Oct. 2, 1951 M. H. KOWAL 2,570,133

BOTTLE CARRIER

Filed April 20, 1946 2 Sheets-Sheet 1

Fig. 1

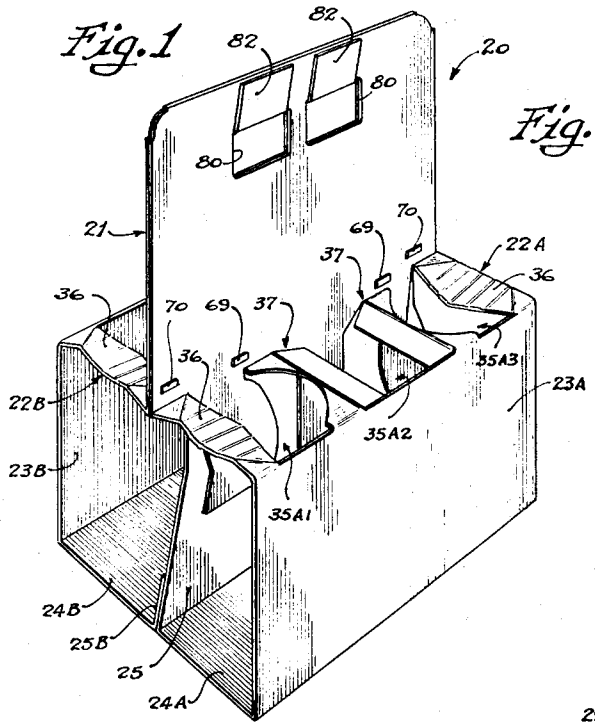


Fig. 2

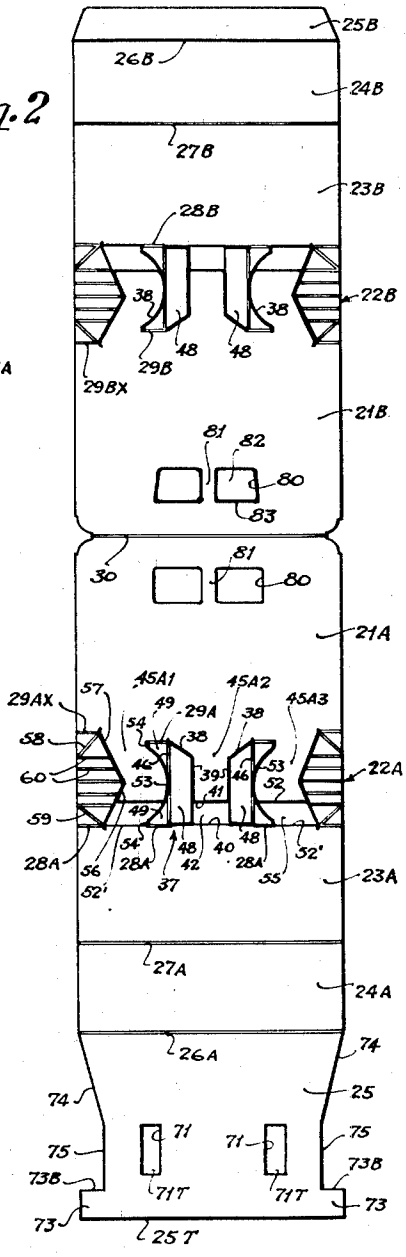


Fig. 3

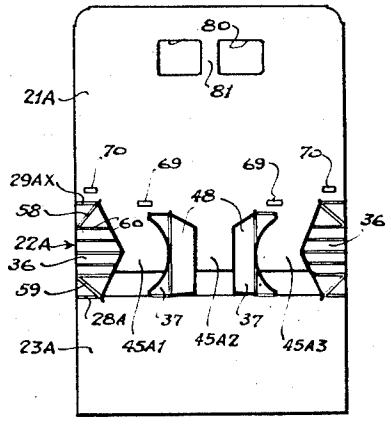
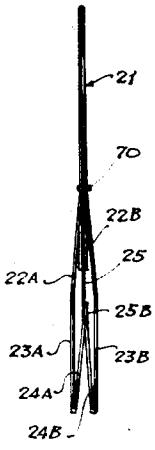


