

Oct. 27, 1953

H. A. CARRUTH
CAN CARRIER

2,656,960

Filed Dec. 4, 1950

3 Sheets-Sheet 1

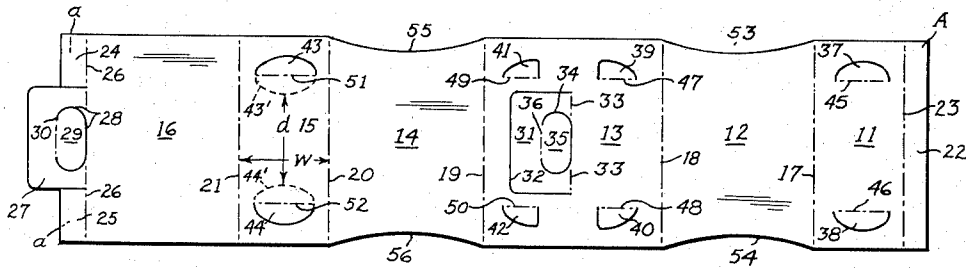


Fig. 1

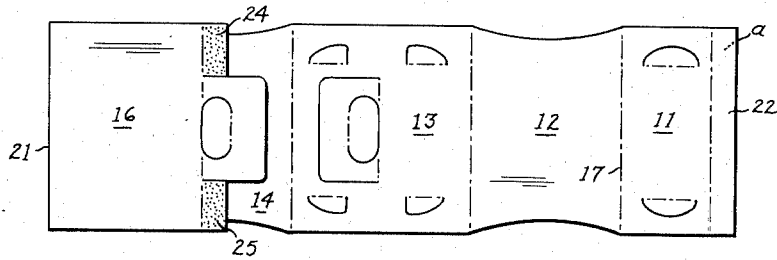


Fig. 2

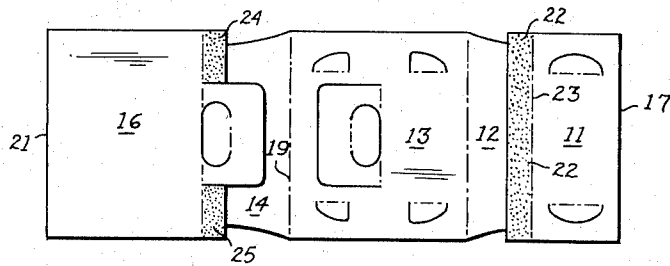


Fig. 3

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3 Sheets-Sheet 2

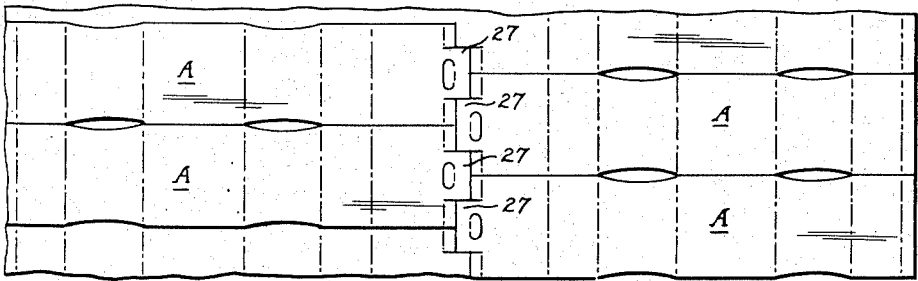
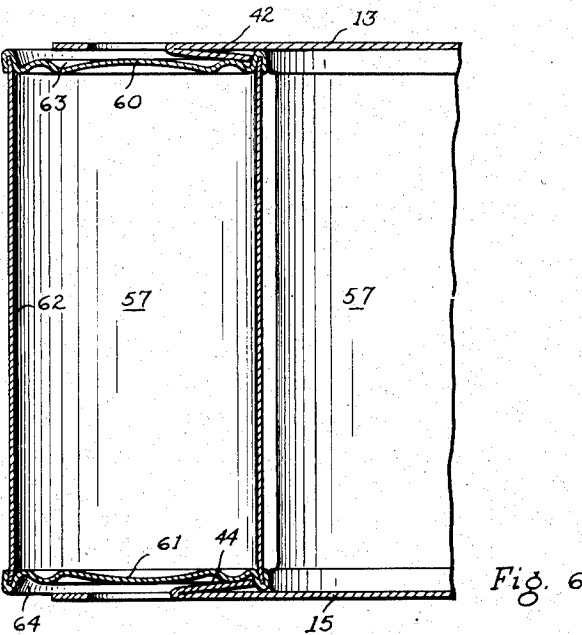
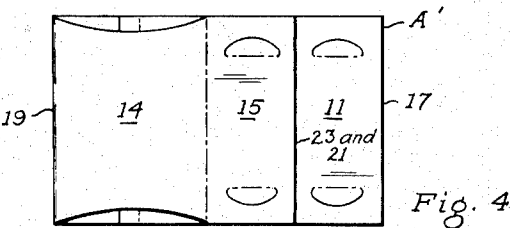


