United States Patent [19]

Bunnell

[11] **3,812,996**

[45] **May 28, 1974**

[54] **BOTTLE CARRYING CASE**

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[22] Filed: **June 8, 1972**

[21] Appl. No.: **260,815**

[52] **U.S. Cl.**..... **220/21,** 217/19, 220/DIG. 15, 220/97 R, 206/504, 229/15

[51] **Int. Cl.**..... **B65d 1/36**

[58] **Field of Search** ... 220/21, 22, DIG. 2, DIG. 15, 220/20; 229/15; 217/18, 19

[56] **References Cited**

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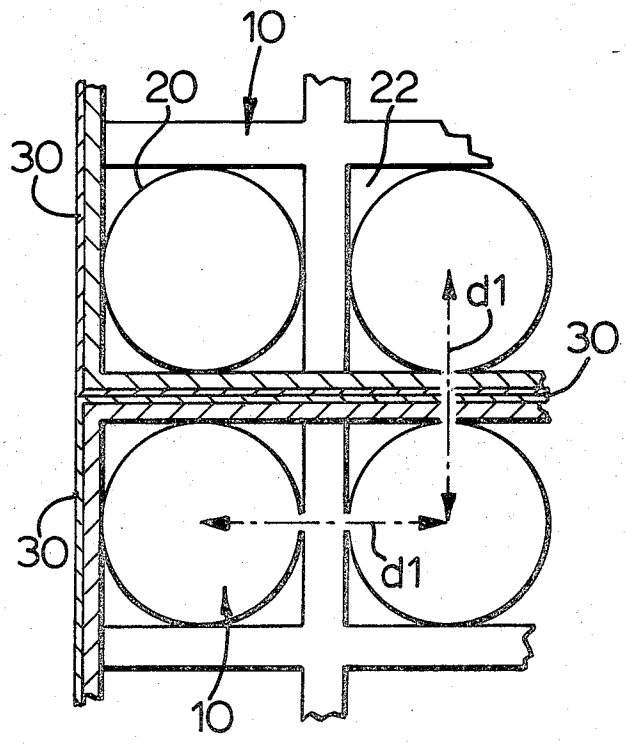
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Assistant Examiner—Douglas B. Farrow
Attorney, Agent, or Firm—Sim & McBurney

[57] **ABSTRACT**

Plastic carrying cases for bottles, especially beer bottles, are provided of a structure, in which, when the cases are stacked with bottles therein the tops of the bottles in one case engage the underside of the next upper case so that the load of the stack is supported through the bottles.

