

Nov. 3, 1964

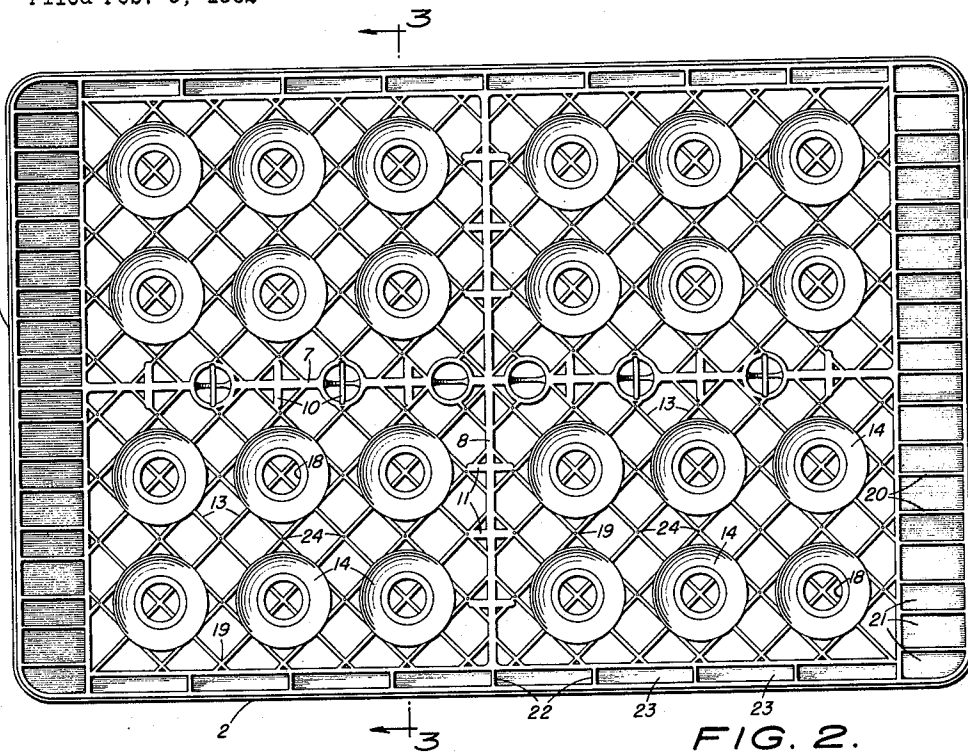
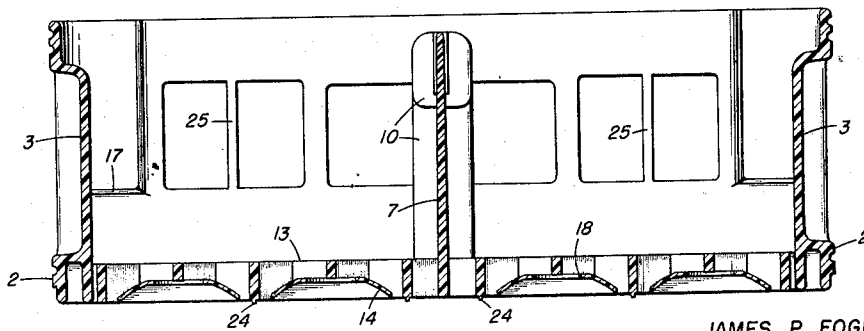
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3,155,268

