

May 7, 1968

S. L. BELCHER ET AL

3,381,879

BEVERAGE BOTTLE CASE

Filed Feb. 4, 1966

2 Sheets-Sheet 1

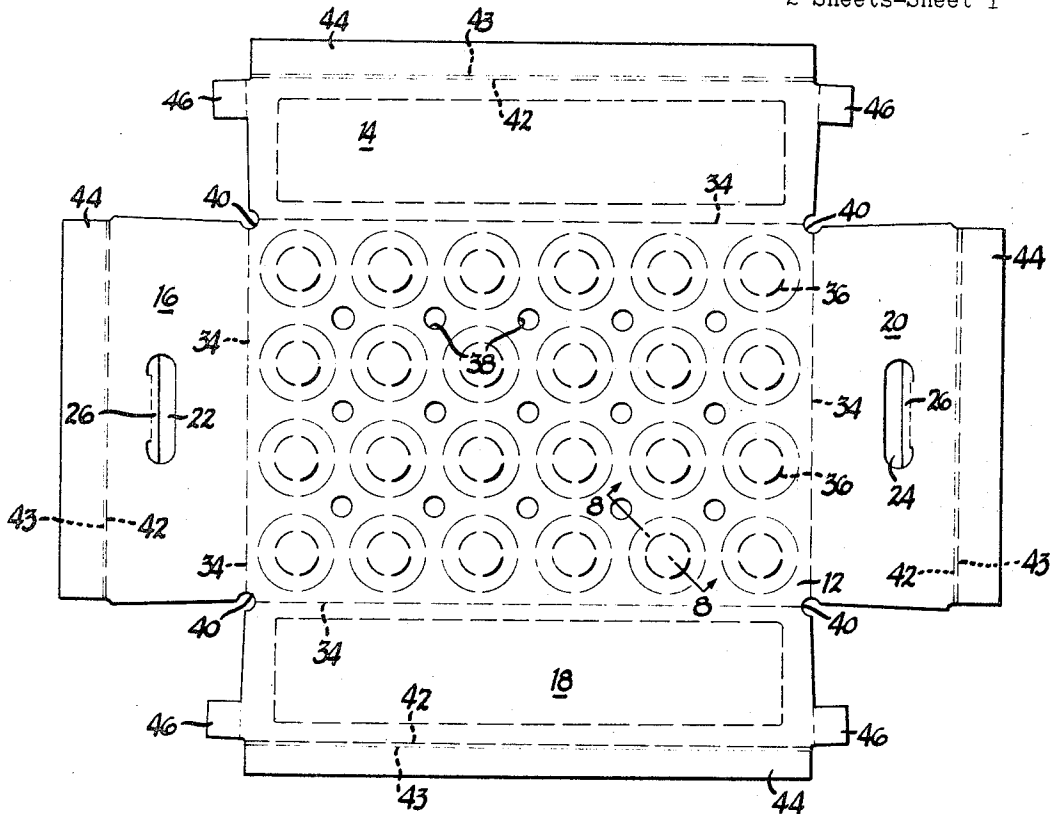


FIG. 1

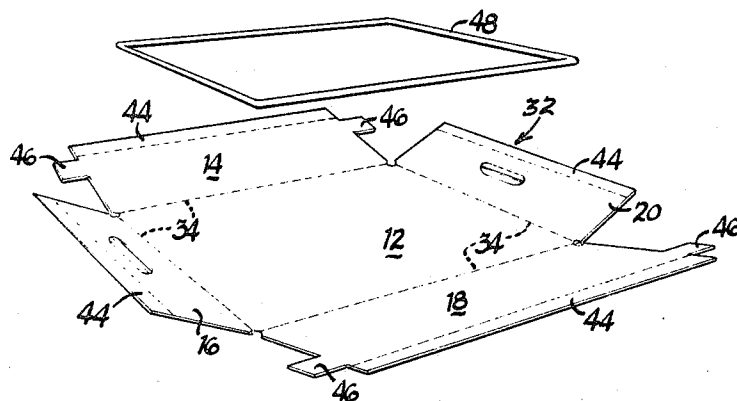


FIG. 2

Inventor.  
SAMUEL L. BELCHER  
ROBERT F. DEBROCK  
By Philip M. Rice  
& W. A. Schaefer  
ATT'YS.

