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Gibson et al.

[11] **3,820,706**

[45] **June 28, 1974**

[54] **FIBERBOARD CONTAINER**

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[73] Assignee: **Georgia-Pacific Corporation,** Portland, Oreg.

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[52] **U.S. Cl.**..... **229/34 R,** 220/97 R, 229/31 FS, 229/DIG. 11

[51] **Int. Cl.**..... **B65d 5/22,** B65d 21/02

[58] **Field of Search** ..... 229/34 R, 31 FS, DIG. 11; 220/97 R

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Assistant Examiner—Bruce H. Bernstein
Attorney, Agent, or Firm—Schuyler, Birch, Swindler, McKie & Beckett

[57] **ABSTRACT**

A fiberboard shipping container assembled from a single cut and scored fiberboard blank for containing goods, such as produce. The container includes end walls formed by multiple fiberboard thickness and having stacking tabs projecting upwardly from the upper edges thereof and notches in the lower edges thereof for receiving the stacking tabs of a subjacent container to facilitate stacking of the containers. The container also includes cover flaps which may extend less than all the way across the top of the container to permit cooling air to circulate about the contents of the container.

10 Claims, 6 Drawing Figures

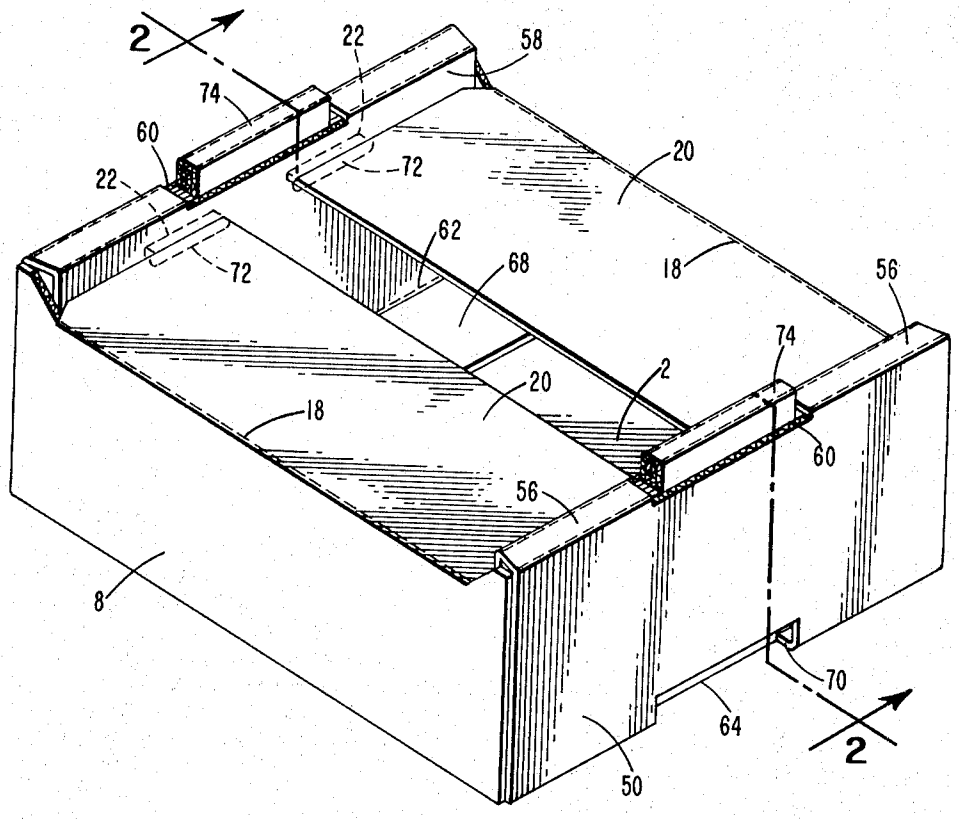
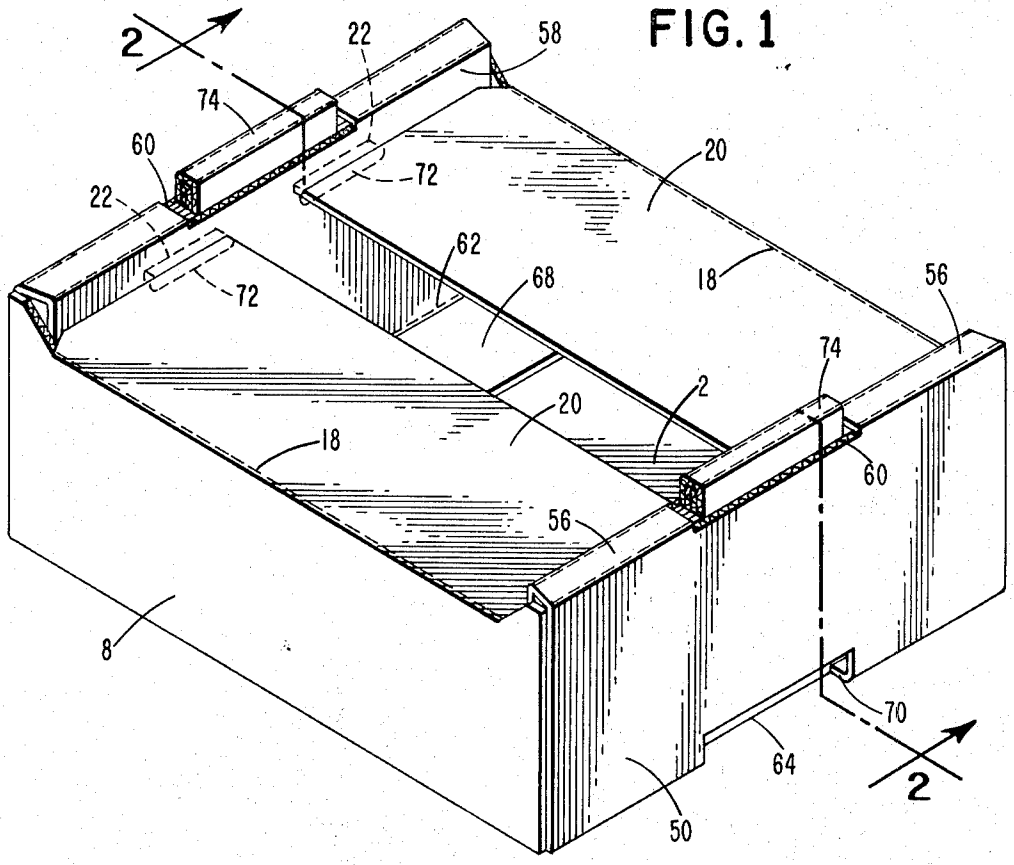