BOTTLE CASE

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4 Sheets-Sheet 2



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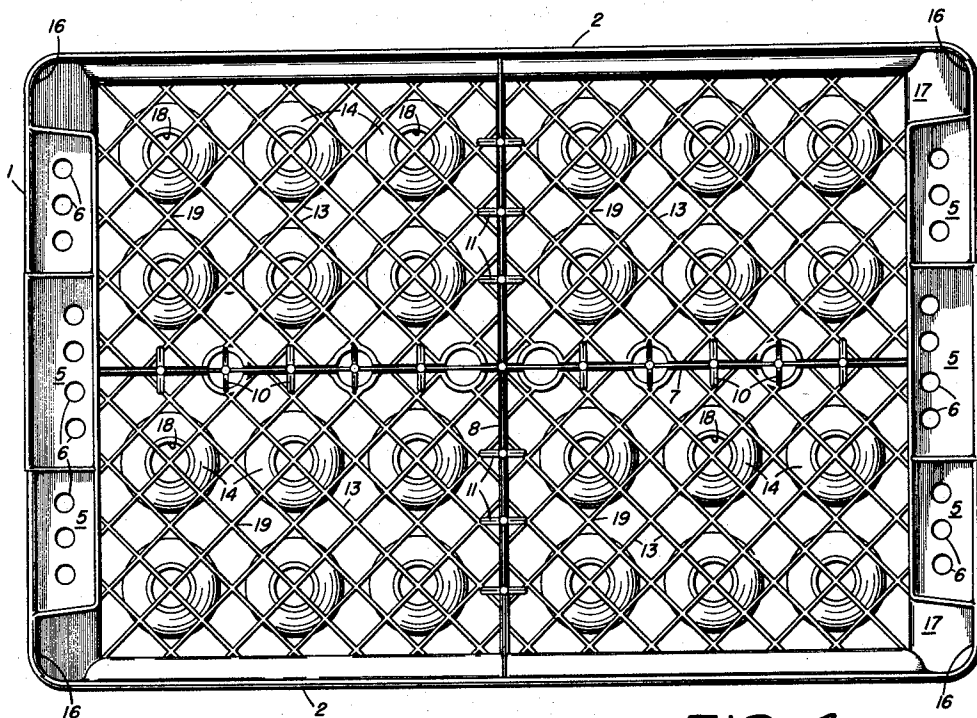


FIG. 4.

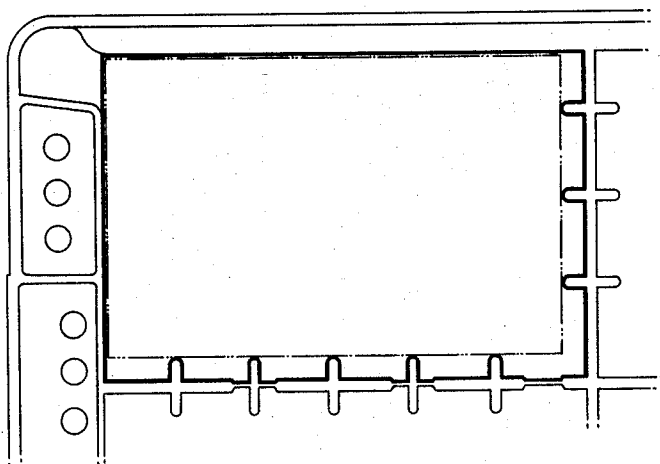


FIG. 5.

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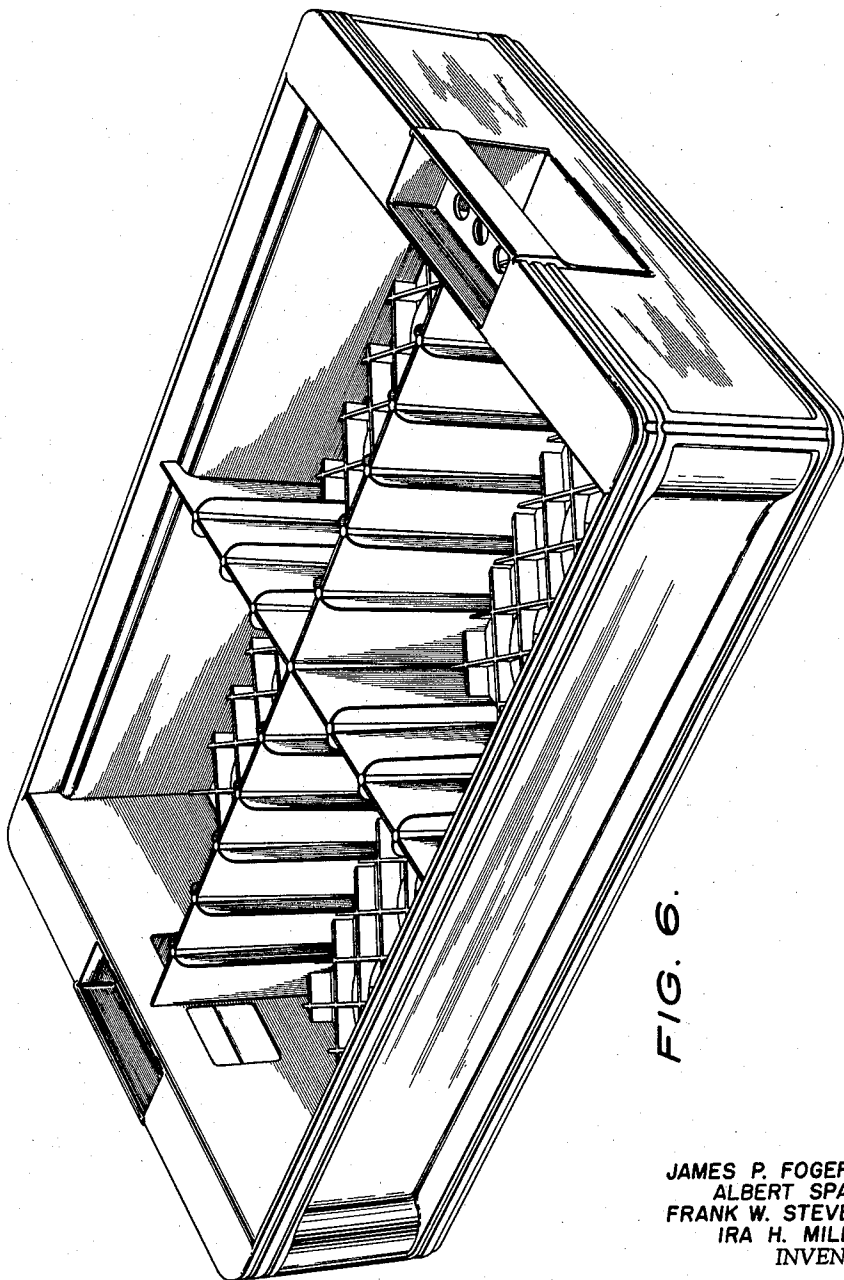


