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Aust et al.

[11] **3,825,170**

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[54] **DOUBLE-BOTTOM, ONE-PIECE BEVERAGE CASE**

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[73] Assignee: **Owens-Illinois, Inc.**, Toledo, Ohio

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[52] **U.S. Cl.** ..... **229/37 E**, 229/16 A, 229/38, 229/41 B, 229/52 B, 229/23 A

[51] **Int. Cl.** **B65d 5/08**, B65d 5/46

[58] **Field of Search** ..... 229/37 E, 52 B, 38, 49, 229/44, 16 A, 23 R, 37 R, 41 B

[56] **References Cited**

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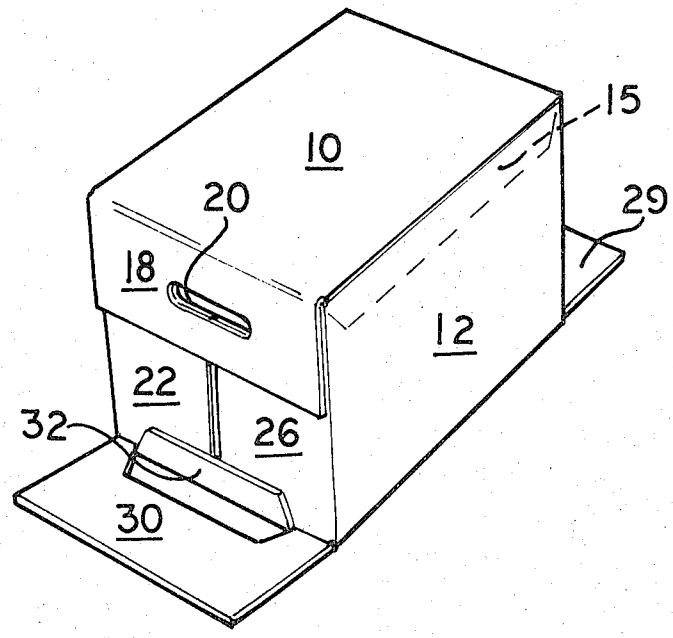
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Assistant Examiner—Bruce H. Bernstein
Attorney, Agent, or Firm—A. J. Steger

[57] **ABSTRACT**

A wrap-around or end-loading style container, adapted to be formed in a typical rectangular, tubular configuration, but with a double thickness cushion bottom, a blank for making same, and a method for folding the blank into the container as disclosed. The design of this invention is unique in that a double thickness bottom with cushioning characteristics is obtained using a blank no larger than a standard blank, thereby giving minimal additional costs. To a typical rectangular container blank with four adjacent top, bottom, and side panels are added end closure flaps at each opposite end of the respective panels. The side panel closure flaps are inwardly folded after the four panels are rectangularly arranged and attached by way of a manufacturer's flap or joint. The top closure flap is glued and folded inwardly and down against these side panel flaps. The bottom panel closure flap is formed with two sections, each foldable along the line connecting the flap to the bottom panel. One of these sections, resembling a manufacturer's tab, is glued and folded inwardly to contact the first-folded side panel flaps, while the second section is glued and reversibly folded to contact the bottom of said container, thereby giving, in conjunction with the similarly folded flap at the opposite end of said bottom panel, a double thickness over a substantial portion of the surface of the bottom of the container for cushioning properties.

