

April 13, 1965

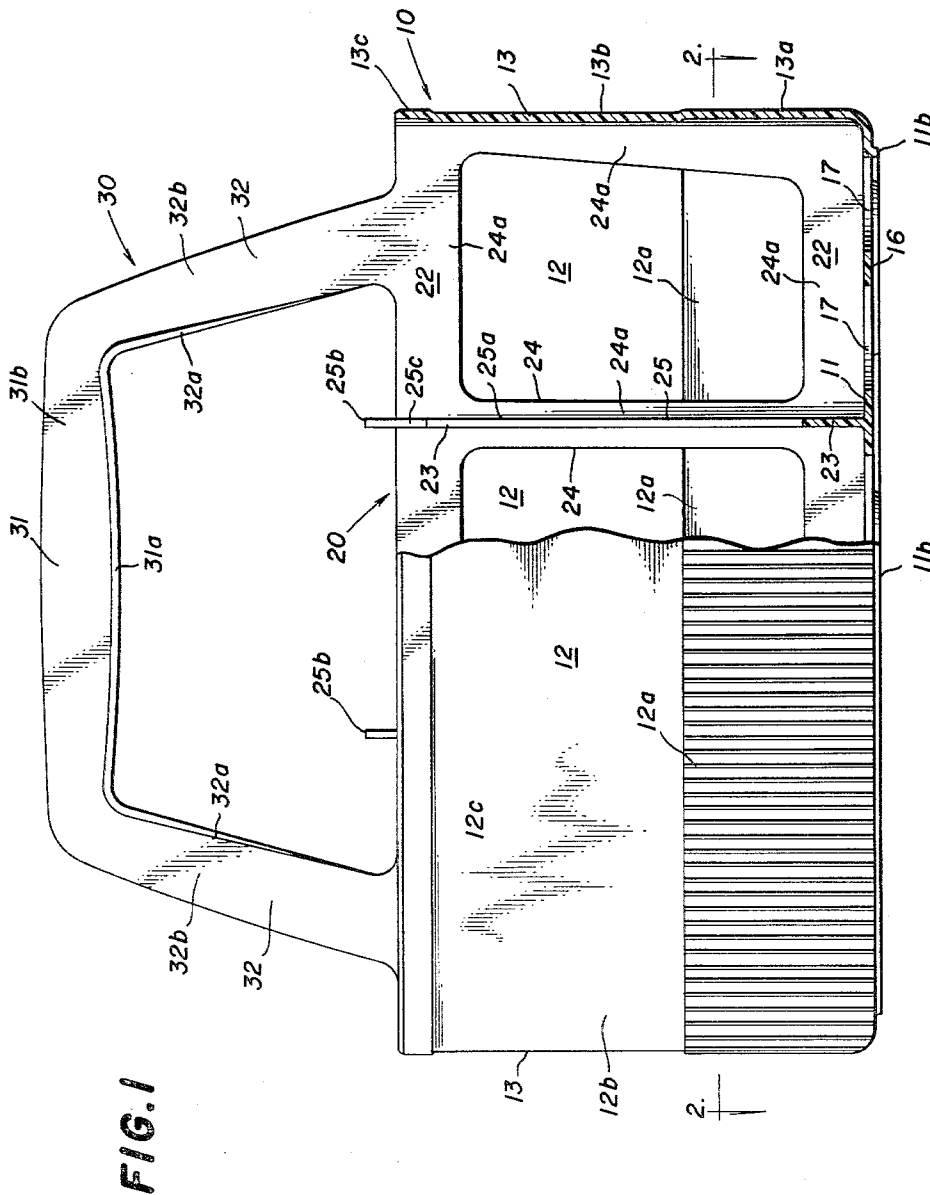
K. W. BROMLEY

3,178,052

CARRYING CASES FOR BOTTLES

Filed Sept. 13, 1962

3 Sheets-Sheet 1



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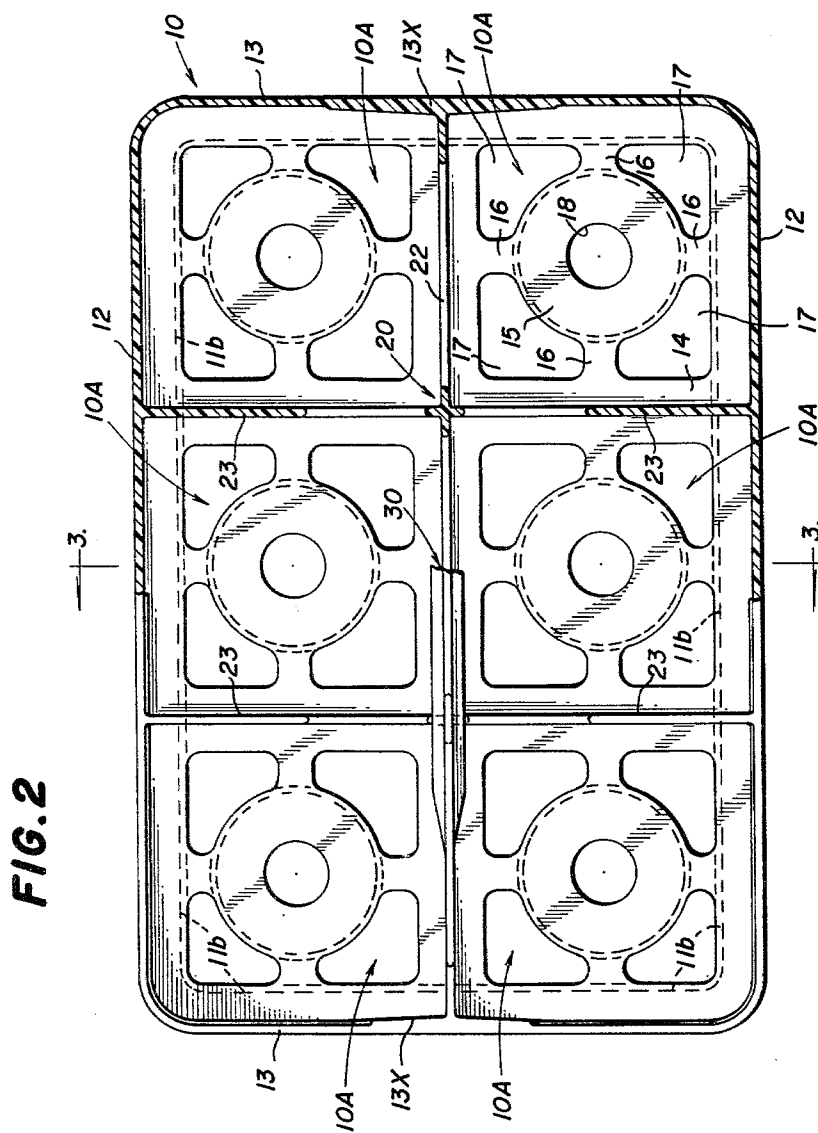
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CARRYING CASES FOR BOTTLES

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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

