United States Patent [19]

Page et al.

[11] **3,722,781**

[45] **Mar. 27, 1973**

[54] **FOLDABLE CARRY-OUT SERVING TRAY**

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[22] Filed: **June 28, 1971**

[21] Appl. No.: **157,098**

[52] **U.S. Cl.** **229/28,** 229/30, 206/72

[51] **Int. Cl.** **B65d 5/48**

[58] **Field of Search** .....229/27, 28, 30, 37 R; 206/41 FR, 72

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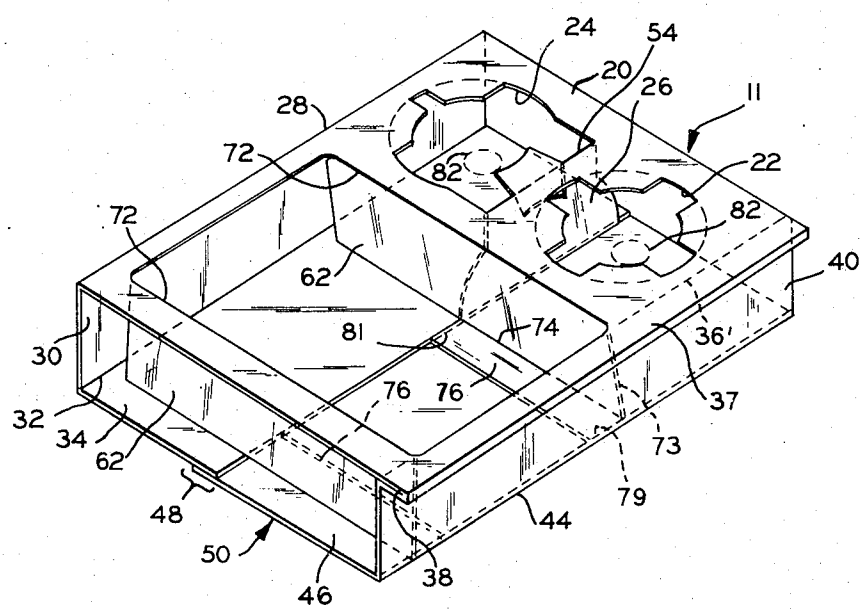
[57] **ABSTRACT**

A collapsible tray foldable from one sheet of material such as paperboard having two partly overlapping bottom panel sections, opposite side panels and a top panel which is cut out to form cup retaining apertures and a large rectangular sandwich retaining aperture; which cut-outs provide first hinged struts parallel to the side panels and having end hinged flaps connected between the overlapping bottom panel sections, and second hinged struts transverse to the side panels having end hinged flaps which may engage notches which lock in the edge of the upper overlapping bottom panel section, and one of whose ends abuts one side panel, for locking the tray in its erected position. One side edge of this one side panel also may have a reinforcing flange therealong to prevent bending of the tray.

