

PATENT SPECIFICATION (11)

1 408 415

(21) Application No. 48057/72 (22) Filed 18 Oct. 1972 (19)

(31) Convention Application Nos. 219 328 (32) Filed 20 Jan. 1972
289 909 18 Sept. 1972 in

(33) United States of America (US)

(44) Complete Specification published 1 Oct. 1975

(51) INT. CL.² B65D 5/16 5/46

(52) Index at acceptance

B8P 7A 8C1C1 8C1C2 8M

(72) Inventors MINDAUGAS JULIUS KLYGIS,

RONALD CHARLES OWEN and

MICHAEL WARREN BREZETTE



08

(54) CONTAINER CARRIERS

(71) We, ILLINOIS TOOL WORKS INC., a corporation organized under the laws of the State of Delaware, United States of America, of 8501 West Higgins Road, Chicago, Illinois 60631, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention is concerned with improvements in container carriers of the manually transportable type adapted to support two rows of containers, for example of bottles. The term "six pack" has been in common use to identify a manually transportable carrier for six containers, such as bottles, cans, and the like. Some of the "six pack" carriers heretofore available are not reusable, because of the mutilation of the carrier which occurs as the containers are removed. In order to render a carrier reusable it must furthermore be so designed as to enable the removal of the normal accumulation of soil, stain, etc. Another significant factor to be considered in the production of multi-pack containers is to assume compactness when in folded condition to facilitate storage and shipment thereof.

It is an important object of the present invention to provide a multi-pack container of novel, collapsible and expandable form which will greatly facilitate the ease with which containers may be inserted within the expanded carrier and subsequently removed therefrom and will permit subsequent collapsing of the carrier to a relatively small, flat multi-ply structure.

It is further object of the present invention to provide a novel, container carrier which may be produced very economically. To this end, it is contemplated that suitable sheet plastic material may be employed requiring a minimum quantity of sheet stock without sacrificing carrier strength and with-

out impairing efficiency in the retention of containers supported thereby.

According to this invention a container carrier is formed from a folded sheet of material and comprises a pair of side walls joined together at upper edges thereof, a plurality of container-receiving apertures formed in each side wall and arranged in a row between the ends of the side walls, a bottom wall divided into two sections side by side with each section joined to the lower edge of a respective one of the side walls, a central wall joined to both of the bottom wall sections, and extending upwards between the side walls and terminating in a handle fixed to the central wall, the side walls defining an opening to accommodate the handle telescopically, and also defining stop means arranged to limit upward movement of the handle relative to the opening, and strips cut from the end marginal edges of the side walls and the bottom sections, and arranged to prevent dislodgment of containers from the ends of the carrier.

The accompanying drawings show three examples of carriers embodying the invention. In these drawings:—

Figure 1 is a side elevation of a first carrier having a plurality of bottles associated therewith;

Figure 2 is an end elevation of the carrier and bottles shown in Figure 1;

Figure 3 is a plan view of the carrier and bottles;

Figure 4 is a plan of a sheet plastic blank which may be folded so as to assume the container carrying relation illustrated in Figures 1 to 3;

Figure 5 is a side elevation of the blank of Figure 4 after folding, in flat condition in readiness to be expanded for accommodating a plurality of bottles;

Figure 6 is an end elevation of the complete carrier as shown in Figure 5;

Figure 7 is an end elevation similar to Figure 6 illustrating the relative position of

the parts during expansion of the container accommodating side walls of the carrier;

Figure 8 is an enlarged, fragmentary perspective view of the upper portion of the carrier in the condition illustrated in Figure 7, to illustrate the manner in which the upper margins of the side wall sections are joined by heat seals and provide an opening therebetween for telescopically accommodating the handle of the carrier;

Figure 9 is a side elevation similar to Figure 1 of a second carrier, an upper portion of one of the side walls and the handle being broken away for clarity of disclosure;

Figure 10 is a plan of a sheet plastic blank which may be folded to produce the carrier shown in Figure 9;