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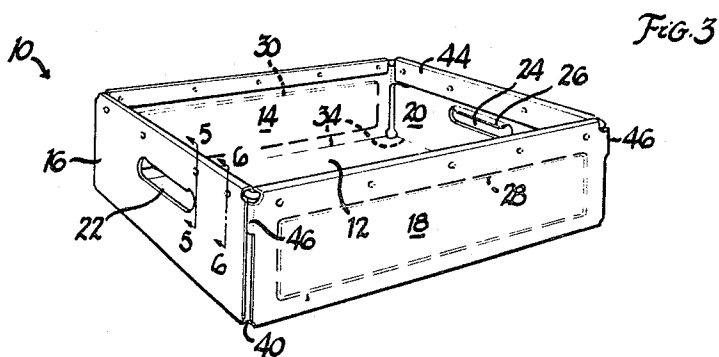


FIG. 5

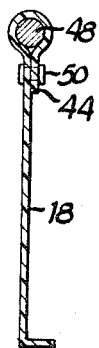


FIG. 6

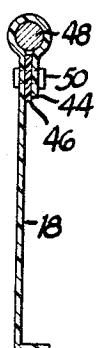


FIG. 7

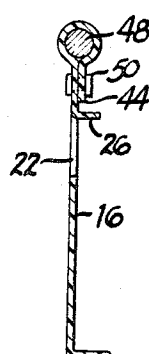


FIG. 4

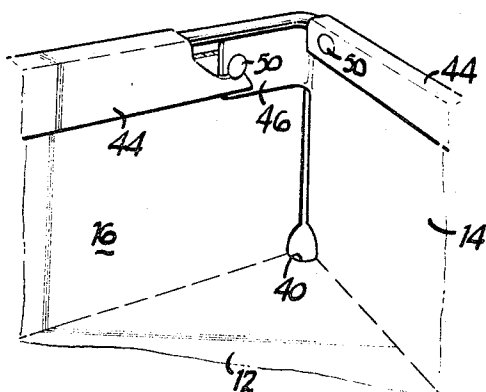
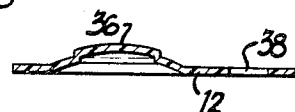


FIG. 8



Inventor:  
SAMUEL L. BELCHER  
ROBERT F. DEBROCK  
By Philip M. Rice  
W. A. Schaefer  
ATT'YS.

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3,381,879

## BEVERAGE BOTTLE CASE

Samuel L. Belcher, Toledo, and Robert F. De Brock,  
Maumee, Ohio, assignors to Owens-Illinois, Inc., a  
corporation of Ohio

Filed Feb. 4, 1966, Ser. No. 525,136

9 Claims. (Cl. 229—34)

### ABSTRACT OF THE DISCLOSURE

The case of the invention is made from a single piece of sheet plastic material which includes a bottom section, four upstanding rectangular side sections forming side walls of the case, and flaps along the top edge of the side sections and also along corner edges of the side sections. A rigid, rectangular endless hoop is retained at the top edge of the case, the top edge flap being folded over the hoop and downwardly against the respective side section of the case where these flaps are secured with the hoop retained between the flap and the respective side section. The corner edge flaps extend about the corners of the case and are held in overlapping relation with an adjacent side section to reinforce the corners of the case. Raised seats for cushioning purposes and also openings for drainage purposes are formed in the bottom of the case, and two of the side walls of the case have openings with a folded-over top edge to grasp when handling the case. In the method of making the case, a blank is stamped out from sheet plastic material, and the details such as the flaps, the raised cushion portions, the drainage openings and the handle opening may be formed during this stamping step. The side walls are folded upwardly, the top flaps are folded about the reinforcing hoop, and the corner flaps are folded about the corners of the case. The flaps are secured to the side walls of the case to complete the case.

This invention relates to containers and methods of making the same, and more particularly to a plastic case which is made from a sheet of plastic by stamping, folding and fastening steps.

Cases for carrying bottled products such as soft drinks, beer and other beverages have typically been made from wood. The case must be strong enough to withstand rough handling. Consequently, wooden pieces of rather thick section are used and these are nailed or otherwise fastened together to form the case. Due to the use of fairly thick pieces, the case is somewhat bulky and awkward to handle as well as being somewhat heavy. Another disadvantage of wooden cases is that the wood absorbs moisture and this can lead to rotting or other damage to the case. Sometimes some of the beverage is spilled on the case, and the moisture absorbed in this manner may attract roaches or other undesirable insects.

It has been proposed to make plastic cases by injection molding. The material cost for such cases is high as is the cost of the molding dies. To keep costs down it is necessary to mold walls of thin section, but some difficult molding problems are encountered when attempting to mold thin sections.