FIG. 4

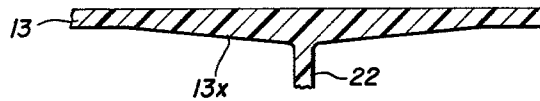
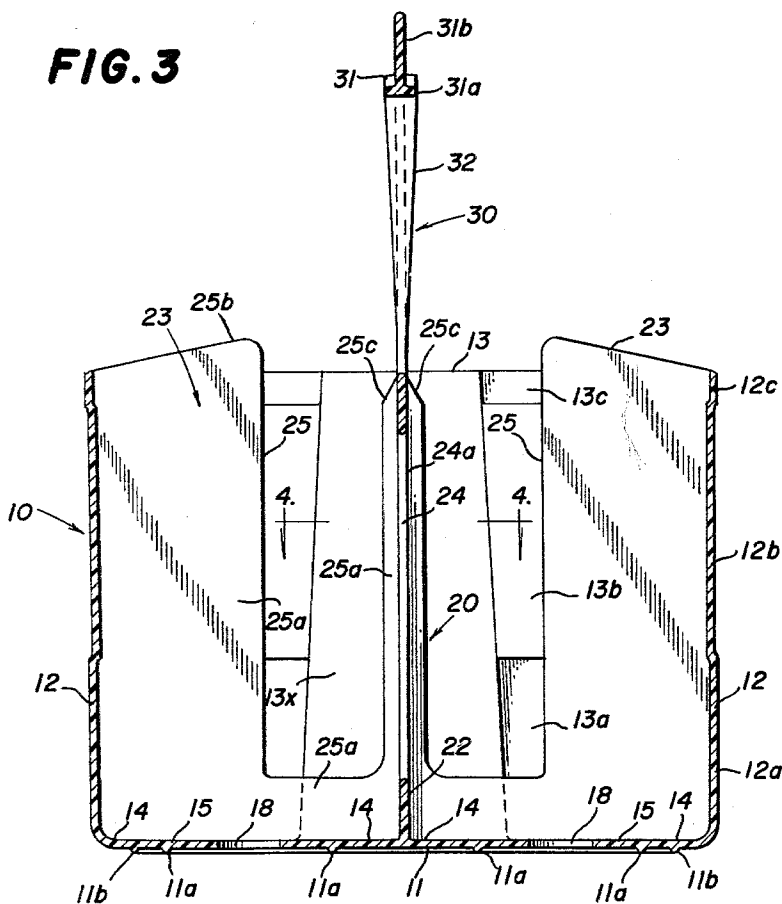


FIG. 3



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3,178,052

CARRYING CASES FOR BOTTLES

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The present invention relates to carrying cases for pop bottles, or the like, and it is the principal object of the invention to provide such a carrying case that is of one-piece construction formed entirely of an integrally molded single mass of thermoplastic synthetic organic resin, such as linear high-density polyethylene.

Another object of the invention is to provide a carrying case of the character noted that is of simple, strong and light-weight construction and that may be completely formed in a single-stage injection molding operation in an economical manner.

A further object of the invention is to provide a carrying case of the character noted that essentially comprises a basket-like body including a substantially rectangular bottom wall and a pair of substantially parallel upstanding side walls and a pair of substantially parallel upstanding end walls and having an open top, the five walls named being joined together along the several junctions therebetween, divider structure disposed in the body and including a plurality of intersecting divider walls and arranged to divide the interior of said body into a plurality of bottle-receiving pockets having open tops and readily accessible from the exterior, the bottoms of the divider walls being joined to the bottom wall and the ends of the divider walls being joined to the adjacent ones of the side and end walls, one of the divider walls extending longitudinally between the end walls and located substantially centrally between the side walls and substantially parallel thereto, and longitudinally extending upstanding handle structure arranged directly above the one divider wall and positioned substantially symmetrically with respect to the end walls, the handle structure including a substantially centrally disposed hand-grasp section spaced well above the top central portion of the one divider wall and two leg sections, the top end portions of the two leg sections being respectively joined to the opposite end portions of the hand-grasp section and the bottom end portions of the two leg sections being respectively joined to the top of the one divider wall at two longitudinally spaced-apart positions disposed respectively adjacent to the end walls.

A still further object of the invention is to provide a carrying case of the character described that further incorporates improved structure that accommodates ready stacking thereof with other such carrying cases, wherein the stacked cases and carried bottles are characterized by great stability against overturning, notwithstanding accidental striking or bumping thereof by other objects.

Further features of the invention pertain to the particular construction and arrangement of the elements of the carrying case, whereby the above-outlined and additional operating features thereof are attained.

The invention, both as to its organization and method of operation, together with further objects and advantages thereof, will best be understood by reference to the following specification, taken in connection with the accompanying drawings, in which:

FIGURE 1 is a side elevational view, partly broken away, of a carrying case for pop bottles, or the like, embodying the present invention;

FIG. 2 is a horizontal sectional view of the carrying case, this view being taken in the direction of the arrows along the line 2-2 in FIG. 1;

FIG. 3 is a vertical sectional view of the carrying case,

this view being taken in the direction of the arrows along the line 3-3 in FIG. 2; and

FIG. 4 is an enlarged fragmentary horizontal sectional view of the end wall of the carrying case, this view being taken in the direction of the arrows along the line 4-4 in FIG. 3.