Figure 11 is an enlarged, perspective view of the upper portion of the carrier shown in Figure 9, with the handle thereof disclosed in partial telescopic association with the opening provided along the upper junction of the side walls;

Figure 12 is a fragmentary, perspective view of the bottom portion of the carrier shown in Figure 9 before it has been expanded to accommodate a plurality of bottles, this view illustrating the heat sealed areas of the central wall sections;

Figure 13 is a side elevation of a third carrier with a plurality of bottles therein;

Figure 14 is an end elevation of the carrier and bottles shown in Figure 13;

Figure 15 is a side elevation of the carrier of Figures 13 and 14, with the bottles removed and with the carrier in a folded flat condition;

Figure 16 is an end view of the carrier shown in Figure 15; and

Figure 17 is a partial perspective view of the third carrier in an unfolded condition.

The carrier shown in Figures 1 to 8 inclusive is designated generally by the numeral 14. A foldable blank, of plastic sheet stock, is shown in Figure 4. In order to more readily understand the function and structure of the various parts of the plastic sheet blank when in its folded, container-accommodating position, reference will now be made to Figure 4. A central transverse fold line, indicated by the dot-and-dash line 16, divides the blank into two identical units, designated generally by the letters "X" and "Y". Intermediate transverse bottom sections of the units X and Y are designated by the numerals 18 and 20, respectively. The section 18 has a row of apertures 22, and the section 20 has a row of similar apertures 24. As will later be explained, the sections 18 and 20 form, in use, the support for the bottom of a plurality of bottles 30.

Extending from the outer margin of the bottom section 18 is a side wall 26, and extending from the outer margin of the bottom section 20 is a similar oppositely disposed

side wall 28. Elongate vertically disposed apertures 32 in the side wall 26 serve, in use, to accommodate the bottles 30, after the plastic sheet blank has been folded and expanded to the position illustrated in Figures 1 to 3, inclusive. Likewise, the side wall 28 has similar container-accommodating apertures 34. Extending from the inner margin of the bottom section 18 is a central section 36, and extending from the inner margin of the adjacent bottom section 20 is a corresponding central section 38. These sections 36 and 38 have hand-accommodating handle apertures 40 and 42 respectively, adjacent to the line 16.

The manner in which the plastic sheet blank illustrated in Figure 4 may be folded and laterally expanded to accommodate the bottles 30 will now be described. The central wall sections 36 and 38 are first folded along the line 16 so as to bring these sections into abutting relation, as illustrated in Figures 6 and 7. The handle apertures 40 and 42 are then in register. The bottom section 18 is now folded along a fold line indicated by the dot-and-dash line 44, and the bottom section 20 is similarly folded along a fold line 46, so as to bring the bottom sections 18 and 20, together with their adjacent side walls 26 and 28 respectively, into engagement with the outer surfaces of their respective central sections 36 and 38. When thus folded, the sections will appear as illustrated in Figures 5 and 6, namely as a compact four-ply sheet arrangement. With the above-described sections thus folded, the upper abutting margins of the side walls 26 and 28 are joined by heat sealing in areas designated by numerals 48 and 50, Figure 5. Similarly, the lower abutting margins of the central sections 36 and 38 are joined by heat sealing in the areas designated by the numerals 52 and 54. The presence of the apertures 22 and 24 makes it possible to perform this heat sealing operation without affecting any other portion of the sheet stock. The central sections 36, 38 thus form a central wall.

Attention is now directed to additional fold lines 56 and 58 in the unit X and corresponding fold lines 60 and 62 of the unit Y. When the side walls are expanded laterally from the flat position illustrated in Figure 6 towards the partially expanded position illustrated in Figure 7, and ultimately to the final position of expansion illustrated in Figure 2, folding occurs along the fold lines 56, 58, 60 and 62.

It will be apparent from the foregoing that, as the side walls 26 and 28 are moved laterally from the position shown in Figure 6 to the position illustrated in Figure 2, the vertical elongate openings 32 and 34 are disposed for receiving the bottles 30. The edges of the sheet material defining the apertures

32 and 34 are so shaped as to substantially conform with and engage the peripheries of the bottles and thereby prevent displacement thereof away from the central wall.