The case for bottled products according to the present invention is made from a single sheet of thin plastic material and so is lighter and easier to handle than a wooden case. The plastic material is braced with a rigid metallic hoop at the top edge of the case. The combination of sheet material and the metallic hoop is strong and will withstand rough handling even though the plastic material is quite thin. The plastic material is water repellant so moisture absorption is not a problem.

The method of making the case is simplified by the use of a single piece of sheet plastic for the body of the case.

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This plastic piece is folded along the four borders of a rectangular bottom section to form the four side walls of the case, and the tops of the side walls are folded over the rigid hoop and affixed to the side walls to provide a rigid top edge for the case. Also incorporated into this top edge are side and/or end wall flaps cooperatively defining a peripheral reinforcement. Stamped out handle openings are formed in two of the side walls, and an edge along each handle opening is folded over to provide a broader surface to grasp when handling the case.

The bottom section of the case may have raised seats for bottles which act as cushions under the bottles to absorb some of the shocks of loading bottles in the case and of rough handling. These seats are depressed from the outer bottom side of the case and are adapted to receive the tops of bottles in an underlying case when cases are stacked, thus acting to retain such bottles in their proper positions and to aid in stacking. Openings may also be formed in the bottom section for drainage purposes.

It is, therefore, an object of the present invention to provide a case for beverage bottles consisting of a single folded piece of plastic material.

Another object of the invention is to provide a method of making a case by stamping out, folding and fastening a single piece of sheet plastic material.

A further object of the invention is to provide a beverage bottle case and a method of making it wherein flaps along top edges of a folded plastic sheet forming the body of the case are folded over a rigid hoop and affixed to the case's side walls, thereby reinforcing the top edge of the case.

Another object of the invention is to reinforce the corners of the folded plastic case with flaps which extend about the corners of the case and overlap the top edge flaps of the adjacent side wall such that all flaps may be secured to the side walls without additional fastening means.

Among the other objects of the invention are to incorporate suitable cushioning seats in the bottom of the plastic case; to provide drainage holes in the bottom wall; and to provide a straightforward and simple method of forming and assembling the case to make it economical to manufacture on a mass production basis.

Other objects of this invention will appear in the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

### On the drawings

FIGURE 1 is a plan view of a piece of plastic material which has been stamped out from sheet plastic according to a pattern which allows the plastic piece to be folded so as to form a beverage bottle case;

FIGURE 2 is an exploded view of the stamped out plastic piece of FIGURE 1 in a partially folded condition, together with a rigid hoop to be incorporated in the case to reinforce its top edge;

FIGURE 3 is a perspective view of the completed case;

FIGURE 4 is a perspective view of one corner of the case with material cut away to show a flap folded around this corner to reinforce it;

FIGURE 5 is a sectional view taken on line 5—5 of FIGURE 3 showing a flap folded over the reinforcing hoop and secured to a side wall of the case;

FIGURE 6 is another sectional view taken on line 6—6 of FIGURE 3 through a staple which fastens the flap to the side wall;

FIGURE 7 is a sectional view taken through a handle of the case; and

FIGURE 8 is a sectional view of a portion of the bottom wall of the case showing a raised seat and a drainage hole.

Before explaining the present invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also, it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

*As shown on the drawings*

In FIGURE 3, reference numeral 10 refers generally to a case which has a bottom wall 12 and four upright side walls 14, 16, 18 and 20 which are generally perpendicular to the bottom wall.

The case 10 is formed from the piece or blank 32 shown in FIGURE 1, the blank being die cut by conventional means to a general overall cruciform configuration. In the blank of FIGURE 1, cut or shear lines are shown in solid lines and fold lines, depressions and the like are shown as dotted lines.

The case 10 is made from a single piece 32 of sheet plastic material which is stamped out from a larger sheet to give the piece the desired configuration as shown in FIGURE 1. The plastic piece 32 has a rectangular central section 12 and four rectangular side sections 14, 16, 18 and 20 which correspond respectively to the bottom and four side walls of the case 10 (FIGURE 3). Walls 16 and 20 in FIGURE 3 are the end walls of the case, but the term side wall is used generically herein to include the end walls 16 and 20 as well as walls 14 and 18. Although the central section and side sections of the piece 32 are actually rectangular in the illustrated embodiment, for purposes of this application it is intended that the term rectangular apply to a square configuration as well since the square configuration is equivalent to a true rectangular configuration. It may be seen in FIGURE 1 that the four side sections respectively adjoin the bottom section at its four borders or boundaries shown by dashed lines 34.

