May 11, 1965 J. A. BRIAN 3,182,913

CARTON

Filed March 4, 1963 2 Sheets-Sheet 1

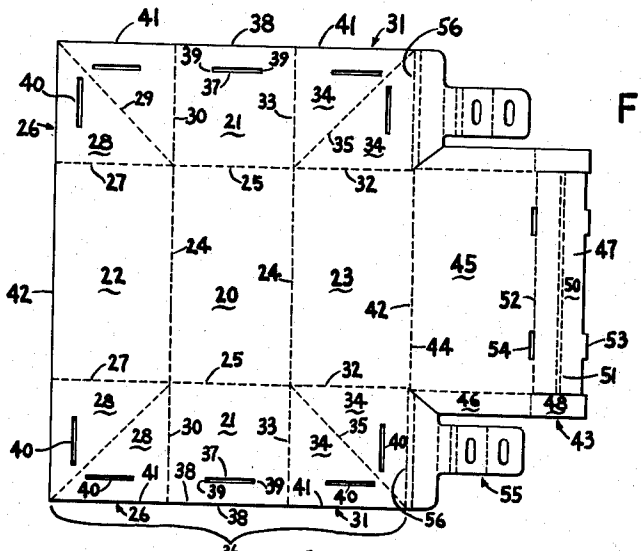


FIG. 1

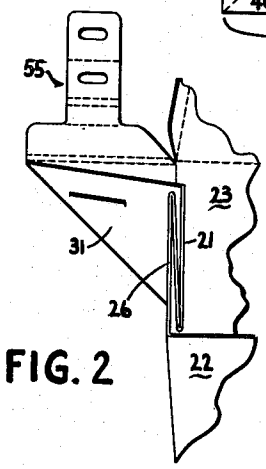


FIG. 2

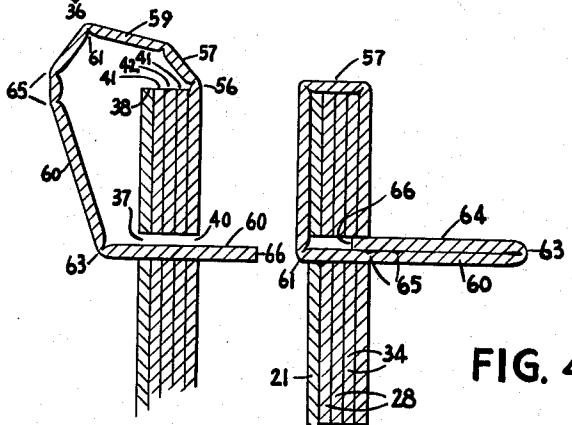


FIG. 3

FIG. 4

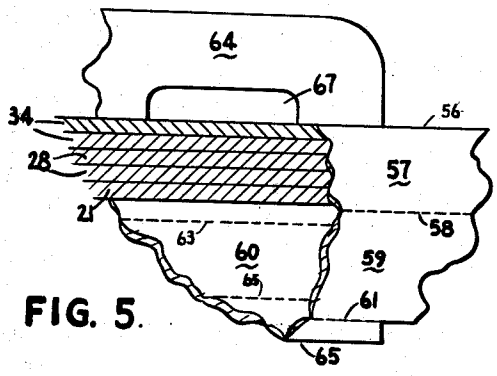


FIG. 5

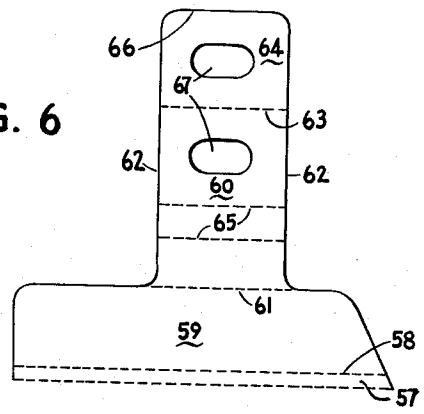
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FIG. 6