Fig. 7

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3 Sheets-Sheet 3

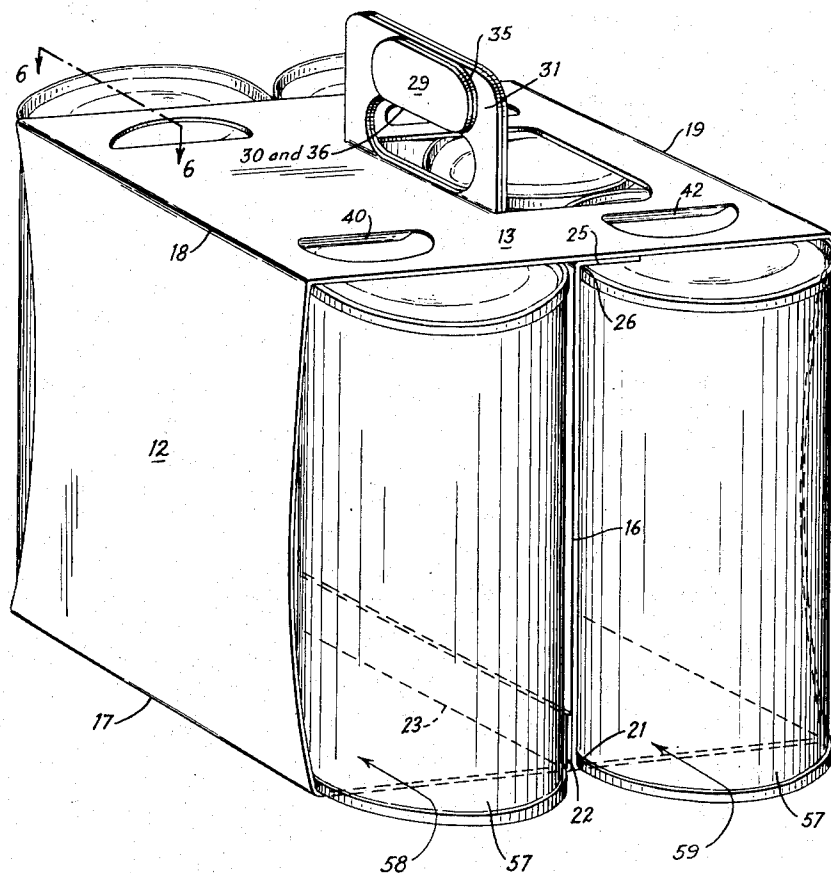


Fig. 5

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2,656,960

CAN CARRIER

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6 Claims. (Cl. 224-45)

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This invention relates to improvements in carriers made from foldable sheet material, for example, paperboard, for packaging a plurality of chimed-end cans as a unit which may easily be carried by the consumer without further wrapping or packaging and which facilitates storage and handling of cans in multiples in the transport and sale of canned beverages.

Special considerations enter into the design and manufacture of can carriers which are not present in other forms of carriers, for example, the commonly known bottle carriers.

Can carriers are single use items. They are discarded once the cans are removed from the carrier and are not reused. In this respect can carriers differ from bottle carriers which are generally designed to serve a number of round trips between the beverage producer and the consumer.

Being a single use item, the cost of the carrier is a very important factor, and savings in stock, particularly savings in blank size and board quality are far more important than comparable savings in a bottle carrier, since the total saving applies to a single use of the carrier, whereas in the case of the bottle carrier a similar saving is spread over the total number of uses, usually between four and six and is therefore of comparatively lesser importance. For this reason savings in blank size, board caliper, box machine operations, and handling, are particularly critical in can carriers, and savings of an order which in bottle carriers might be considered minor, frequently amount to the difference between failure and success in the production of a competitive can carrier.