At the outset, it is noted that "linear high-density" polyethylene is altogether different from "branched low-density" polyethylene, both as to structure and to physical properties. The linear high-density product may be produced by the Ziegler "low-pressure" polymerization process and is characterized by a specific gravity in the range 0.941 to 0.965, products having a lower specific gravity (0.926 to 0.940) being referred to as "medium-density" polyethylene, and products having a still lower specific gravity (0.910 to 0.925) being referred to as "low-density" polyethylene. Linear high-density polyethylene possesses physical properties that are ideally suitable to its utilization as the plastic material of which the carrying case of the present invention is molded in its entirety and as a one-piece construction. Specifically, linear high density polyethylene comprises an excellent injection molding material, has a very mold shrinkage characteristic (0.02 to 0.05 in. per in.), has a high tensile strength (3,100 to 5,500 p.s.i.), has a high compressive strength (2,400 p.s.i.), has a high impact strength (1.5 to 12.0 ft.-lb. per in. of notch— $\frac{1}{2}$ in. x $\frac{1}{2}$ in. notched bar, Izod test) substantial hardness (D60 to D70—Shore—Rockwell), a high resistance to heat (250° F.—continuous), a high heat distortion temperature (140 to 180° F.—66 p.s.i.), has a very low water absorption characteristic (<0.01% per 24 hr. in $\frac{1}{8}$ in. thickness specimens), has a very slow burning rate, has an exceedingly high resistance to sunlight, and is very resistant to weak alkalis, strong alkalis, weak acids, strong acids and organic solvents.

Referring now to the drawings, the carrying case there illustrated, and embodying the features of the present invention, is especially designed to carry six pop bottles, or the like, and may be called a six-pack; which carrying case is of one-piece construction formed entirely of an integrally molded single mass of thermoplastic synthetic organic resin, such as linear high-density polyethylene. Specifically, the case comprises a basket-like body 10, divider structure 20 and handle structure 30.

The body 20 includes a substantially rectangular bottom wall 11 having four rounded corners, a pair of longitudinally extending substantially parallel laterally spaced-apart upstanding side walls 12, and a pair of laterally extending substantially parallel longitudinally spaced-apart upstanding end walls 13, and provided with an open top, the five walls named being joined together along the several junctions therebetween. The body 10 is adapted to receive the six bottles arranged in three longitudinally positioned groups of two laterally positioned individual bottles so that the side walls 12 are correspondingly longer than the end walls 13. The lower portion of each of the side walls 12 comprises a plurality of longitudinally spaced-apart upstanding ribs 12a; and the lower portion of each of the end walls 13 comprises a plurality of laterally spaced-apart upstanding ribs 13a; which ribs 12a and 13a produce a continuous lower band extending around the lower portion of the body 10. The ribs 12a and 13a not only provide an attractive decoration upon the body 10, but they also substantially reinforce the lower portion thereof in a highly desirable manner. The intermediate portion of each of the side walls 12 is disposed slightly laterally inwardly, as indicated at 12b, with respect to the upper portion 12c thereof; and the upper portion 12c of each side wall 12 is disposed approximately in the plane of the ribs 12a carried by the lower portion thereof. Similarly, the intermediate portion of

each of the end walls 13 is disposed slightly longitudinally inwardly, as indicated at 13b, with respect to the upper portion 13c thereof; and the upper portion 13c of each end wall 13 is disposed approximately in the plane of the ribs 13a carried by the lower portion thereof. Thus, the upper portions 12c and 13c of the respective walls 12 and 13 define, in effect, a continuous upper band extending around the upper portion of the body 10, and the intermediate portions 12b and 13b of the respective walls 12 and 13 define, in effect, a continuous intermediate band extending around the intermediate portion of the body 10. The arrangement of the three bands described is not only decorative in a desirable manner, but the intermediate band 12b, 13b is useful for the purpose of locating a paper band, not shown, that may be carried by the body 10 for the purpose of presenting an advertising or other display of printing matter.