9 Claims, 9 Drawing Figures



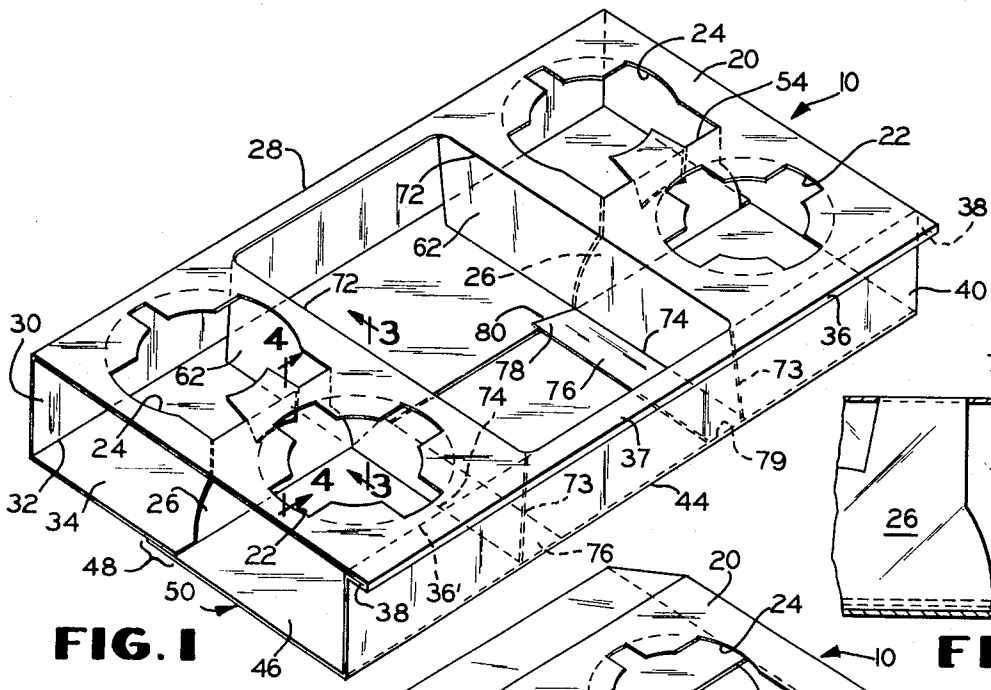


FIG. 1

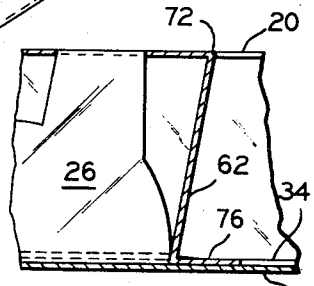


FIG. 3

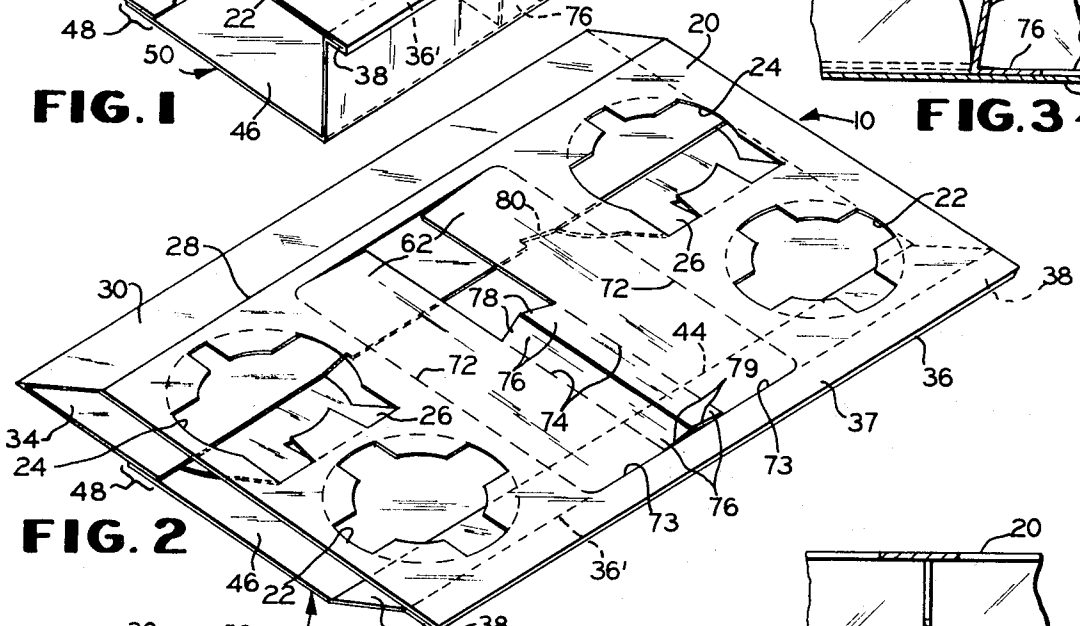


FIG. 2