5 It has been found practical to have the container-accommodating apertures 32, 34 of generally egg shape. In consequence, a major part of the outline of each aperture is a pair of edge portions which diverge upwards.

10 To prevent the dislodgment endways of bottles 30 positioned at each extremity of the rows thereof, a narrow strip 64 is sheared from one end margin of the side wall 26, and a similar narrow strip 66 is sheared from the side wall 28 and these strips are heat sealed together at the area designated by the numeral 68, Figure 2. Similar strips 70 and 72 are sheared from the opposite extremity of the side walls 26 and 28 and are joined at 74 by heat sealing. It will be apparent from Figure 2 that the presence of the strips 64 and 66 at one extremity and the corresponding strips 70 and 72 at the opposite extremity will prevent endways dislodgment of the bottles 30. During the lateral expansion of the side walls 26 and 28, the upper margins of the side walls move downwards, thereby exposing the registering hand-accommodating apertures 40 and 42, as clearly illustrated in Figure 1. Upward movement of the handle relative to the side walls is limited by shoulders 76 on the central section 36 and corresponding shoulders 78 on the central section 38. These shoulders are adapted to engage the side walls adjacent to the heat-sealed portions 48 and 50.

40 In Figures 1 to 8 the bottles 30 have been shown smaller than they would really be. In fact they should fit closely in the apertures 32, 34, as shown in Figures 13 to 17, described below.

45 Figures 9 to 12 show a modified form of carrier, designated generally by the numeral 14a. As previously described, the carrier 14 is produced from a strip in which the handle portions of the carrier are joined along a fold line 16, whereas the blank from which the carrier 14a is produced, as illustrated in Figure 10, has handle portions at the opposite extremities and incorporates a fold line 16a at the junction of side walls 26a and 28a. Dot-and-dash fold lines corresponding with the fold lines previously described in connection with the plastic sheet blank in Figure 4 are given similar identifying numerals bearing the suffix "a". Likewise, all other structural features corresponding with the structures of the carrier 14 are identified with similar numbers bearing the suffix "a". The blank of the carrier 14a is initially folded along the line 16a, and the handle portions are threaded through an opening 80, which may be a slot or a slit, so as to ultimately occupy the position illustrated in

Figures 9 and 11. It will be apparent that the container carrier 14a incorporates structural and functional advantages previously set forth in the description of the carrier 14.

70 The carrier shown in Figures 13 to 17 inclusive, is designated generally by the numeral 114. It is symmetrical about the line 115 shown in Figures 15, 16 and 17. As shown in Figures 15 and 16, the carrier 114 in its folded condition comprises two outwardly disposed panels 116. Each panel 116 comprises a side wall and one half of the bottom wall of the carrier. The upper side edges of the panels 116 are integrally joined at the line 115, with the central area being open to present a slot to permit the handle assembly to project therethrough. The lower edges of each of the panels 116 are integrally connected to the lower marginal edge of one of a pair of panels 117. The panels 117 from the central wall and handle assembly for the carrier.

85 Each panel 116 comprises an upper section 116a and a lower section 116b. The portions 116a and 116b are contiguous on a fold line 118. Each section 116b forms $\frac{1}{2}$ of the bottom wall of the carrier, and each section 116a forms one side wall of the carrier 114. This carrier is intended to carry eight bottles 120 as shown in Figures 13 and 14, and for that purpose the upper portion of each of the side wall portions 116a has four adjacently disposed apertures 121. The apertures 121 are substantially egg-shaped to circumferentially engage the bottles 120 when the carrier is in an expanded condition as shown in Figures 13 and 14.

100 Strips 122 are cut or slit from the side marginal edge portions of the side and bottom wall sections 116a and 116b. The upper end of each strip 122 is integrally connected to a side wall section 116a. The lower end of each strip 122 is integrally connected to a bottom wall section 116b. The strips 122 are further cut from the sheet material of the carrier so that the portions of the strips 122 intermediate the ends thereof curve inwardly of the side wall sections 116a to form inwardly projecting corners 122b. In an alternative construction, the upper end of each strip 122 is cut free from the side wall sections 116a and terminates immediately above the inwardly curved corners 122b.

