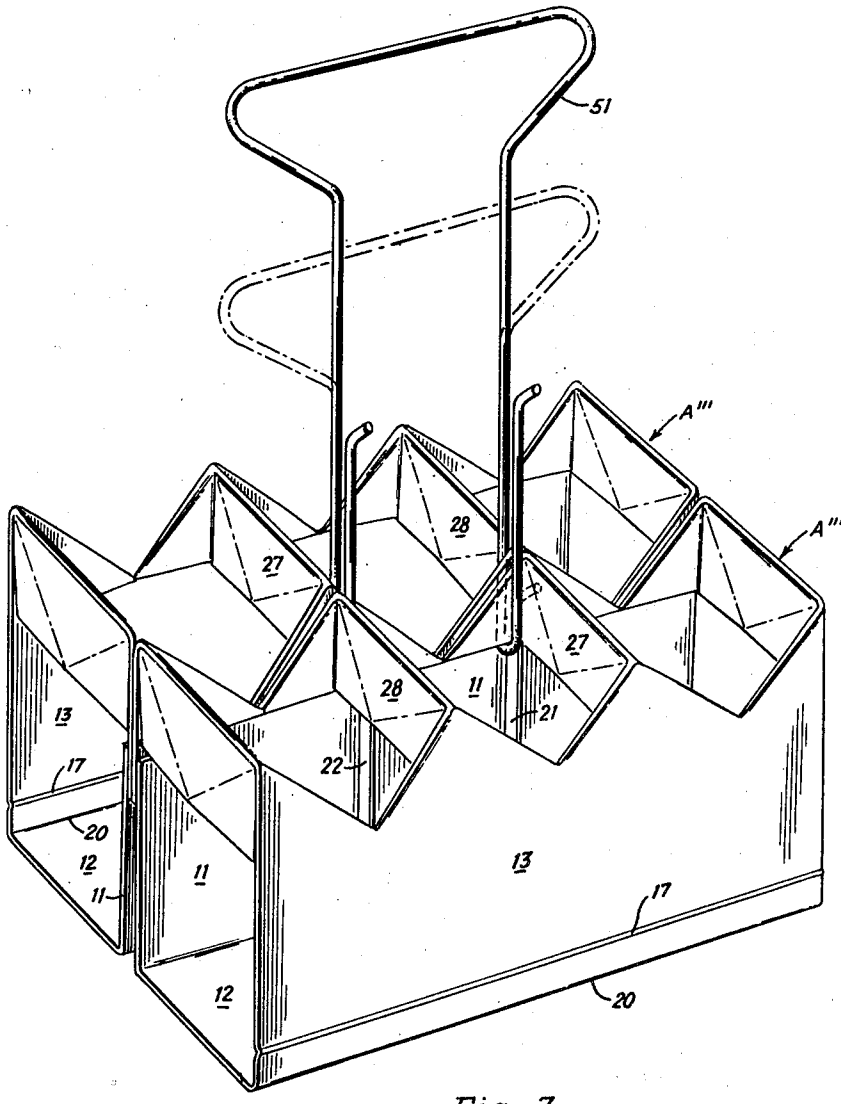


Fig. 7

Marshall & Williamson
INVENTOR.
by Austin Wilhelm & Carlson
per Howard & Russell
his attorneys.

Patented Jan. 30, 1951 2,540,065

UNITED STATES PATENT OFFICE

2,540,065

CARRIER FOR BOTTLES, CANS, OR SIMILAR ARTICLES

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

Application March 30, 1949, Serial No. 84,337

6 Claims. (Cl. 224—45)

1

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 carried by the consumer and which, in addition, provides protection for the packaged articles.

In the mass packaging in carriers of goods contained in bottles, cans, and jars, it is essential that the carrier is suited for handling on existing commonly established types of machines. Taking a bottle carrier as a specific example, it is necessary for a carrier, in order to be commercially acceptable, that it can be loaded on the machines which are in established use for loading cases partitioned for individual bottles, so that such cases and cases designed to contain carriers may interchangeably be loaded by the same machine.