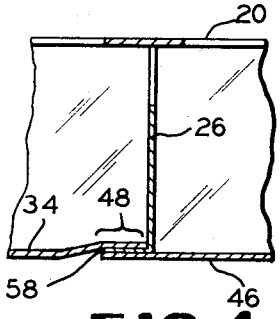


FIG. 4

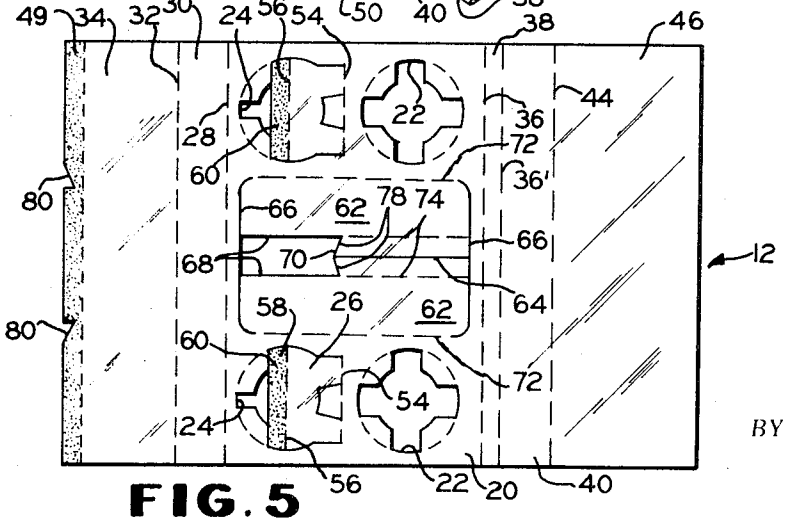


FIG. 5

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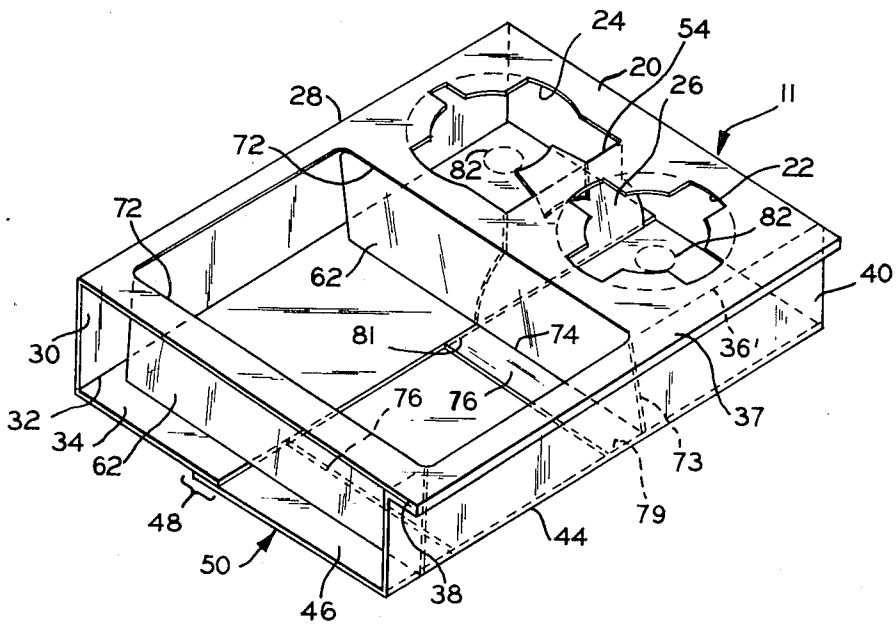