FIG. 1


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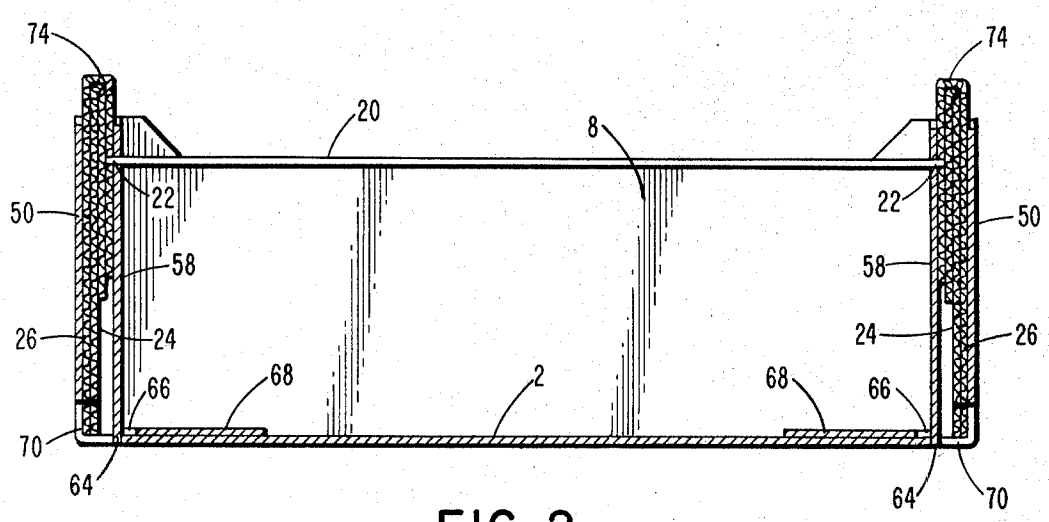