2 Claims, 6 Drawing Figures



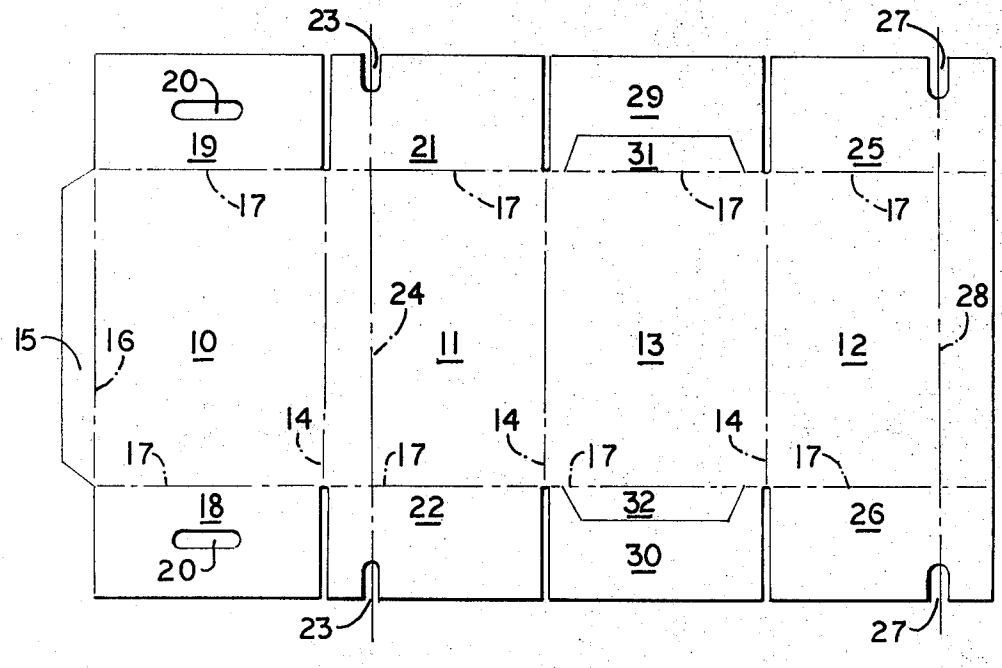

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FIG. 1

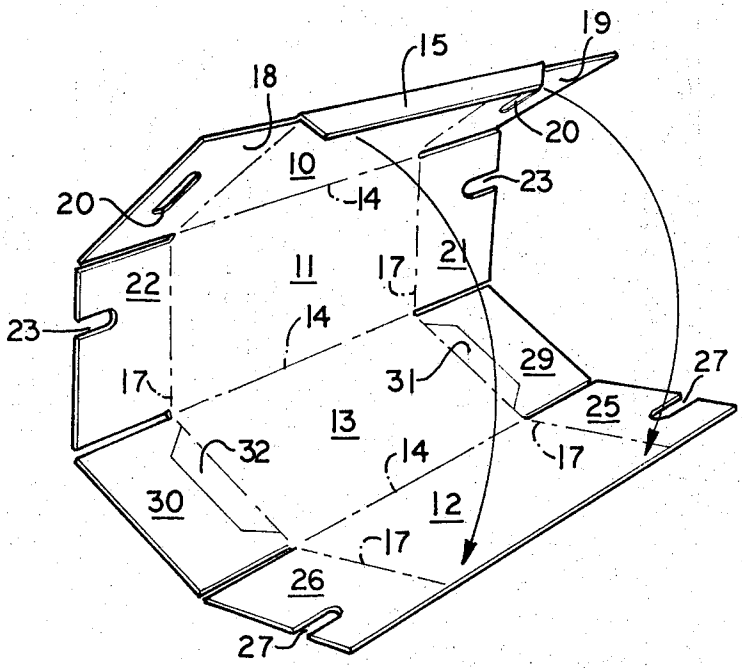

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FIG. 2

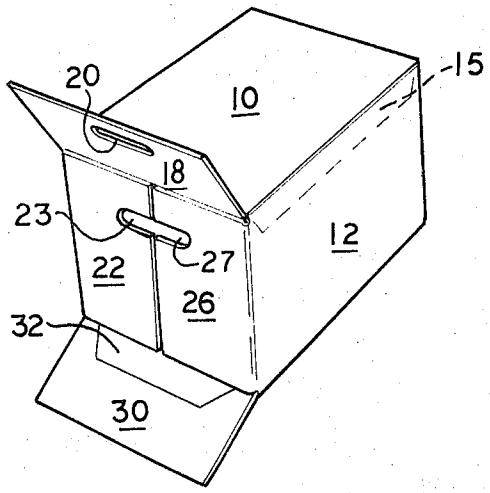


FIG. 3

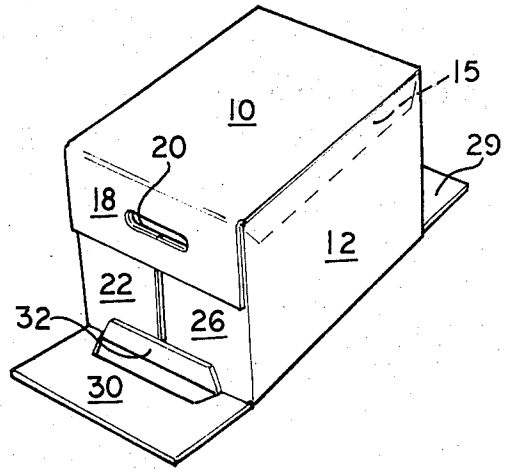
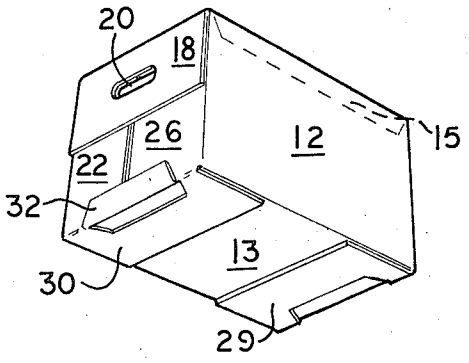