Fig. 4



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BOTTLE CARRIER

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Fig. 5

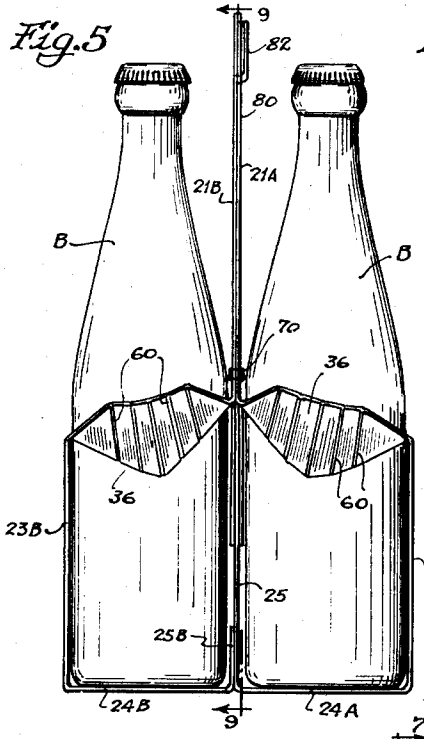


Fig. 7

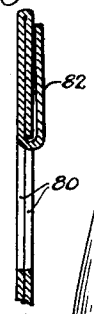


Fig. 6

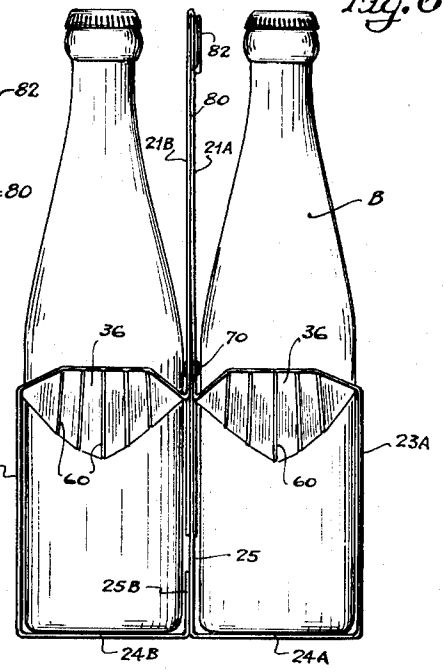


Fig. 8

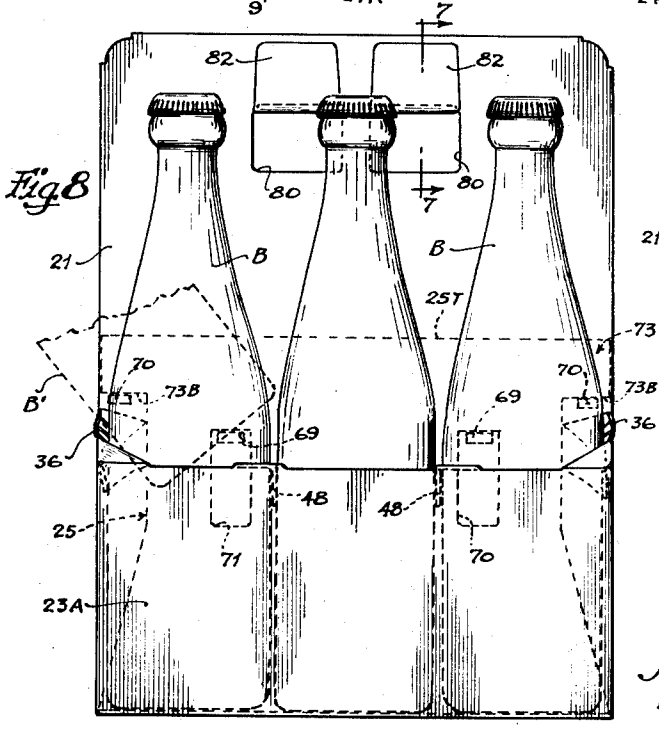
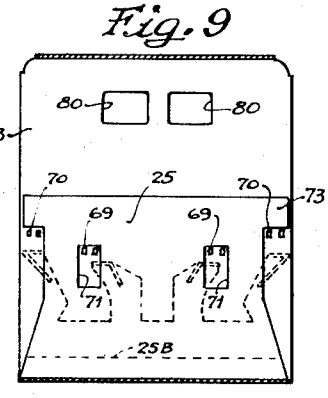