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FIG. 2

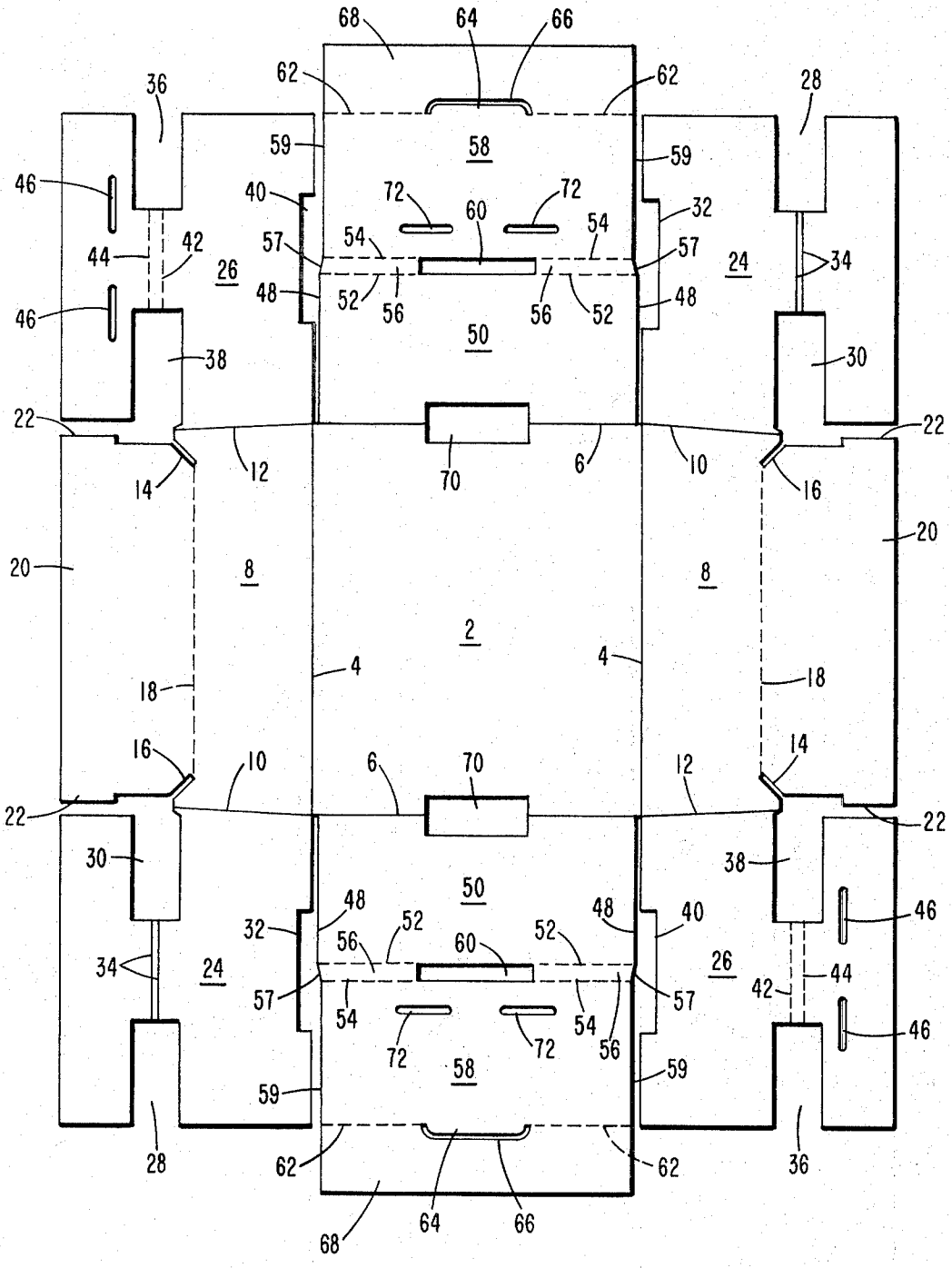

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FIG. 3