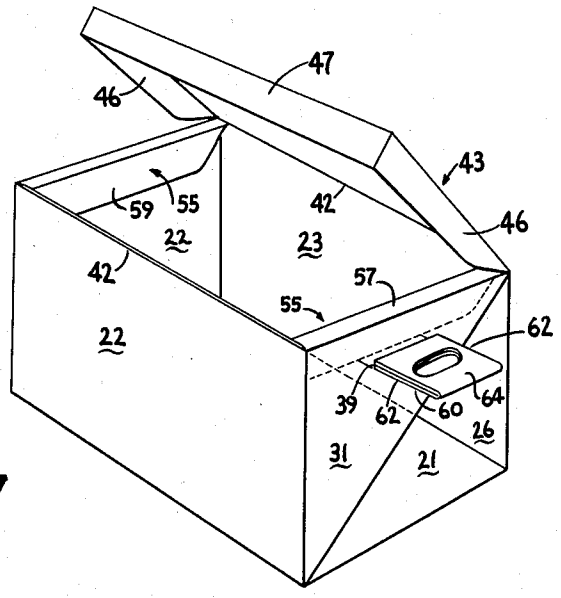


FIG. 7

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CARTON

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6 Claims. (Cl. 229—31)

This invention relates to improvements in cartons formed from foldable sheet material.

More particularly the invention relates to a container formed from a unitary foldable blank which is subject to manual assembly without resort to extraneous fastening means such as adhesives, staples or tape and which will provide a carton having a seamless body section capable of retaining free moisture therein.

The embodiments of the invention hereinafter described have been particularly useful for applications wherein ice is disposed in the container as for example in conjunction with bottled or canned beverages. However, the carton obviously is equally useful for other purposes wherein a manually erectable and collapsible container having integral carrying handles is desired. In any event, the container design is eminently suitable for cartons of large size, as for example capable of carrying 24 bottles or cans of beverages and attendant ice, or for 25 pounds or more of ice.

The carton is formed from a one piece blank of a suitable bendable material such as corrugated paperboard which is scored and cut to provide a self-locking container section which is free of cuts or slots throughout the lower extremities thereof whereby a seamless leakproof construction is attainable. In those utilizations of the carton involving the retention of free moisture, the blank is preferably coated on its inner surface with paraffin or other suitable materials to render it moisture resistant. The carton blank further includes means which are readily foldable by a manual operation to lock the container in erected condition and at the same time provide projecting handle members for convenient carrying of the carton. The carton blank may also include a hinged cover which is likewise easily assembled and locked by the mere folding of the component parts thereof into mutual interengaging relation.

The invention will be readily understood by reference to the following description and the accompanying drawings in which like numerals and symbols refer to like parts wherever they occur.

In the drawings:

FIGURE 1 is a plan view of a carton blank embodying the invention;

FIGURE 2 is a fragmentary perspective view of an intermediate stage of erection of a carton from the blank of FIGURE 1;

FIGURES 3 and 4 are cross-sectional views through the median line of the carton end walls showing an intermediate stage of erection in FIGURE 3 and the fully erected form in FIGURE 4;

FIGURE 5 is a fragmentary perspective partially broken away showing the intermediate stage of erection of the carton similar to FIGURE 3;

FIGURE 6 is an enlarged detail of the locking and handle member of the blank in FIGURE 1;

FIGURE 7 is a perspective view of a fully erected carton with the cover in a partially open position.

The blank shown in FIGURE 1, described in terms appropriate to the carton erected therefrom, includes a bottom panel 20, end panels 21 and side panels 22 and 23 which are foldably connected by longitudinal scores 24 and transverse scores 25. Inner bellows fold end wall sections 26 are foldably connected to the front side panel 22 by corner scores 27 which are extensions of transverse scores 25. The bellows fold sections 26 are comprised of counterpart triangular panels 28 which are foldably connected by diagonal scores 29. The bellows fold sections 26 are also connected to end panels 21 by corner scores 30 which are extensions of longitudinal score 24.

Outer bellows fold end wall sections are shown generally at 31. Said sections 31 are foldably connected to end edges of the back side panel 23 by corner scores 32 which are extensions of transverse scores 25. The outer bellows fold sections 31 are also connected to the side edges of end panels 21 by corner scores 33 which scores are extensions of longitudinal score 24. The outer bellows fold end wall sections 31 are divided into counterpart triangular panels 34 by diagonal score 35.