Fig. 9



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Patented Oct. 2, 1951 2,570,133

UNITED STATES PATENT OFFICE

2,570,133

BOTTLE CARRIER

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Application April 20, 1946, Serial No. 663,719

1 Claim. (Cl. 224—45)

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This invention relates to bottle carriers and particularly to bottle carriers that are fabricated in a collapsible form from material such as cardboard.

It has been customary for many years to construct bottle carriers of the general character to which this invention relates from material such as cardboard so as to afford an upstanding handle section adapted to be grasped by the user and having a pair of bottle receiving sections on opposite sides of the handle into which bottles may be inserted in a downward direction so as to rest upon a bottom wall that is associated with the bottle receiving sections by means of downwardly extended side walls that embrace the outer sides of the bottles. Such bottle carriers are usually arranged to accommodate two rows of three bottles each, the two rows being disposed in symmetrical relation on opposite sides of the handle section. In the use of such carriers it is usually considered to be essential that the parts be so formed and arranged that the loaded carriers may be placed in the usual cases in which the particular kind of bottles are usually handled, and it is also important that the carriers be so constructed that such carriers may be stacked one upon the other, thereby to enable the loaded carriers to be economically stacked and stored. It is important therefore that the handle section be so arranged that it may be depressed to a position beneath the tops of the bottles when the carriers are to be stacked one upon the other.

In the copending applications of Maynard G. Hall and Thomas Hurbon, Jr., Serial No. 604,654, filed July 12, 1945, now Patent No. 2,457,307, and Serial No. 627,680, filed November 27, 1945, now Patent No. 2,457,308, bottle carriers have been disclosed that were so constructed and arranged as to enable the weight of the bottles in a bottle carrier to be transmitted directly from the central portion of the bottom wall to the handle section in such a manner that the handle section may readily be depressed when the user desires to stack one bottle carrier upon another, and by the arrangement thus afforded, the use of relatively thin and lightweight separating webs in the bottle receiving sections of a bottle carrier is rendered practical; and it is the primary object of the present invention to enable the transmission of the weight of the bottles to the handle section in bottle carriers of this character to be accomplished with even greater efficiency.

In the attainment of relatively small dimensions in a bottle carrier so as to enable the carrier to be disposed in the usual cases in which the

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bottles are transported, the width of the bottle carrier, that is the dimension parallel to the two rows of bottles, is quite important and must be only slightly more than the combined diameters of the three bottles in a row, and in attaining this result, it is customary to make the webs that separate the bottles so as to be quite thin, and in respect to the two webs that are disposed on opposite sides of the central bottle of one of the rows, this may be readily and easily accomplished in the manner disclosed in the copending application of Joseph L. Lyons, Serial No. 301,915, filed October 30, 1939, now abandoned, or in the copending application of Joseph L. Lyons, Serial No. 429,873, filed February 7, 1942, now Patent No. 2,432,481. As to the end webs of each bottle receiving section, however, the attainment of the desired smallness of dimension has in most instances required the use of reenforcing flanges along the ends of the bottle receiving sections, and these reenforcing flanges have necessitated the use of added width in the blanks from which the carriers are made, and to enable such reenforcing flanges or flaps to be eliminated in a novel manner that still maintains the desired smallness of dimension of the carrier is a still further object of the present invention. Other and related objects are to form the end webs of the bottle receiving sections of a bottle carrier in such a way that these webs may move to an angular position when the bottles are in position without imposing undue stresses on the material, to so form such end webs of the bottle receiving sections that these webs may bend readily and easily as an incident to the movements required when the handle section is depressed or elevated, and to so form such end webs that loading of the end bottles in the carrier is facilitated and the loaded bottles are held firmly in position in the carrier.

