

Aug. 15, 1967

P. G. DANIS

3,335,934

FIBERBOARD CONTAINER

Filed March 19, 1965

2 Sheets-Sheet 1

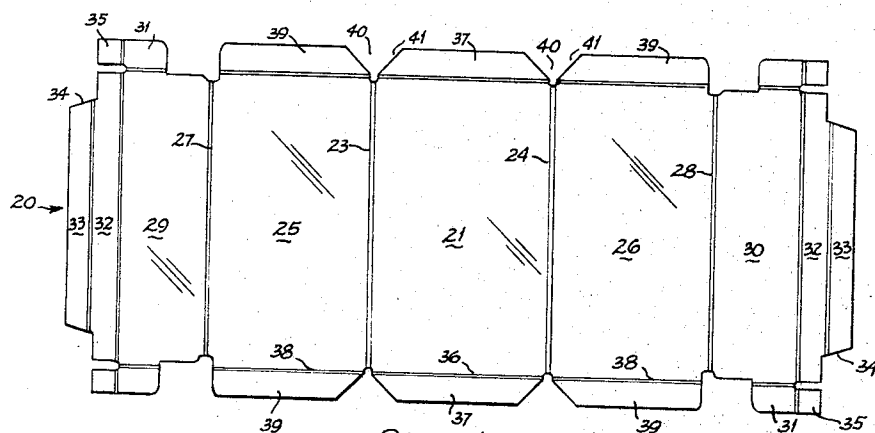


fig. 1

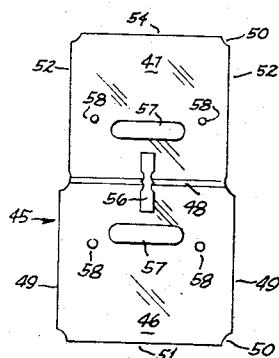


fig. 2

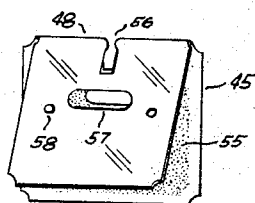


fig. 3

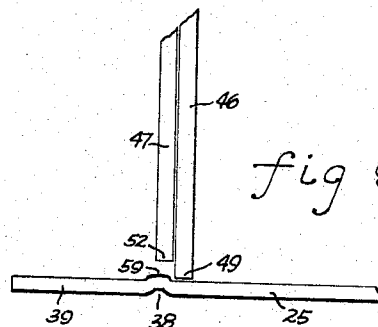


fig. 4

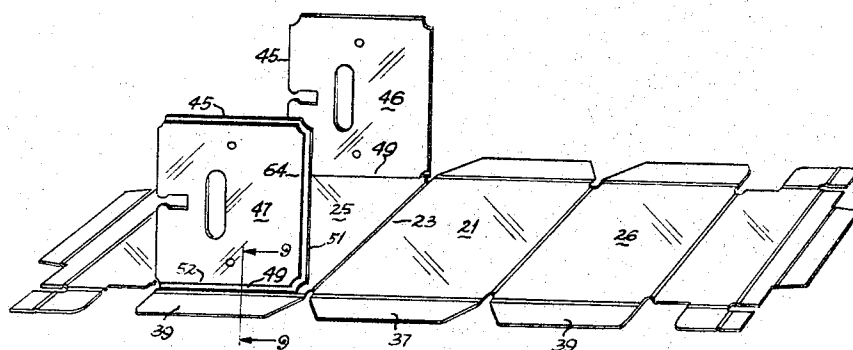


fig. 5

INVENTOR:

PETER G. DANIS

BY

Robert W. Brubaker
AGENT

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P. G. DANIS
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2 Sheets-Sheet 2