115 The panels 117 which form the central wall of the carrier 114 may conveniently have apertures 123 to reduce the weight of the carrier. The panels 117 further have apertures 124 adjacent to the side marginal edges of the panels 117. The apertures 124 have a length sufficient to include or encircle corners 122b of the strips 122 in both the folded condition of the carrier 114 as shown in Figure 15 and in the open condition of the carrier as shown in Figures 14 and 17.

130 The upper portions of the panels 117 are

reduced in width to form upwardly extending handle sections 125. The handle sections 125 in each panel 117 have apertures 126 which when superimposed form a convenient and comfortable opening for receiving a person's hand. A tab 127 may be provided by material from within one or both of the apertures 126, being joined to the handle section 125 along a fold line 128. The tab or tabs 127 are provided for distributing the weight of the carrier and the bottles carried therein over a relatively wide portion of a person's hand in carrying the package, as well as to retain the apertures 126 in the handle sections 125 in aligned relation.

The bottom sections 116b have spaced apart apertures 130 adjacent to the line of interconnection between the panels 116 and 117. The apertures 130 are provided to permit the panels 117 to be heat sealed together at spaced areas 131 when the carrier is in the folded flat condition shown in Figures 15 and 14.

In addition to the heat sealing at areas 131, the handle sections 125 may be conveniently heat sealed together at areas 132 which are exposed through the apertures 121, and the corners 122b of the strips 122 are heat sealed together at areas 133. The heat sealing of the strips 122 at areas 133 forms integral joints between adjacent brace members 122 within the apertures 124.

When the heat sealed central wall of the carrier formed by the panels 117 is projected upwards relatively to the panels 116, so that the handle section 125 is moved above the fold line 115, with a contemporaneous folding of the panels 116 along fold lines 118, the carrier will be arranged into the expanded bottle-receiving configuration shown in Figures 13, 14 and 17. As the folded flat carrier is manipulated to the expanded condition, the integral connections at corners 122b of the strips 122 will move downwardly in the apertures 124 to the position shown in Figure 17. As may be seen in Figure 17, the strips 122 in the expanded condition of the carrier 114 define a substantially X-shaped brace assembly across the open ends of the carrier 114, with the centre of the brace assembly 122 effectively locked to the central wall of the carrier. This arrangement positively and securely holds the end bottles when positioned in the carrier 114 against any slipping or shifting out therefrom even under extreme jostling or swinging of the carrier and bottle package during transport by a person holding the package at the handle section 125. In the aforesaid alternative embodiment wherein the brace members 122 terminate immediately above the corners 122b, the configuration of the brace assembly in the open condition of the carrier will be a downwardly open V-shape.

The insertion and removal of bottles 120 from the carrier may be easily understood from the drawings.

The third carrier, shown in Figures 13 to 17, is the one which we at present prefer.

As an alternative to the construction shown in Figures 13 to 17, the portion of the carrier which forms the central wall and handle assembly need not be made up of two identical sections, but one section 117 may terminate a short distance above the lower marginal edge thereof. Obviously this short panel 117 must have a height sufficient to include apertures 130.

The container carriers 14 and 14a and 114 are readily collapsible to assume the compact flat relation illustrated, for example, in Figures 5 and 6, and Figures 15 and 16, thus rendering the carriers convenient for the purpose of storage or shipment. The side walls are conveniently and instantaneously expandable to condition the carrier for accommodating containers. Likewise, upon removal of the containers the carrier may be collapsed into flat compact form. Also, the design of the carriers is such as to enable convenient heat sealing at readily available exposed areas. It will also be apparent that the invention enables the provision of very practical and inexpensive returnable bottle carriers. By employing suitable high density polyethylene sheet material or the like, the carriers described herein may be very expeditiously die cut from a strip of plastic sheet stock, folded and heat sealed. Plastic sheet material may also be cleaned or washed with convenience, thereby facilitating the reusability of the device.