A modern bottle carrier should desirably be so constructed that it can be produced and shipped by a paper box manufacturer to the bottler or packer in flat, collapsed condition, that it be suited for erection into hollow carrier form by hand or on relatively simple and inexpensive machinery, and that the carrier after erection will remain in erected position without a tendency to recollapse or distort. This feature is important for the bottler since it facilitates handling of the erected empty carrier and its loading at the bottling plant, and it is is important for the consumer, who removes filled bottles and inserts empty ones, either one by one, or all at one time, and who should not be expected to reerect a partially or entirely collapsed carrier.

There are other features which are desirable, for example, the ability of the carrier safely to support a partial or unequal load, for example, two or three bottles on one side of a central handle and none on the other without danger of dumping the bottles when the carrier is lifted up. Various other features and desirable points will be mentioned as the description proceeds.

The invention provides a carrier for bottles, jars, cans and similar articles which meets the specifications heretofore set forth and, in addition, provides numerous other features which make the carrier desirable for the trade.

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, a preferred embodiment of the invention. The invention also consists in certain new and

2

orginal features of construction and combination of elements 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 taken in connection with the accompanying drawings forming a part of it in which:

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

Figure 2 is a plan view of the blank of Figure 1 after an initial gluing and folding operation to form a tubular blank structure;

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

Figure 4 is a perspective view of the squared blank of Figure 3 in the process of folding of its cellular top structure;

Figure 5 is a perspective view of the completed carrier unit after folding of the cellular top structure;

Figure 6 is a perspective view of a wire handle for assembling two structural units into a carrier for six bottles;

Figure 7 is a perspective view of an assembled carrier ready for loading with six bottles; and

Figure 8 is an end view of one of the structural units with a bottle inserted.

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, 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 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. They comprise a lower inner side wall panel 11, a bottom panel 12, an outer side wall panel 13, a top panel 14, and

an upper inner side wall panel 15 separated by fold lines 16, 17, 18 and 19, respectively. An auxiliary fold line 20 may extend across the bottom panel 12 to permit convenient collapsing of the glued blank, as will later appear. Elongated apertures 21, 21', 22 and 22' are cut into the inner side wall panels, preferably in such a way that the scrap material produced by the cuts may conveniently be removed from the outer edges of the blank by a strpping operation.

The top panel 14 and adjoining portions of the side wall panels 13 and 15 are cut and scored to provide a cellular web structure. Cuts 23, 24, and 25 extend normal to the fold lines 18 and 19. These cuts separate the stock into webs 26, 27, 28 and 29 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 30, 31, 32, 33, 34 and 35 extending from the ends of the cuts 23, 24, and 25 to transverse fold line 18 preferably at an angle of 45 degrees. Similar diagonal fold lines 36, 37, 38, 39, 40 and 41 extend from the other ends of the cuts 23, 24 and 25 to the transverse fold line 19 and preferably include between themselves the same angles as the fold lines 30, 31, 32, 33, 34 and 35.

The webs 26 and 29 constitute terminal webs, since they lie at the outer edges of the blank. The webs 27 and 28 constitute intermediate webs. These intermediate webs comprise ridge fold lines 42 and 43 to provide for double thickness of the intermediate webs as will later appear.

Folding of the web structures is facilitated by a plurality of crease lines 44, 45, 46, 47, 48 and 49. These crease lines criss-cross the top panel 14 and subdivide the several webs into substantially triangular portions between the fold lines 18 and 19. It is evident that the angle at which these crease lines intersect depends entirely on the width of the panel 14 measured between the fold lines 18 and 19. For this reason the crease lines are not necessarily aligned with the oblique fold lines 30 to 41.

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

Adhesive *a* is first applied to a marginal portion of one of the inner side wall panels, for example at 50, and the blank is then folded about the auxiliary fold line 20 to bring panels 11 and 12 into a position overlying the panels 13 and 14. Thereafter the blank is folded about the fold line 19 and the end portions of the blank are pressed into adhesive engagement. The resulting tubular blank A' is ready for expansion into hollow form. Flat tubular blanks may be stored and shipped to the user in flat condition requiring a minimum of space and may be set up into carrier form by performance of a few relatively simple assembling operations which may be performed at the bottling plant and will now be described.

The tubular blank A' is first squared to assume a substantially rectangular shape as shown in Figure 3. In performing the squaring operation it is optional whether the bottom panel 12 is flattened out at the auxiliary fold line 20 and the blank is creased at 17, or whether the stock is left uncreased at 17 for the time being as shown in the drawings, since insertion of bottles into the carrier automatically causes the bottom panel 12 to flatten out at the fold line 20, if this folding operation was not performed before.