4 Claims, 7 Drawing Figures



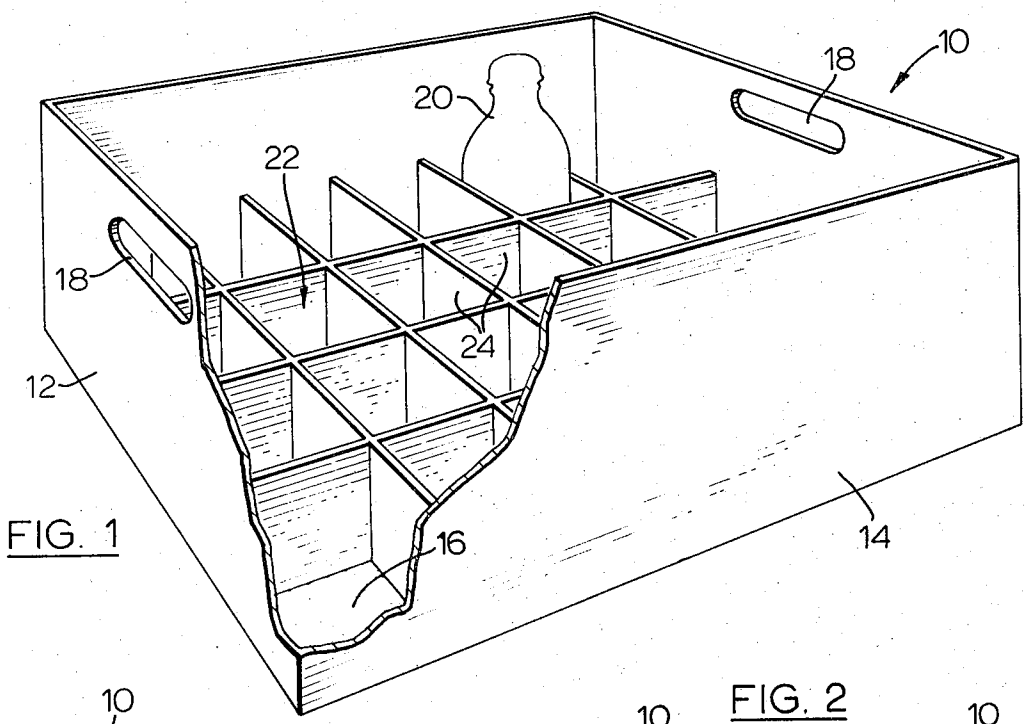


FIG. 1

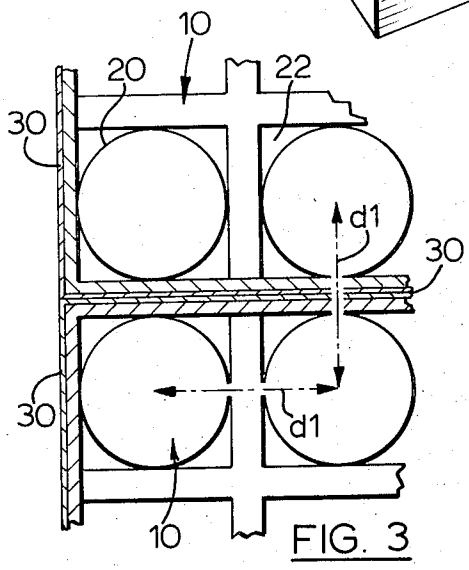
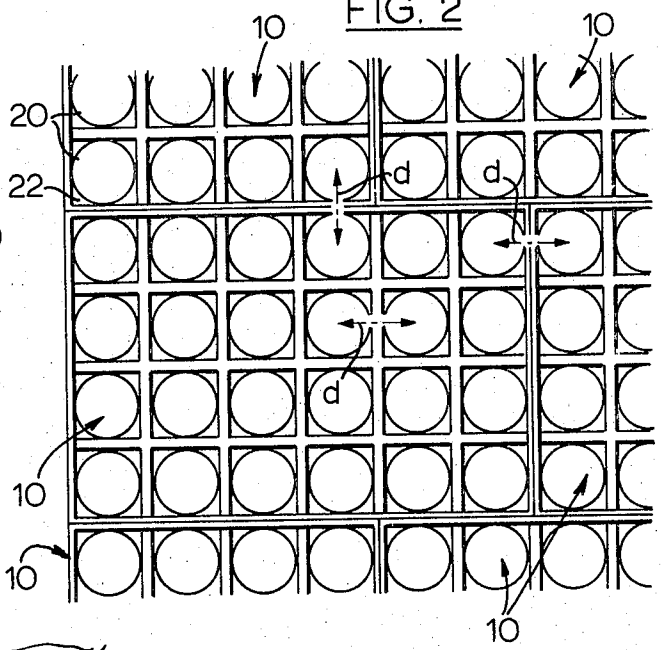


