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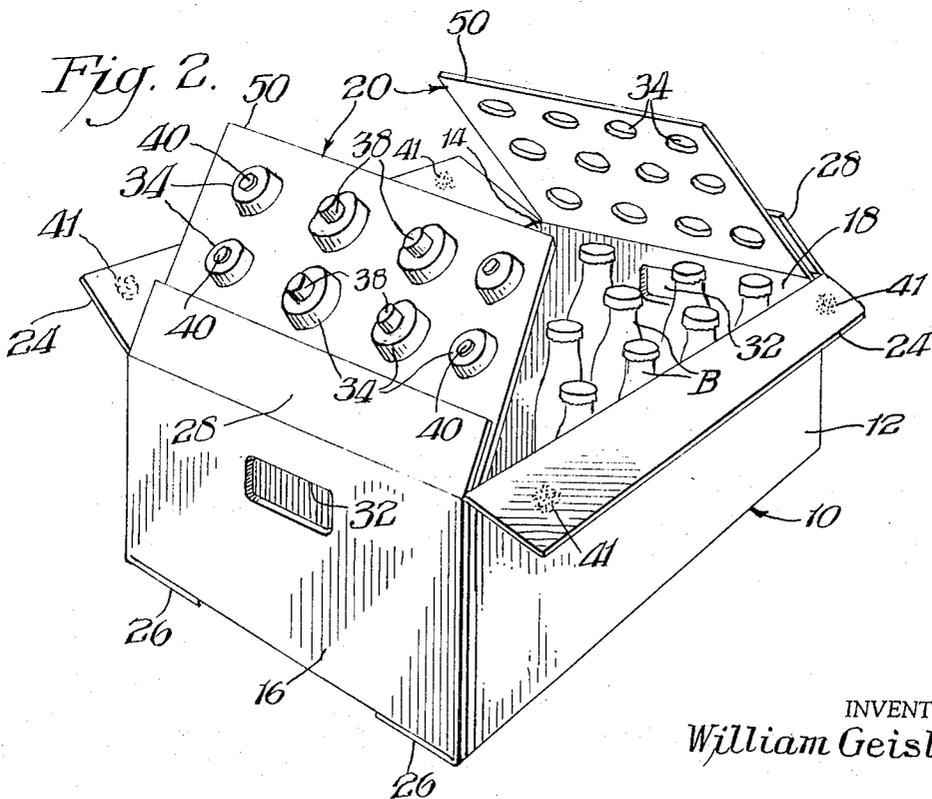
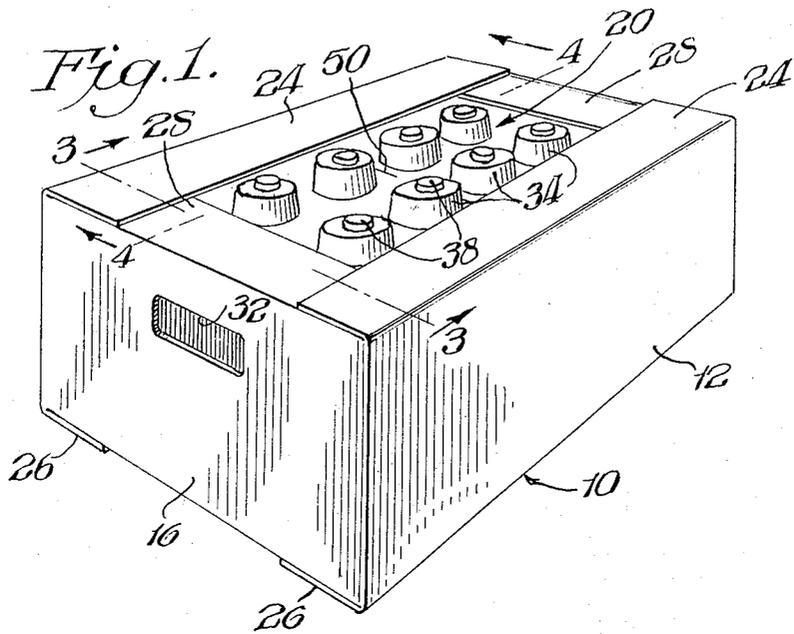
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3,294,270