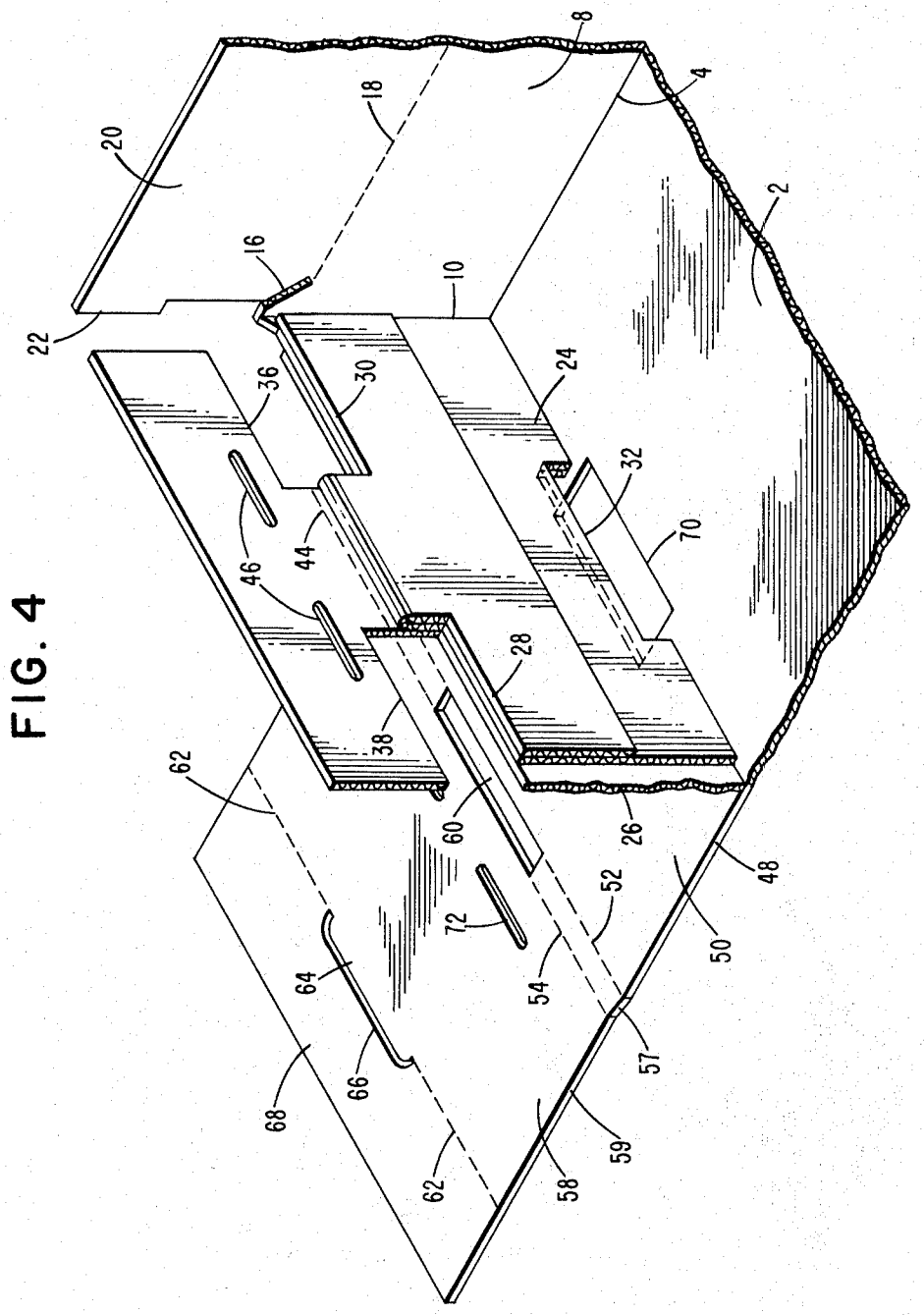

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FIG. 4

FIG. 5

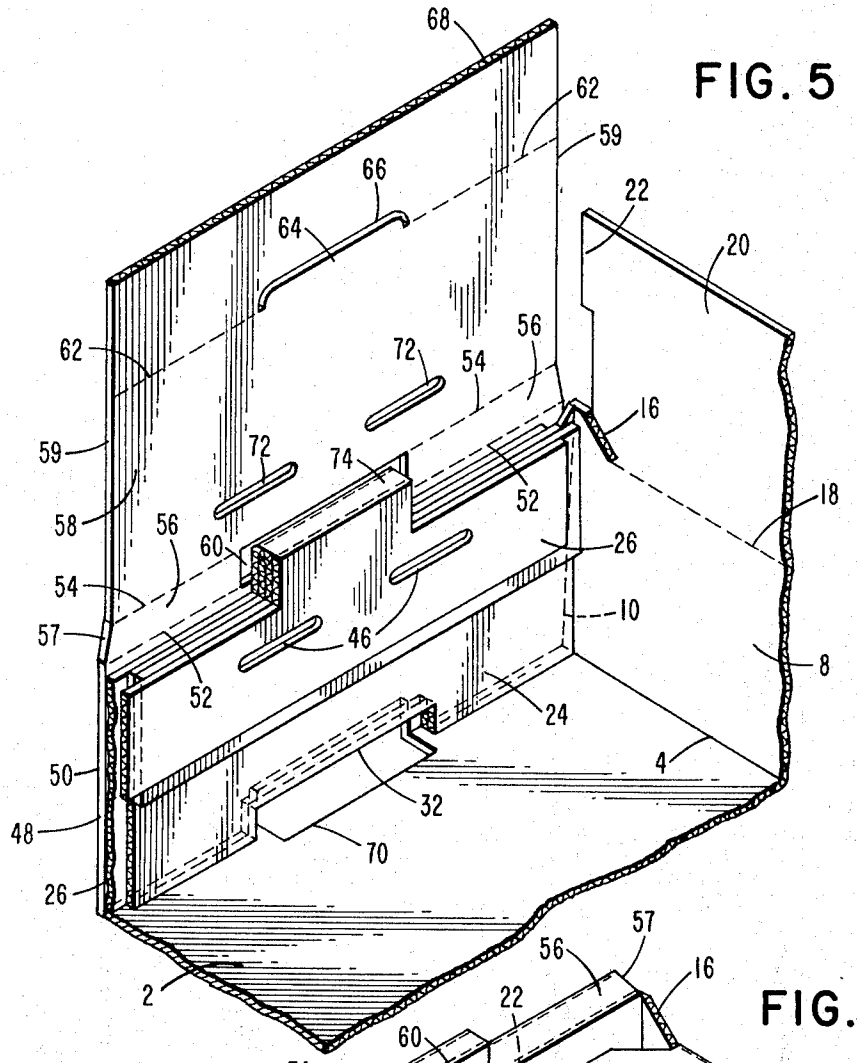
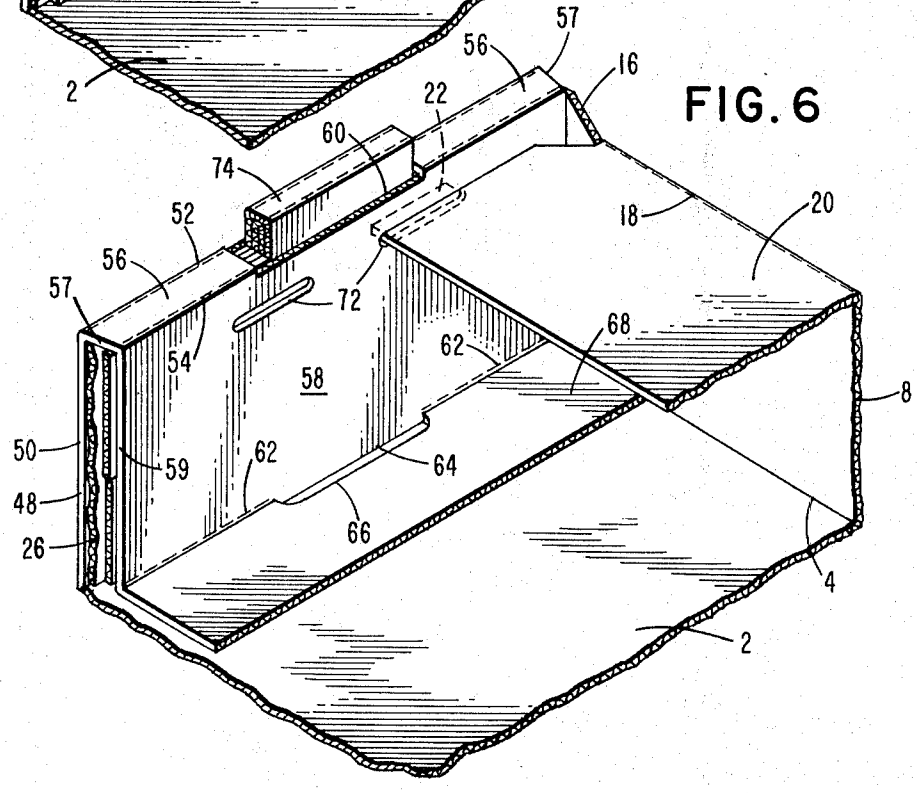