As an alternative to an all-plastic sheet material, other materials may be used, for example a laminate of plastic and paper-board.

The generally rectangular shape of the blanks enables the carriers to be made from sheet stock with very little scrap material. The preferred high density polyethylene gives excellent strength for a given thickness of material. The combination of the egg-shaped apertures and the strips at the ends of the carriers gives efficient retention of the bottles or other containers.

WHAT WE CLAIM IS:—

1. A container carrier formed from a folded sheet of material and comprising a pair of side walls joined together at upper edges thereof, a plurality of container-receiving apertures formed in each side wall and arranged in a row between the ends of the side walls, a bottom wall divided into two sections side by side with each section joined to the lower edge of a respective one of the side walls, a central wall joined to both of the bottom wall sections, and extending upwards between the side walls and termin-

reduced in width to form upwardly extending handle sections 125. The handle sections 125 in each panel 117 have apertures 126 which when superimposed form a convenient and comfortable opening for receiving a person's hand. A tab 127 may be provided by material from within one or both of the apertures 126, being joined to the handle section 125 along a fold line 128. The tab or tabs 127 are provided for distributing the weight of the carrier and the bottles carried therein over a relatively wide portion of a person's hand in carrying the package, as well as to retain the apertures 126 in the handle sections 125 in aligned relation.

The bottom sections 116b have spaced apart apertures 130 adjacent to the line of interconnection between the panels 116 and 117. The apertures 130 are provided to permit the panels 117 to be heat sealed together at spaced areas 131 when the carrier is in the folded flat condition shown in Figures 15 and 14.

In addition to the heat sealing at areas 131, the handle sections 125 may be conveniently heat sealed together at areas 132 which are exposed through the apertures 121, and the corners 122b of the strips 122 are heat sealed together at areas 133. The heat sealing of the strips 122 at areas 133 forms integral joints between adjacent brace members 122 within the apertures 124.

When the heat sealed central wall of the carrier formed by the panels 117 is projected upwards relatively to the panels 116, so that the handle section 125 is moved above the fold line 115, with a contemporaneous folding of the panels 116 along fold lines 118, the carrier will be arranged into the expanded bottle-receiving configuration shown in Figures 13, 14 and 17. As the folded flat carrier is manipulated to the expanded condition, the integral connections at corners 122b of the strips 122 will move downwardly in the apertures 124 to the position shown in Figure 17. As may be seen in Figure 17, the strips 122 in the expanded condition of the carrier 114 define a substantially X-shaped brace assembly across the open ends of the carrier 114, with the centre of the brace assembly 122 effectively locked to the central wall of the carrier. This arrangement positively and securely holds the end bottles when positioned in the carrier 114 against any slipping or shifting out therefrom even under extreme jostling or swinging of the carrier and bottle package during transport by a person holding the package at the handle section 125. In the aforescribed alternative embodiment wherein the brace members 122 terminate immediately above the corners 122b, the configuration of the brace assembly in the open condition of the carrier will be a downwardly open V-shape.

The insertion and removal of bottles 120 from the carrier may be easily understood from the drawings.

The third carrier, shown in Figures 13 to 17, is the one which we at present prefer.

As an alternative to the construction shown in Figures 13 to 17, the portion of the carrier which forms the central wall and handle assembly need not be made up of two identical sections, but one section 117 may terminate a short distance above the lower marginal edge thereof. Obviously this short panel 117 must have a height sufficient to include apertures 130.

The container carriers 14 and 14a and 114 are readily collapsible to assume the compact flat relation illustrated, for example, in Figures 5 and 6, and Figures 15 and 16, thus rendering the carriers convenient for the purpose of storage or shipment. The side walls are conveniently and instantaneously expandable to condition the carrier for accommodating containers. Likewise, upon removal of the containers the carrier may be collapsed into flat compact form. Also, the design of the carriers is such as to enable convenient heat sealing at readily available exposed areas. It will also be apparent that the invention enables the provision of very practical and inexpensive returnable bottle carriers. By employing suitable high density polyethylene sheet material or the like, the carriers described herein may be very expeditiously die cut from a strip of plastic sheet stock, folded and heat sealed. Plastic sheet material may also be cleaned or washed with convenience, thereby facilitating the reusability of the device.