It is for this reason particularly essential to construct a can carrier from a minimum of board, and in such a way that it can be set up on simple, commonly available box machinery, preferably in a single pass through the machine and with a minimum of assembly operations.

The present invention provides a can carrier which is constructed from a minimum of stock without sacrifice of essential qualities, such as strength and attractive appearance. The carrier embodying the present invention is equipped with a handle which is integral with the carrier body.

The construction of the handle is another point with respect to which different considerations apply to a can carrier than to a bottle carrier. It is of course desirable, even imperative from a commercial point of view, that, the construction of the carrier permits stacking of loaded carriers one on top of another without making it inconvenient to grasp the handle.

In some forms of bottle carriers this problem is solved by provision of a telescoping handle which can be lifted above the tops of the bottles for carrying and which can be depressed below the tops of the bottles for stacking. The

construction of telescoping handles, however, involves an expense which makes the use of such handles prohibitive for single use carriers such as can carriers.

The handle problem is solved in another type of bottle carrier by making the handle deformable or foldable so that in deformed position it will occupy the space between the necks of the bottles, below the bottle tops. The latter handle construction is not usable for can carriers since no such space is provided between the tops of the cans into which the deformed handle can be moved.

On the other hand, it is essential that the carrier, in the position in which it is to be stacked, presents a flat top surface free from protrusions, welts, or ridges, since such protrusions interfere with the stacking to such an extent that even stacks of moderate height are unsteady and likely to collapse besides being unsightly because of their irregular appearance.

The present invention provides a carrier which has an integral handle extending above the top of the carrier for convenient grasping, but which is so arranged that it will fold away into the plane of the top wall of the carrier for stacking in a neat and orderly fashion. Loaded carriers embodying the present invention may be stacked to considerable height without being unsteady or unsightly.

These and other 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 original features of construction and combination of elements hereinafter set forth and claimed.

Although the characteristic features of this 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 following 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 carrier embodying the present invention may be made;

Figure 2 is a plan view of the blank shown in Figure 1 after an initial application of glue and a first folding operation;

Figure 3 is a plan view of the blank after a second application of glue and a second folding operation;

Figure 4 is a plan view of the blank after a third folding operation resulting in the formation of a flat collapsed tubular structure ready for expansion into hollow carrier form and loading with cans;

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Figure 5 is a perspective view of the loaded can carrier, the handle being shown in carrying position;

Figure 6 is a side view, partly in section, the section being taken on line 6—6 of Figure 5; and

Figure 7 is a plan view illustrating the layout of individual blanks in a sheet of stock in interlocked relationship resulting in maximum economy.

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 one specifically shown.

The blank A shown in Figure 1 may be cut and scored, in multiple, from large rolls or sheets of foldable sheet material, for example, paper-board, on automatic cutting and scoring machines. Only one surface of the stock needs to be imprinted or otherwise decoratively finished since only one side appears as the outside of the finished carrier. The blank A is shown with its unfinished back-side facing the observer.

The several constituent parts of the blank are set apart by fold or crease lines or by cuts. The blank comprises a bottom panel 11, a wall panel 12, a top panel 13, a further wall panel 14, a further bottom panel 15, and a center panel 16. These panels are articulated to one another along several fold or score lines which, for convenience of description, may be termed a bottom side fold line 17, a top side fold line 18, a further top side fold line 19, a further bottom side fold line 20, and a bottom center fold line 21. An end flap 22 is articulated to the bottom panel 11 along a fold line 23 and end flaps 24 and 25 are articulated to the center panel along a fold line 26 which in the following description also will be referred to as the top center fold line.

The top center fold line 26, preferably, although not necessarily, extends across the blank, and also forms the hinge for a handle panel 27 lying between the end flaps 24 and 25. An aperture is formed in the handle panel by a substantially C-shaped cut 28 bordering a flap 29 which is hinged to the remainder of the handle panel along a fold line 30. This construction permits formation of a handle aperture without stripping of stock and further provides rounded edge 30 comfortable for gripping of the handle when the flap 29 is folded back upon the remainder of the handle panel along its fold line 30.

A similar handle is formed in the top panel 13. The handle panel 31 is cut from the stock of the top panel 3 by a substantially C-shaped cut 22 and is articulated to the remainder of the top panel along a fold line 33. A grip aperture is formed in the handle panel 31 by a further C-shaped cut 34 forming a flap 35 in the handle panel, the flap 35 being articulated to the remainder of the handle panel along a fold line 36.