Other and further objects of the present invention will be apparent from the following description and claim and are illustrated in the accompanying drawings which, by way of illustration, show a preferred embodiment and the principle thereof and what I now consider to be the best mode in which I have contemplated applying that principle. Other embodiments of the invention embodying the same or equivalent principle may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claim.

In the drawings:

Fig. 1 is a perspective view of a bottle carrier

embodying the features of the invention, the carrier being shown in its fully erected position;

Fig. 2 is an elevational view of one face of a blank that is utilized in constructing the bottle carrier of Fig. 1;

Fig. 3 is an elevational view of one side face of the carrier of Fig. 1 when the carrier is in its collapsed condition;

Fig. 4 is an end elevational view of the collapsed carrier shown in Fig. 3;

Fig. 5 is an end elevational view of the carrier with the bottles loaded therein and with the handle in its elevated position;

Fig. 6 is an end elevational view of the loaded carrier showing the parts in the positions which they assume when the handle section is depressed for purposes of stacking;

Fig. 7 is a sectional view of the handle taken along the line 7—7 of Fig. 8;

Fig. 8 is a side elevational view showing the relationship of the weight transmitting elements when the handle section is in the upper or carrying position shown in Fig. 5; and

Fig. 9 is a sectional view, at a reduced scale, taken along the line 9—9 of Fig. 5 and showing the relationship of the weight transmitting elements when the handle section is elevated to the position of Figs. 6 and 8.

In the form chosen for disclosure herein the invention is embodied in a bottle carrier 20 made from a material such as cardboard, and this carrier, in the erected form shown in Fig. 1 of the drawings, comprises an upstanding handle section 21 composed of parallel panels 21A and 21B, a pair of generally horizontal bottle receiving sections 22A and 22B extended outwardly from opposite sides of the lower ends of the handle section, side wall sections 23A and 23B extended downwardly from the outer side edges of the respective bottle receiving sections, a pair of connected bottom wall panels or sections 24A and 24B extended between and connected to the lower edges of the side walls, and a weight transmitting panel 25 pivotally connected to the adjacent edges of the bottom panels 24A and 24B and extended upwardly into position between the handle panels 21A and 21B. The carrier 20 is particularly adapted to contain six bottles B arranged in two rows of three bottles each, one row being disposed in the bottle receiving section on each side of the handle section 21.

The bottle carrier 20 of the present invention is formed from a material such as cardboard, and in the production of the carrier, the cardboard stock is initially formed as an elongated rectangular blank that is shown in detail in Fig. 2 of the drawings. The elongated blank has a glue flap 25B formed along one end thereof so as to be joined along a fold line 26B to the edge of the bottom panel 24B, while at its other end the blank is formed to afford the weight supporting panel 25 which is joined along a fold line 26A to an edge of the bottom panel 24A, and intermediate the other edges of the bottom panels 24A and 24B, the parts that are to form the bottle receiving sections 22A and 22B, the side wall sections 23A and 23B and the handle panels 21A and 21B are disposed. Thus the side wall section 23A is joined to the other or adjacent edge of the bottom panel 24A along a fold line 27A, while the other edge of the side wall section 23A is joined to one edge of the bottle receiving section 22A along a discontinuous fold line 28A. The other edge of the bottle receiving section 22A is joined to one edge of the handle panel 21A along an irregular and discontinuous fold line 29A, while the other edge of the handle panel 21A is joined to adjacent and corresponding edge of the other handle panel 21B along a fold line 30 that is located midway between the fold lines 26A and 26B of the blank.