Pressure is exerted against the triangular panels of the webs at the fold lines 18 and 19. This pressure is preferably directed at 45 degrees with respect to the horizontal and towards the inside of the hollow tubular structure A''. As a result of this pressure the triangular panel portions lying to either side of the cuts 23, 24 and 25 cave in at the fold lines 18 and 19 shown in Figure 4, and simultaneously the triangular center portions of the webs are raised up and form upwardly projecting peaks as is clearly apparent from Figure 4.

Pressure is then exerted in a vertical downward direction against the peaks as indicated by arrows P in Figure 4, causing the web assemblies to snap inwardly and assume the position shown in Figure 5. The terminal webs 26 and 29 are of single thickness, and the intermediate webs 27 and 28 are of double thickness, folded back-to back at ridge fold lines 42 and 43. As a result the top of the unit is transformed into a web structure comprising three cells adapted to receive three bottles, cans, jars, or other pieces of merchandise.

In the completed carrier unit A''' shown in Figure 5 each web is seen to comprise two end portions which are folded back against the side walls 11 and 13 from which they were formed. These end portions lie on the inside of the cells and assist in guiding in the manner of a funnel bottles, cans and jars fed vertically to the carrier safely into seating position within the cells. The intermediate portions of each web extend at right angles with respect to the side walls 11 and 13 and run from one side wall to the other. These intermediate portions are of single thickness in the outermost webs and of double thickness in the intermediate webs 27 and 28, since the latter webs are formed by folding the stock back upon itself along the ridge fold lines 42 and 43.

The structural unit A''' shown in Figure 5 is quite rigid and will not recollapse unless the webs are pulled back into the position which they originally had in the expanded tubular blank A'' shown in Figure 3. Resistance to recollapsing is a very desirable feature, since it causes the cells of the carrier to remain properly squared at all times without external restraint.

Two carrier units A''' may be combined to produce a carrier for six bottles. This is accomplished by placing two units back-to-back so that their elongated apertures 21 and 22 register as shown in Figure 7. A wire handle 51 is then threaded through the apertures 21 and 22 and pulled upward into the position shown in solid lines in Figure 7 hooking the two units A'' securely together.

The handle 51 is shown in detail in Figure 6. It comprises a central handle portion 52 from which two legs 53 and 54 depend downwardly. The legs 53 and 54 are bent back upon themselves at 55 and at 56 to form hook portions. The ends of the hook portions are outwardly bent at 57 and 58 to facilitate assembly with the carrier units. The space between the bent back portions of the legs is preferably equal to slightly less than four times the thickness of the sheet material since each of the carrier units is supported by the hook portions of the handle at a portion of the unit having double thickness.

The blank is preferably so laid out that the lower edges of the webs produced by the cut 24 are in substantial coincidence with the upper ends of the elongated apertures 21 and 22, so that the

hook shaped handle portion bears not only against the stock at the ends of the cuts 21 and 22 in the inner side wall 11, but also bears against the lower edges of the end portion of the webs 27 and 28.

An incidental result of this construction is the clamping together of the intermediate webs of the two carrier units by the handle. This causes the webs 27 and 28 to act as braces for the outer side walls 13 with respect to the inner side walls 11 so that the outer side walls 13 are prevented from bellying out along the center portion under the load of bottles or other contents.

The length of the bent back portions of the handle 51 is preferably so selected that the handle can be depressed until its lower ends 55 and 56 strike the bottom panel 12 without disengagement of the end portions from the webs 27 and 28. The depressed position is indicated in dot dash lines in Figure 7. Its main purpose is the displacement of the handle into a position in which it will not interfere with the stacking of loaded carriers, one on top of the other. So stacked, the bottom of the topmost carrier rests on the necks of the bottles of the carrier underneath. This is a practice customary in the trade. Another purpose of the displacemnt of the handle is to permit unloading by machine of carriers containing empty bottles returned to the bottling plant.

It is easily apparent that the carrier shown in Figure 7 has great rigidity and strength, remains properly squared once it is set up, and permits safe carrying of uneven loads. Thus, for example, three bottles or less may be carried on one side and none on the other without danger of distortion of the carrier and resultant dumping of the bottles. Also the loaded carrier may be broken up into units of three simply by lifting one of the units A'' upwardly and disengaging it from the hook shaped portion of the handle. This is a great advantage for the retail trade since it provides a package of three bottls which prevents glass-to-glass contact between the bottles since the bottles are securely held in individual cells.