Two of the side walls 16 and 20 have handle openings 22 and 24 in them, and there are small inwardly bent tabs 26 (FIGURE 3 and 7) along the top edge of each of these openings which provide a broader surface at the handle's top edge to be grasped when lifting the case. The plastic material of the case is thin, say one-sixteenth ( $\frac{1}{16}$ ) of an inch thick, so the tabs 26 broaden the top edge of the handle openings so that those edges will not cut into the fingers of a person lifting the case.

The longer side walls 14 and 18 have central panels within the rectangular dashed lines 28 and 30 which are indented or recessed slightly inwardly of the case so as to provide some protection for the recessed panels. Thus, decoration may be provided on the recessed panels and it will be protected from some of the rough handling to which a case of this type is frequently subjected.

The bottom section 12 of plastic piece 32 has twenty-four (24) raised seats 36 (see FIGURE 8) which act as cushions for bottles when they are loaded into the case. In a typical loading operation, the bottles are placed in the case and released into the bottom section. Obviously, some breakage could result if they drop onto a hard surface. The raised seats 36 are flexible enough to yield slightly and then spring back to their original condition so as to absorb some of the shock when bottles are dropped into the case. The seats are arranged in rows of six and columns of four (FIGURE 1) to correspond with the usual pattern in which soft drink bottles or other bottles are provided in cases. There are a plurality of drain holes 38 in the bottom of the case which allow water or other moisture to drain out. There are also cut-out apertures or recesses 40 at the four corners of the bottom section 12

providing further drainage outlets which are effective for example when the case is held at an angle to a horizontal position as is sometimes done when the cases are hauled by trucks. The handle openings 22 and 24 with their tabs 26 are also formed in the plastic piece 32 as shown in FIGURE 1.

The portions of the side sections located outward of the dashed lines 42 and 43 are flaps 44 which are folded over a hoop when the case is assembled. Side sections 14 and 18 each have two additional flaps 46 which project from corner edges of these side sections. The latter flaps 46 are folded around the corners of the case when it is assembled so as to overlap the adjacent side wall and its top edge flap 44. Both flaps 44 and 46 are then secured to the side walls as will be explained further in connection with the method of making the case. It is evident that the corner flaps 46 could be provided on end sections 16 and 20 or that each of the sections 14, 16, 18 and 20 could be provided with one corner flap.

The first step of the method of making the case is to stamp the plastic piece 32 out from a sheet of plastic material having an appreciable thickness, e.g., on the order of one-sixteenth ( $\frac{1}{16}$ ) of an inch. Suitable plastic materials are polyethylene and polypropylene. The stamping step is done with dies which also form the raised sections 36, the panels 28 and 30, and the cut-out details of the case all in one stamping operation. The stamping dies have portions for forming the raised seats 36 by cold flow of the plastic material such that the plastic need not be heated in order to form these seats. The stamping dies also cut out the apertures 38 and 40, but the material within apertures 38 is pushed out in a separate punching step. Tab 26 and flaps 44 and 46 are delineated by the stamping dies by forming or creasing the appropriate fold lines. The dies form creases along the dual dashed lines 42 and 43 since the flaps 44 are to be folded completely over, one fold being made along line 42 and another along line 43, to make a wide edge at the top edge of the case and a loop in which the hoop is retained. Furthermore, the indented panels of the side sections within the dashed lines 28 and 30 are also formed by cold flow of the material due to the configuration of the stamping dies. Thus, in a single stamping step all of the details of the case are formed on the single piece 32 of plastic material.

To assemble the case, the side sections 14, 16, 18 and 20 are folded as in FIGURE 2 along the fold lines 34 between the side sections and the central section 12. When the side sections have been folded to an upright position, a rigid hoop 48, preferably made of tough metal, such as steel, is placed inside the top edge of the case. The hoop 48 is rectangular to match the rectangular configuration desired for the top of the case and is strong enough to materially strengthen the top edge of the case.

The corner flaps 46 are folded around the corners of the case to overlap the adjoining end sections 16 and 20. The top edge flaps 44 are then folded over and about the metal hoop 48 to the configuration shown in FIGURE 5, and in this folded over position the flaps 44 overlap the corner flaps 46 which have previously been folded. Flaps 44 are folded once along line 42 and again along line 43 to provide an overall 180° fold.