FIG. 4

FIG. 5



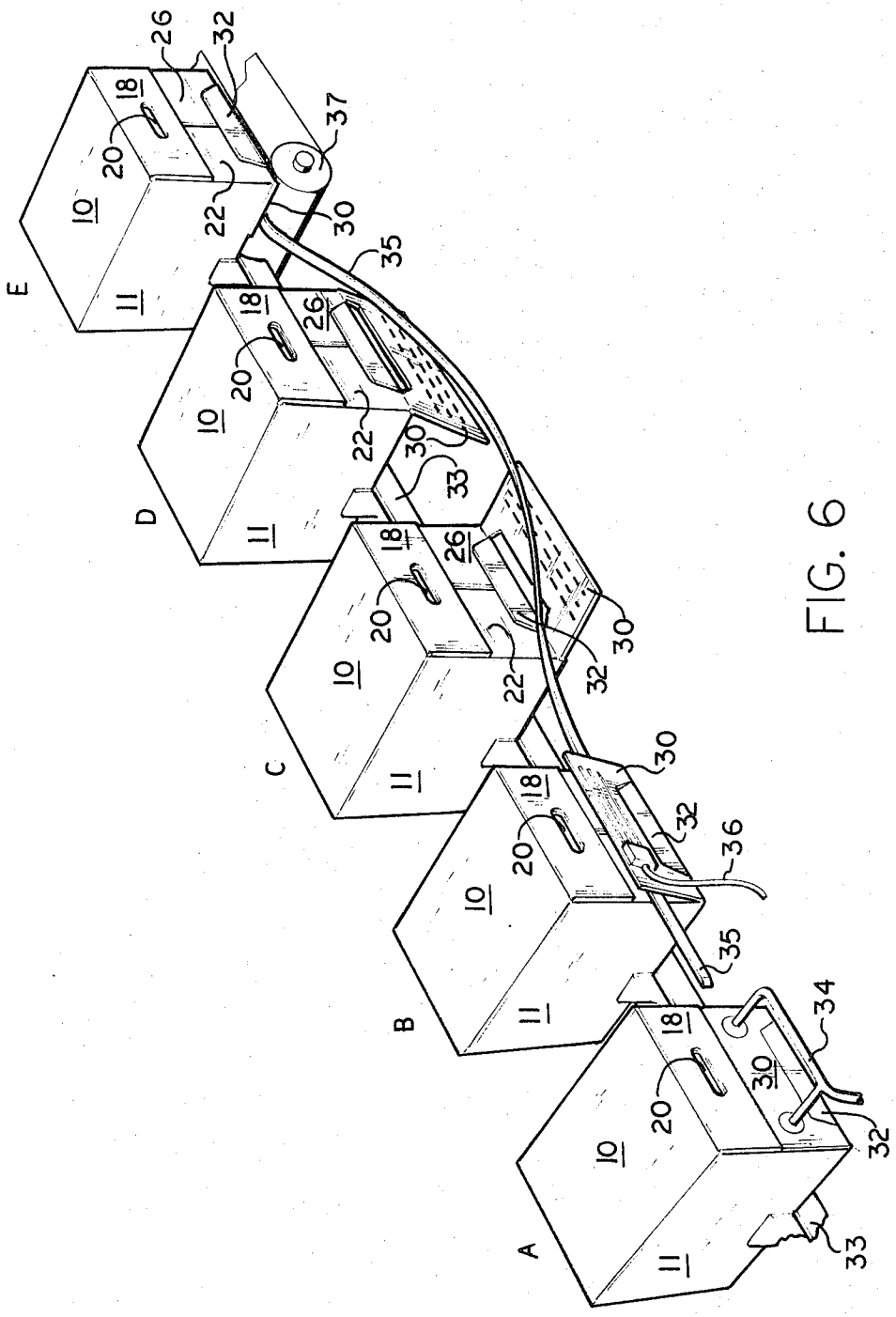


FIG. 6

DOUBLE-BOTTOM, ONE-PIECE BEVERAGE CASE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to fiberboard containers, blanks for making same, and methods of folding same, and, more particularly, to a container with a common rectangular, tubular configuration with an end closure which has one outer flap connecting the bottom panel formed in two foldable sections, the first section resembling a foldable tab which is inwardly folded to constitute a portion of the end closure, and the seccond section reversibly folded to be attached to the bottom of the container which, with the corresponding section from the flap at the opposite end of the panel, form a double thickness over a substantial portion of the bottom of the container.

2. Description of the Prior Art OF THE PRIOR ART

Modern automatic glass container handling equipment and carton handling techniques have resulted in a need for cartons having cushioning properties to resist breakage during handling and in transit. Initially, spaced inserts and partitions were used to prevent contact between the containers, arranging the containers into columns and rows. In time the concept of bulk packaging evolved wherein it was found that if sufficient cushioning could be provided for in the containers these partitions could be deleted. Early attempts to produce such a container were expensive in the utilization of additional sheets inserted into the bottom of the container. The invention in this case provides a unique design requiring no additional surface area of paperboard to obtain the cushioning properties, and at the same time is one which can easily be automated for folding.

SUMMARY OF THE INVENTION

A rectangularly arranged tubular container made from corrugated paperboard or the like is provided by this invention, wherein two side panel closure flaps are folded inwardly to cover an open end of said tubular container, an outer top closure flap is folded down and glued to said side panel closure flaps, a fourth outer flap hingedly attached to the panel designated as the bottom panel is formed with two sections, the first said section being a foldable tab inwardly folded and glued to said side panel closure flaps, thereby giving the end closure structure, and the remaining section being reversibly folded and glued to the bottom panel of said container, thereby giving a double thickness over a portion of the area of the bottom of the container.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a corrugated paperboard blank adapted to be foldable into the container disclosed in this invention.

