Sept. 28, 1948. S. B. DE MIAN 2,450,035

BOX

Filed Nov. 23, 1945

2 Sheets-Sheet 1

Fig. 1

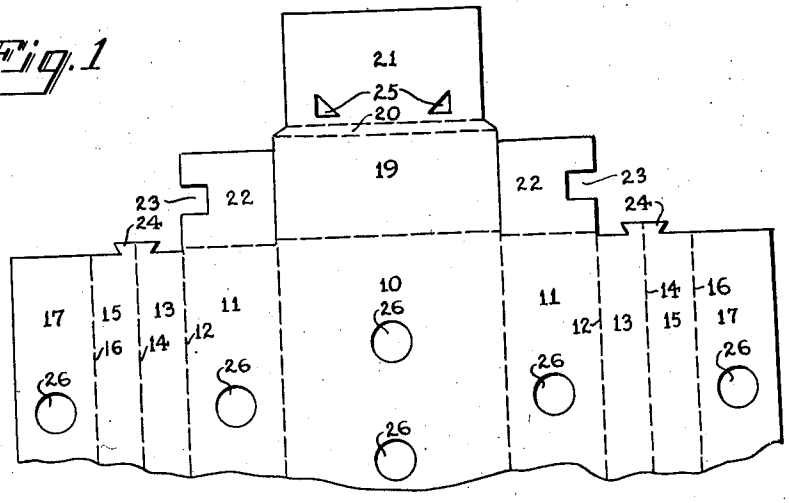
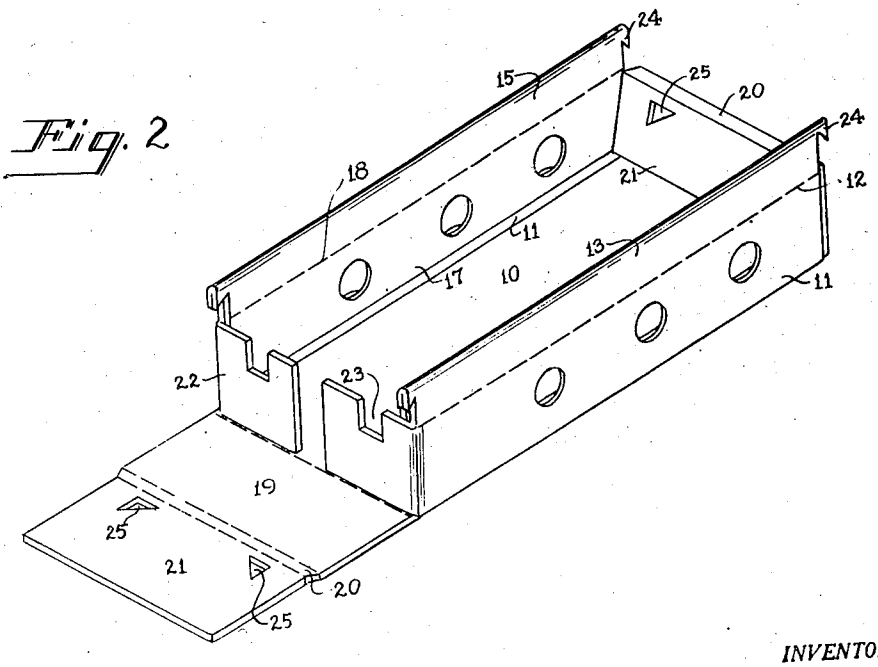