FIG. 3

FIG. 2



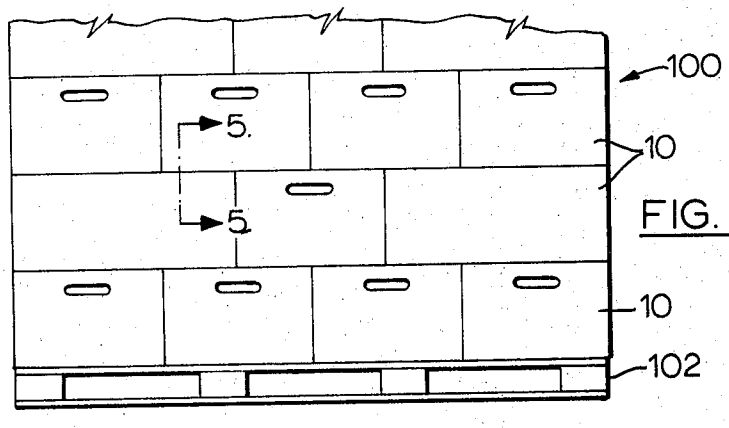


FIG. 4

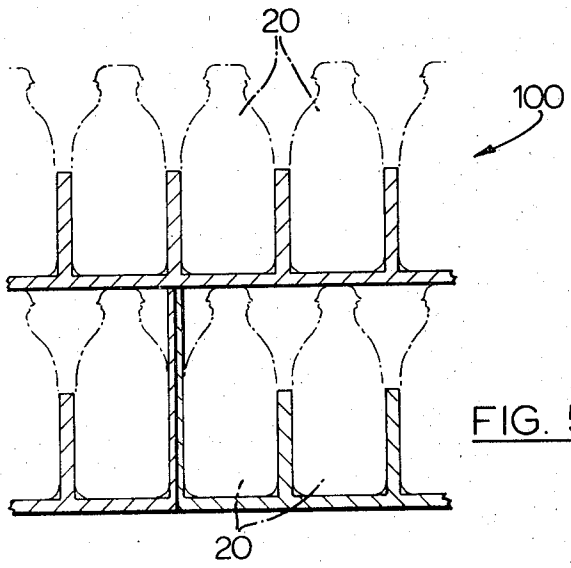


FIG. 5

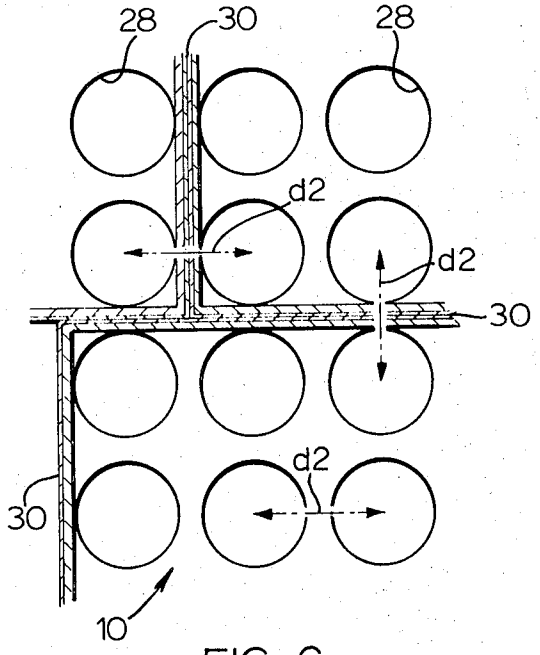


FIG. 6

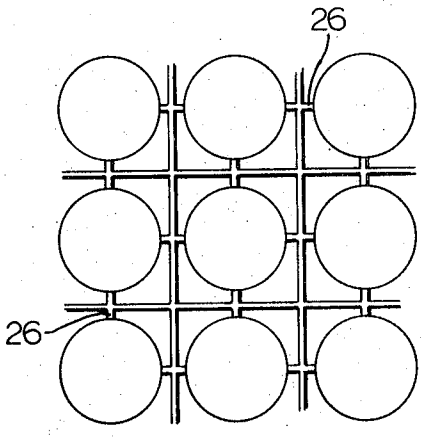


FIG. 7

BOTTLE CARRYING CASE

This invention relates to a carrying case for bottles, more particularly to a carrying case for beverage bottles.

Cases for the transportation and storage of beverage bottles of many types and designs have been suggested. A variety of materials have been used in the construction of such cases, depending on the bottles concerned, such as, cardboard, wood, metal and synthetic polymeric materials.

The present invention is concerned with cases constructed of polymeric materials and particularly to cases utilized in the carrying of beer bottles, although the cases may be utilized for the transportation and storage of other beverage bottles.

The term "beer" is used in a broad sense in this specification to refer to alcoholic liquors obtained by the fermentation of malt or other saccharine substance and flavored by hops or other bittering agents, and hence includes lagers, ales, stouts and porters.

Beer is packaged for sale to the consumer in many ways, usually in cases containing 6, 12 or 24 bottles. The form of packaging employed varies depending on the sales area. In one such sales area, such cases are constructed of light cardboard and the empty bottles are returned by the consumer to the sale outlet in the cases. The returned bottles are refilled, but the cases are discarded.