FIG. 2 is a perspective view of the blank of FIG. 1 partly folded into rectangular, tubular configuration.

FIG. 3 is a perspective view of the blank in FIG. 2 folded in tubular configuration, with one end closure only partly folded.

FIG. 4 is a perspective view of the container in FIG. 3, with the end closure folded, and before final folding of the double bottom.

FIG. 5 is a perspective view of the container completely folded, showing the double thickness bottom.

FIG. 6 is a perspective schematic view of an apparatus suitable for automatically folding a portion of the end closure of the container.

DETAILED DESCRIPTION OF A PREFRRED EMBODIMENT

As can be seen generally in the drawings, a container and blank are disclosed including a top panel **10**, two sidewall panels **11** and **12**, and a bottom panel **13** connected along parallel fold lines **14**. A manufacturer's glue flap **15** is attached to top panel **10** along fold line **16** and when attached to panel **12** holds the panels **10**, **11**, **12** and **13** in a tubular configuration. Each panel has flaps extending from the ends thereof defined by two parallel fold lines **17** arranged perpendicularly to fold lines **14** and **16**. Top end closure flaps **18** and **19** extend from either end of top panel **10**, connected along fold lines **17**. Each flap **18** and **19** has an oval line-cut hand hole **20** formed therein spaced a distance from fold line **17**. Side end closure flaps **21** and **22** extend from either end of side panel **11**, connected along fold line **17**. Each flap **21** and **22** has formed therein a slot or cut out portion **23** equivalent to one-half of the hand hole **20** as cut in flaps **18** and **19**. Each of the slots **23** has as its center line (shown as dashed line **24**) a line spaced from the edge of panel **10** adjacent panel **11** a distance equal to that spacing of the center line of oval line-cut hand hole **20** from the fold line **17**. Such spacing allows for overlapping alignment of the hand hole **20** and the slot **23** when in the final folded position.