FIG. 6.

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3,155,268

BOTTLE CASE

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2 Claims. (Cl. 220-21)

The present invention relates to a novel and useful plastic beverage case. More particularly, it relates to a plastic beverage case which is particularly adapted to hold four conventional beverage cartons.

It is known in the art that beverage cases for holding the conventional beverage cartons, such as the six-pack carton, may be made of various materials such as wood, cardboard, plastics and the like. With the advent of the newer plastics and particularly high density polyethylene, various beverage cases have been proposed which are composed solely of plastic and molded as a single unit. The advantages of such cases are obvious since the plastic is high melting, resistant to chemicals, etc. In addition, such cases have aesthetic appeal and can be easily washed and sterilized.

However, such plastic beverage cases have not received widespread acceptance in the field as the proposed cases have all suffered from a number of disadvantages which tend to offset the advantages obtained by their utilization. One disadvantage of some of the proposed cases was that they were too heavy and used too much plastic to be economically feasible. When the dimensions of the case were changed in order to use less plastic, the cases could not readily be processed on conventional equipment due to the fact that they would not trip the automatic switches and the like. Another disadvantage of the proposed beverage cases was that the plastic bottoms were too smooth and would not travel uphill on the belts used in the processing equipment. In addition, when the cases were stored the bottom of one case tended to slip over the bottles in the next case so that stacks of more than a few cases were completely impractical. Also, the cases did not wash well as they tended to fill up in the washing process unless drain holes were provided in the bottom of the case which weakened the bottom. The relative ease of abrasion of the labels and designs on the flat portions of the case was likewise objectional. Another disadvantage of some of the proposed cases was that they were useful to the consumer for packing and storage and consequently were not returned. Since the cost of the plastic case was many times the nominal deposit required to be put up by the consumer, the loss of the case represented a substantial loss on that sale. A plastic beverage case which did not have any of the aforementioned disadvantages would obviously be highly desirable.

It is an object of the present invention to provide a relatively inexpensive plastic beverage case which has a long life. Another object is to provide a beverage case which is lightweight and easy to wash and sterilize. A further object is to provide a beverage case which is fully compatible with the beverage cases currently employed and the machinery used to process the cases in the bottling plant. A still further object is to provide beverage cases which may be stacked on one another without the danger of one case slipping over the bottles of the lower case. Another object is to provide a beverage case which is substantially useless for any purpose other than the intended purpose. Other objects will become apparent as the description of the invention proceeds.

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These objects are accomplished by the present invention which provides a substantially rigid, unitary, plastic beverage case having an open top and integral dividers, side, end and bottom walls, said end walls being provided with openings comprising handle elements, said side walls having a recessed portion therein, the interior of the case being divided into four compartments by said dividers which run from the center of each side and intersect at the central portion of the case, the said bottom comprising a plurality of intersecting, narrowly-spaced, flat ribs which are located edgewise to the bottom of the case, the bottom of the said ribs containing four groups of downwardly open indentations, each group of the said indentations being arranged in two rows which are symmetrically spaced below the effective area of each of the four compartments in the interior of the case.