The corresponding elements of the other side of the carrier 20 are, in the blank of Fig. 2, similarly joined together along fold lines as hereinabove described. Thus the side wall section 23B is joined along its opposite edges to the bottom panel 24B and the bottle receiving section 22B along discontinuous fold lines 27B and 28B respectively, while the other edge of the bottle receiving section 22B is connected to the other edge of the handle panel 21B along an irregular and discontinuous fold line 29B.

It has been pointed out hereinabove that each of the bottle receiving sections 22A and 22B is adapted to receive a row of three bottles B, and each such bottle receiving section is therefore provided with three bottle receiving openings which, in the bottle receiving section 22A, are indicated as 35A1, 35A2, and 35A3. In forming or defining these three bottle receiving openings, each bottle receiving section is arranged to afford a pair of end webs 36 which define the outer end edges of the bottle receiving openings 35A1 and 35A3, while a pair of webs 37 are provided in spaced relation to each other and with respect to the end webs 36 so as to thereby define the inner edges of the end openings 35A1 and 35A3 and the webs 37 also define the opposite side edges of the central opening 35A2.

The web 37 of the bottle receiving sections are in the present case formed substantially in the manner disclosed in the aforesaid copending application Serial No. 301,915, filed October 30, 1939, now abandoned, thereby to render these webs relatively thin when they are in their operative condition shown in Fig. 8. Thus as will be evident in the blank illustrated in Fig. 2, the central opening 35A2 is formed by a pair of angularly disposed slits 38 extended from spaced portions of the fold line 27A in converging relationship so as to merge with spaced parallel slits 39 that are disposed perpendicular to the fold line 27A. The two slits 39 are arranged so as to meet a slit 40 which extends between the adjacent portions of the discontinuous fold line 28A in alignment therewith. A slit 41 is extended between the slits 39 in spaced relation to the slit 40, thereby to form a cut-out 42. Thus the slits 38, 39 and 41 cooperate to form a flap 45A2 that is joined in an unbroken or uncreased relationship along one of its ends to the panel 21A. This relationship is such that in the erected carrier, the flap 45A2 remains in the plane of the panel 21A so as to serve as a downwardly bottle cushioning flap disposed between the central bottles of the two rows.

In affording the requisite material for the webs 37, the blank has score lines 46 extended from opposite or remote ends of each of the slits 39 so that opposite ends of the score lines 46 meet with the score lines 27A and 28A, the slit 40 being extended to the score lines 46, as will be evident in Fig. 2, and thus flaps 48 are formed so as to be connected along the score lines 46 with the triangular sections 49 of material that are formed on the opposite side of each of the score lines 46, as will hereinafter be explained. The flaps 48 serve in the erected carrier as depending bottle cushioning flaps disposed on opposite sides of the central bottle B.

In the formation of the bottle receiving openings 35A1 and 35A3, a pair of bottle separating flaps 45A1 and 45A3 are formed from the material that is cut away in forming the respective bottle receiving openings 35A1 and 35A3, and in this process the blank is cut or slit so as to afford the triangular sections 49. These bottle separating flaps 45A1 and 45A3 are joined along their upper edges to the panel 21A in an unscored relationship, and the lower edges of these flaps are defined by slits 52 that are aligned with the slit 41. The sides of the flaps 45A1 and 45A3 that are adjacent to the webs 37 are defined by arcuate slits 53 that are extended from the adjacent fold line 27A downwardly and somewhat beyond the slit 52, and to points adjacent to the fold line 28A, and the opposite ends of the slits 53 are arranged to meet with the ends of slits 54 that extend respectively to the fold lines 28A and 29A in spaced relation to the fold lines 46. Thus the triangular portions 49 are afforded. In alignment with the fold line 28A and in spaced relation to the slit 52, another slit 52' is formed and this results in the formation of an opening 55 adjacent the lower end of each of the tabs 45A1 and 45A3, as will be evident in Fig. 2 of the drawings.