The top panel 13 and the bottom panel 12 and 14 are provided with can retaining locking tabs

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37, 38, 39, 40, 41, 42, 43 and 44. These tabs are formed in the respective panels by substantially C-shaped cuts and are articulated to the panels from which they are cut along fold lines 45, 46, 47, 48, 49, 50, 51, and 52. These flaps are alike in construction and purpose, and it will therefore suffice to describe the construction of one pair of flaps, 43 and 44.

The curvature of the cut edges of the flaps is preferably so chosen that it is equal to, or slightly less than, the curvature of the edge of the can chime against which the flap bears in the loaded carrier to retain the can in the carrier shell. The fold lines of the can retaining locking flaps are substantially parallel to each other and to the side edges of the blank and permit folding of the tabs back upon the panel from which they are cut. In folded back position the curved edges of the tabs 43 and 44 lie at 43' and 44', spaced apart by a distance d . This distance d is substantially equal to the width w of the panel from which the tabs are cut or equal to a multiple of the width, that is $2w$, $3w$ and so forth, depending on the number of cans to be accommodated in the carrier. In a six can carrier, in which two lines of cans are held, each line comprising three cans, the distance d is substantially equal to the width w , width being measured between the bordering fold lines 20 and 21. If four cans are arranged in each line, the distance would be equal to $2w$. If five cans are in line, they require a distance d equal to $3w$ and so forth.

It will be noted that the can retaining locking tabs 39, 40, 41 and 42 are of reduced width. This is done for the purpose of accommodating the end flaps 24 and 25 in adhered position, as will later appear, particularly from an inspection of Figure 5. Gluing of the flaps 24 and 25, strictly speaking, only requires reduction to the width of two tabs, for example, tabs 39 and 40, but it is preferred to make all four tabs of equal size for uniform appearance.

The side edges of the wall panels 12 and 14 may be cut back slightly as shown in 53, 54, 55 and 56 to expose the can labels as will later appear.

The assembly of the blank A into tubular collapsed carrier form may proceed as follows:

Adhesive a is first applied to the under side of the end flaps 24 and 25, and the blank is then folded about the bottom side fold line 21 to bring the center panel into a position overlying the bottom panel 15 and a portion of the wall panel 14. The folded blank is shown in Figure 2.

Adhesive a is then applied to the under side of the end flap 22 and the blank is folded about the bottom side fold line 17 to bring the bottom panel 11 into a position overlying the wall panel 12. The resulting blank is shown in Figure 3 and is ready for a final folding and adhering operation.

The final folding operation involves folding of the blank about the top side fold line 19 to bring the end flaps 24 and 25 into adhesive engagement with the center portion of the top panel 13. Simultaneously, the end flap 22 is brought into adhesive engagement with a marginal portion of the center panel 16 adjacent the bottom center fold line 21. The resulting structure A' is shown in Figure 4.

The folded blank is maintained under pressure for a time sufficient to permit the adhesive to set, whereafter the folded structure is ready for use and may be expanded into hollow carrier form. From Figure 4 it is apparent that the bot-

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tom center fold line 21 and the fold line 23 of the flap 22 are in substantial coincidence, and lie at the center of the bottom of the carrier.

The collapsed flat tubular structure or body A' may be stored and shipped in flat collapsed condition requiring a minimum of space. In this connection, it is particularly notable that no portion of the handle protrudes, but that the collapsed structure A' is a clean rectangle which may be stacked either flat or on edge.

The setting up and loading of the carrier is simple and may proceed as follows:

The structure A' is first squared and its locking tabs are then folded towards the inside of the hollow structure substantially back upon the panels from which they are cut. After release, these tabs will move into an angular position with respect to the panels to which they are articulated, due to the resistance of the stock to folding at the respective folding creases 45 through 52. This "fight" of the stock is most desirable, since it tends to keep the tabs in locking position against the inner edges of the chimes of the cans.

The inwardly pointed tabs offer no substantial resistance to the insertion of cans 57 into the two parallel sleeve passages 58 and 59 of the carrier, to either side of the center panel 16. The cans 57 have recessed ends 60 and 61 which are attached to the side walls 62 of the cans in a conventional way by crimping, resulting in the formation of chimes 63 and 64 at either end of the can.

The locking tabs engage the chimes of the cans and hold the cans locked in the carrier as is clearly apparent from Figure 6. The inherent resiliency of the stock causes the tabs to remain in engaged position regardless of jarring and vibration of the loaded carrier, particularly, since the tabs are in a protected, and practically inaccessible position within the recessed ends of the cans.