CARTONS HAVING CONTOURED MOLDED PULP WALLS

Filed March 13, 1964

2 Sheets-Sheet 1



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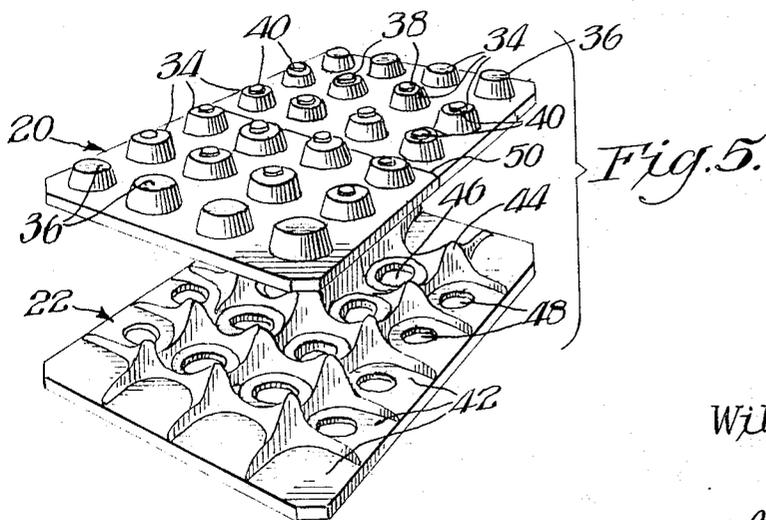
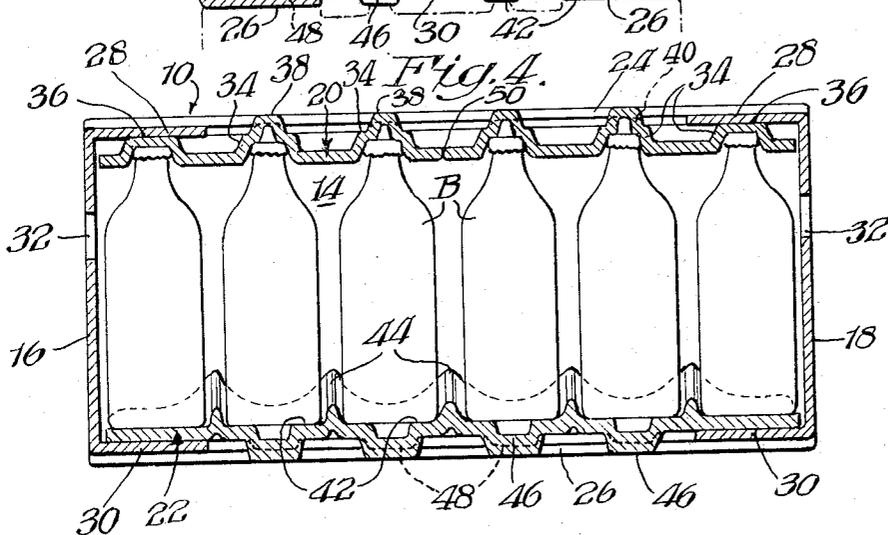
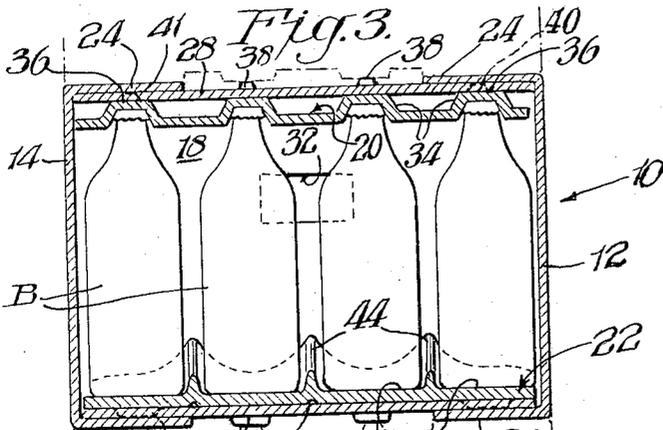
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CARTONS HAVING CONTOURED MOLDED PULP WALLS

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2 Sheets-Sheet 2



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3,294,270
CARTONS HAVING CONTOURED MOLDED PULP WALLS

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4 Claims. (Cl. 217-21)

This invention relates to containers, and more particularly to shipping cartons having contoured molded pulp walls.