FIG. 6

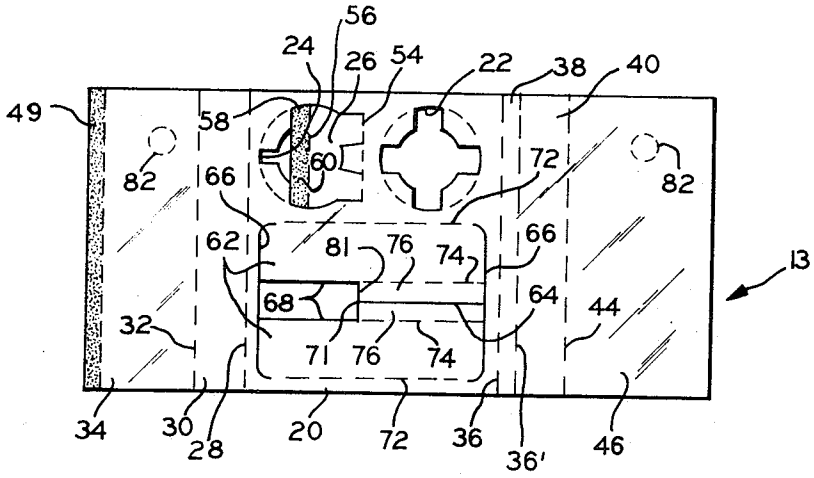

FIG. 7

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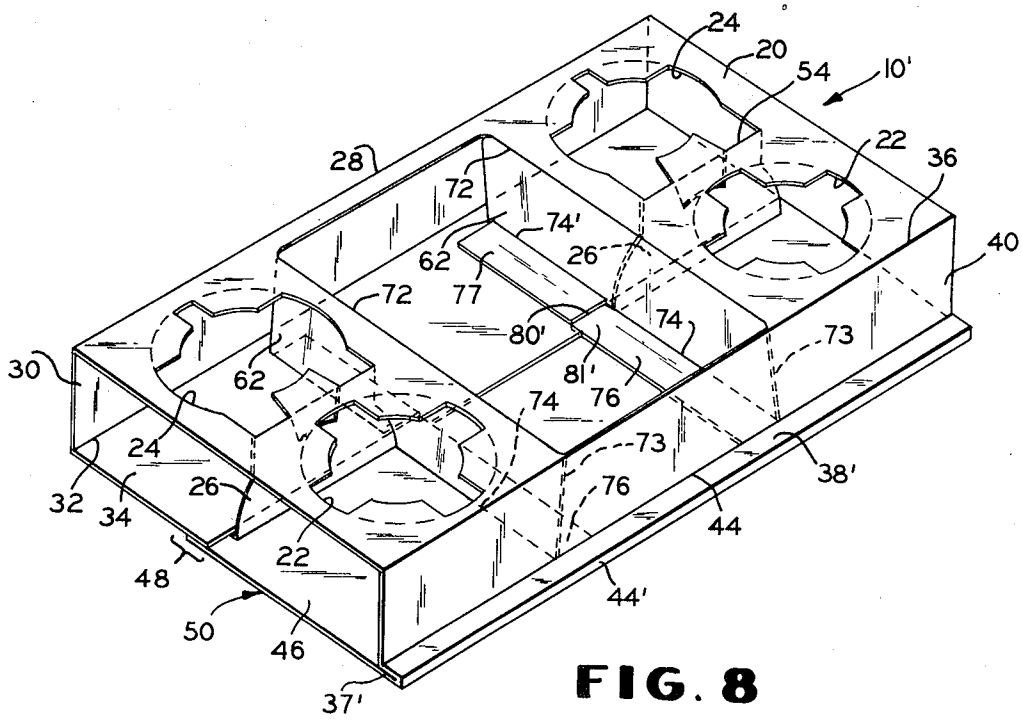

FIG. 8

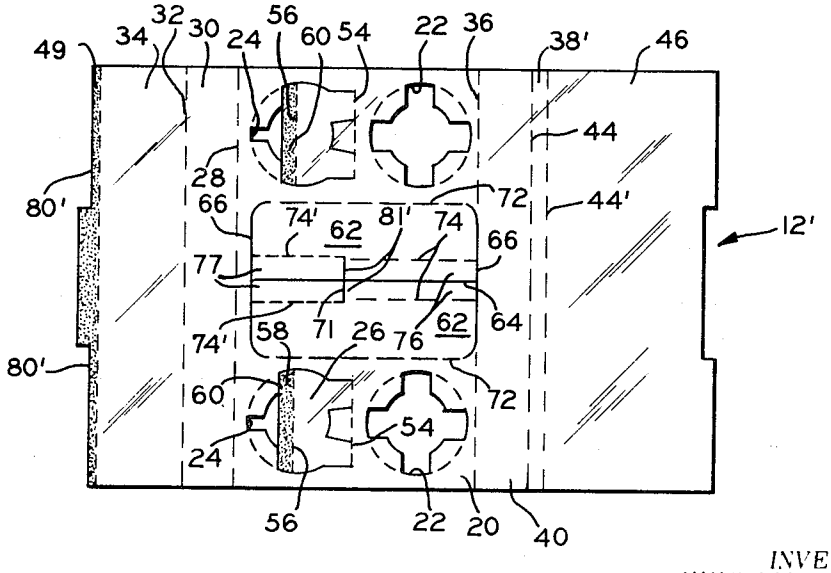

FIG. 9

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FOLDABLE CARRY-OUT SERVING TRAY

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to disposable foldable paperboard trays of the type used for serving customers of drive-in restaurants and the like.