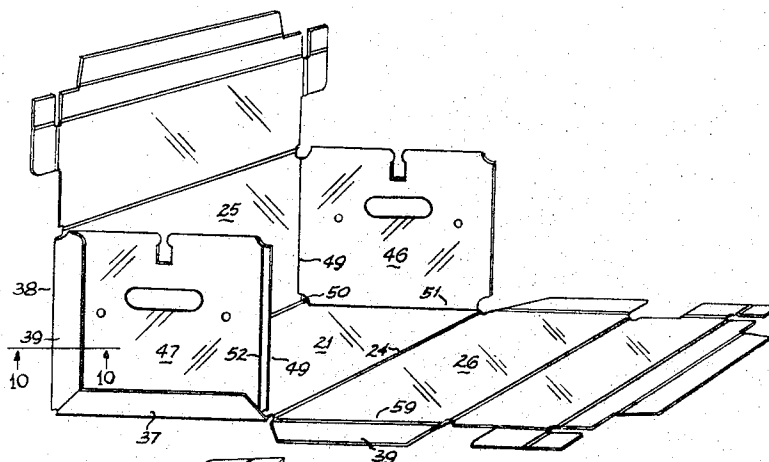


fig. 5

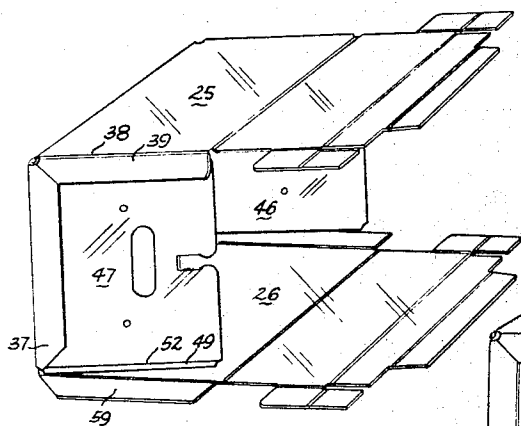


fig. 6

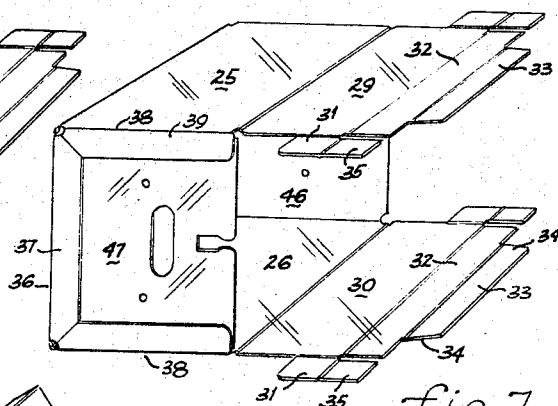


fig. 7

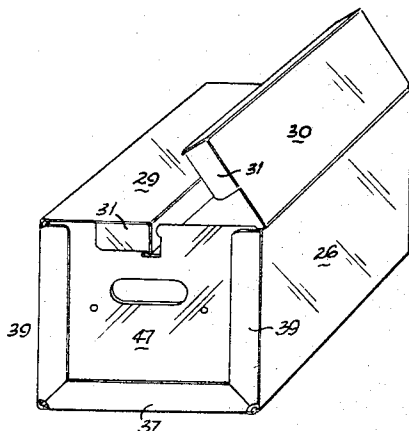


fig. 8

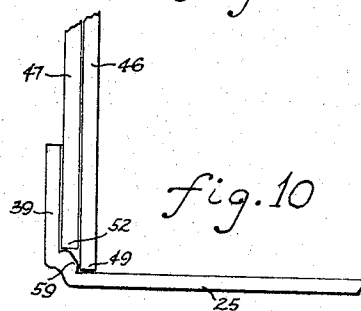


fig. 10

INVENTOR:

PETER G. DANIS

BY *Robert W. Burkhardt*
AGENT

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3,335,934

FIBERBOARD CONTAINER

Peter G. Danis, Orinda, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif., a corporation of Nevada

Filed Mar. 19, 1965, Ser. No. 441,102
6 Claims. (Cl. 229—23)

ABSTRACT OF THE DISCLOSURE

A heavy-duty paper board container having a body section wrapped around and secured to separate end wall sections. Each end wall section has notches at each corner and a stepped recess extending along its sides and bottom to accommodate the internal bead formed inwardly of the body section fold lines.

This invention relates to heavy duty, returnable, paperboard containers for bottled beverages and the like and more particularly to containers of this character formed from a multiplicity of foldable blanks in secured together relation.

Heavy duty, returnable paperboard containers, and more particularly solid fibreboard containers, have been used for beer or soft drink beverages for many years. The so-called Bliss style has been highly successful in this usage. The Bliss style comprises a one-piece body section including a bottom panel, opposed side walls on opposite side edges of the bottom panel, and usually one or more cover panels foldably connected to the upper edges of the sidewalls. The end edges of the bottom and side wall panels are provided with relatively short securing flaps which are stitched or otherwise secured to the outer face of separate end wall panels. The Bliss container has met with widespread success, particularly in the brewing industry, because of its economy of materials and noteworthy convenience, durability and strength properties.