Prior to the present invention, shipping cartons of corrugated cardboard, fiberboard or other known materials for packaging various articles such as bottled beverages and the like were subject to several disadvantages. For instance, known cartons consisting of several integral top and bottom flaps which serve as plural thickness walls require excessive material, and this is particularly so with corrugated cardboard where it is necessary to overlap the board in two or more directions to obtain the desired rigidity of the walls as well as to provide compartmented honeycomb inserts of the same material to restrain lateral shifting of bottles. The cost of this additional material to obtain the desired strength of the carton for stacking and positioning of the contents is substantial when it is considered that cartons or containers of this general variety are used only once. Furthermore, in previously known cartons or containers where molded pulp inserts having contoured article positioning means have been employed, the molded pulp inserts represent an additional amount of material adjacent the folded flap top and bottom walls of the carton constituting an additional expense rendering such arrangements suitable for packaging only specialty items commanding high profit margins. Finally, the usual top and bottom wall construction material has poor wet strength. As a consequence accidental wetting by warehouse flooding may cause the heavy contents of a filled carton to rupture the bottom wall when lifted, and thus spill the contents.

Accordingly, it is an object of the present invention to provide a container having contoured molded pulp walls which obviates the above problems.

Another object of the present invention is to provide a shipping carton of corrugated cardboard or fiberboard sides and molded pulp top and bottom walls having integrally molded contours to restrain lateral shifting of articles therein.

Another object of the present invention is to provide a shipping container in which empty bottles may be loaded by the bottle manufacturer for shipment to the bottle filler after which the bottle filler may repack and permanently seal the shipping container, and which further has a top opening feature for easily removing the contents from the carton.

Novel features and advantages of the present invention will become apparent to one skilled in the art from a reading of the following description in conjunction with the accompanying drawing wherein similar reference characters refer to similar parts, and in which:

FIG. 1 is a perspective view of the container of this invention in the closed position;

FIG. 2 is a perspective view of the container of this invention in the open position;

FIG. 3 is a sectional elevational view on line 3-3 of FIG. 1 showing details of the construction of the container;

FIG. 4 is a sectional elevational view on line 4-4 of FIG. 1 showing further details of the construction of the container; and

FIG. 5 is a perspective view of the contoured molded

pulp top and bottom walls removed from the container to show the contours thereof.

Referring to the drawings, a six-sided container 10 of generally rectangular configuration is illustrated. This comprises four flat, generally rectangular side walls including two side walls 12 and 14 and two end walls 16 and 18, as well as a top wall generally designated 20 and a bottom wall generally designated 22. Each of the four side walls, 12, 14, 16 and 18 may be formed of corrugated cardboard, fiberboard, Masonite, light wood or any other material having the proper qualities for the purposes to which the container will be put. The opposite vertical edges of each side are joined to form a continuous surrounding side wall which, with the top and bottom wall members absent, may be collapsed to a generally flat plane for shipping and storage purposes.

At least the two end walls have a top and bottom flap portion hinged thereto. In the preferred embodiment the side walls 12 and 14 also have upper flap members 24 and lower flap members 26, and the end walls 16 and 18 have upper flap members 28 and lower flap members 30. For instance, if the four side walls are composed of cardboard or fiberboard, the hinge joints with the foldable upper and lower flaps may be provided in known manner by longitudinal creases. The upper and lower flaps, when folded inwardly to a position generally normal to their respective side walls, extend significantly less than one-half the distance to the opposite side of the container. As explained in more detail below, these flaps serve only to provide means for attaching with the contoured molded pulp top and bottom walls, and consequently are made as narrow as possible to effect a maximum saving of material. If desired, handle means 32 may be provided in known manner such as by cut-out portions in the end walls 16 and 18.

The top and bottom walls 20, 22 are formed as rectangles shaped to fit telescopically within the continuous surrounding side wall, and are formed of heavy-duty molded pulp material according to known manufacturing processes. It will be appreciated that different compositions of material may be utilized for different purposes. For instance, a mixture of virgin kraft and groundwood pulp together with a substantial portion by weight of at least one moisture retarding and strength imparting agent would be appropriate. The percentage of moisture retarding ingredients may be varied to obtain essentially water-resistant top and bottom members for shipping cartons which will resist rupture under adverse moisture conditions.

The top member 20 contains a plurality of recessed pocket means 34 designed to overlie the top of bottles B or other such articles which may be packaged within the container. The pocket means 34, of course, may vary in shape and size to conform with the upper portions of the particular size and shape of articles. In the configuration used for purposes of illustration, the contours take the form of inverted cup-shaped cavities integrally molded in continuous fashion without openings. It will be noted that the pocket means 34 which position the bottles adjacent the end walls of the container have flat upper surfaces 36 lying in a common flat plane. The pocket means 34 which position bottles in the center of the container include additional central raised portions 38, the upper surfaces of which lie in a different common flat plane parallel with and spaced from the plane in which the upper surfaces 36 of the end pocket means lie. The spacing between the two planes is equal to the thickness of the end flaps 28 plus the side flaps 24. The pocket means 34 which position bottles adjacent the side walls and between the end row pocket means include intermediate raised portions 40, the upper surfaces of which