The other sides of the flaps 45A1 and 45A3 are formed in each instance by a pair of angular slits 56 and 57, the slit 56 being in each instance extended from the juncture of the related slit 52' and the related section of the fold line 28A. The other end of the slit 56 meets the slit 57 somewhat beyond the lower end of the flaps 45A1, and the other end of the slit 57 meets the inner end of the related fold line 29AX, as shown in Fig. 2. The apex of the slits 56 and 57 is directed inwardly, or toward the longitudinal center line of the blank, thereby to define the end web 36 between the fold lines 28A, 29AX, the slits 56 and 57 and the adjacent side edge of the blank, and the end web 36 that is thus afforded is wider in the center than it is in its end portions.

The webs 36 are so formed and arranged that they may be readily bent with relation to the side wall sections 23A and 23B and the handle section 21 when the handle section is moved up and down between its elevated position of Fig. 5 and its depressed or lowered position of Fig. 6, and in accomplishing this the webs 36 are provided with a plurality of score lines that function to enable such bending of the webs as will hereinafter become apparent. Thus a score line 58 is extended across the web 36 in an angular direction from the juncture of the slits 53 and the fold line 29AX so that the score line 58 is disposed at an angle of substantially 45° with respect to the side edge of the blank.

Similarly, another angularly disposed score line 59 is formed in each of the webs 36 so as to extend across such webs from the juncture of the slits 52' and the related section of the fold line 28A so as to meet the edge of the blank at an angle of substantially 45°. At the points where the fold lines 58 and 59 meet the edge of the blank, fold lines 60 are extended across the web 36 perpendicular to the side edge of the blank, and similar fold lines 61 are extended across the web 36 in spaced and parallel relation with respect to the fold lines 60 so that the web 36 may readily be bent to an arcuate relation to conform to the arcuate form of the bottle B as will hereinafter be explained in detail.

Thus by an arrangement of fold lines and slits as just described, the openings 35A1 and 35A2 and 35A3 of the bottle receiving section 22A are afforded, and the necessary webs 36 and 37 are defined, and by a similar arrangement of fold lines and slits, the corresponding webs and bottle receiving openings of the bottle receiving section 22B are provided, it being understood of course that the relationship of the fold lines and slits is reversed in the bottle receiving section 22B.

When the bottle carrier 20 is in its erected condition, it is desirable that the weight of the bottles B loaded in the carrier be transmitted directly upwardly from the center portion of the bottom wall to the handle section 21, thereby to relieve the webs 36 and 37 of substantially all weight-supporting forces, and in attaining this result, it is also desirable that the handle section 21 be capable of depression from the elevated position of Fig. 5 to the depressed position of Fig. 6, thereby to enable the bottle carriers to be stacked one upon the other. In accordance with the present invention, this desirable weight supporting action, coupled with the depressability of the handle section 21 is attained through the provision of lost-motion connections between the handle section 21 and the weight transmitting panel 25 which is connected to the bottom wall of the carrier along the line where the bottom sections 24A and 24B are joined.

Thus in the assembly of the carrier of the present invention, opposite end portions of the blank are first bent or folded along the score lines 27A and 27B to thereby locate these opposite end portions in face to face relation with the same side surface of the central portion of the blank, this surface being the one which is to constitute the inner surface of the carrier when the assembly thereof is completed. Suitable adhesive is then applied to the exposed face of the glue flap 25B, or to a corresponding surface area of the panel 25 adjacent to the fold line 26A, and the blank is then folded along the score line 30 so as to juxtapose the fold lines 26A and 26B and locate the flap 25B and the lower portion of the panel 25 in opposed relation. These parts are pressed together so that the aforesaid adhesive secures the flap 25B to the lower portion of the panel 25. The upper portion of the panel is in this operation disposed between the lower portions of the handle panels 21A and 21B, and in accordance with the present invention the panel 25 and the handle section 21 are so related as to afford a lost motion connection therebetween so that depressability of the handle section is attained while the panel 25 not only constitutes a direct weight transmitting connection from the bottom panels to the handle but also serves to impart rigidity to the bottom panels so as to cause better weight and force distribution to be attained.