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FIG. 6


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FIBERBOARD CONTAINER

BACKGROUND OF THE INVENTION

This invention relates to containers, and more particularly to containers made of fiberboard or similar material and which are adapted for vertical stacking.

The prior art containers have employed various means to provide stable verticle stacking of loaded containers. Such means generally have included stacking tabs formed of one or more thicknesses of fiberboard and projecting upwardly and downwardly from the container end walls, or have included additional stacking appliances, such as wire stacking guides. These means for providing stacking have suffered several drawbacks. The peripheries of the prior art stacking tabs generally are formed by cut edges of fiberboard, solid or corrugated, and thus are susceptible to rapid deterioration by breakage or fraying. Also, the design of the prior art stacking tabs frequently has required that the fiberboard blanks from which the containers were assembled depart substantially from the desired economical rectangular shape. Additional stacking appliances, such as wire stacking guides, require that additional elements not integral with the container be provided.

Several of the prior art containers also include means to permit the circulation of cooling air about the contents of the containers. Such means generally have comprised a plurality of openings in the containers walls. These openings have the disadvantage of substantially weakening the container walls, and therefore, of imparing the capability of the containers to withstand vertical stacking loads.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an improved container which may be assembled from a generally rectangular cut and scored blank of fiberboard or similar material without any additional elements.

It is another object of the invention to provide a container of the character stated having end walls formed of multiple thicknesses of material to provide high stacking strength.

It is a further object of the invention to provide a container of the character stated having stacking tabs formed of multiple thicknesses of material which extend above the top edges of the end walls and which are adapted to be received in notches in the bottom edges of the end walls of a superjacent container, whereby a plurality of containers may be vertically stacked in interlocked relationship.

It is an additional object of the invention to provide a container of the character stated which includes cover flaps which, when closed are spaced below the top edges of the container end walls and which may extend less than half way across the container top to provide space for cooling air to circulate about the contents of each of several vertically stacked containers.

A still further object of the invention is to provide a container of the character stated which can be shipped and stored in a flat, knocked-down form and then simply and quickly erected when needed, without special tools, thus conserving shipping and storage space prior to actual use of the container.