In other sales areas, the case is constructed of heavy cardboard and is reutilized many times. However, the outer brand identifying material becomes dirty and possibly defaced as the cases are recycled, and as such give rise to sales resistance. Cases constructed of cardboard material therefore suffer from drawbacks.

Cases constructed of polymeric materials have been suggested in view of the many useful properties of polymeric materials, such as, strength and wear resistance and hence long life; washability and lightness. As used herein the term "synthetic polymeric material" is utilized to refer to those synthetic polymeric materials which are capable of extrusion or molding to a formed article and does not include those polymeric substances which are incapable of or are otherwise unsuitable for the production of formed articles, such as cellulose nitrate. Synthetic polymeric materials are commonly referred to as "plastics" and the latter term will be used in this specification in that sense.

Those plastic cases which have been proposed for the transportation and storage of beer bottles generally have upright side and end walls, which may have openings therein, a bottom wall and an open top. Dividers are usually provided within the container to separate the individual bottles from each other. Such plastic cases have thick walls, so that the cases both when empty and when containing empty or full bottles may be stacked and the combined weight of the stack is supported by the walls through the height of the stack. Usually such cases are constructed in such a way that they may nest together when stacked.

In the handling of returned beer cases containing empty bottles, the bottles must be removed from the cases for washing and label removal prior to recycling for refill. The sequence of operations employed in such debottling operations depends on the market area. In North America, a stack of cases is provided in which each layer is separated from the vertically adjacent layers by pallets. Generally, the cases in the stack are provided in a "cross-stacking" manner with the cases in one layer being stacked cross-wise with respect to those in the vertically adjacent layers. The cases are removed from the pallets and placed on a conveyor for feed as an in-line stream of cases to a debottling machine. At the debottling machine all of the bottles are removed from each case in turn.

In European practice bottles are removed from the cases directly from the stack. However, the cases in the stack must be positioned in a regular pattern in each layer with the pattern being repeated in each layer of the stack.

In accordance with the present invention there is provided an improved plastic case which includes side walls, end walls, a bottom wall and an open top. Dividers are provided within the container to provide a plurality of individual compartments for receiving bottles. The side and end walls extend upwardly from the bottom wall to substantially the height of or slightly below the height of the bottles to be stored in the case. The case is constructed so that it supports the load of bottles to be stored and transported therein, but is insufficient to support a stack of cases of such bottles. In the case of the present invention, when the cases are stacked, the load of the stack is supported through the bottles of the stack.

Usually the side walls and end walls are smooth and any reinforcing ribs utilized are positioned internally of the walls. Hand holes usually are provided in the end walls to assist in the carrying of the case.

The case of the present invention is unique in providing outer walls which are not load-bearing, other than the load-bearing capability required of the complete case when full of bottles, and in essence constitute a skin surrounding the internal dividers. Any load support required when full cases are stacked is provided by the bottles themselves. Since the bottles extend substantially the height of the side and end walls, and usually the caps of the bottles are slightly proud of the plane of termination of the outer walls, when cases containing bottles are stacked one on top of another the top of the bottles in a lower case engage the bottom wall of the next higher case. In this way support for the stack is provided through the bottles themselves rather than through the side and end walls of the case. This is in contrast to the prior art plastic cases described above wherein the outer walls are load supporting and when stacked the weight of the stack is supported by such side and end walls and not through the bottles contained in the cases. When the cases of the invention are empty they are sufficiently light that they may be readily stacked with the load of the stack being supported in this instance through the side and end walls.

In a preferred aspect of the invention, the individual bottle-receiving compartments are constructed so that the centre-to-centre distance between adjacent compartments is substantially the same across the length and width of the case, and also when a plurality of cases are positioned in outer wall-to-outer wall abutting relationship, the centre-to-centre distance between compartments in adjacent cases is substantially the same as that within each case.

Thus, in the pallet stacking and subsequent debottling operation the European practice of debottling directly from the stack may be utilized while the North American cross-stacking positioning may be used. In-

deed, by utilizing cases in accordance with this embodiment of the invention, cases may be positioned in any desired random orientation on the individual pallets without reference to the orientation of cases in the next adjacent or any other layer in the stack. Additionally, by the use of such cases, it is possible to mix in any layer 24-bottle, 12-bottle or 6-bottle cases.

