April 18, 1961 F. C. BASELT 2,980,311

CONTAINER

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Fig. 1

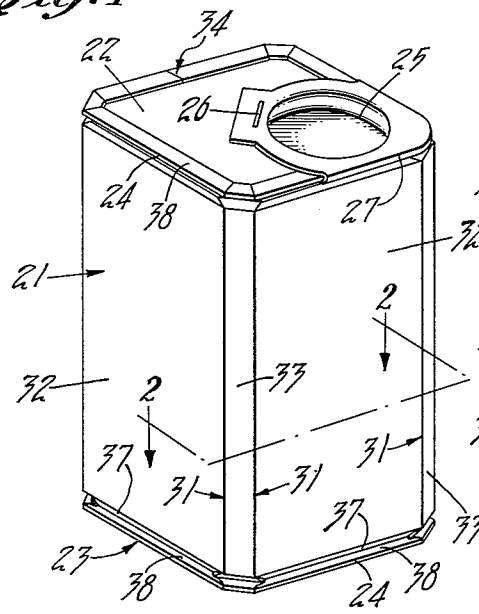


Fig. 2

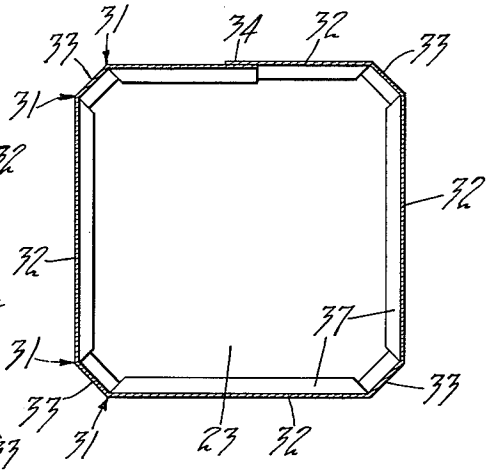


Fig. 5

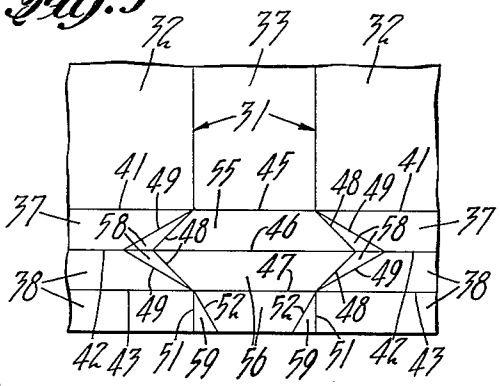


Fig. 4

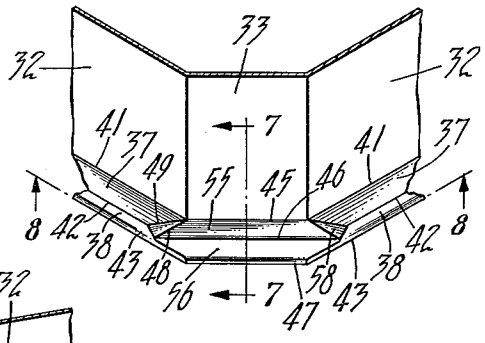
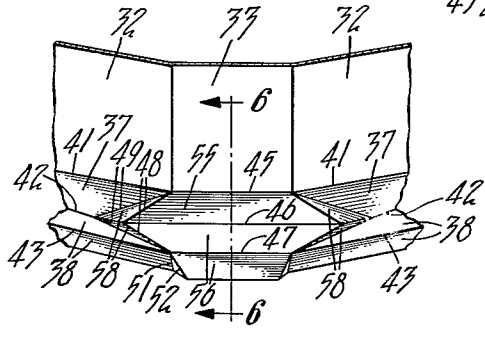