Fig. 2



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Fig. 3

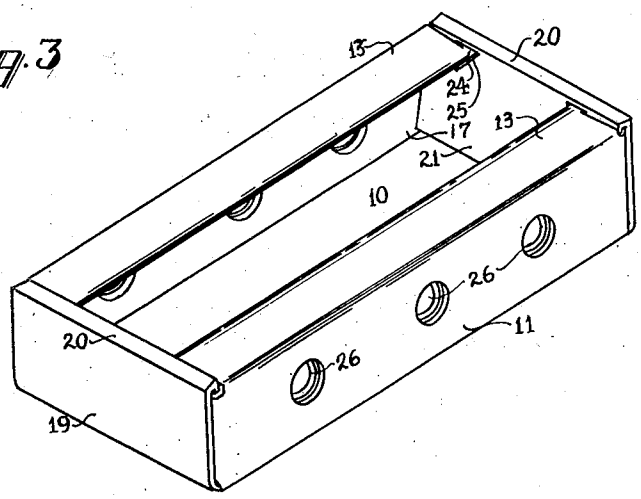
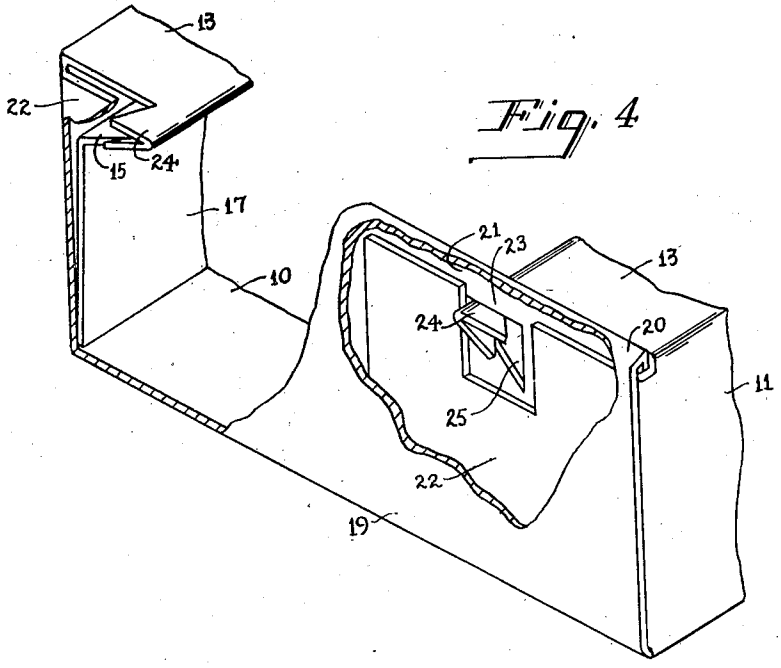


Fig. 4



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2,450,035

UNITED STATES PATENT OFFICE

2,450,035

BOX

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5 Claims. (Cl. 229—34)

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This invention relates to new and useful improvements in containers and particularly seeks to provide a novel fabricated box especially useful in the consumer packaging of apples, oranges or similar fruits.

An object of this invention is to provide a novel fruit carton fabricated from a single blank of a fibrous material such as paperboard, fibreboard, corrugated board or the like.

Another object of this invention is to provide a box of the character indicated which in its assembled form is self-locking to provide a rigid, unitary structure capable of being stacked in multiples when packed without damage to the contents.

Another object of this invention is to provide a box of the character indicated which includes integral but depending interior wall portions which cooperate to securely hold the contents of a packed box in position without necessitating the use of a lid whereby the box is always open for visual inspection of the contents thereof.

A further object of this invention is to provide a box of the character stated which is adapted to be shipped to a packing house in flat or knocked down form and then to be readily assembled as the need arises in accordance with packing conditions, thereby saving valuable shipping space when such boxes are not actually employed in the transportation of consumer goods.

A further object of this invention is to provide a box of the character stated which is rugged in construction, simple in design and economical to manufacture.

With these and other objects in view, the nature of which will become more apparent, the invention will be more fully understood by reference to the drawings, the accompanying detailed description and the appended claims.

In the drawings:

Fig. 1 is a plan view of one end of a symmetrical blank from which a box constructed in accordance with this invention is formed;

Fig. 2 is a perspective view of one end of the box during assembly thereof;

Fig. 3 is an enlarged detail view showing the engagement of a locking ear with an inner end wall of the box;

Fig. 4 is a perspective view of one end of the assembled box, portions thereof being broken away in order more clearly to disclose the relationship between the various elements.