The case in accordance with this preferred embodiment of the invention therefore allows the improved European debottling operation to be employed with a standard North American stack, and also increases the versatility of the North American stacking operation in allowing cases of different sizes or the same size to be employed in random orientation in the layers of the stack.

The plastic beer cases of the present invention having particular utility in the beer case structure described and claimed in copending U.S. Pat. application Ser. No. 261,075 filed June 8, 1972. As disclosed in that copending application, a bottle packaging structure includes a disposable sleeve closing the top of the case and surrounding and engaging the outer walls of the case. In another embodiment of the invention cases of this type are provided utilizing the cases of the present invention and the cases are dimensional so that the centre-to-centre distance between bottles within a case is substantially the same distance as the centre-to-centre distance between the bottles positioned in adjacent cases with the outer faces of the sleeves of the adjacent cases in abutting relationship. In the specification references to face-to-face abutting relationship of adjacent cases is intended to refer not only to the abutting relationship of the cases themselves but also to abutting relationship of packaging structures including a sleeve, as disclosed in the copending application.

Further while the sleeve arrangement described in the copending application represents a preferred closure for the open top of the case, other closures may be employed. For example, a disposable light cardboard or paper sheet may be inserted in the top of the case to cover the bottles. Alternatively, openings may be provided in such a sheet coinciding with the position of the bottles, so that the bottle necks project through the openings.

The invention is described further by way of illustration with reference to the accompanying drawings, wherein:

FIG. **1** is a perspective view of a plastic case in accordance with the invention, partially cut away;

FIG. **2** is a plan view of a plurality of cases positioned in wall-to-wall abutting relationship,

FIG. **3** is a detail of a modified form of FIG. **2**;

FIG. **4** is a side elevation of a stack of cases the type shown in FIG. **1**;

FIG. **5** is a section taken on lines **5—5** of FIG. **4**;

FIG. **6** is a detail of a plurality of cases positioned as shown in FIG. **2** with a differing form of bottle receiving coypartment; and

FIG. **7** is a close-up plan view of part of a bottle carrying case of the invention having yet another form of bottle receiving compartment.

In the drawings, referring to FIG. **1**, a plastic beer bottle carrying case **10** includes end walls **12** and side walls **14** extending upwardly from a bottom wall **16.** The case **10** has an open top allowing access to the interior of the case.

The outer faces of the side walls **14** are smooth and renforcing ribs are provided on the inner face of the side walls. The outer faces of the end walls **12** also are smooth, and any required reinforcing ribs are positioned internally of these walls. Hand holes **18** are provided in the end walls **12** to aid in the carrying of the case **10.**

The side walls **14** and end walls **12** extend upwardly from the bottom wall **16** a distance substantially equal to the height of a beer bottle **20** positioned in the case. The beer bottle **20** is placed in an individual compartment **22** defined by upright walls **24** which extend upwardly from the bottom wall **16.** Usually the top of the beer bottle **20** extends slightly beyond the upper extremity of the side and end walls **14** and **12.** The compartments **22** in the region immediately adjacent the side and end walls **12** and **14** are defined by the upright walls **24** and by part of the side or end walls.

The upright walls **24** may extend upwardly any desired distance, up to the height of the side and end walls **12** and **14,** and separate the bottles **20** in the individual compartments **22** from each other. Any desired number of compartments **22** may be provided in the case **10,** usually 6, 12 or 24.

The compartments **22** as illustrated are defined by the upright walls **24** which engage the bottles **20** to position the bottles in the compartments **22.** Any other convenient form of positioning of the bottles **20** in the compartments **22** may be employed, such as webs **26** (FIG. **7**) extending from the walls **24** into the compartments, or cylindrical sleeves substantially the size of the bottles fixedly positioned in the compartments **22.** Also, recesses **28** (FIG. **6**) in the bottom wall **16** at the base of each compartment **22** may be provided to receive the bottom of the beer bottle.

The network of the compartments **22,** the bottom wall **16,** and the end and side walls **12** and **14** of the case **10** should be strong enough to sustain the load of all of the full bottles **20** in the case **10.** However, the walls **12** and **14** do not sustain the load of a stack of cases, as will become more apparent below.