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lie in yet another common flat plane parallel with and spaced between the two above-mentioned planes. As can be understood, this construction enables the end flaps 28 to be folded inwardly normal to their walls 16 and 18 into contact with the upper surfaces 36 of the edge pocket means 34. Also, the upper flaps 24 may be folded inwardly normal to their walls 12 and 14 into contact with the inwardly folded flaps 28 and the upper surfaces 40 of the side pocket means, and secured by glue spots 41 or the like. The upper surfaces of the raised portions 38 of the center pocket means 34 thus lie in the plane in which the upper surfaces of the last folded flaps 24 lie. As suggested by dash-dot lines in FIG. 3, this permits stacking of the shipping containers of this invention without gaps or spaces in the center portions of the containers; that is, the weight distribution is transmitted downwardly through each of the articles packed in the container and is not concentrated on only a few of such articles.

The bottom molded pulp wall 22 includes a plurality of pocket means 42 integrally molded therein. Those in the illustrated embodiment are formed by upstanding pyramids or posts 44, the bases of which define areas conforming to the size and shape of the particular article to be packaged in the container. The pocket means 42 adjacent the end walls of the container have single pulp thickness bottoms, the lower surfaces of which occupy a common flat plane. The central pocket means 42 further include downwardly relieved cup-shape center portions 46, the bottom surfaces of which occupy a common flat plane parallel with but spaced from the plane in which the bottom surfaces of the end pocket means lie. The spacing between the two planes is equal to the thickness of the end flaps 30 plus the side flaps 26. The pocket means 42 which positions bottles adjacent the side walls and between the end row pocket means include intermediate depressed portions 48, the lower surfaces of which lie in yet another common flat plane parallel with and spaced between the two above-mentioned planes. This enables the end flaps 30 to be folded inwardly normal to their end walls 16 and 18 into contact with the bottom surfaces of the end pocket means. Also, the side bottom flaps 26 may be folded inwardly normal to their walls 12 and 14 into contact with the inwardly folded flaps 30 and the bottoms of the depressed portions 48. This positions the bottom surfaces of the central cup-shape depressions 46 of the central pocket means 42 in the same plane as the bottom surfaces of the flaps. Again, as suggested by dash-dot lines in FIG. 3, this enables filled containers to be stacked one upon another with an equal distribution of weight transmitted through every article in the container.

It will be appreciated that the distance between the upper surface of the central raised portions 38 and the lower surface of the central depressed portions 46 is equal to the distance between the upper surface of the flaps 24 and the lower surface of the flaps 26. If desired, the pulp tops and bottoms may be designed so that these two equal distances are offset relative to each other so that the center of each upper and lower pulp wall will nest with the lower and upper flaps, respectively, of adjacently positioned containers in a stack.

It can be appreciated that additional areas of the molded members in the flap area may be elevated to the contact level for more secure bonding than would be obtained with the cup surfaces alone.

For easy access to the container contents, at least the upper wall 20 includes a transverse line of separation such as a score line 50 which may be formed by perforations or the like. This line extends laterally across the wall panel mid-way between the ends of the rectangular top 20 whereby the top may be separated and opened as described below in connection with FIG. 2.

In use, the above described carton is advisably supplied to the bottle manufacturer in knocked-down or flattened

condition comprising a stack of flattened side walls, a stack of nested top members and a stack of nested bottom members. The side walls may first be opened to the rectangular surrounding shape, and the bottom flap means thereof folded inwardly to receive the bottom molded pulp wall panel 22 which spans the distance between the side walls at their bottoms. The inwardly folded bottom flaps may then be secured to the molded pulp bottom panel by gluing, staple stitching or other known fastening means. Thereafter, empty bottles may be loaded into the pocket means 42 of the molded pulp bottom panel within the surrounding side walls. After positioning the top molded pulp wall panel 20 over the upper portions of the empty bottles to restrain them against lateral shifting within the container, the upper flaps may be folded inwardly to enclose the edge of the upper wall panel. Advisably, the upper flaps 24 are temporarily secured at this point to the flaps 28 by gluing or light stapling, and the end flaps 28 may be secured to the tops 36 of the cups 34. The bottles may then be shipped safely to the filling and capping plant.