As an alternative to an all-plastic sheet material, other materials may be used, for example a laminate of plastic and paper-board.

The generally rectangular shape of the blanks enables the carriers to be made from sheet stock with very little scrap material. The preferred high density polyethylene gives excellent strength for a given thickness of material. The combination of the egg-shaped apertures and the strips at the ends of the carriers gives efficient retention of the bottles or other containers.

WHAT WE CLAIM IS:—

1. A container carrier formed from a folded sheet of material and comprising a pair of side walls joined together at upper edges thereof, a plurality of container-receiving apertures formed in each side wall and arranged in a row between the ends of the side walls, a bottom wall divided into two sections side by side with each section joined to the lower edge of a respective one of the side walls, a central wall joined to both of the bottom wall sections, and extending upwards between the side walls and termin-



ating in a handle fixed to the central wall, the side walls defining an opening to accommodate the handle telescopically, and also defining stop means arranged to limit upward movement of the handle relative to the opening, and strips cut from the end marginal edges of the side walls and the bottom sections, and arranged to prevent dislodgment of containers from the ends of the carrier.

2. A carrier as set forth in claim 1, wherein the sheet is of heat-sealable plastic stock and wherein the upper margins of the side walls are heat sealed at spaced intervals, providing the opening therebetween for telescopically accommodating the handle.

3. A carrier as set forth in claim 1, wherein the upper margins of the side walls are integral at spaced intervals and provide an opening therebetween for telescopically accommodating the handle.

4. A carrier as set forth in any of claims 1 to 3, wherein a major part of the outline of each container receiving aperture is a pair of upwardly diverging edge portions.

5. A carrier as set forth in claim 4, wherein each container receiving aperture is of generally egg shape.

6. A carrier as set forth in any of claims 1 to 5, wherein the bottom margin of the central wall includes a pair of abutting connected sheet portions.

7. A carrier device as set forth in claim 6, wherein the sheet is of heat-sealable plastic stock, and wherein the abutting bottom margin portions of the central wall are joined by heat seals.

8. A carrier device as set forth in claim 7, wherein the bottom sections are apertured so as to expose the bottom margin portions of the central wall and thereby to facilitate heat sealing thereof.

9. A carrier as set forth in any of claims 1 to 8, wherein there are transverse folding lines so as to enable the central and side

walls to be folded into adjacent, flat, compact relation.

10. A carrier as set forth in any of claims 1 to 9, wherein the end marginal portions of the side walls and the bottom sections are slit to form a pair of the strips at each end of the carrier, and there is means joining each pair of the strips together intermediate the ends thereof.

11. A carrier as set forth in any of claims 1 to 9, including an end brace assembly for each end of the carrier, each end brace assembly comprising a pair of the said strips, the central wall having apertures at each end thereof, and means joining each pair of the strips together intermediate the ends thereof and within one of the apertures.

12. A carrier as set forth in claim 11, wherein the apertures in the central wall are of a size permitting the side walls and the bottom wall sections to be folded against the central wall with a contemporaneous sliding movement of the junctions of the strips in apertures to fold the strips against the central wall in the folded condition.

13. A carrier as set forth in claim 12, wherein the junctions of the strips are exposed in directions perpendicular to the plane of the carrier when the side walls and bottom wall sections are folded against the central wall.

14. A carrier as set forth in any of claims 10 to 13, wherein the sheet is of heat-sealable plastic stock, and the means joining the strips comprises heat seals of the strips.

15. A carrier as set forth in claim 1, substantially as described with reference to Figures 1 to 8, Figures 9 to 12, or Figures 13 to 17 of the accompanying drawings.

For the Applicants:
GILL, JENNINGS & EVERY,
Chartered Patent Agents,
51/52 Chancery Lane,
London, WC2A 1HN.