Basically, the fiberboard container of the invention comprises; a generally horizontal bottom panel having two longitudinal edges and two lateral edges; two generally vertical side panels each having two generally vertical edges, an upper longitudinal edge and a lower longitudinal edge, the lower longitudinal edges of said side panels being articulated to the respective longitudinal edges of said bottom panel; four generally vertical extension flaps each having two generally vertical edges and two lateral edges, a portion of one of the generally vertical edges of said extension flaps being articulated to the respective generally vertical edges of said side panels, with two of said extension flaps being positioned in overlapping relationship at one end of the container and two of said extension flaps being positioned in overlapping relationship at the other end of the container, each of said extension flaps having a pair of opposed cutouts therein extending inwardly from the lateral edges thereof and further having a portion thereof folded downwardly about at least one score line thereon spaced medially of said cutouts to form a stacking tab at each container end, each of said stacking tabs thereby comprising four thicknesses of fiberboard; two generally vertical outer end panels each having two generally vertical edges, an upper lateral edge and a lower lateral edge, the lower lateral edges of said outer end panels being articulated to the respective lateral edges of said bottom panel, each of said outer end panels and the adjacent portion of said bottom panel having an opening therein bridging the respective articulated edges of said outer end and bottom panels; two generally horizontal connecting panels each having two longitudinal edges, an outer lateral edge and an inner lateral edge, the outer lateral edges of said connecting panels being articulated to the respective upper lateral edges of said outer end panels, each of said connecting panels having a slot therein, said stacking tabs extending upwardly through the respective slots above said connecting panels, said openings being positioned to receive the stacking tabs of a subjacent container to thereby facilitate stacking of the containers; and two generally vertical inner end panels each having two generally vertical edges, an upper lateral edge and a lower lateral edge, the upper lateral edges of said inner end panels being articulated to the respective inner lateral edges of said connecting panels, the lower lateral edges of said inner end panels abutting said bottom panel.

BRIEF DESCRIPTION OF THE DRAWINGS

The container of the invention having been generally described, a preferred embodiment thereof will be described in detail with reference to the following drawings in which:

FIG. 1 is a perspective view of the container of the invention;

FIG. 2 is a sectional view taken on line 2—2 of FIG. 1;

FIG. 3 is a plan view of the cut and scored fiberboard blank from which the container of FIG. 1 is assembled;

FIG. 4 is a fragmentary perspective view of the container of FIG. 1 in a partially assembled condition;

FIG. 5 is a fragmentary perspective view of the container of FIG. 1 at a later stage of assembly than shown in FIG. 4; and

FIG. 5 is a fragmentary perspective view of the container of FIG. 1 at a later stage of assembly than shown in FIG. 5.

DESCRIPTION OF A PREFERRED EMBODIMENT

A generally rectangular cut and scored fiberboard blank from which the container of the invention may be assembled is shown in FIG. 3. The sections of the blank are described hereinbelow in relation to the container as assembled. Therefore, terms such as longitudinal, lateral and vertical are used to indicate relative directions, and terms such as inner, outer, upper and lower are used to indicate relative positions, all with respect to the container as assembled. Such terms as used in the specification and claims are intended to facilitate an understanding of the structure of the container of the invention, but are relative only, and are not intended to limit the scope of the invention since it is obvious that the container of the invention and the blank from which such container is assembled can be positioned in various different positions.

Referring to the blank shown in FIG. 3, a generally rectangular bottom panel 2 is defined by score lines 4, delineating two opposed longitudinal edges thereof, and score lines 6, delineating two opposed lateral edges thereof. Two side panels 8 each is defined by score lines 10 and 12, delineating two opposed generally vertical edges thereof, one of score lines 4, delineating the lower longitudinal edge thereof, and a perforated score line 18 and cuts 14 and 16, delineating the upper longitudinal edge thereof. Side panels 8 are articulated to bottom panel 2 along score lines 4.

Two cover flaps 20 each is cut free on the inner longitudinal and two opposed lateral edges thereof, and is articulated to one of said panels 8 along one of score lines 18 which delineates the outer longitudinal edge thereof. Each cover flap 20 also includes two locking tabs 22 extending outwardly from the respective lateral edges thereof. The function of tabs 22 is described hereinbelow.

Two extension flaps 24 and two extension flaps 26 each is cut free along one generally vertical and the upper and lower lateral edges thereof. Each of flaps 24 also is cut free along a portion of the other generally vertical edge thereof, and is articulated to one of side panels 8 along one of score lines 10 which delineates the remaining portion of such other generally vertical edge. Similarly, each of flaps 26 also is cut free along a portion of the other generally vertical edge thereof, and is articulated to one of side panels 8 along one of score lines 12 which delineates the remaining portion of such other generally vertical edge. Each of flaps 24 has two opposed cutouts 28 and 30 therein extending inwardly from the respective lateral edges thereof, a lower cutout 32 therein, and two parallel score lines 34 thereon extending between and spaced medially of cutouts 28 and 30. The functions of cutouts 28, 30 and 32, and score lines 34 are described hereinbelow. Similarly, each of flaps 26 has two opposed cutouts 36 and 38 therein extending inwardly from the respective lateral edges thereof, a lower cutout 40 therein, two parallel perforated score lines 42 and 44 thereon extending between and spaced medially of cutouts 36 and 38, and two horizontally aligned slots 46 therein. The functions of cutouts 36, 38 and 40, score lines 42 and 44, and slots 46 are described hereinbelow.

Two outer end panels 50 each is cut free along two opposed generally vertical edges 48 thereof, and is articulated to bottom panel 2 along one of score lines 6 which delineates the lower lateral edge thereof. The upper lateral edges of panels 50 are delineated by perforated score lines 52.