The before described assembly of bottom panel 20, side panels 22–23, end panels 21, and end wall sections 26 and 31 comprise the container section of the blank designated generally at 36. The container section further includes locking slots 37 in the end panels 21. The locking slots are parallel to the top edges 38 of the end panels 21 and spaced therefrom by a determined amount which will be described hereinafter. The locking slots have end edges 39 which are in spaced relation to the respective corner scores 30–33. Counterpart locking slots 40 are disposed in the triangular panels 28 and 34 in a manner to be in aligned relation with the end panel locking slots 37 in the erected condition of the container. Continuing with the container section 36, the triangular panels 28 and 34 adjacent the end panels 21 have top edges 41 in aligned relation with the end panels top edges 38. Also the side panels 22–23 are provided with top edges 42 as are the triangular panels 28 and 34 adjacent thereto.

A cover section 43 is hingedly connected to the top edge 42 of the back side panel 23 by a score line 44. The cover section 43 includes a cover panel 45 with depending end flanges 46 and front flanges 47. Corner connecting tabs 48 are hingedly connected to the front end edges of the end flanges 46. The front flange 47 is comprised of an outer member 49 and an inner member 50 which are foldably connected to each other by score 51 and to the cover panel 45 by score 52. Locking tabs 53 may be provided on the free edge of the inner member 50 in aligned relation with engaging openings 54 in the cover panel 45 adjacent the score 52.

The locking handle members indicated generally as 55 are hingedly connected to the top edges 56 of the outer end wall sections 31 and are included in the container section 36 of the blank. This connection more particularly is to the outer one in respect to the set-up carton of the triangular panels 34 thereof. The locking handle members are best shown in FIGURE 6 wherein it may be seen that this member is comprised of a top panel 57 which is hingedly connected by top score 58 to inner panel 59. The inner panel 59 is hingedly connected to the handle flange 60 by score 61. The handle flange 60 is determined by side edges 62 and is of a width closely conforming to the locking slots 37 and 40. The handle flange 60 is terminated at its outer end by end

score 63 which serves as a hinge connection to the handle reinforcing tab 64. Handle flange 60 also includes relief scores 65 which are functional only during the operation of erecting the container as will be hereinafter described. The handle flange 60 and reinforcing tab 64 include handholes 67 which correspond in configuration and in spacing relation to the end score 63 so that they will be in aligned relation in the erected condition of the container.

To erect the carton the side walls 22–23 and end walls 21 are folded upwardly about the longitudinal and transverse scores 24–25 to vertical relation. In this position the front corner scores 27 and 30 and rear corner scores 32 and 33 are respectively disposed in adjacent aligned relation whereby the end wall sections 26 and 31 are extended outwardly with the respective paired triangular panels 28–28 and 34–34 in flatwise contacting relation. As shown in FIGURE 2, the inner bellows fold end wall sections 26 are then infolded in flatwise relation to the end panels 21. Following which the outer bellows fold end wall sections 31 are infolded into parallel flatwise relation with the end walls and in overlapping relation to the inner bellows fold sections 31. In this position the locking slots 37 and 40 are in aligned relation as best shown in FIGURES 3 and 4. Thus the locking handle member 55 may be infolded and the handle flange 60 and handle reinforcing tab 64 inserted through the locking slots whereby the top panel 57 rests on the top edges 31, 38, 41, 42 and 56 of the end panels and bellows fold end wall sections. The folding is continued through the stages shown in FIGURES 3 and 5 until the inner panel is disposed in flatwise relation to the inner surfaces of the end panels 21 and top margins with the score 61 in aligned relation with the locking slots as shown in FIGURE 4. As best shown in FIGURES 3 and 5, the relief scores 65 are positioned to facilitate the successive rolling of the locking handle members 55 during the operation of insertion through the locking slots 37 and 40. The use and disposition of the relief scores is optional depending on the dimensions of the carton and the flexibility of the sheet material of which it is constructed. It is to be noted that the handle reinforcing tab 64 and handle flange 60 are in flatwise mutually reinforcing relation as shown in FIGURE 4 with the free end edge 66 of the handle tab 64 confined within the boundaries of at least one of the aligned locking slots 37 and 40.

The cover section 43 is erected by folding the end flanges 46 into substantially perpendicular relation to the cover panel 45 and infolding the corner connecting tabs into disposition in parallel alignment with the score 52. The front flange 47 may then be folded about scores 51 and 52 to contain the corner connecting tabs 48 between the inner and outer members 49. The locking engagement of the cover flanges is then secured by the disposition of the locking tabs 53 in the engaging openings 54.