Referring to the drawings in detail, the invention as illustrated is formed from a blank A of corrugated board or the like cut and scored to

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include a bottom panel 10, side panels 11, top flange panels 13 adjoining the side panels 11, panels 15 adjoining the panels 13 and adapted to form in the assembled box upper portions of inner walls and panels 17 adjoining the panels 15 and adapted to form the lower portions of such inner walls. The ends of the bottom 10 are provided with outer end wall flaps 19 and end wall top edge panels 20 adjoining the flaps 19, as well as slightly narrower inner end wall flaps 21. The ends of each side panel 11 are provided with locking flaps 22 slotted as at 23 to define corner tab sections. Adjacent portions of each end of each pair of panels 13 and 15 together are provided with symmetrically shaped tabs 24 having outwardly divergent edges which form locking ears in the assembled box. The inner end wall flaps 21 are each provided with a pair of triangularly shaped apertures 25 adapted to receive the locking ears 24. The bottom 10 together with side walls 11 and 17 may be provided with the usual ventilation holes 26.

In the assembly of a box constructed in accordance with this invention the side walls 11 are first folded to a vertical position, after which the top flange panels 13 are folded inwardly at substantially right angles thereto. The panels 15 are then folded back under the flange panels 13 at an angle relative thereto and the dependent wall panels 17 are bent downwardly therefrom to form angularly positioned inner walls, the lower edges of which are normally positioned adjacent the junction between the bottom 10 and the side wall panels 11. The locking flaps 22 at each end of the side walls 11 are bent inwardly at right angles thereto and the corner tabs thereof are bent inwardly and down into close proximity to the adjacent faces of the tabs. Following these steps the end wall panels 19 are bent upwardly and the associated top and inner end wall panels 20 and 21 are bent inwardly towards the center of the structure. In order that the outer and inner end wall panels 19 and 21 may be closely positioned adjacent the outer and inner faces of the associated locking flaps 22 it is necessary to bend the folded side wall structures outwardly a distance sufficient to permit the insertion of the inner end wall flaps 21 under the angularly positioned side wall panels 15. Then the flaps 21 are bent downwardly to a vertical position and at the same time the side wall structures are returned to the initial vertical alignment.

The flaps 21 are locked in their end wall forming position by the overlapping engagement of side edge portions thereof with lower end edge

portions of the associated inner side wall panels 17. When the side wall structures have been returned to the vertical positions it will be noted that the locking ears 24 carried by the side wall structures will be disposed in substantial alignment with the triangularly shaped receiving apertures 25. The final step in the assembly of the box consists of slightly depressing the inner edges of the flanges 13 incident to thereafter inserting the locking ears 24 into the apertures 25 to thereby effect locking of the box into a unitary structure.

It will be noted that in the assembled box the corner tab sections which are bent down into close proximity with the associated locking flaps 22 serve to additionally space the outer and inner wall panels 19 and 21 of each end wall formation. As a result of bending the tab sections in this manner the slots 23 of tabs 22 are extended to form a cut away portion at the top inner corners of the tabs in the assembled box. These cut-away portions embrace the areas occupied by the triangular apertures 25 and thus provide a void between the end wall flaps 19 and 21 for receiving the projecting end portions of the locking ears 24, the inclined edges of which are engaged with the vertical edges of the apertures to block the box into its assembled position.

When the box is assembled in this manner it will be observed that the apertures 25 have edge portions substantially parallel to the plane of the flanges 13 and other edge portions substantially parallel to the plane of the angularly positioned panels 15 when such panels are in the normal position assumed prior to filling of the box. Consequently the angularly positioned side wall panels 15 together with the dependent side wall inner panels 17 are thus free to partake of motion relative to the outer side wall panels 11. Thus when a box constructed in accordance with this invention is filled with fruit such as oranges or apples the inner side wall portions can yield to permit the inclusion of over-sized units of fruit. Also, the natural resiliency of the box material tends to cause these wall portions to return to the normal position assumed prior to filling and thus the walls serve to bind the contents of a filled box in place. It will be observed that the flanges 13 together with associated angularly positioned panels 15 extend inwardly of the bottom of the box and in a filled box serve to retain fruit contained therein without the necessity of employing a separate closure member. Thus the contents of a filled box used for the consumer packaging of fruits is always visible to an observer.