Two narrow connecting panels 56 each is cut free along two opposed longitudinal edges 57 thereof, and is articulated to one of outer end panels 50 along one of score lines 52 which delineates the outer lateral edge thereof. The inner lateral edges of panels 56 are delineated by perforated score lines 54. Also, each of panels 56 has a slot 60 therein positioned medially of longitudinal edges 57. The function of slots 60 is described hereinbelow.

Two inner end panels 58 each is cut free along two opposed generally vertical edges 59 thereof, and is articulated to one of connecting panels 56 along one of score lines 54 which delineates the upper lateral edge thereof. The lower lateral edges of panels 58 are delineated by perforated score lines 62.

Two lower end flaps 68 each is cut free along the inner lateral and two opposed longitudinal edges thereof, and is articulated to one of inner end flaps 58 along one of score lines 62 which delineates the outer lateral edge thereof.

Two retaining tabs 64 are formed by U-shaped cuts 66 extending inwardly of panels 68 from score lines 62. Tabs 64 are positioned medially of the vertical edges of inner end panels 58 and extend downwardly beyond the lower lateral edges of such panels. Also, two openings 70 are cut in bottom panel 2 and outer end panels 50, bridging score lines 6, and positioned medially of the longitudinal edges of panel 2 and the vertical edges of panels 50. Further, each of inner end panels 58 has two horizontally aligned slots 72 therein. The functions of tabs 64, openings 70 and slots 72 are described hereinbelow.

The principal steps for assembling the container of the invention from the blank shown in FIG. 3, are shown in FIGS. 4–6. Only one end of the container is shown in FIGS. 4–6; the opposite end being assembled generally concurrently and in substantially identical manner.

Initially, the blank is positioned in a generally horizontal position. Side panels 8 are then folded upwardly about score lines 4 into a generally vertical position. Extension flaps 24 are then folded inwardly along generally vertical score lines 10 to a position adjacent and parallel to score lines 6. The upper portions of extension flaps 24 are then folded inwardly and downwardly about double score lines 34 so that such portions partially overlap the lower portions of flaps 24. Extension flaps 26 are then folded inwardly about score lines 12 into overlapping relationship with flaps 24, as shown in FIG. 4. The upper portions of flaps 26 are then folded inwardly and downwardly about perforated score lines 42 and 44 so that such portions overlap the folded-over upper portions of flaps 24, as shown in FIG. 5.

Cutouts 28, 30, 36 and 38 are positioned and dimensioned such that when the upper portions of extension flaps 24 and 26 are folded inwardly and downwardly about respective score lines 34, 42 and 44, the portions of the flaps between the cutouts form upwardly projecting stacking tabs 74.

Next, outer end panels 50 are folded upwardly about score lines 6 into overlapping relationship with exten-

sion flaps **26**, as shown in FIG. **5**. Connecting panels **56** are then folded inwardly about score lines **52** so that the connecting panels cover the lateral edges of cutouts **28**, **30**, **36** and **38**, and tabs **74** extend upwardly through slots **60**. Inner end panels **58** are then folded inwardly and downwardly about score lines **54** into overlapping relationship with the folded-over upper portions of extension flaps **26**. When end panels **58** are folded inwardly and downwardly, end flaps **68** are folded inwardly and upwardly about score lines **62** into overlapping relationship with bottom panel **2**, thus exposing tabs **64**. Tabs **64** are inserted into the portions of openings **70** in bottom panel **2** and engage the inner edges thereof to thus secure end panels **50** and **58** in assembled position, as shown in FIGS. **2** and **6**. When tabs **64** are inserted into openings **70**, slots **72** in inner end panels **58** are aligned with slots **46** in extension flaps **26**, and cut-outs **32** and **40** in extension flaps **24** and **26**, respectively, are aligned with the portions of openings **70** in outer end panels **50**.

When the container has been filled with produce or other goods to be transported, cover flaps **20** are folded inwardly about score lines **18** and locking tabs **22** snapped into aligned slots **46** and **72**. As shown in FIG. **1**, each of flaps **20** is dimensioned to extend less than halfway across the top of the container, thus providing an open space between the inner longitudinal edges of the flaps to permit cooling air to circulate about the contents of the container. If desired, each of flaps **20** may extend halfway or a greater distance across the top of the container to discourage pilferring of the contents of the container. In such instance, openings may be provided in cover flaps **20** to permit cooling air to circulate about the contents of the container. Also, score lines **18** about which cover flaps **20** are folded are positioned below the level of connecting panels **56** which form the upper edges of the end walls of the container. This vertical displacement between the cover flaps, when closed, and the upper edges of the end walls provides a space above the cover flaps through which cooling air may circulate between vertically stacked containers.

To stack the containers, one container is positioned above another so that the stacking tabs **74** of the subjacent container are received in the notches formed by the openings **70** and cutouts **32** and **40** of the superjacent container. In this manner, the portions of the bottom panel **2** adjacent the lateral edges thereof of the superjacent container engage the connecting panels **56** of the subjacent container. The weight of the stacked containers is thus borne by the container end walls formed by extension flaps **24** and **26** and end panels **50** and **58** comprising four thicknesses of fiberboard extending the full width and depth of such walls.