On receipt of the container by the bottle filler, the lightly secured upper flaps 24 are opened and the top molded pulp wall panel 20 is opened at its score line 50 as shown in FIG. 2. After unloading, filling, capping and reloading the bottles, the upper molded pulp wall panel is folded down over the bottle tops to again securely restrain the filled bottles against lateral shifting in the container. At this point, the upper side flaps 24 are folded inwardly and again glued or otherwise secured to the upper surfaces 40 of the side pocket means as well as the end flaps 28. This provides a shipping container of full bottles properly positioned and well secured for shipment to consumer distribution points.

Upon receipt by the ultimate consumer, access to the contents of the container is easily obtained by breaking the seal between the upper side flaps 24 and upper end flaps 28 and raised portions 40 to allow the side flaps 24 to be folded out of the way. Then, each half of the upper molded pulp wall panel 20, divided along the score line 50, may be swung upwardly about the hinge line which joins the upper end flaps 28 to their upper walls 16, 18. As clearly shown in FIG. 2, this permits the carton to be closed again with only a portion of the articles removed, and the remaining articles will still be restrained against lateral shifting by pocket means in the upper and lower molded pulp wall panels.

Thus, a shifting carton having molded pulp top and bottom walls has been disclosed which utilizes less material than standard containers for bottles or similar tall articles of similar size, and which is of increased strength. Furthermore, it will be apparent that the disclosed structure provides a convenient manner of transporting bottles both before and after the filling and capping operation without the use of additional, specially designed containers. Additionally, the molded pulp top and bottom walls, which may occupy the position of two end walls or two side walls, depending upon the orientation of the carton during shipping, may be formed originally with ventilation openings if desired, or without contoured pocket means if unbreakable articles such as cans, cardboard boxes, or the like are to be packaged in the container instead of fragile articles such as the glass bottles shown for purposes of illustration. With fragile articles, the depressions in the article positioning cavities provide a cushioning effect which is of value during rough handling of the containers. Finally, it will be clear that containers according to this invention may be constructed with a number of side wall panels greater than four, and the non-rectangular tops and bottoms closed by appropriately designed polygonal top and bottom members of heavy-duty molded pulp.

While the above described embodiment constitutes the preferred mode of practicing this invention, other embodiments and equivalents may be resorted to within the

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scope of the actual invention, which is claimed as follows.

What is claimed is:

1. A container for firmly holding a plurality of similar articles in spaced array comprising a plurality of wall panels joined together at their edges to form a continuous surrounding side wall, flap means hinged to the top and bottom of at least some of the side wall panels adapted to be folded inwardly to a position generally normal to the side wall, the flap means when folded inwardly extending significantly less than one-half the distance to the opposite side of the container, a pair of wall panels formed of heavy-duty molded pulp, one essentially spanning the distance between the side walls at their tops and the other essentially spanning the distance between the side walls at their bottoms, a significant portion of the area of both the top and the bottom of the container being closed only by the molded pulp wall panels, article pocket means integrally molded in the pulp wall panels to restrain lateral shifting of articles within the container, the vertical distance between the upper surface of the pocket means of the top wall panel and the lower surface of the pocket means of the bottom wall panel being equal to the vertical distance between the upper surface of the top flap means and the lower surface of the bottom flap means, and the pulp wall panels being secured near their edges to at least some of the flap means.

2. A container as in claim 1 wherein there are four side wall panels defining a generally rectangular container and the flap means at the ends of the rectangular container are secured to the pulp wall panels.

3. A container as in claim 2 wherein a line of separation essentially bisects the pulp wall panel spanning the side walls at their tops in a direction generally parallel to the secured flap means.

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4. A container for firmly holding a plurality of similar articles in spaced array comprising a plurality of wall panels joined at their edges to form a continuous surrounding side wall, flap means hinged to the top and bottom of at least some of the side wall panels adapted to be folded inwardly to a position generally normal to the side wall, the flap means when folded inwardly extending significantly less than one-half the distance to the opposite side of the container, a pair of wall panels formed of heavy-duty molded pulp, one essentially spanning the distance between the side walls at their tops and the other essentially spanning the distance between the side walls at their bottoms, article pocket means integrally molded in the pulp wall panels to restrain lateral shifting of articles within the container, the vertical distance between the upper surface of the pocket means of the top wall panel and the lower surface of the pocket means of the bottom wall panel being equal to the vertical distance between the upper surface of the top flap means and the lower surface of the bottom flap means, the pulp wall panels being secured near their edges to at least some of the flap means, and a line of separation essentially bisecting the pulp wall panel spanning the side walls at their tops in a direction generally parallel to the secured flap means.

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