It is, of course, to be understood that various details of arrangements and proportions of parts may be modified within the scope of the appended claims.

I claim:

1. A box formed from a single blank of paperboard or the like, comprising a bottom, side walls, and end walls, all of said walls being folded upwardly from said bottom, each of said side walls including an outer wall panel, a flange connected thereto and extending inwardly from the top thereof, a panel dependent from the inner edge of said flange and folded back under said flange along a score line and at an angle thereto, and an inner wall panel dependent from said angularly positioned panel and extending into proximity to said bottom, said flange and angular panel together being provided with means projecting at each end beyond said outer and inner

wall panels and engageable with said end walls for locking all of said walls in erect position, said end walls being provided with means for receiving said locking means.

2. A box formed from a single blank of paperboard or the like, comprising a bottom, side walls, and double-ply end walls, all of said walls being folded upwardly from said bottom, means for spacing the plies of said end walls, each of said side walls including an outer wall panel, a flange connected thereto and extending inwardly from the top thereof, a panel dependent from the inner edge of said flange and folded back under said flange at an angle thereto, and an inner wall panel dependent from said angularly positioned panel and extending into proximity to said bottom, said flange and angular panel together being provided with means projecting at each end beyond said outer and inner wall panels and engageable with said end walls for locking all of said walls in erect position, said double-ply end wall structures being provided with means for receiving said locking means.

3. A box formed from a single blank of paperboard or the like, comprising a bottom, side walls, and double-ply end walls, all of said walls being folded upwardly from said bottom, means for spacing the plies of said end walls, each of said side walls including an outer wall panel, a flange connected thereto and extending inwardly from the top thereof, a panel dependent from the inner edge of said flange and folded back under said flange at an angle thereto, and an inner wall panel dependent from said angularly positioned panel and extending into proximity to said bottom, said flange and angular panel together being provided with means projecting at each end beyond said outer and inner wall panels and engageable with said end walls for locking all of said walls in erect position, the inner ply of each of said double-ply end walls being provided with means for receiving said locking means.

4. A box formed from a single blank of paperboard or the like, comprising a bottom, side walls, and double-ply end walls, all of said walls being folded upwardly from said bottom, flaps carried by said side walls and insertable between the plies of said end walls to effect spacing thereof, each of said side walls including an outer wall panel, a flange connected thereto and extending inwardly from the top thereof, a panel dependent from the inner edge of said flange and folded back under said flange at an angle thereto and an inner wall panel dependent from said angularly positioned panel and extending into proximity to said bottom, said flange and angular panel together being provided with means projecting at each end beyond said outer and inner wall panels and engageable with said end walls for locking all of said walls in erect position, said locking means being so located as to be engaged with said end walls in areas not occupied by said end wall spacing flaps, the inner ply of each of said double-ply end walls being provided with means for receiving said locking means.

5. A box formed from a single blank of paperboard or the like, comprising a bottom, side walls, and double-ply end walls, all of said walls being folded upwardly from said bottom, means for spacing the plies of said end walls, each of said side walls including an outer wall panel, a flange connected thereto and extending inwardly from the top thereof, a panel dependent from the inner edge of said flange and folded back under said

flange at an angle thereto, and an inner wall panel dependent from said angularly positioned panel and extending into proximity to said bottom, said flange and angular panel together being provided with means projecting at each end beyond said outer and inner wall panels and engageable with said end walls for locking all of said walls in erect position, the inner ply of each of said double-ply end walls being provided with a pair of apertures for receiving said locking means, each aperture having an edge disposed in substantial parallelism with the flange of an associated side wall and an edge disposed in substantial parallelism with the angularly positioned panel whereby upon the receiving of said locking means in said apertures said angularly positioned panels together with their dependent

inner wall panels may be flexed outwardly and upwardly from their normal position in an unfilled box to accommodate contents bulking somewhat greater than the volume of the box normally available for filling.

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