Several advantages of the container of the invention are apparent from FIG. **2**. The overfolded structure of stacking tabs **74** results in such tabs comprising four thicknesses of fiberboard and having smooth outer surfaces. The structure of the tabs thus provides not only strength but also reduces fraying of the tab edges during usage.

Further, the lower end flaps **68** stabilize the container and distribute a portion of the weight borne by the end walls across bottom panel **2**. Also, the lateral edges of cover flaps **20**, when closed, bear against the inner surfaces of the container end walls, thus providing not only a tight closure but also additional stability. In addition to these structural advantages, the container is fabricated from a generally rectangular fiberboard blank with, accordingly, very little material waste.

It is to be understood that the preferred embodiment described herein is illustrative only, and that modifications thereof are considered to be within the scope of the invention as defined by the appended claims.

We claim:

1. A fiberboard container comprising:

a generally horizontal bottom panel having two longitudinal edges and two lateral edges;

two generally vertical side panels each having two generally vertical edges, an upper longitudinal edge and a lower longitudinal edge, the lower longitudinal edges of said side panels being articulated to the respective longitudinal edges of said bottom panel;

four generally vertical extension flaps each having two generally vertical edges and two lateral edges, a portion of one of the generally vertical edges of said extension flaps being articulated to the respective generally vertical edges of said side panels, with two of said extension flaps being positioned in overlapping relationship at one end of the container and two of said extension flaps being positioned in overlapping relationship at the outer end of the container, each of said extension flaps having a pair of opposed cutouts therein extending inwardly from the lateral edges thereof and further having a portion thereof folded downwardly along at least one score line thereon spaced medially of said cutouts to form a stacking tab at each container end, each of said stacking tabs thereby comprising four thicknesses of fiberboard;

Two generally vertical outer end panels each having two generally vertical edges, an upper lateral edge and a lower lateral edge, the lower lateral edges of said outer end panels being articulated to the respective lateral edges of said bottom panel, each of said outer end panels and the adjacent portion of said bottom panel having an opening therein bridging the respective articulated edges of said outer end and bottom panels;

two generally horizontal connecting panels each having two longitudinal edges, an outer lateral edge and an inner lateral edge, the outer lateral edges of said connecting panels being articulated to the respective upper lateral edges of said outer end panels, each of said connecting panels having a slot therein, said stacking tabs extending upwardly through the respective slots above said connecting panels, said openings being positioned to receive the stacking tabs of a subjacent container to thereby facilitate stacking of the containers; and

two generally vertical inner end panels each having two generally vertical edges, an upper lateral edge and a lower lateral edge, the upper lateral edges of said inner end panels being articulated to the respective inner lateral edges of said connecting panels, the lower lateral edges of said inner panels abutting said bottom panel.

2. A one-piece, cut and scored fiberboard blank for making the container recited in claim **1**.

3. A container as recited in claim **1**, wherein said extension flaps extend vertically from said bottom panel to said connecting panels and extend laterally from one of said side panels to the other of said side panels, whereby said extension flaps, said outer end panels and

said inner end panels form end walls comprising four thicknesses of fiberboard.

4. A container as recited in claim **1,** wherein the portions of said extension flaps adjacent the lower lateral edges thereof have lower cutouts therein corresponding size and position to the portions of said openings in said outer end panels, whereby said openings and said lower cutouts form notches for receiving the stacking tabs of a subjacent container.

5. A container as recited in claim **1,** further comprising two generally horizontal lower end flaps each having two longitudinal edges, an outer lateral edge and an inner lateral edge, the outer lateral edges of said end flaps being articulated to the respective lower lateral edges of said inner end panels, said end flaps overlapping said bottom panel.

6. A container as recited in claim **1,** wherein each of said inner end panels includes a retaining tab disposed medially of the vertical edges thereof and projecting downwardly beyond the lower lateral edge thereof, said retaining tabs engaging the portions of said respective openings in said bottom panel to secure said outer and inner end panels in assembled position.

7. A container as recited in claim **1,** further comprising two cover flaps each having two lateral edges, an outer longitudinal edge and an inner longitudinal edge, the outer longitudinal edges of said cover flaps being articulated to the respective upper longitudinal edges of said side panels.

8. A container as recited in claim **7,** wherein each of said cover flaps, when closed, extends laterally less than halfway across the top of the container.

9. A container as recited in claim **7,** wherein said cover flaps, when closed, are positioned below said connecting panels.

10. A container as recited in claim **7;** wherein each of said cover flaps includes two locking tabs extending outwardly from the respective lateral edges thereof; and wherein each of said inner end panels has two slots therein respectively engageable by one of said locking tabs on each of said cover flaps to secure said cover flaps in closed position.

* * * * *