Fig. 3



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CONTAINER

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Fig. 6

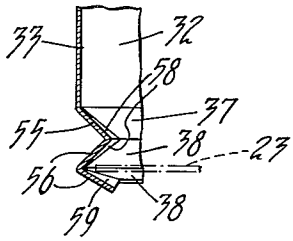


Fig. 7

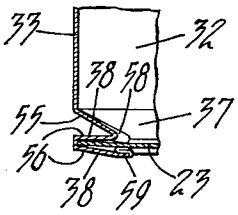


Fig. 8

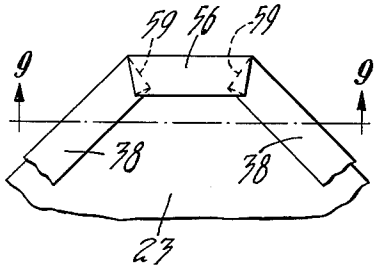


Fig. 9

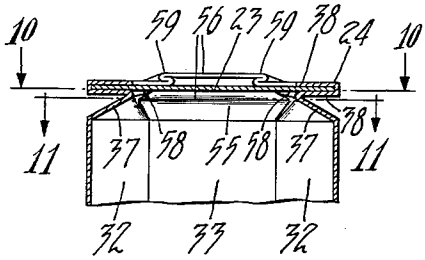


Fig. 10

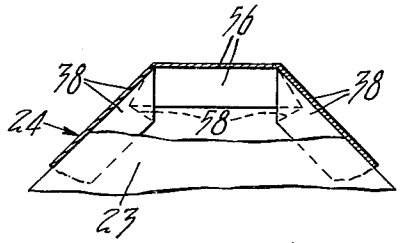


Fig. 12

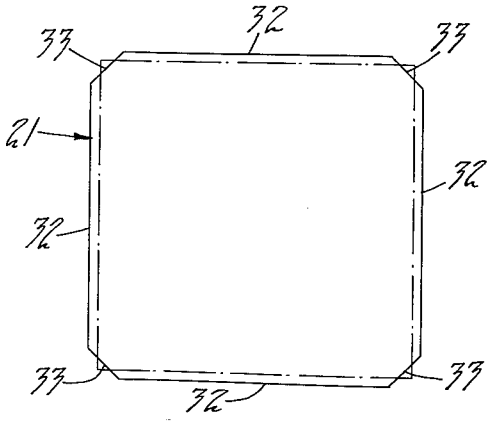
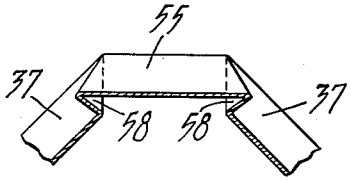


Fig. 11



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2,980,311

CONTAINER

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Filed Dec. 6, 1957, Ser. No. 701,066

2 Claims. (Cl. 229—37)

The present invention relates to containers for the packaging and delivery of liquids, such as milk, fruit juices and the like and has particular reference to fibre containers having bevel corner panels and necked-in body portions securing end closure members to the container bodies.

An object of the instant invention is the provision of a container for milk and other liquid products wherein the body of the container is generally square in configuration for ease in handling and is provided with bevel corner panels which result in an increase in the volume or capacity of such a container over a square container made from a blank of the same length thereby permitting the use of a blank of less height which results in a container of reduced height for the same volume or capacity and a resultant saving in material used for each container.

Another object is the provision of such a container in which the corner panels permit of a particular folding of the body material for cooperation with necked-in portions disposed along the marginal end edges of the body for the attachment of end closures thereto. This results in a natural or unstressed bending of the body material without tucking or tight compression of the material into sharp corners.

Another object is the provision of such a container wherein the provision of relatively narrow corner panels permits of less binding of the body material at the corners as compared with sharp cornered square containers and thereby results in a structurally stronger body with bend lines of less depth and panels flexed only 45 degrees instead of 90 degrees.