The fully erected container is shown in FIGURE 7 wherein it may be seen that the cover section, being in hinged relation to the top edges of the rear wall 23, is adapted to movement between an open position and a carton closure position wherein the cover flanges 46 and 47 are disposed outwardly in engagement with the top margins of the carton front and end walls 22 and 21 respectively. The handle flange 60 and handle tabs 64 project from the locking slots outwardly of the container to provide convenient handle carrying means for the carton. The handle locking members additionally fix the disposition of the end wall panels 21 and bellows fold end wall sections 31 and 26 in their vertical parallel disposition by the abutting relation of the handle flange side edges 62 with the locking slot end edges 39. The disposition of these end wall sections is further fixed by the wrapping engagement of the locking handle members 55 with the top margins of the end panels 21 and bellows fold sections 26 and 31. Thus the bellows fold sections

cannot move laterally outwardly because of the wrap-around engagement of the locking handle member 55 extending from the outer bellows fold section around the top margin of the end wall assembly including the end panels 21 and inner and outer bellows fold sections 26 and 31. Additionally, the bellows fold sections are restrained from vertical movement, which would allow the front and rear side panels to move outwardly and downwardly, because of the positive restraint of the handle locking member disposition in the locking slots. Nevertheless, the container may be intentionally collapsed for storage or return shipment, if desired, by simply withdrawing the handle flanges 60 and reinforcing tabs 64 from the locking slots 37 and 40 and returning the carton blank to planar condition.

While the container is described in accordance with one commercial embodiment of the invention having a hinged cover section, it is obvious that other top closures may be substituted or if desired an open top box construction may be constructed in accordance with the invention. In any event it is to be understood that the disclosed embodiment is for illustration only and is not intended as a definition of the scope of the invention, reference being had for this purpose to the appended claims.

What is claimed is:

1. A self-locking carton formed from a unitary foldable blank, the carton having a bottom panel with side and end wall panels hingedly connected to the edges thereof and disposed in upright relation, the side and end walls connected by corner scores to bellows fold sections, said sections disposed in substantially parallel relation to the end wall panels, the end wall panels and bellows fold sections each having top edges in horizontally aligned relation, locking slots in each end wall panel and in the bellows fold sections in aligned relation, an integral locking member at each end of the carton foldably connected to one of the top edges, said locking members being scored to determine a series of foldably connected panels with a first panel disposed on the top edges, a second panel in flatwise relation to the respective end wall panel and bellows fold sections, and a third panel projected through the locking slots, the end wall panels and bellows fold sections being secured in fixed relation by the wrapping engagement of the locking members with the respective top margins of the end wall panels and bellows fold sections.

2. A self-locking carton formed from a unitary foldable blank, the carton having a bottom panel with side and end wall panels hingedly connected to the edges thereof and disposed in upright relation, the side and end walls connected by corner scores to bellows fold sections, the bellows fold sections each comprised of substantially counterpart triangular panels connected by diagonal scores, said sections disposed in exterior substantially parallel relation to the end wall panels and in overlapping relation to each other, the end wall panels and bellows fold sections each having top edges in horizontally aligned relation, locking slots in aligned relation in each end wall panel and overlapping portions of the bellows fold sections, the locking slots being parallel to the top edges of the end wall panels and bellows fold sections, an integral locking member at each end of the carton foldably connected to the outermost one of said top edges, the locking members scored to determine a top panel, an inner panel and a handle flange, the top panel disposed on the top edges and the inner panel in flatwise relation to the inner surfaces of the end panel top margins with the handle flange projected outwardly through the locking slots and exteriorly of the carton to provide handles for carrying the carton and securing the end wall panels and bellows fold sections in fixed relation by the wrapping engagement of the locking members with the respective top margins of the end wall panels and bellows sections.

3. A carton as set forth in claim 2 wherein handle reinforcing tabs are foldably connected to the outer ends of the handle flanges and disposed in flat-wise relation to the handle flange, the reinforcing tabs having end edges disposed within the locking slots and confined thereby.

4. A carton as set forth in claim 2 wherein the bellows fold extensions each extend substantially the width of the end walls and the top panels of the locking members are coterminous therewith, the handle flange having side edges in edgewise abutment with the locking slot end edges.

5. A carton as set forth in claim 2 wherein a hinged cover is foldably connected to at least one side wall panel.

6. A carton as claimed in claim 3 wherein the handle flange is provided with at least one relief score which is

foldably operative during the assembly of the carton to facilitate insertion of the locking member through the locking slots.

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