The divider structure 20 is disposed fundamentally in the body 10 and includes a plurality of upstanding intersecting divider walls and arranged to divide the interior of the body 10 into six bottle-receiving pockets 10A having open tops and readily accessible from the exterior. Specifically, the divider structure 20 includes a longitudinally extending upstanding divider wall 22 located substantially centrally between the side walls 12 and substantially parallel thereto, and two laterally extending upstanding divider walls 23 located in substantially parallel and equally longitudinally spaced-apart relation with each other and with the end walls 13. The bottom of the divider wall 22 and the bottoms of the divider walls 23 are joined to the adjacent portions of the bottom wall 11; the opposite ends of the divider wall 22 respectively join the adjacent portions of the opposed end walls 13; the opposite ends of each of the divider walls 23 respectively join the adjacent portions of the opposed side walls 12; and the divider wall 22 joins the two divider walls 23 at the two upstanding intersections therebetween.

The handle structure 30 extends longitudinally of the body 10 and is arranged in upstanding position thereabove and directly over or above the divider wall 22 and is positioned substantially symmetrically with respect to the end walls 13, as clearly shown in FIG. 1. Specifically, the handle structure 30 includes a substantially centrally disposed hand-grasp section 31 spaced well above the top central portion of the divider wall 22 and two leg sections 32, the top portions of the two leg sections 32 being respectively joined to the opposite end portions of the hand-grasp section 31 and the bottom end portions of the two leg sections 32 being respectively joined to the top of the divider wall 22 at two longitudinally spaced-apart positions disposed respectively adjacent to and somewhat longitudinally inwardly of the end walls 13, as clearly shown in FIG. 1.

The six portions of the bottom wall 11 respectively defining the bottoms of the six bottle-receiving pockets 10A are of reticular structure, as clearly shown in FIG. 2. Specifically, each of the six pocket bottoms mentioned includes a substantially square frame 14, a substantially annular centrally positioned base 15 and four interconnecting arms 16, the four arms 16 being disposed in substantially equally angularly spaced-apart relation about the base 15 and respectively joining the four portions of the base 15 mentioned and the respective four sides of the frame 14. The arrangement of the arms 16 described defines four substantially triangular openings 17 in the pocket bottom and disposed about the base 15 and adjacent to the four junctions between the four sides of the frame 14; and the central portion of the base 15 has a substantially circular opening 18 therein. The elements 14, 15 and 16 of each pocket bottom are disposed in the substantially horizontal plane of the bottom wall 11; and the provision of the openings 17 and 18 in each pocket bottom conserves substantial material in the molding of the case and materially contributes to desired

light weight in the article of manufacture, without sacrificing any substantial strength in the case that is necessary to entirely satisfactory operation thereof.

The two divider walls 23 divide the divider wall 22 into three longitudinally spaced-apart sections; and similarly, the single divider wall 22 divides each of the two divider walls 23 into two laterally spaced-apart sections. Three substantially rectangular openings 24 are respectively provided in the three sections of the single divider wall 22; and four substantially rectangular slots 25 are respectively provided in the four sections of the two divider walls 23; all for the previously mentioned material-conserving purpose. In each of the three sections of the single divider wall 22, the opening 24 is substantially centrally disposed so as to provide a substantially rectangular frame 24a surrounding the opening 24, as best shown in FIG. 1, thereby to preserve substantial strength in the section of the divider wall 22. In each of the four sections of the two divider walls 23, the slot 25 is off-set laterally closer to the divider wall 22 than to the adjacent side wall 12 and extending from the top of the section of the divider wall 23 so as to provide a substantially U-shaped partial frame 25c surrounding the two sides and the bottom of the slot 25, as best shown in FIG. 3. In each section of each divider wall 23, the outer portion of the U-shaped frame 25a joining the adjacent side wall 12 is relatively wide and the top thereof projects upwardly and inwardly from the adjacent side wall, as indicated at 25b in FIG. 3, while the inner portion of the U-shaped frame 25a joining the divider wall 22 is relatively narrow and the top thereof projects downwardly and outwardly from the divider wall 22, as indicated at 25c in FIG. 3. Thus, in the divider structure 20, each bottle pocket 10A is in communication with the laterally adjacent one of the bottle pockets 10A through the opening 24 provided in the adjacent section of the wall divider 22, and each bottle pocket 10A is in communication with the longitudinally adjacent one of the bottle pockets 10A through the slot 25 provided in the adjacent section of the associated wall divider 23.