Another object is the provision of such a container wherein the use of corner panels provides for greater protection through less protrusion of the tucked under lip of the friction plug closure element usually attached to such containers. This results in less danger of displacement of the tucked under lip during shipment and storage of the containers.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a perspective view of a sealed container embodying the instant invention;

Fig. 2 is a sectional view taken substantially along a horizontal plane indicated by the lines 2—2 in Fig. 1;

Figs. 3 and 4 are enlarged fragmentary perspective views of one corner of the container shown in Fig. 1, with Fig. 3 showing the manner of folding the necked-in portions of the container body and Fig. 4 showing the folds in a completed condition;

Fig. 5 is an enlarged fragmentary plan view of a corner portion of the blank from which the container body is made, the view illustrating crease lines in the body to effect the folds shown in Figs. 3 and 4;

Figs. 6 and 7 are sectional views taken substantially along the lines 6—6, 7—7 in Figs. 3 and 4 respectively, with parts broken away;

Fig. 8 is a fragmentary bottom plan view taken along a plane indicated by the lines 8—8 in Fig. 4;

Fig. 9 is a sectional view taken substantially along the line 9—9 in Fig. 8, with parts broken away;

Figs. 10 and 11 are fragmentary sectional views taken along planes indicated respectively by the lines 10—10, 11—11 in Fig. 9; and

Fig. 12 is a composite schematic plan view showing the contour of a square container in dot and dash lines superimposed upon the contour of a container of the instant invention in full lines to illustrate the difference in volume or capacity when the two containers are made from blanks of the same length.

As a preferred or exemplary embodiment of the instant invention the drawings illustrate a generally square or rectangular container of the character disclosed in United States Patent 2,085,979, issued July 6, 1937, to John M. Hothersall on Container. Such a container comprises a fibre tubular body 21 (Fig. 1) closed at its ends with top and bottom end closure members 22, 23 secured in place by end seams 24. The top closure member 22 preferably is provided with a dispensing opening having a friction plug cover 25 hingedly secured in place by a staple 26. The plug cover 25 preferably is formed with a lip 27 which extends along and is tucked under the portion of the end seam 24 adjacent the dispensing opening, to protect the plug cover against accidental opening during shipment and storage.

The container body 21 preferably is formed from a single flat sheet or blank of fibrous material folded along vertical crease lines 31 to provide four right angularly disposed relatively wide side walls 32 (see also Fig. 2) and four, intervening relatively narrow beveled corner panel walls 33, and having the side edges of the blank overlapped and adhesively secured together to provide a side seam 34.

The width of the beveled walls 33 preferably is about one fifth the width of the side walls 32 and are designed to increase the volume or capacity of the container over a square or rectangular container having sharp 90 degree corners where both containers are made from blanks of the same length. This comparison is shown in Fig. 12 where a square container outlined in dot and dash lines is superimposed upon a bevel corner panel container outlined in full lines. With such a beveled corner panel container the height of the container can be reduced for the same volume as a square container and hence a substantial saving may be made in the amount of material used in the container bodies.

The body side walls 32 adjacent their top and bottom ends are necked-in or formed with inwardly obliquely extending wall sections 37 (see also Figs. 4 and 9) which merge into horizontally disposed channel or U shaped flanges 38 which surround and are adhesively secured to the outer peripheral edge portions of the top and bottom end closures 22, 23 to form the end seams 24 and to thus provide a seat for and hold the closures in place on the body (see also Figs. 8, 10 and 11). To facilitate bending the oblique trapezoidal wall sections 37 and the channel shaped flanges 38 into place, the flat blank from which the body is made, preferably is provided with horizontal crease lines 41, 42 43 disposed longitudinally along the edge portions of the blank as shown in Fig. 5.

At the beveled panel walls 33 the oblique wall sections and channel shaped flanges are continued to produce a continuous end seam entirely around the end closures 22, 23, but this continuation is effected in a manner which permits of a natural or unstressed folding of the body material and thus prevents undue compression or crushing of the material which would result in a weakening

of the container structure. For this purpose the flat blank as shown in Fig. 5 in the region of the bevel panel walls 33 is provided with horizontal crease lines 45, 46, 47 which are substantially continuations of the crease lines 41, 42, 43 and in addition is provided with pairs of crease lines 48, 49, the lines of each pair, 48 or 49, extending outwardly from vertically aligned points on the crease lines 45, 47 and converging at a point on the central crease lines 46 (Fig. 5). Also at the ends of the body the blank is provided with vertical crease lines 51 leading from the crease line 47 and the point of connection with the lines 48, 49 and with connecting inwardly sloping crease lines 52 leading from the crease line 47 to the edge of the blank.