In a preferred embodiment of the present invention the plastic beverage case is composed of high density polyethylene and the bottom of the case contains a number of small protuberances which are located at the intersections of the narrowly spaced flat ribs. In a more preferred embodiment of the present invention, the plastic beverage case has substantially rectangular recessed side walls and is particularly designed to hold the conventional six-pack cartons of bottles.

The terms "unitary" and "integral" are used in the same sense to mean that all components of the plastic case are associated together as a single unit. Thus, where the dividers meet the end walls, side walls and bottom wall of the case, the intersection is merely a continuity of the plastic from the one wall to the other. The term "plastic" is used to signify any of the conventional polymeric materials which will result in the formation of a substantial rigid beverage case. A particularly preferred plastic is high density polyethylene (i.e. having a density above about 0.940) homopolymer or copolymer. The preparation of such a material is disclosed in United States Patent 2,825,721. However, many other plastics are known which would likewise be operable.

The expression "narrowly spaced" is used to signify that the ribs are in close proximity to one another as compared to the diameter of the bottles in the beverage carton which the case is adapted to hold. The ribs are spaced so that the individual bottles, if packed within the case without a carton, will not fall through the openings formed by the intersecting ribs. Preferably, the ribs are spaced about $\frac{3}{4}$ " or less from each other so that bottle caps will not fall through or get caught between the ribs. The term "edgewise" is used to signify the smallest side of the "rib." Thus, the ribs are in close proximity to one another with one of the smallest sides facing the bottom of the case and the other the interior of the case.

The expression "effective area" is used to designate that portion or area of each compartment of the case upon which the beverage carton rests when it is inserted into the compartment.

The plastic beverage case is hereinafter more fully described by reference to the drawings.

In the accompanying drawings, which illustrate preferred embodiments of the invention:

FIGURE 1 is a perspective illustration of a beverage case representing one embodiment of the invention;

FIGURE 2 is a bottom view of the beverage case shown in FIGURE 1;

FIGURE 3 is a cross-sectional view of the beverage case shown in FIGURE 1;

FIGURE 4 is a top view of the beverage case shown in FIGURE 1;

FIGURE 5 is a sketch of one of the four compartments shown in FIGURES 1 and 4 which points out the smaller "effective" or useful area in a single compartment

with relation to the actual area of the compartment; and
FIGURE 6 is a perspective illustration of a beverage case representing another of the preferred embodiments of the invention.

In the drawings, the longitudinal divider 7 runs from the center of the end walls 1 to the central portion of the case 9 where it intersects the transverse divider 8 running from the center of side walls 2 to the central portion of the case 9. The longitudinal divider 7 contains a plurality of longitudinal spacers 10 and the transverse divider 8 contains a plurality of transverse spacers 11. The spacers serve a dual function in that they strengthen the divider and case, and, in addition, allow easy insertion and withdrawal of the beverage cartons due to the slope on the edge of the spacers. As an optional feature, the longitudinal or transverse dividers may contain a plurality of vacant portions 12 in the dividers to conserve on plastic where the additional rigidity is not required in the divider.

The side walls 2 contain a recessed portion 3 where labels or designs may be affixed without fear of abrading from the case. The recessed portion 3 also acts as a spacer from the side walls 2 and adds rigidity of the wall. The recessed portion 3 is preferably rectangular but may be oval or the like. The end walls 1 contain grooved openings 4 which serve as handles and additional openings 15 which are employed to conserve plastic. The guides 25 prevent any "holdup" of the beverage cartons on the inner ridge of openings 4 of the end walls 1. The end wall 1 contains a plurality of small compartments 5 which tend to fill with water and so are provided with drainage holes 6. The corner indentation area 16 of the end wall 1 is provided with a sloping inner face 17 so that liquids will likewise drain from this portion of the container.