The cans 57 are securely locked within the carrier and form a conveniently saleable unit. The cans can be removed from the sleeve only by destroying the carrier. If the outermost cans were pulled from the carrier by force, the respective locking tabs would be torn or be so deformed that the can could not be re-locked.

The labels on the cans are easily readable and the visibility of the labels is aided by the cut backs 53, 54, 55 and 56.

The invention thus provides a simple, inexpensive, and practically tamperproof device for combining into a unit, a plurality of cans, containers, or other devices of which the outermost ones are provided with chimes which the retaining locking tabs can engage. An extremely small amount of stock is used for making the carrier and practically no stock is wasted in cutting blanks from larger sheets or rolls of board. This is illustrated in Figure 7 in which the layout of a plurality of blanks is shown. The individual blanks A interlock with their handle portions in such a way that no stock is wasted at the handles.

The carrier is readily lifted up by its handle after folding the handle 27, 31 into upright position as shown in Figure 5. The handle is particularly strong since it consists of two plies of board throughout, except at the finger engaging portion where four plies are provided at the fold 30 and 36. For stacking, the handle may be depressed into the aperture in the top panel 13, thereby leaving the top surface of the carrier flat and unobstructed and free from protrusions, welts and ridges.

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The folding and setting up operations of the carrier are simple and only the simplest form of machinery is required for gluing it. The most elementary form of folding box machine, a conventional straight-line gluing and folding machine, is the only equipment needed for gluing and folding the blank and the carrier is completed after a single pass through the machine. No further securing operations are required.

Particularly, it is not necessary to drive stitches through any portion of the carrier to strengthen it. The simplicity of the blank, the simplicity of the setting up procedure and the small number of operations required for producing the carrier are important factors on which its commercial merits are based.

Obviously various additions, omissions, substitutions, or other changes may be made without departing from the essence of the invention.

What is claimed is:

1. A collapsible carrier of foldable sheet material for a plurality of chime-end cans arranged in two rows, the carrier comprising, two bottom panels articulated to each other along a bottom center hinge line; two wall panels articulated to the bottom panels along bottom side fold lines; a one-piece top panel articulated to said wall panels along top side fold lines; a center panel articulated to said bottom panels along said bottom center hinge line and articulated to said top panel along a top center hinge line; a handle articulated to said top panel at said top center hinge line, said handle being narrower than said top panel and having two thicknesses, one thickness being integral with, and an extension of, said center panel, said one thickness extending through said top panel, the other thickness being cut from the stock of said top panel, the cut-out stock leaving an aperture in said top panel through which said one thickness projects, the handle being foldable into said aperture into a position substantially flat with respect to said top panel; a flap integral with, and articulated to, said center panel on either side of said handle, making a total of two flaps on the center panel, said flaps being secured to the underside of said top panel; and means for retaining cans in the carrier, said means including a plurality of hinged tabs inwardly foldable upon the panels to which they are hinged, said tabs having edges adapted to engage edge-wise against the inner surfaces of the chimes of at least some of the cans.

2. A collapsible carrier of foldable sheet material for a plurality of chime-end cans arranged in two rows, the carrier comprising, two bottom panels articulated to each other along a bottom center hinge line; two wall panels articulated to the bottom panels along bottom side fold lines; a one-piece top panel articulated to said wall panels along top side fold lines; a center panel articulated to said bottom panels along said bottom center hinge line and articulated to said top panel along a top center hinge line; a handle articulated to said top panel at said top center hinge line, said handle being narrower than said top panel and having two thicknesses, one thickness being integral with, and an extension of, said center panel, said one thickness extending through said top panel, the other thickness being cut from the stock of said top panel and being substantially equal in size to said one thickness, the cut-out stock leaving an aperture in said top panel through which said one thickness projects, the handle being foldable into said aperture into

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a position substantially flat with respect to said top panel; a flap integral with, and articulated to, said center panel on either side of said handle, making a total of two flaps on the center panel, said flaps being secured to the underside of said top panel; and means for retaining cans in the carrier; said means including a plurality of tabs cut from the stock of said bottom panels and of said top panel, said tabs being articulated to the panels from which they are cut along tab hinge lines and foldable inwardly and substantially back upon the panels from which they are cut into a position pointing towards one another to rest edgewise against the inner surfaces of at least some of the cans, thereby locking the cans in the carrier.