Hence when the blank is formed into tubular body shape to produce the body 21 and this body is necked-in at its top and bottom ends, the material of the body naturally folds along the crease lines above described and produces the oblique trapezoidal wall sections 37 in the side walls 32 and similar substantially continuing oblique trapezoidal wall sections 55 in the beveled panel walls 33. The oblique trapezoidal wall sections 55 merge into horizontally disposed channel or U-shaped flanges 56 which surround and are adhesively secured to the outer peripheral edge portions of the top and bottom end closures 22, 23 at the beveled panel wall 33 and thus provide continuity of the end seams 24.

Where the oblique trapezoidal wall sections 55 in the panels 33 connect with the adjacent oblique trapezoidal wall sections 37 in the side walls 32, the crease lines 48, 49 define and provide two small obtuse triangular wall sections 58 (Fig. 3) which are connected along the crease line 42 and which gradually merge the oblique wall sections 55 into the oblique wall sections 37 and similarly merge the adjacent channel wall section 56 into the adjacent channel wall section 38.

In the finished container as viewed in Figs. 4 and 7, the outer triangular wall section 58 is folded down flat against the adjacent inner channel wall section 38 and is thus made a portion of the end seam 24. The inner triangular wall section 58 remains as a slight protuberance on each side of the panel walls 33 and presents a smooth merger of the oblique wall section 55 into the adjacent oblique wall sections 37 in the side walls in a natural smooth fold which enhances the appearance of the necked-in sections and more importantly provides a structurally strong necked-in formation.

In a similar manner, the crease lines 51, 52 in the outer channel wall sections 56 set off small triangular wall sections 59 which produce under-folds as shown in Figs. 7, 8 and 9, in the outer flange section of the end seam 24 and which provide a smooth continuous connection between the outer channel wall sections 56 of the bevel panel walls 33 and the outer channel wall sections 38 of the side walls 32.

With such a construction of containers, the body bevel corner panel walls 33, aside from increasing the capacity of the container with a reduction or saving in material used for a given volume, also provide for adjoining walls having more gradual and smoother 45 degree bends instead of sharp 90 degree corners while at the same time preserving the general square or rectangular configuration which facilitates handling of the containers during

shipment and storage. In addition to these important features, the instant structure of the container provides for a natural folding of the body material in the necked-in sections thereof and thus greatly increases the strength and rigidity of the corners of the body. The beveled panel wall 33 in the region of the friction plug cover 25 also serves as a protector for the tucked-under lip 27 of the plug cover and thereby prevents accidental displacement of the lip during shipment and storage of the containers.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A fibre container comprising a tubular polyhedral body having an even number of relatively wide vertical side walls and an equal number of relatively narrow vertical panel walls disposed alternately around the body perimeter, each wall and panel being bounded laterally by vertical crease lines and at least one end thereof by a first horizontal crease line, said first horizontal crease lines lying in a first horizontal plane spaced from an end of said body, a second series of horizontal crease lines lying in a second horizontal plane disposed between said first horizontal plane and said end of the body and setting off a continuous flange at the end of the body, a pair of diverging crease lines starting at each point of intersection between a said vertical crease line and a said first horizontal crease line, said pairs of diverging lines terminating at points on said second horizontal crease lines and setting off between said first and second series of horizontal crease lines a series of inclined trapezoidal wall sections each merging at one side with a said vertical wall and at the opposite side with said flange and a series of obtuse triangular wall sections each disposed between adjacent trapezoidal wall sections, the fibre along said diverging crease lines being bent in alternately opposite directions, and an end closure secured to said flange at said end of the body, whereby a strong and relatively unstressed necked-in formation lies between said vertical walls and said end closure.

2. A fibre container of the character defined in claim 1 wherein a second series of obtuse triangular wall sections are defined by a second series of similar but reversely directed paired diverging crease lines in said flange that meet corresponding lines of said first mentioned pairs of diverging crease lines to set off a second series of trapezoidal sections, and whereby said first and second series of trapezoidal and obtuse triangular sections merge with each other and with said vertical walls and flange.

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