The bottom wall of the case is formed by a plurality of intersecting flat ribs 13 which are narrowly spaced from each other and which are located edgewise to the bottom of the case so as to give maximum rigidity and strength but still allow ready drainage of any liquid from the interior of the case. The bottom of the case contains four groups of downwardly open indentations 14 which are flared and will receive the bottle caps from the next lower case in stacking, thus alleviating any stacking problems. Preferably, each downwardly open indentation 14 is located below an intersection of the flat ribs 13 to give maximum strength to the indentation. Each of the downwardly open indentations 14 is provided with a drainage hole 18 so that liquids readily drain from all interior portions of the case. The intersecting portions 19 of the intersecting flat ribs 13 are substantially flush with the remainder of the bottom wall of the case. The bottom of the case may optionally be provided with a plurality of small protuberances 24 which serve to increase frictional contact with moving belts as processing takes place.

As shown by FIGURE 2, a plurality of reinforcing ribs 20 and 22 act as reinforcement in the spaces 21 and 23.

FIGURE 5 shows the smaller "effective" area in each of the four compartments as shown in FIGURES 1 and 4. The longitudinal and transverse spacers serve to reduce the area utilized in the case but allow ready insertion and withdrawal of the beverage cartons from each compartment.

In FIGURE 6, the end walls of the case are modified so as to eliminate the guides 25 (as shown in FIGURE 1). The modification consists of closings over portions of the end wall so as to present a flat surface to the interior of the case. To avoid utilizing a great deal of unnecessary

plastic, the ribs 20 (as shown in FIGURE 2) are extended upward to enlarge the spaces 21 (as shown in FIGURE 2) in this section of the case.

Example

A beverage case for holding four six-pack cartons of soda is injection molded as shown in FIGURES 1, 2, 3 and 4. The plastic employed is polyethylene homopolymer having a density of 0.960 gram per cubic centimeter and a melt index of 3.5 (ASTM D-1238-59T). The overall outside dimensions of the beverage case are approximately 18 $\frac{3}{8}$ " x 11 $\frac{1}{8}$ " x 4 $\frac{1}{4}$ " and it has an interior depth of about 3 $\frac{5}{8}$ ". The intersecting ribs at the bottom of the case are approximately $\frac{1}{4}$ " thick, $\frac{3}{4}$ " apart and $\frac{5}{16}$ " in depth from the bottom to the inner portion of the case. The downwardly open indentations are about 1 $\frac{7}{8}$ " in diameter at the bottom of the case and taper to a flat area approximately $\frac{15}{16}$ " in diameter so the conventional bottle cap would readily center itself in the indentation. The "effective area" of each compartment is about 4 $\frac{15}{16}$ " x 7 $\frac{3}{8}$ ".

The beverage case has the same approximate dimensions as a conventional wooden case but only weighs about 2.4 lbs. as compared to a wooden case which weighs approximately 4 $\frac{1}{2}$ lbs. The plastic case is fully compatible with the wooden case and interchangeable therewith in the conventional processing equipment.

While the invention has been described with respect to an uncolored plastic, it is obvious that other materials such as dyes, pigments, fibers and the like may be introduced into the plastic without substantial alteration of the properties or usefulness of the resulting plastic beverage case.

Many equivalent modifications will be apparent to those skilled in the art from a reading of the foregoing without a departure from the inventive concept.

What is claimed is:

1. A substantially rigid, unitary, plastic beverage case having an open top and integral dividers, side, end and bottom walls, said end walls being provided with openings comprising handle elements, said side walls having a substantially rectangular recessed portion therein, the interior of the case being divided into only four compartments by said dividers which run from the center of each side and intersect at the central portion of the case, the said dividers containing a plurality of integral spacers which extend substantially perpendicular from the dividers, the said bottom being an open grillwork and comprising a plurality of intersecting narrowly-spaced flat ribs which are located edgewise to the bottom of the case, the bottom of the said ribs containing twenty-four downwardly-open flared indentations which terminate flush with the bottom of the case and tend to make the case self-centering in stacking, each group of six of said indentations being arranged in two rows of three each which are symmetrically spaced below the effective area of each of the four compartments formed by the dividers in the interior of the case.

2. The beverage case of claim 1 wherein the plastic is high density polyethylene.

References Cited in the file of this patent

UNITED STATES PATENTS

2,414,171	Scharff	Jan. 14, 1947
2,743,030	Read	Apr. 24, 1956
2,970,715	Kappel	Feb. 7, 1961
2,979,222	Levine	Apr. 11, 1961
3,045,862	De Chelbor	July 24, 1962
3,055,531	De Chelbor	Sept. 25, 1962
3,092,284	Stout	June 4, 1963