In the handle structure 30, the hand-grasp section 31 has a lateral cross section that is substantially inverted T-shaped, so as to prevent the head 31a of the inverted T, as contrasted with the stem 31b thereof, to the contacting portion of the closed hand of a person grasping the hand-grasp section 31. Similarly, the upper portions of the leg sections 32 have like cross sections, respectively indicated at 32a and 32b in FIG. 1. These elements 31a and 32a of the respective members 31 and 32 positively prevent accidental injury to a person handling the case.

As best shown in FIGS. 3 and 4, the central portions of the two end walls 13, at corresponding junctions with the opposite ends of the divider wall 22, are thicker, as indicated at 13x than are the outer portions disposed laterally on opposite sides of the divider wall 22. The thicker portions 13x of the end walls 13 suitably reinforce the same in the stress areas produced incident to carrying the case, when it contains the six full bottles of pop, not shown. In each end wall 13 the thicker central portion 13x thereof projects inwardly of the body 10, as indicated in FIG. 4, and has a substantially trapezoidal configuration with the lower end thereof wider than the upper end thereof, as indicated in FIG. 3.

The tops of the six pop bottles, not shown, when the case is loaded, normally project well above the handle structure 30; whereby three of the bottles are disposed on each side of the handle structure 30; and the tops of the two groups of three bottles each are located in ample laterally spaced-apart relation readily to accommodate the hand of the person grasping the hand-grasp section 31 of the handle structure 30; whereby the case may be carried in a ready and convenient manner.

Considering now the stacking of a plurality of the cases of the construction described above, the crowns carried by the top of the six pop bottles in the lower such

case engage the bottoms of the pockets of the upper such case in which six pop bottles are also arranged. Specifically, the crowns provided on the six lower pop bottles respectively engage the lower surfaces of the six bases 15 respectively adjacent to the six centering openings 18 in the six pocket bottoms, as shown in FIG. 2; whereby the six bases 15 are deflected upwardly out of the horizontal plane of the bottom wall 11 into the six concavities respectively formed in the bottoms of the six pop bottles respectively arranged in the six pockets 10A, as shown in FIG. 2. In order to improve the stability of the stack of such cases, as described above, the bottom wall 11 of each such case carries upon the lower surface thereof interlock structure in the form of six downwardly projecting ring-like rims 11a respectively positioned below the peripheries of the six bases 15. Hence, as each of the bases 15 is deflected upwardly by the engagement of the lower surface thereof about the centering opening 18 therein by the crown carried by the top of the pop bottle disposed therebelow, the rim 11a toes-in into closely surrounding cooperation with the crown mentioned. This interfitting of the six crowns mentioned into the six rims 11a respectively surrounding the same substantially increases the stability of the stack of cases by greatly minimizing the tendency of the upper such case from being displaced laterally from the lower such case. Finally, a substantially rectangular reinforcing rim 11b projects downwardly from the lower surface of the bottom wall 11. The rectangular rim 11b is disposed somewhat laterally inwardly from the side walls 12 and somewhat longitudinally inwardly from the end walls 13, as indicated in FIG. 2; the rectangular rim 11b is arranged to surround and to encompass the six rims 11a; and each of the rims 11a and 11b terminates in a substantially horizontal plane positioned slightly below the plane of the lower surface of the bottom wall 11, as best shown in FIG. 3. When the case is supported upon a flat table, or the like, the six circular rims 11a and the rectangular rim 11b directly engage the supporting surface.

Due to the construction, arrangement and relationships of the component elements of the carrying case, the same may be readily molded in a single step employing an injection molding machine and employing thermoplastic synthetic organic resin, such as linear high-density polyethylene as the plastic molding material, whereby only a single mass of this material is incorporated in the carrying case; all of the component elements thereof are integral with each other; and the same is of unitary one-piece and permanently-erected construction, requiring no assembly step or other material in the finished article of manufacture. Thus, when the carrying case is removed from the injection molding machine, it comprises a finished article of manufacture, after trimming of the several spews therefrom. Of course the material of the carrying case is ideally suited to this article of manufacture in view of its intended use and the conditions encountered therein.