Numerous variations and modifications of the Bliss style have been devised and utilized through the years which have afforded integral reinforcement of the end walls and various means for securing and releasing the cover panels to facilitate opening and closing the container for the loading or withdrawal of the container contents.

In recent years, however, the increasing labor cost in erecting and securing together the three discrete blanks of Bliss containers has furnished impetus for attempts to automate the erection procedure or resort to other styles of containers that afford somewhat simpler erection procedures. A major difficulty in mechanized erection of solid fibre boxes in general and the Bliss style in particular is that solid fibre lines of scoring tend to roll in the folding thereof resulting in undesirable variation in the container and often causing jam-ups in the assembly apparatus itself or in automated packaging lines. The applicant has now devised an improved Bliss style container, which while affording the previously mentioned advantages, adapts itself to erection on available apparatus without substantial modification of the mode of operation thereof and more particularly assures uniformity of the folding of the solid fibre scores and proper angular disposition of the adjacent foldably connected panels in the container construction. Accordingly the applicant's container and method of assembly thereof provides a solid fibre Bliss container construction wherein the end wall sections are of two ply construction characterized by having stepped bottom and side edges providing: outwardly extending inner ply edges adapted to abutting the body section bottom and side panel inner faces to determine the disposition thereof during folding of said body section about the

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end wall sections; and a void in the outer surface side and bottom margins for receiving the inwardly extending score line beads of the body section end wall securing tabs thus assuring uniform folding thereof and eliminating undue stress and distortion of the score line and adjacent tab and panel areas.

It is therefore an object to provide a solid fibreboard Bliss style container wherein uniform score line folding and proper relative disposition of the panels are assured.

A further object is to provide a container of the class described which is particularly adapted to automated set-up and assures necessary uniformity in connection therewith.

An additional object of the invention is to provide a Bliss style container with reinforced two-ply end walls affording unique accommodation of the inwardly protruding beads of the solid fibre body section score lines and thus affording freedom from score line stress and distortion.

Additional and more specific objects and advantages of the invention will become apparent from the following description and drawings, wherein:

FIGURE 1 is a plan view of a body section blank;

FIGURE 2 is a plan view of an end wall blank;

FIGURE 3 is a perspective view of the end wall section in a stage of folding thereof during the erection procedure;

FIGURE 4 is a perspective view of the end wall sections positioned on a body section blank preparatory to the assembly of the container;

FIGURE 5 is a perspective view showing a further stage of the assembly wherein the initial attachment of an end securing flap is accomplished and the body section is being folded about the end wall sections;

FIGURE 6 is a perspective view showing a still further stage of assembly wherein the end securing flaps of the body section are being successively attached to the end wall sections and the completion of the wrap-around folding of the body section is proceeding;

FIGURE 7 shows the completion of the assembly and securing together of the body and end wall sections but preparatory to completion of the hinged top closures;

FIGURE 8 is a perspective view of the completed container and top closure thereof;

FIGURE 9 is a cross section through line 9—9 of FIGURE 4;

FIGURE 10 is a cross section through line 10—10 of FIGURE 5.

In the drawings, the blank 20 constituting the body section of the container is shown in FIGURE 1. The interior surface of the blank is shown wherein the solid fibre lines of scoring are represented by the beads or female score lines protruding above the blank surfaces. The male or indented score lines not shown are impressed in respective aligned relationship in the outer or under surface of the blank. The body section comprises an intermediate panel 21 having longitudinal side edge scores 23 and 24. Flanking panels 25—26 are foldably connected to the intermediate panel 21 along the said scores 23—24. In the disclosed embodiment of the invention the top edges 27—28 of the flanking panels 25—26 are determined by score lines which serves as the hinge connection of the optional top closure panels 29—30. In the event that symmetrical opposed cover panels are desired as shown, each of the cover panels 29—30 is provided with integrally foldably connected end flanges 31 and longitudinal flanges 32. The longitudinal flanges 32 are provided with a foldably connected reinforcing strip 33 with recessed end edges 34 disposed to accommodate the disposition of the ear tabs 35 in the erected condition of the container as will be described hereinafter. Finally, the end edges of the interme-

diate panel 21 are determined by score lines 36 which serve as the hinge connection of the end or securing tabs 37. The end edges of the flanking panels 25-26 are determined by score lines 38 which serve as the hinge connection of the end or securing tabs 39. The end tabs 37 and 38 are separated by slots 40 determined by side edges 41 which are preferably angulated to provide a miter corner in the erected container.