2. Description of the Prior Art

Erectable, foldable carry-out serving trays such as shown in assignee's U.S. Pat. No. 3,149,770 to Spillson issued Sept. 22, 1964 are well known. However, since trays of the type described therein are disposable, the structure thereof and the cost of manufacture are extremely important factors to consider. Also since such trays are made of paperboard, a relatively uncomplicated and thin sheet tray structure may not be rigid enough to serve its intended purpose. It is to overcome these problems that the present invention is directed.

SUMMARY OF THE INVENTION

Generally speaking, the tray of the present invention comprises a single rectangular paperboard blank scored and folded to provide a central top panel, side panels and bottom sections overlapped and glued together to form a bottom panel. The top panel is scored and cut to provide at least one end compartment having apertures for beverage containers and a rectangular food compartment.

The rectangular food compartment is defined by at least one transverse bracing strut hinged to the end compartment and terminating in a bottom engaging flange. This bottom engaging flange extends from one abutting side panel across one of the bottom sections to engage the edge of the other upper overlapped bottom section thereby locking the tray in an erected position. This engagement may be by an inner end of a partial bottom engaging flange or a slit in a larger bottom engaging flange, which end or slit may cooperate with a notch or a step in the edge of the upper overlapping bottom section.

The top panel of the end compartment is provided with a support strut that may be folded from one beverage container aperture therein parallel to the side panels and have at its free end a hinged flap which is secured to the bottom panel, such as being glued between the overlapping sections thereof. One side edge of this strut may act as an abutment for the back side of an adjacent transverse bracing strut. The bottom panel may have smaller aligned knock-out apertures to receive the tapered ends of cones or conical cups placed in the top panel apertures.

The strut abutting side panel may have an outwardly extending flange along either its upper or lower edge or along both edges to form a double thickness stiffening flange with the adjacent top or bottom panel, respectively, for providing a rigid tray.

OBJECTS AND ADVANTAGES

Thus, it is an object of this invention to provide a disposable serving tray made of low-cost paperboard that can be erected from a collapsed form, securely locked in such erected position, and which will be sufficiently rigid to support adequately any containers for food and beverage that may be placed therein for transport and during consumption.

Another object of this invention is to provide a completely prefabricated tray that may be furnished to the trade in collapsed form and subsequently prepared for service by erecting the folding parts thereof along score lines including the folding of the compartment defining bracing struts inwardly into a locking relationship with the side and bottom panels of the tray.

BRIEF DESCRIPTION OF THE DRAWINGS

The above mentioned and other features, objects and advantages and a manner of attaining them are described more specifically below by reference to embodiments of this invention shown in the accompanying drawings, wherein:

FIG. **1** is a perspective view of one embodiment of a four beverage apertured tray in erected position incorporating the present invention;

FIG. **2** is a perspective view of the tray shown in FIG. **1** in an initial stage of erection from collapsed position;

FIG. **3** is an enlarged sectional detailed view taken substantially on line **3—3** of FIG. **1** illustrating one of the center compartments forming struts in locking position;

FIG. **4** is an enlarged sectional detailed view taken substantially along line **4—4** of FIG. **1** illustrating a top panel supporting strut with its glue flap secured between the overlapping ends of the bottom panel sections;

FIG. **5** is a reduced in size developed plan view of the blank from which the tray of FIG. **1** is fabricated;

FIG. **6** is a perspective view of another embodiment of a two beverage apertured tray in erected position incorporating the present invention;

FIG. **7** is a reduced in size developed plan view of the blank from which the tray of FIG. **6** is fabricated;

FIG. **8** is a perspective view of still another embodiment of a four beverage apertured tray in an erected position incorporating the present invention with a modified form of locking struts and a differently located reinforcing side flange; and

FIG. **9** is a reduced in size developed plan view of the blank from which the tray in FIG. **8** is fabricated.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings, three embodiments of disposable carry-out serving trays incorporating the present invention are illustrated generally as **10** and **10'** in FIGS. **1** and **8** and as **11** in FIG. **6**, and as shown in FIGS. **5**, **9**, and **7** these trays **10**, **10'** and **11** are fabricated from substantially waste free rectangular blanks **12**, **12'** and **13**, respectively. The blanks **12**, **12'**, and **13** each include a central top panel **20** having at least one pair, and herein spaced pairs, of beverage container receiving apertures **22** and **24**, the apertures **22** being cross-shaped while the material from the openings **24** are hinged to the top panel **20** to form supporting struts **26**. One side edge of the top panel **20** is connected along a score line **28** to a first side panel **30** which in turn is connected along a score line **32** to a bottom panel section **34** at one end of the blanks **12**, **12'** and **13**.