In affording such a lost motion connection the panel 25 is formed so as to provide a plurality of spaced, downwardly facing abutments adapted to engage fastening means such as staples 69 and 70 that are extended through and between the handle panels 21A and 21B. Thus, as will be evident in Figs. 2, 8 and 9, a pair of spaced rectangular slots 71 are formed in the panel 25 near the upper end edge 25T, the upper end edges 71T of the slots 71 being spaced substantially from the edge 25T so as to afford a substantial web of material between the edges 71T and 25T. The edges 71T thereby afford two spaced, downwardly facing abutments, and the location of

the edges 71T is such that when the handle section 21 is moved to its upper position of Figs. 5 and 8, the staples 69 will be engaged with the edges or abutments 71T in a weight or force transmitting relation. When however, it is desired to depress the handle section 21, this may be done since the staples 69 will move freely downwardly in the slots 71.

Further weight supporting action is attained by the staples 70, and for this purpose the side edges of the panel 25 are cut away as will be evident in Figs. 2, 8 and 9 to afford laterally projecting ears 73 at the upper side edge portions of the panel 25. Thus the panel 25 is cut inwardly at each side at an angle along a line 74 which merges with a line 75 that is parallel to the side edge of the blank and extends to a line 73B that defines the lower edge or abutment surface of the ear 73. The relation of the edges 73B to the edges 71T is such that the edges 73B are disposed somewhat above the edges 71T, Figs. 8 and 9, and this enables the staples 70 to be disposed at a higher point than the staples 69. This locates the staples 70 above the score lines 29AX. It should be observed, however, that the staples 70 are so arranged as to engage the abutment edges 73B at the same time that the staples 69 engage the abutment edges 71T, and hence the weight of the bottles is transmitted to all four staples and through a plurality of spaced abutment edges on the panel 25, thereby to effectually distribute the forces and give maximum efficiency. The large solid area of the panel 25 below the slots 71 causes the vertically positioned panel 25 to function with a beam-like action to impart rigidity to the bottom panels 24A and 24B, and thereby assure even weight distribution, and this action is aided by the glue flap 25B that is secured to the lower portions of the panel 25.

The carrier of the present invention is arranged to be lifted by grasping the upper portion of the handle section 21, and this is facilitated by the provision of finger-receiving openings 80 disposed adjacent the upper edge of the handle so as to be accessible when the handle section is in its upper position of Figs. 5 and 8. In the present instance two such openings 80 are formed in laterally spaced relation so as to be separated by a weight-transmitting web 81. The material is entirely cut away in forming the openings 80 in the panel 21A, while the material is only partially cut away in forming the openings in the panel 21B, thereby to afford flaps 82 joined along their upper edges to the panel 21B along a fold line 83. Thus the flaps 82 may be forced through the openings 80 in the panel 21A to afford a smoother surface for contact with the fingers of the user.

When the assembly of the carrier of the present invention is completed, the carrier is in the collapsed form shown in Figs. 3 and 4, and it is in this form that the carriers are shipped to the user. When the carrier is to be loaded, the bottom panels 24A and 24B are bent outwardly about the score lines 26A and 26B respectively until the carrier assumes substantially the erected form shown in Fig. 1, and the carrier is then ready for loading. The center bottles B may be inserted in a downward direction between the webs 37, and in the course of such inserting movement the bottle separating flaps 48 are bent along the score lines 46 and into their downward or effective positions. In putting the end bottles B in position in the end bottle receiving