3. A collapsible carrier of foldable sheet material for a plurality of chime-end cans arranged in two rows, the carrier comprising, two bottom panels; a first end flap articulated to one of the bottom panels for assembling said bottom panels in side-by-side hinged relationship along a bottom center hinge line; two wall panels articulated to the bottom panels along bottom side fold lines; a one-piece top panel articulated to said wall panels along top side fold lines; a center panel articulated to, and integral with, one of said bottom panels along said bottom center hinge line; a second end flap articulated to said center panel along a top center hinge line, said second end flap being adhered to the underside of said top panel; a handle articulated to said top panel at said top center line, said handle being narrower than said top panel and having two thicknesses, one thickness being integral with, and an extension of, said center panel, said one thickness extending through said top panel, the other thickness being cut from the stock of said top panel and being substantially equal in size to said one thickness, the cut-out stock leaving an aperture in said top panel through which said one thickness projects, the handle being foldable into said aperture into a position substantially flat with respect to said top panel; and means for retaining cans in the carrier, said means including a plurality of hinged tabs inwardly foldable upon the panels to which they are hinged, said tabs having edges adapted to engage edgewise against the inner surfaces of the chimes of at least some of the cans.

4. A collapsible carrier of foldable sheet material for a plurality of chime-end cans arranged in two rows, the carrier comprising, two bottom panels; a first end flap articulated to one of the bottom panels for assembling said bottom panels in side-by-side hinged relationship along a bottom center hinge line; two wall panels articulated to the bottom panels along bottom side fold lines; a one-piece top panel articulated to said wall panels along top side fold lines; a center panel articulated to, and integral with, one of said bottom panels along said bottom center hinge line; a second end flap articulated to said center panel along a top center hinge line, said second end flap being adhered to the underside of said top panel; a handle articulated to said top panel at said top center hinge line, said handle being narrower than said top panel and having two thicknesses, one thickness being integral with, and an extension of, said center panel, said one thickness extending through said top panel, the other thickness being cut from the stock of said top panel and being substantially equal in size to said one thickness, the cut-out stock leaving an aperture in said top panel through

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which said one thickness projects, the handle being foldable into said aperture into a position substantially flat with respect to said top panel; and means for retaining cans in the carrier, said means including a plurality of tabs cut from the stock of said bottom panels and of said top panel, said tabs being articulated to the panels from which they are cut along tab hinge lines and foldable inwardly and substantially back upon the panels from which they are cut into a position pointing towards one another to rest edgewise against the inner surfaces of at least some of the cans, thereby locking the cans in the carrier.

5. A blank of foldable sheet material for constructing a collapsible carrier for a plurality of chime-end cans arranged in two rows, the blank comprising a series of flaps and panels articulated to one another along parallel score lines said flaps and panels being, in order, an end flap, a bottom panel, a wall panel, a top panel twice as long as said bottom panel, a further wall panel, a further bottom panel, a center panel, a handle panel narrower than said top panel, and two further end flaps side by side with respect to said handle panel, said handle panel and said two further end flaps being articulated to said center panel along a common score; a handle flap cut from the stock of said top panel and articulated to the remainder of said top panel along a handle score line, said handle flap being at least as wide as said handle panel; and chime-end retaining tabs articulated to said top panel and to said bottom panels, the tabs of each panel pointing away from each other in the flat unfolded blank and being foldable back upon the panels from which they extend into a position pointing towards each other.

6. A blank of foldable sheet material for constructing a collapsible carrier for a plurality of chime-end cans arranged in two rows, the blank comprising a series of flaps and panels articulated to one another along parallel score lines, said flaps and panels being, in order, an end flap, a bottom panel, a wall panel, a top panel twice as long as said bottom panel, a further wall panel, a further bottom panel, a center panel, a handle panel narrower than said top panel, and two further end flaps side by side with respect to said handle panel, said handle panel and said two further end flaps being articulated to said center panel along a common score; a handle flap cut from the stock of said top panel and articulated to the remainder of said top panel along a handle score line, said handle flap being at least as wide as said handle panel; and chime-end retaining tabs cut from the stock of said top panel and of said bottom panels, said tabs being articulated to the remainder of the panels from which they are cut along tab hinge lines, the tabs in each panel pointing away from each other in the flat unfolded blank and being foldable back upon the panels from which they are cut into a position pointing towards each other.

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