The other side edge of the top panel **20** is connected along a score line **36** and/or **36'** to a second side panel **40** which in turn is connected along a score line **44**

and/or 44' to a bottom panel section 46 at the other end of the blanks 12, 12' and 13. When the bottom sections 34 and 46 are folded inwardly, they overlap to provide a seam 48 as shown in FIGS. 1, 2, 4, 6 and 8, which seam 48 is held by a suitable adhesive 49 that may be applied along one or both of the overlapping edges of bottom sections 34 and 46 to adhere them together to form a bottom panel 50.

As best shown in FIGS. 1, 2, 6 and 8 the side panels 40 of the trays 10, 10' and 11 preferably have an outwardly extending flange portion 38 and/or 38' which extends longitudinally along either one or both of its upper and/or lower edges which may be adhesively applied to the outer extending portions 37 and/or 37' of the top panel 20 and/or the bottom panel 50, respectively, to form a double thickness or two-ply flange 37 – 38 and/or 37' – 38' thereby lending considerable rigidity and strength to the mid portions of the trays 10, 10', and 11.

The struts 26 are attached to top panel 20 along score lines 54 and are provided with additional score lines 56 to provide glue flaps 58 at their outer or free ends, which flaps 58 may be coated on one or both faces with adhesive 60 for attachment to the bottom panel 50 with or, as shown in FIG. 4, between the overlapping edges of the sections 34 and 46 forming the seam 48. Due to use of material for the struts 26 that ordinarily would be discarded to provide apertures 24, the struts 26 are produced during the blanking and scoring operation at no added cost or loss. These struts 26 serve to space and support the top and bottom panels 20 and 50, produce longitudinal support for the trays 10, 10', and 11, and additionally the struts 26 provide abutment stops for the compartment defining transverse bracing struts or partition flaps 62 now to be described.

Top panels 20 have die cuts 64, 66, 68, 70 and 71 as shown in the blanks of FIGS. 5, 7 and 9 and have transverse score lines 72 serving as hinges for the struts or flaps 62. These flaps 62 are additionally scored at 74 and 74' to form locking flanges or strips 76 along about half of the free or bottom edge of each flap 62 engageable with the inner surface of the bottom panel section 46 upon erection of the trays 10, 10' or 11, respectively. The inner edges or ends of these flanges 76 may be cut off perpendicular to score line 74 (see FIG. 7) or may terminate in angular or other shaped tabs 78 (see FIG. 5), which engage against the straight free end edge of the section 34 or into correspondingly angular or other shaped notches 80 or steps 80' in the free edge of the bottom panel section 34, when the trays 10, 10' and 11 are in their erected position. In the embodiment in FIGS. 8 and 9, the bottom flanges 76 extend the full length of the struts 62 and the die cut slits 71 therein form tabs 81' which lock into the steps 80' in the free edge of the upper bottom panel section 34, while the remaining portions 77 of these flanges 76 overlies this upper panel section 34, being folded along the offset portion 74' of its hinged score line. The material from notches 80 and/or steps 80' may be left in the other end of the adjacent blank when cut from a sheet, for example see FIG. 9.