Turning now to consideration of FIG. **2,** there is illustrated a plurality of cases **10** positioned in face-to-face abutting relationship. Each of the cases **10** is of the type shown in FIG. **1.**

The embodiment illustrated in FIG. **2** may be modified as shown in FIG. **3.** In accordance with the structure described in the above-mentioned co-pending application Ser. No. surrounding each of the cases **10** is a disposable cardboard sleeve **30** which spaces the cases from each other. The outer faces of the sleeves **30** abut each other.

As may be seen in FIG. **2,** the centers of the bottles **20** in each compartment **22** in each case **10** are positioned the same distance apart whether distances within the same case **10** or between adjacent cases **10,** is considered. Thus, the distances d all are substantially equal.

Similarly, in FIG. **3,** the centers of the bottles **20** in each compartment in each case **10** is positioned the same distance apart, and in this embodiment the distances *d*1 are substantially equal. To compensate for the thickness of the sleeve **30** in the embodiment of the FIG. **3,** the thickness of the walls are varied as compared to the embodiment of FIG. **2.**

The bottle receiving compartments **22** in each of the cases **10** may be of the same design or of varying de-

sign. The compartments **22** may have any of the forms discussed above, and may be the form shown in FIG. **6** or **7.** As illustrated in FIG. **6,** the distance d2 between bottle centers is substantially the same.

Therefore, for a plurality of cases constructed in accordance with this embodiment of the invention and all designed to receive the same size bottles, in a layer of cases positioned in abutting relationship and of random orientation or regular orientation, in which the cases are designed to receive differing numbers of bottles, for example **24, 12** or **6,** or all of the cases are designed to receive the same number of bottles, and in which the cases have differing design of individual bottle-receiving compartments or the same design of such compartments, the centre-to-centre distance between individual bottle receiving compartments throughout the length and width of the layer is substantially the same. This unique construction results in an improved debottling operation, as described in more detail above.

As is seen in FIGS. **4** and **5,** a stack **100** of cases **10** is provided on a pallet **102.** The load of the cases **10** is supported through the bottles **20** throughout the height of the stack, as may be seen in more detail in FIG. **5.** The bottles normally are glass, although other load supporting construction materials may be employed. As illustrated, the stack **100** may include cases provided in random orientation within each layer and between the layers when the cases have the preferred construction described above with reference to FIG. **2** or **3.**

Modifications are possible within the scope of the invention.

What I claim is:

1. A bottle carrying case constructed of synthetic polymeric material comprising a bottom wall, side walls extending upwardly from said bottom wall, end walls extending upwardly from said bottom wall a distance substantially the distance of extension of said side walls, and an open top, divider means within said case dividing the space into a plurality of bottle receiving compartments of equal plan view cross-sectional dimension, the side walls and end walls extending upwarding a distance substantially equal to the height of the bottles positioned in said compartments, the centre-to-centre distance between adjacent compartments in the plan view within the case and like cases abutting any side or end wall of the case being substantially equal.

2. The case of claim **1** wherein each of said side and end walls has a substantially smooth outer face.

3. The case of claim **1** wherein an outer sleeve is provided in engagement with the outer walls of said case and said abutting face-to-face relation is provided by abutting the outer faces of sleeves on adjacent cases.

4. A stack of bottle carrying cases, each of said cases being constructed of synthetic polymeric material and comprising a bottom wall, non-load bearing side walls extending upwardly from said bottom wall, non-load bearing end walls extending upwardly from said bottom wall a distance substantially the distance of extension of said side walls, and an open-top, divider means within each of said cases dividing the space within each of said cases into a plurality of glass bottle containing compartments, the side walls and end walls of each of said cases extending upwardly from said bottom wall a distance substantially equal to the height of said bottles, each of said cases having sufficient strength to support a load of bottles positioned therein, said cases in said stack being positioned with bottles in vertically adjacent trays in vertical alignment and with the top of bottles in one case engaging the undersurface of the bottom wall of the vertically upwardly adjacent case, whereby the weight of said stack is sustained through said bottles said cases in each layer of the stack being provided either perpendicular or parallel with respect to each other and said cases in vertically adjacent layers being provided either perpendicular or parallel with respect to each other, the rows of bottles in each case in each layer of the stack being colinear.

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