Nov. 22, 1949 K. T. BUTTERY ET AL 2,488,706

COLLAPSIBLE TRAY OR BOX

Filed Sept. 10, 1948 2 Sheets-Sheet 1

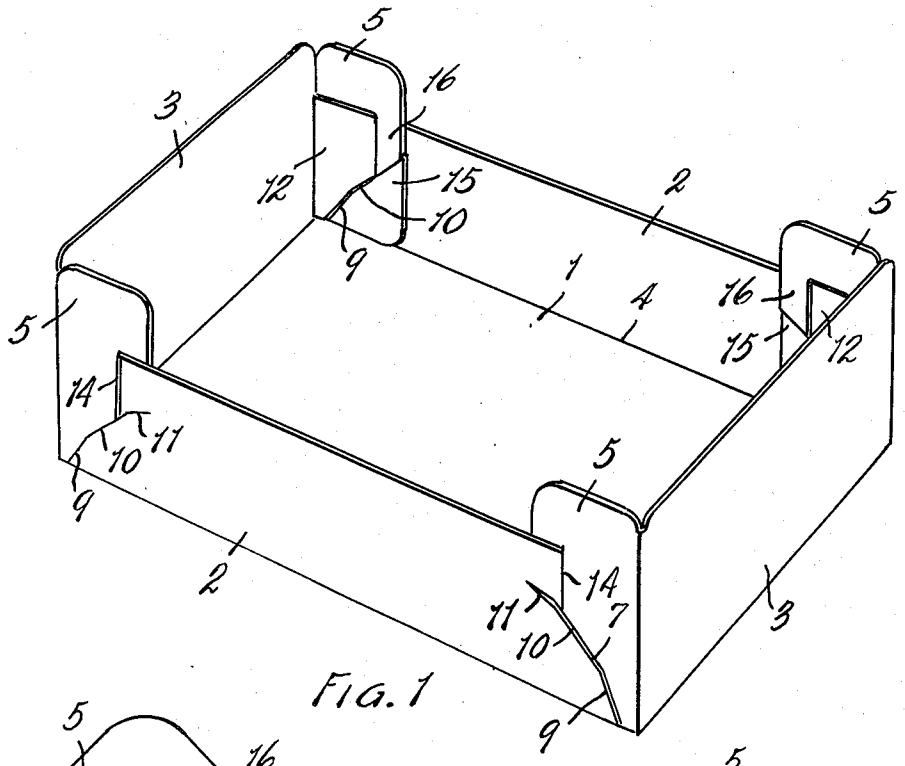


FIG. 1

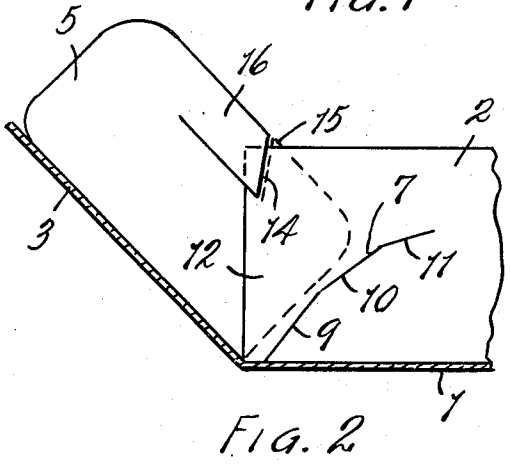


FIG. 2

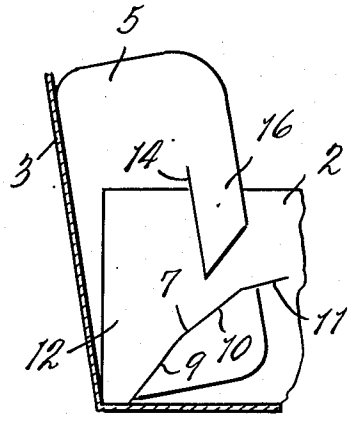


FIG. 3

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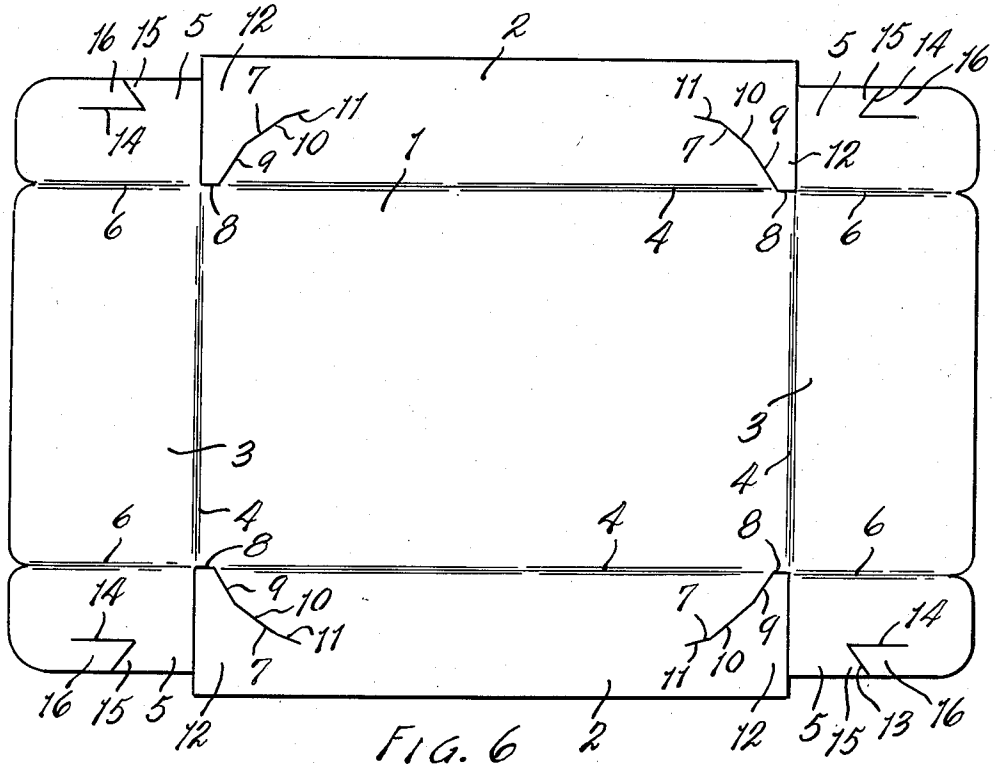


FIG. 6

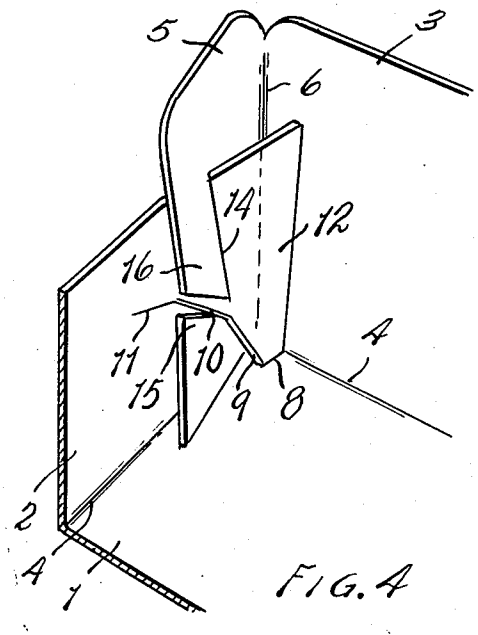


FIG. 4

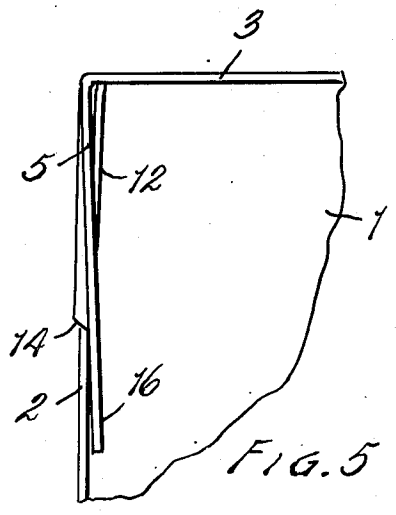


FIG. 5

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UNITED STATES PATENT OFFICE

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COLLAPSIBLE TRAY OR BOX

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Application September 10, 1948, Serial No. 48,667

7 Claims. (Cl. 229—35)

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This invention relates to improvements in a collapsible tray or box.