Side end closure flaps **25** and **26** extend from either end of side panel **12** and have formed therein a cutout or slot **27** similar to slot **23**, centered along dashed line **28**, spaced from the outer edge of panel **12** a distance equal to the spacing of the oval hand holes **20** from fold line **17** in flaps **18** and **19**. The fractional cut hand holes **23** and **27** meet in end-abutting relation when the end closure is folded and, when the top end closure flap **18** or **19** is folded into position, the overlapping alignment gives a complete hand hole extending through the closure.

Bottom panel **13** has extending therefrom closure flaps **29** and **30**. Each flap **29** and **30** has cut therein a smaller secondary glue tab **31** and **32**, respectively. After the side end closure flaps and top closure flaps are in position, the glue tabs **31** and **32** are glued into place over the side end closure flaps **21** and **25**, or **22** and **26**. Tabs **31** and **32** hold the lower portion of the side end closure flaps in position and give a satisfactory end closure.

The closure flaps **29** and **30** are reversibly folded and glued to the bottom panel **13** to provide the necessary cushion. The shape of tabs **31** and **32** and the relative percentage of area used for the tabs can be varied depending on the weight of the contents of the container and the type of material used in fabricating the container, as well as the nature of the forces to be exerted on the end closure restrained in part by tabs **31** and **32**.

In FIG. **6** a portion of an automatic folding apparatus is shown to be used in conjunction with other automatic folding equipment, that shown in FIG. **6** being particularly adapted for folding the bottom closure flaps **29** and **30** and secondary glue tabs **31** and **32**. It is to be understood that a similar device would be lo-

cated on the opposite side of the conveyor for folding the other end of the container.

A typical conveyor **33** is shown moving the partly folded containers in the direction as shown. At this stage, the containers are already loaded with glass bottles or whatever and are being sealed for shipment.

The container approaches the apparatus as shown in A, with the side closure flaps in place and the top closure flap (shown as **18**) glued and in position. The line cut has been made in bottom closure flap **30** to form tab **32,** but the two separately foldable portions of that flap **30** have not been broken apart. Glue has been applied to the inside surface of the tab **32** only, and the entire flap and tab **30** and **32** have been folded up into contact with the side closure flaps **22** and **26.**

A vacuum head **34** is brought into contact with bottom closure flap **30** to break it loose from tab **32** which remains in position as part of the closure, the flap **30** not being adhesively attached. The vacuum head **34** pulls the flap **30** out a distance sufficient to allow engagement with a fixed guide rail **35,** commonly referred to in the art as a fixed plow. The vacuum head **34** is disengaged from flap **30** as soon as engagement with guide rail **35** is accomplished. The movement of the container (as in B) past the guide rail **35** results in deflection and folding of the flap **30** according to the design of the guide rail **35.** Adhesive is applied to the outer surface of flap **30** by a brush **36** or similar apparatus, and is usually done while the flap **30** is in contact with the guide rail **35** to prevent deflection of the flap **30** by the brush **36.**

The guide rail **35** is arranged in a downward section of a helix or spiral to deflect and fold the flap **30** through nearly 270° of arc into contact with the surface of the bottom of the container as can be seen at positions C and D. A roller **37,** seen at position E, presses the flap **30** against the container to ensure adhesive contact after the flap **30** disengages from guide rail **35.** This roller **37** may be heated to help set the glue.

We claim:

1. A container having a double-thickness area over a portion of its bottom panel and adapted to be formed from corrugated paperboard or similar foldable material, said container having top, bottom and opposed side panels arranged into a rectangular tubular configuration, and closure flaps hinged to the opposite edges of each of said top, bottom, and opposed side panels, said end closure flaps adapted to form end closures for said tubular configuration, and said end closure flaps attached to the opposite ends of said bottom panel including a reversibly foldable portion adapted to be reversibly folded into contact with said double thickness area over a portion of the panel of said container and a glue tab portion foldable into contact with the end closure flaps connected to reinforce the side walls.

2. A container having a double-thickness area over a portion of its bottom panel as set forth in claim **1** wherein the reversibly foldable portion of the end closure flap attached to the opposite ends of said bottom panel comprises the major portion of the area of said end closure flap attached to the ends of said bottom panel.

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