An end wall section 45 is shown in FIGURE 2. The end wall section includes an inner panel 46 and an outer panel 47 in foldably connected relation along top score 48. The inner panel 46 is further determined by vertical side edges 49 and bottom edge 51. The outer panel 47 has side edges 52 which are inwardly offset from the corresponding edges 49 of the inner panel 46. Bottom edge 54 of the outer panel 47 is spaced from the top score 48 a distance so that it will be offset from the inner panel bottom edge 51 similarly to the side edge offsets thus resulting in a marginal recess extending inwardly from the outer major planar surface of each end wall along the sides and bottom thereof. The bottom corners of the panels 46-47 are notched at 50. A cover flange slot 56 extends from the top score 48 into the adjacent top margins of the inner and outer panels 46-47. In addition, handholes 57 and a pair of spaced apertures 58 are positioned in each of the inner and outer panels 46-47 in respective aligned relationship.

The preliminary step of erecting the container is illustrated in FIGURE 3 wherein a two ply end wall section 45 is folded about the top score 48 whereby the outer panel 47 is secured in flatwise contacting relation to the inner panel 46 as by adhesive connection indicated by the stippled area 55.

To initiate the erection of the container from a body section 20 and pair of end wall sections 45, as shown in FIGURE 4, the end wall sections are first positioned with the inner panel side edges 49 in abutting relation with the inner surface of a wall panel 25 in parallel adjacent relation to the end scores 38 thereof with the outer panels 47 directed outwardly in relation to the body section 20, as best shown in FIGURE 4. The score lines 38 are formed by utilizing a male scoring bar to indent the outer surface of the body section blank 20 and an aligned female scoring bar on the inner surface provides the inwardly projecting score line bead 59, best shown in FIGURE 9. Thus the bead 59 is disposed in the offset determined by the stepped end wall edges 49 and 52.

As the assembly of the container continues, as shown in FIGURE 5, the end securing tab 39 is infolded and secured to the outer marginal surface of the respective outer panels 47. Thus the bead 59 increasingly projects inwardly during the folding of the securing tabs 39 and being in a softened condition consequent to the scoring operation, conforms itself to the void in the stepped offset edge formation of the end wall section 45 as best shown in FIGURE 10. This accommodation of the bead 59 eliminates the usual stress on the outer surface portions of the score line 38 and it eliminates score line stress which would tend to cause distortion of the adjacent panels, namely the securing tabs 39 and flanking panel 25, whereby they are disposed in the desired planar mutually right angular relation. This score line bead accommodation also avoids undesirable exterior protrusion of the line of fold which heretofore has often caused undue wear and abrasion at this point.

Continuing with FIGURE 5, there is effected a rotation of the container sections following the securing of the first securing tab 39 whereby the bottom edge 51 of the end wall section 45 inner panel 46 contacts the inner surface of the body section 20 bottom panel 21 adjacent the end edge score line 36 thereof. This rotation may be accomplished by mechanical means engaging the paired aperture holes 58 to rotate the end sections 45 whereby the body section is successively drawn onto and about said end sections and the body section score lines precisely

folded by the successive contacting engagement with the end section extending, outermost edges 49 and 51. The bottom panel securing tab 37 is then infolded and secured to the exterior surface of the end wall section outer panel 47 with the consequent score line bead accommodation as before described. It is to be noted at this point that the end wall section corner notches also accommodate the inward protrusion of the longitudinal side edge scores 23.

Upon a further rotation of the end wall sections 45 the final flanking panel 26 is brought into contacting relation with the corresponding edge 49 of the end wall sections and the respective securing tabs secured in the before described manner. Of course, the described rotation of the end wall sections with the consequent wrapping around of the body section is merely a convenience for the purpose of the apparatus utilized in the operation whereby only one stitching station is necessitated. The critical factor is that the body section is folded about the end wall sections so that the inner surfaces of the body section panels contact and are determined in this position by the abutment with the protruding end wall section edges 49 and 51 yet there is an accommodation in the offset of the outer panel 47 edges 52-54 which permits and determines the subsequent folding and securing of the securing tabs 37 and 39 without distortion or stress of the container parts.