Referring now to Figure 8, it is seen that the carrier unit engages the bottles underneath the neck portion at approximately the area of greatest diameter whereby the bottles of adjacent carriers as well as the bottle within any one carrier are protected against glass-to-glass contact.

Experience has indicated that it is desirable to make the side wall portions as well as the top and bottom portions of each unit of slightly unequal dimensions. This is particularly apparent from Figure 8, but it is also seen from Figure 1. It is preferable to make the inner side wall 11 slightly taller than the outer side walls 13, and it is advantageous to make the top panel 14 slightly narrower than the bottom panel 12. As the loaded carrier is lifted up by the handle, the bottom panel will then remain substantially horizontal, whereas the top panel 14 will slope slightly outwardly and downwardly. This causes the top structure 14 to exert a certain pull upon the outer side wall panel 13 and aid in supporting the portion of the load carried by the outer side wall. This support would not be available to its full extent if the outer side wall 13 were as tall as the inner side wall and if the top structure were parallel to the bottom panel.

The sloping of the top structure, furthermore, causes a slight decrease in the width of the cell measured from the inner side wall panel to the outer side wall panel. This, in turn, produces a gripping or clamping action of the top structure on the bottles when the carrier is lifted up by the handle. The gripping action, however, is nearly absent when the carrier is placed on a horizontal surface so that the feeding of bottles into the pockets is not interfered with.

The unequality in the dimensions of the panels requires the presence of the auxiliary collapsing crease 20 since obviously the tubular blank could not be folded flat, if the collapsing crease 20 were absent.

As previously stated, it is not necessary to flatten out the bottom panel 12 at the collapsing crease prior or during formattion of the cellular top structure. The blank may remain creased about the auxiliary fold line 20 and flat at the bottom fold line 17 until bottles, can, or jars are actually loaded into the carrier. When this is being done the bottom panel flattens out automatically since, as is quite apparent in Figure 8 the distance between the fold lines 16 and 20 is not sufficient to accommodate the bottoms of the bottles. The bottles, therefore, will automatically cause the blank to crease at the fold line 17 when they are dropped into the carrier.

The invention thus presents a relatively simple but sturdy and efficient carrier for full lots, such as six bottles, as well as a convenient package for half lots, for example, three bottles. The carrier requires a minimum of stock, its folding and setting up operations are simple, and its strength is great so that it will serve a number of round trips between bottling plant and consumer.

What is claimed is:

1. In a carrier for a plurality of bottles, cans, or similar articles, the structural unit made from a single blank of foldable sheet material, spaced portions of the blank being secured together to form a tubular structure including a plurality of creases between the several constituent parts of the unit, such parts comprising a bottom, side panels hingedly connected to and upwardly extending from said bottom, and a top structure consisting of webs integral with said side panels and extending from one side panel to the other to form article receiving cells between them, each web having two end portions folded back upon the respective side panel about a diagonal fold line and overlying the side panel on the inside of the cells, said webs further including a central portion intermediate said end portions extending substantially at right angles to said bottom and to said end portions from one side wall to the other, the outermost webs of the structure being of single thickness, the intermediate webs being of double thickness, the two thicknesses being folded into back-to-back contact about a fold line forming the ridge of the web, the bottom maintaining the side panels in a set position in which the webs are at right angles to the side panels and said cells are squared.

2. A structural unit for a carrier for bottles, cans, or similar articles, the unit being made of a single blank of foldable sheet material including a plurality of creases between the several constituent parts of the unit, the unit comprising a substantially rectangular bottom, two side walls upwardly extending from said bottom along two spaced parallel bottom crease lines, and a cellular top structure extending between said side walls, the top structure comprising webs hinged to said side walls along diagonal fold lines, the end portions of the webs being folded back upon said side

walls about said diagonal fold lines to overlie said side walls on the inside of the cells formed by the webs, an intermediate portion of the webs extending substantially at right angles to said side walls, said bottom and said end portions, the outermost webs of the structure being of single thickness, the intermediate webs being of double thickness, the two thicknesses being folded into back-to-back contact about a fold line forming the ridge of the web, said intermediate portion being maintained in the right angular position by virtue of the side walls being attached to the said rectangular bottom, whereby the cells are maintained squared.