openings, the end webs 36 are moved with a rocking or twisting action from the positions shown in Fig. 1 to the positions illustrated in Figs. 5, 6 and 8. While this may be accomplished in different ways, one convenient and rapid mode of insertion is to place the side of the bottle against a web 36 while the bottle is tilted, as indicated in dotted outline at B' in Fig. 8, so that the top thereof is disposed outwardly beyond the side edge of the handle, and the moving or rocking the bottle to a vertical position while maintaining the bottle in contact with the web 36. This rocks the web 36 to a substantially vertical position, and bends the web along the lines 60 so as to closely embrace the bottle, and along the line as 29AX, 28A, 58 and 59 to the relation shown in Figs. 5, 6 and 8. This relation is such that when the handle section 21 is to be moved up or down, the webs 36 may bend or pivot along the lines as 29AX and 28A. The movements of the webs 36 thus required in loading the carrier or in shifting the handle 21 are of such a character that there is no weakening or tearing of the cardboard stock, and hence the carrier is rugged in character and proper operation thereof is assured.

From the foregoing description it will be evident that the present invention enables the weight of the bottles to be transmitted directly upwardly from the center portion of the bottom wall to the handle, thereby to avoid objectionable stresses on the bottle separating webs, and this is accomplished by distributing the forces in the cardboard stock in a novel and efficient manner whereby to enable thin stock to be safely employed. The action of the panel 25 and the flap 25B in stiffening the bottom panels contributes to the efficiency of force distribution, while the continuous connection of the panel 25 to the two bottom panels along the entire length of these bottom panels insures that adequate cross sectional area is afforded to transmit the stresses to the handle 21. The center-pull action of the present carrier is attained in such a way that efficient transmission of forces from the panel 25 to the handle 21 is assured, and yet there is provision for lost-motion that enables depression of the handle to be accomplished when the carriers are to be stacked one upon the other.

It will also be evident that the end webs 36 are highly efficient in use, and are so constructed and arranged that a narrow blank may be employed. The webs 36 are of such a character that the loading operations may readily be accomplished without objectionably stressing the material of such webs, and in addition, the movements of the handle 21 between the lowered and raised positions thereof may take place without objectionable bending or stressing of these webs.

Thus, while I have illustrated and described the preferred embodiment of my invention, it is to be understood that this is capable of variation and modification and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as fall within the purview of the following claim:

I claim:

A pre-formed collapsible bottle carrier formed from cardboard or like material and adapted to receive bottles of predetermined height and comprising, when in its collapsed condition, side walls, a bottom wall formed in two sections foldably joined along adjacent edges and along other fold

lines to corresponding edges of said side walls and disposed in an inverted V-shape formation between said side walls, a handle portion comprising a pair of panels disposed in face to face relation, and bottle receiving sections extended between the other edges of said side walls and the respective panels of said handle portion whereby the handle portion is disposed above said bottom wall and in substantially aligned relation therewith, said bottle receiving sections having bottle receiving openings therein, said handle portion including a part which may extend above the tops of bottles of said predetermined height that are disposed in said bottle receiving openings and rested on said bottom wall when the carrier is erected, said part having a handle opening therein, a weight supporting panel foldably connected along its lower edge to said bottom wall and extended between said handle panels, said weight supporting panel having horizontally projecting ears formed at its opposite edges and also having a pair of vertically extended slots formed therein at spaced points between said projecting ears, and means including fastening elements extended between said handle panels and cooperating with said projecting ears and said slots of said weight supporting panel to afford a lost-motion weight-supporting connection between said handle portion and central portion of said bottom wall and effective when said carrier is erected and said handle portion is elevated to directly support said weight supporting panel at four spaced points to thereby effectually support said central portion of said bottom wall and also enabling the upper free end of said handle portion to be moved downwardly substantially into alignment with the tops of the bottles whereby said part of said handle portion may be depressed so as not to interfere with the stacking of one bottle carrying carrier of the aforesaid character directly over and upon the tops of another such carrier.

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