FIGURES 7 and 8 show the final stages of assembly of the container and the completed container wherein the top closure members are assembled by the folding of the end flanges 31 and longitudinal flanges 32 into depending relation from the top closure panels 29-30 and finally the reinforcing and rigidifying of the same by the infolding and securing of the reinforcing strips 33 to the inner surface of the longitudinal flanges 32 and the attachment of the ear tabs 35 to the marginal end portions of the respective longitudinal flanges 32. In the erected condition of the container as shown, the intermediate panel 21 of the body section blank constitutes the bottom panel of the container and the flanking panels 25-26 constitute the side wall panels of the container.

The applicant thus provides a container formed from multiple blanks wherein the inside dimensions of the container are precisely determined by the folding of the wall section about and in abutting relation with the extremities of the end wall sections and further provides for the avoidance of any distortion or bulging of the container parts by the accommodation of the inwardly protruding score line beads.

While the present description sets forth a preferred embodiment of the invention, it is apparent that various changes may be made in the construction without departing from the spirit of the invention. It is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

What is claimed is:

1. A paperboard container comprising a body section and end wall sections, the body section formed from a foldable blank including a bottom panel and opposed side wall panels foldably connected thereto, the bottom and side wall panels having end edges defined by lines of scoring, the lines of scoring having inwardly projecting beads, end tabs foldably connected by the lines of scoring to the respective ends of the bottom and side wall panels, the body section disposed in folded relation about said end wall sections, means for accommodating the body section inwardly projecting beads thereby avoiding score line stress and distortion of the container, said means comprising offset edges in the end wall sections defining voids in the outer marginal surfaces of the sections, the inwardly protruding beads of the body section said lines of scoring confined within the defined end wall section voids.

2. A paperboard container as set forth in claim 1 wherein the body section is solid fibreboard and the said lines

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of scoring include an indented outer surface and the projecting beads on the inner surface in mutual alignment.

3. A paperboard container as set forth in claim 1 wherein the fold connections between the bottom panel and side wall panels are characterized by inwardly projecting beads, the end wall sections having notched corner portions to accommodate the bottom and wall panel connection beads.

4. A paperboard container comprising a body section formed from a foldable blank and separate end wall sections and means fixedly securing the body section and end wall sections together, the body section including a bottom panel and an opposed pair of side wall panels foldably connected to respective side edges of the bottom panel with the bottom panel and side wall panels each having end edges determined by lines of scoring, end tabs connected to the bottom and side wall panels along said lines of scoring, the lines of scoring having beads protruding inwardly of the container, the end wall sections each including inner and outer panels with side and bottom edges and the panels being in flatwise, secured together relation with at least the side and bottom edges in stepped, offset relation defining voids in the outer marginal surfaces of the sections, the body section disposed in folded relation about the end wall sections with the edges of the end wall sections inner panels abutting the inner surfaces of the body section bottom and side wall panels adjacent and parallel to the end edge lines of scoring thereof and the end tabs in folded disposition and se-

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cured to the outer surface of the respective end section outer panel with the line of scoring inwardly protruding beads disposed within said voids whereby score line distension and stress is avoided.

5. A paperboard container comprising a body section formed from a foldable blank and separate end wall sections, said body section having lines of scoring with inwardly projecting beads in the plane of said end wall sections, the body section disposed in folded relation about said end sections, means for accommodating the body section inwardly projecting beads thereby avoiding score lines stress and distortion of the container, said means comprising a marginal recess extending inwardly from the outer major planar surface of said end wall sections defining voids along the side margins of said end wall sections, the body section beads disposed within the said voids.

6. The container of claim 1 wherein the marginal recess is of step-like configuration.

References Cited

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JOSEPH R. LECLAIR, *Primary Examiner.*

DONALD F. NORTON, *Examiner.*

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,335,934

August 15, 1967

Peter G. Danis

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 6, line 17, for the claim reference numeral "1"
read -- 5 --.

Signed and sealed this 16th day of July 1968.

(SEAL)

Attest:

Edward M. Fletcher, Jr.

Attesting Officer

EDWARD J. BRENNER

Commissioner of Patents