3. A structural unit for a carrier for bottles, cans, or similar articles the unit being made from a single blank of foldable sheet material, the ends of the blank being secured together to form a tubular structure, the structure including a plurality of creases between the several constituent parts of the unit, such parts comprising a bottom, side panels hingedly connected to, and upwardly extending from, said bottom, and a cellular top structure narrower than the bottom, width being measured between the respective creases bounding said top structure and said bottom, respectively, the top structure consisting of webs integral with said side panels and extending from one side panel to the other to form article receiving cells between them, each web having two end portions folded back upon the respective side panel about a diagonal fold line and overlying the side panel on the inside of the cells, said webs further including a central portion intermediate said end portions extending substantially at right angles to said bottom, and to said end portions from one side wall to the other, the bottom, the outermost webs of the structure being of single thickness, the intermediate webs being of double thickness, the two thicknesses being folded into back-to-back contact about a fold line forming the ridge of the web, maintaining the side panels in a set position in which the webs are at right angles to the side panels and said cells are squared, said bottom having a collapsing crease extending across it parallel to the creases along which the side wall panels are hinged, said collapsing crease providing a fold line for collapsing the tubular blank into flat condition.

4. A carrier for a plurality of bottles, cans, or similar articles, the carrier comprising two cellular units each made from a single blank of foldable sheet material, the ends of the blank being secured together to form a collapsible and expandable tubular unit, and a wire handle connecting said units into a unitary assembly, each unit comprising a bottom panel, side panels hingedly connected to and upwardly extending from said bottom panel, and a top structure consisting of webs integral with said side panels and extending from one side panel to the other to form article receiving cells between them, each web having two end portions folded back upon the respective side panel about a diagonal fold line and overlying the side panel on the inside of the cells, said webs further including a central portion intermediate said end portions extending substantially at right angles to said end portions from one side wall to the other, the bottom maintaining the side panels in a set position in which the webs are at right angles to the side panels and the bottom panel and the cells are squared, the outermost webs of the structure being of single thickness, the intermediate webs being of double thickness, the two thicknesses being folded into back-to-back contact about a fold line forming the ridge of the web, one of the side walls of each unit having two spaced elongated apertures in it extending substantially vertically to the lower edge of the folded back end portions of certain of the webs, the apertures of the two units being in registry when the units are placed face-to-face with their apertured wall panels, said handle being of wire and comprising a handle portion from which legs depend, the ends of the legs beiug bent back upon themselves to form hooks insertable through said registering apertures to support said two units, the handle engaging two thicknesses of the sheet material of each unit one thickness being that of the apertured side wall, the other thickness being that of the aforesaid folded back web end portion, whereby said units are removably supported on said handle.

5. A structural unit for a carrier for bottles, cans, or similar articles the unit being made from a single blank of foldable sheet material, the ends of the blank being secured together to form a tubular structure, the structure including a plurality of creases between the several constituent parts of the unit, such parts comprising a bottom panel, an outer side wall panel and an inner side wall panel, said side wall panels being hingedly connected to, and upwardly extending from, said bottom panel, and a cellular top structure consisting of webs integral with said side panels and extending from one side panel to the other to form substantially rectangular cells between them, each web having two end portions folded back upon the respective side panel about a diagonal fold line and overlying the side panel on the inside of the cells, said webs further including a central portion intermediate said end portions extending substantially at right angles to said end portions from one side wall to the other, the webs lying at the ends of the unit being of single thickness, the remaining webs being of double thickness, the two thicknesses being folded back-to-back about a crease line forming the ridge of the web, said inner side wall panel having two substantially vertically extending elongated apertures in it the upper ends of the apertures terminating at the lower edge of the folded back end portions of certain of the webs to provide two thicknesses of sheet material at this point for engagement by a handle member inserted through said apertures.

6. A unit as set forth in claim 5 in which the central web portions are subdivided into three triangular portions by two oblique fold lines extending in the manner of a V from the center of the lower edge of the central portion.

MARSHALL I. WILLIAMSON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,374,050	Yarnall	Apr. 5, 1921
2,383,183	Fischer	Aug. 21, 1945