The blanks 12, 12' and 13 shown in FIGS. 5, 7 and 9 are first glued as above described and formed into their collapsed form, as shown in FIG. 2 so as to be substantially flat for convenient storage or shipment. The trays 10, 10' or 11 may then be readily erected from this folded position to generally tubular form as shown in FIGS. 1, 6, and 8 by opposite transverse movement of the top and bottom panels 20 and 50, causing side panels 30 and 40 and struts 26 to swing to their upright parallel positions. The transverse bracing struts 62 are then pivoted inwardly and downwardly about score lines 72 and their locking strips 76 are pivoted upwardly about score lines 74 to seat parallel to and against the bottom section 46 as shown in FIGS. 1, 3, 6 and 8. As particularly shown in FIG. 1 the projecting tabs 78 of the locking strips 76 engage the notches 80 in the edge of the bottom section 34, or as shown in FIGS. 6 and 8 the squared off tabs or ends 81 and 81' of their locking strips 76 directly abut the edge of or a step in the bottom section 34, respectively. The opposite ends 79 of tabs 76 abut against the inside of the side wall 40 while simultaneously the adjacent edges 73 of the bracing struts 62 also abut against the inside of this side wall 40. Also as shown in FIG. 3 the bracing struts 62 are moved past the vertical or more than 90° to an overcenter position into engagement with the lower inner edges of the struts 26. In such position, the struts 62 substantially span the space between the side panels 30 and 40 forming partitions for the food opening or compartment while the locking strips 76 span the space between the side wall 40 and the notches 80, steps 80' or the edge of the upper section 34 in the bottom panel 50 thus locking both side panels 30 and 40 upright and bracing the tray 10, 10' or 11 against collapse.

The bottom panels 50 may also contain knock-out disks 82 as shown in the embodiment of FIGS. 6 and 7 aligned with the center of the beverage container apertures 22 and 24 so that ice-cream cones may be positioned in these apertures.

While there is described above the principles of this invention in connection with a specific structure it is to be clearly understood that any of the above features can be interchanged in the different embodiments. For example, the different types of locking flanges 76 with their different tabs can be used in any of the embodiments, and the reinforcing flanges 38 and/or 38' or both also may be employed in any of the embodiments. Thus this description is made only by way of example and not as a limitation to the scope of this invention.

We claim:

1. A collapsible paperboard tray comprising:
   1. a bottom panel having
      a. two sections with overlapping edges, and
      b. adhesive means for attaching said edges,
   2. a pair of parallel side panels hinged along one edge thereof to two opposite edges of said bottom panel, and
   3. a top panel hinged along the other edges of said pair of said panels, said top panel having a partition flap hinged to said top panel and extending transversely between said side panels and to said bottom panel, said flap having a hinged flange extending parallel to and across the underlying bottom section, one end of which flange lockingly engages the edge of the upper and overlapping bottom section, which abutting edge is parallel to said side panels, and the opposite end of said flange abuts a side panel.

2. A tray according to claim 1 wherein said edge of said upper and overlapping section of said bottom panel has a notch therein, and said one end of said flange hinged to said transverse partition flap seats in said notch.

3. A tray according to claim 2 wherein said notch comprises a step in said edge of said upper overlapping bottom panel section.

4. A tray according to claim 1 wherein said side panel includes a reinforcing flange along at least one longitudinal edge thereof.

5. A tray according to claim 4 wherein said reinforcing flange is of a double thickness and projects outwardly from an edge of said tray.

6. A tray according to claim 1 including at least two partition flaps in said top panel.

7. A tray according to claim 1 wherein said top panel includes a hinged strut cut out of said top panel extending parallel to said side panels to said bottom panel and is attached to said bottom panel.

8. A tray according to claim 7 wherein said strut is adhered to said bottom panel between said overlapping sections thereof.

9. A collapsible paperboard tray comprising:

1. a bottom panel having

a. two sections with overlapping edges,

b. at least one notch in the edge of the upper and overlapping section, and

c. adhesive means for attaching said edges,

2. a pair of parallel side panels hinged along one edge thereof to two opposite edges of said bottom panel, and

3. a top panel hinged along the other edges of said pair of side panels, said top panel having

a. a first strut hinged to said top panel and extending parallel to said side panels to and partly across said bottom panel, said first strut having a hinged flap adhered to said bottom panel, and

b. a second strut hinged to said top panel and extending transversely between said side panels to said bottom panel, said second strut having a hinged flange extending parallel thereto and across the underlying bottom section of said bottom panel, one end of which flange lockingly engages said notch in said edge of said upper and overlapping bottom section, which edge is parallel to said side panels, and the opposite end of said flange abuts a side panel, to lock said tray into its erected position.

* * * * *