The flaps 44 and 46 are then stapled together and to the respective side sections so as to firmly hold the hoop 48 in place and to reinforce the corners of the case by means of the corner flaps 46. A staple 50 is shown extending through a flap 44 and the side section 18 in FIGURE 5. This brings the case to its final configuration as shown in FIGURE 3. Although staples have been illustrated as the means for securing the flaps to the side walls, there are many alternatives. The flaps can be riveted, heat sealed, ultrasonically sealed or sealed with adhesive.

The manner in which the top edge flaps overlap the corner flaps may be seen in FIGURES 4 and 6. A corner flap 46 of side section 14 extends around the corner of the case and is tucked underneath the top edge flap 44

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of side section 16. The staple 50 extends through both of the flaps 44 and 46 and holds them firmly anchored to the side wall 16. The aperture 40 at the corner of the bottom section 12 of the case is also visible in FIGURE 4.

Thus, the invention provides a light-weight, easy-to-handle case for beverage bottles which consists of a single piece of plastic material folded to the desired wall configuration and a rigid hoop which stiffens the top edge of the case. The water-repellent nature of the plastic material gives it a definite advantage over wooden cases since spilled beverages or other liquids are not absorbed by the case. The case may be stored in wet areas and food or beverage products may be iced in the case if desired. The case will carry loose bottles and will also accept cartons of smaller groups of bottles such as those known as "six-packs." Separators or dividers may be used in the case if desired, but they are not essential.

The method of assembling the case depends on folding over integral portions of the single plastic piece from which the case is made and securing certain folded over portions together so as to affix the reinforcing hoop to the top edge of the case. All of the detail of the case is formed by a stamping operation which keeps the processing of the material to a minimum. The folding steps are easy to carry out either by hand or by machine, and relatively little labor is involved in assembling the case.

We claim:

1. A case for bottled products comprising a single piece of sheet plastic material having a rectangular bottom section and four upstanding rectangular side sections forming the four side walls of said case, said side sections each having a flap along an edge thereof at the top of said case, a rigid, rectangular and endless hoop at and reinforcing the top edge of said case, said flaps being folded over and about said hoop and downwardly against the respective side section of said case, and means securing said folded over flaps to said side sections and thereby forming loops in which said hoop is retained between each flap and the respective side section at the top of said case.

2. The case of claim 1 wherein each of said flaps has two closely spaced parallel fold lines at the top edge of said case, each flap being folded at right angles once along one of said fold lines and folded at right angles again along the other of said fold lines to provide an edge substantially wider than the thickness of said material at the top of said case.

3. The case of claim 1 wherein said side sections have other flaps extending along corner edges thereof, said other flaps extending about the corners of said case and being held in overlapping relation with an adjacent side section.

4. The case of claim 3 wherein said first named flaps overlap said corner flaps.

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5. The case of claim 4 wherein said securing means comprises fasteners extending through said flaps and said side sections securing said flaps together and to said side sections.

6. The case of claim 1 wherein two opposite ones of said side sections have openings therein providing handles for lifting said case, and said opposite side sections each have a folded over edge portion along the top side of said opening therein providing a gripping edge wider than the thickness of said sheet to be grasped at said handle.

7. A case for bottled products comprising a single piece of semi-rigid sheet plastic material having a rectangular bottom section and four rectangular side sections all extending at substantially right angles to said bottom section on the same side thereof to form the four side walls of said case, said side sections each having a first flap along a top edge thereof and said side sections having second flaps along corner edges thereof, a rigid, rectangular and endless hoop at and reinforcing said top edges of said side sections, said first flaps extending over and about said hoop and downwardly against the respective side section to retain said hoop at the top of said case and each having fold lines at the top of said case, and said second flaps extending about the corners of said case and each having a portion overlapping a first flap of an adjacent side section, and means securing together said flaps and said side sections.

8. The case of claim 7 wherein at least one of said side sections has an indented portion protected from scuffing by the non-indented remainder of said side section.

9. A beverage bottle case comprising a rigid, rectangular and endless hoop, a single piece of sheet plastic material depending from said hoop, said plastic piece comprising a first rectangular section parallel to said hoop forming a bottom wall for said case, and four rectangular side sections integral with and generally perpendicular to said bottom section forming the four side walls of said case, each of said side sections having a flap portion along a top edge thereof folded over said hoop and downwardly against the respective side section of said case, said flaps being secured to said side sections with said hoop retained under the folded over portion of said flap and between said flap and said respective side section.

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DAVID M. BOCKENEK, *Primary Examiner.*