In the foregoing example of the carrying case, a six-pack has been illustrated and described, but it will be readily appreciated that a substantially identical four-pack may be produced by utilizing a single laterally extending divider wall 23 in conjunction with the divider wall 22, and a substantially identical eight-pack may be produced by utilizing three laterally extending divider walls 23 in conjunction with the divider wall 22.

In a constructional example of the carrying case designed to carry six blown glass pop bottles, each of 6½ oz. volume, the body 10 may have the approximate inside dimensions: 7.302" long, 4.862" wide and 3¼₁₆" high; and the total vertical projection between the plane of the bottoms of the ribs 11a and 11b and the top of the handle structure 30 may be 7¼₃₂". The bottom wall 11 and each of the side walls 12 have a thickness of 0.045"; each of the end walls 13 has a variable thickness with a min-

imum thickness of 0.045"; each of the divider walls 22 and 23 has a variable thickness, 0.040" at the bottom and 0.050" at the top; and the elements 31b and 32b of the handle structure 30 have a thickness of 0.050". The dimensions of the other elements of the carrying case are generally related to those set forth above in accordance with the scales of the various figures of the drawings, as illustrated.

In view of the foregoing, it is apparent that there has been provided a carrying case for pop bottles, or the like, that is of improved construction and arrangement, and essentially comprising a one-piece construction formed entirely of an integrally molded single mass of thermoplastic synthetic organic resin, such as linear high-density polyethylene.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be understood that various modifications may be made therein, and it is intended to cover in the appended claims all such modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A carrying case for pop bottles, or the like comprising a one-piece construction formed entirely of an integrally molded single mass of thermoplastic synthetic organic resin; said case comprising a permanently-erected basket-like body having an open top and including a substantially horizontal and generally rectangular bottom wall and a pair of substantially parallel upstanding side walls and a pair of substantially parallel upstanding end walls, said five walls named being integrally joined together along the several junctions therebetween and mutually cooperating to define said basket-like body, divider structure disposed in said basket-like body and including a plurality of upstanding intersection divider walls and arranged to divided the interior of said basket-like body into a plurality of bottle-receiving pockets having open tops and readily accessible from the exterior, the bottoms of said divider walls being integrally joined to said bottom wall and the ends of said divider walls being integrally joined to the adjacent ones of said side and end walls, one of said divider walls extending longitudinally between said end walls and located substantially centrally between said side walls and substantially parallel thereto, and longitudinally extending upstanding handle structure arranged directly above said one divider wall and positioned substantially symmetrically with respect to said end walls, said handle structure including a substantially centrally disposed hand-grasp section spaced well above the top central portion of said one divider wall and two leg sections, the top portions of said two leg sections being respectively integrally joined to the opposite end portions of said hand grasp section and the bottom end portions of said two leg sections being respectively integrally joined to the top of said one divider wall at two longitudinally spaced-apart positions disposed respectively adjacent to said end walls, said hand-grasp section having a width that is substantially greater than the thickness of said one divider wall and being arranged substantially symmetrically with respect thereto so that the opposite sides of said hand-grasp section project laterally well outwardly beyond the corresponding opposite sides of said one divider wall.

2. The carrying case set forth in claim 1, wherein the plurality of portions of said bottom wall respectively defining the bottoms of said bottle-receiving pockets are of reticular structure.

3. The carrying case set forth in claim 1, wherein the total height thereof between said bottom wall and the top of said handle structure is less than that of the bottles respectively carried in said bottle-receiving pockets, whereby in a stack of such cases the tops of the bottles carried by an intermediate such case project well above the handle structure thereof and engage the bottom wall of an upper such case and the bottom wall of the inter-

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mediate such case is engaged by the tops of the bottles carried by a lower such case.

4. The carrying case set forth in claim 1, wherein said resin consists essentially of linear high-density polyethylene.

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