The main objects of this invention are:

First, to provide a collapsible tray or box formed of an integral blank and one which may be quickly and easily erected and one which when erected the walls are effectively interlocked and supported against bulging and collapsing stresses.

Second, to provide a tray or box formed of an integral blank which may be shipped or transported in the knock-down and quickly set up by hand or by an erecting machine and one which when set up is strong and rigid even when formed of relatively light stock.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is pointed out in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a perspective view of a tray or box embodying our invention fully erected.

Fig. 2 is an enlarged fragmentary longitudinal section illustrating one of the stages in erecting the tray or box.

Fig. 3 is a similar view showing a succeeding stage.

Fig. 4 is an enlarged fragmentary interior view of one corner of the tray or box.

Fig. 5 is an enlarged fragmentary plan view.

Fig. 6 is a plan view of the blank.

The collapsible tray, box or carton of our invention is an adaptation of and in some respects an improvement upon the collapsible tray or box illustrated in the Buttery application for Patent No. 638,165, filed December 29, 1945.

Our improved collapsible tray, box or carton is formed of an integral blank, that shown in Fig. 6 being the blank from which the structure shown in Fig. 1 is formed. The structure comprises a bottom 1, side walls 2—2 and walls 3—3 hingedly connected to the bottom along the score lines, conventionally shown at 4 in Fig. 6. The end walls are provided with corner flaps 5 hingedly connected to the ends thereof as by scoring at 6.

In the embodiment illustrated the end walls and their flaps are substantially wider than the side walls, one purpose being to provide a tray or carton having sides of reduced width to more effectively display the contents when a transparent wrapper is arranged about the tray or box after the contents have been inserted therein. The bottom edges of the corner flaps are in substantial alignment with the hinging score 4 connecting the walls to the bottom. The end edges of the side walls are also substantially aligned with the scores 4.

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The side walls have diagonal slits, designated generally by the numeral 7, connected by the horizontal slits 8 to open at the end edges of the side walls, the slits 8 being aligned with the scores 4 connecting the side walls to the bottom. The slits 7 illustrated have inner diagonal portions 9, intermediate diagonal portions 10 disposed angularly relative to the inner portions 9, and outer portions 11 disposed angularly relative to the inner portions 9, and outer portions 11 disposed angularly relative to the intermediate portions 10. This facilitates the entrance of the bottom edges of the corner flaps into the slits with a general camming movement or engagement of the bottom edges of the corner flaps with the lower edges of the slits 7. The portions of the side walls at the outer sides of the slits 7 form deflectable parts 12.

The corner flaps have outwardly inclined slits 13 opening to their side edges and slits 14 extending vertically from the inner ends of the slits 13. This provides the corner flaps with upwardly projecting relatively short tongues 15 engageable with the upper edges of the slits 7 when the tray is erected and downwardly directed elongated tongues 16 engageable over the upper edges of the side walls to depend within the side walls as is clearly shown in the drawing. When the tray or carton is fully erected the inner or bottom edges of the corner flaps rest on the bottom with the end walls engaging the end edges of the side walls the tongues 15 engage the upper edge of the slits while the tongues 16 engage over the upper edges of the side walls and depend within the side walls. This results in a very effective interlocking of the parts with the tongues 15 interlocking with the outer edges of the side walls slits and the tongue 16 overlapping the inner edges thereof which resists bulging or collapsing movement of the side walls both inwardly and outwardly and relieves the partially severed end portions of some of the stress that it would be otherwise subjected to.

The end walls are supported against collapsing both by the ends of the side walls and by the engagement of the bottom edges of the corner flaps with the bottom. However, the bottom edges of the corner flaps are sometimes relieved somewhat or cut away to facilitate erecting.

We have illustrated and described our tray or box in a highly practical embodiment thereof.

We have not attempted to illustrate or describe the numerous embodiments or adaptations of which our invention is capable as we believe this disclosure will enable those skilled in the art to embody or adapt our invention as may be desired.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A collapsible tray or carton formed of an integral blank comprising bottom, side and end walls hingedly connected thereto and corner flaps hingedly connected to the ends of the end walls and foldable on the outer sides of the side walls when they are in erected position, the side walls having slits opening at their end edges and extending diagonally outward, the slits being adapted to receive the inner edges of the corner flaps when the box is erected, the corner flaps having outwardly inclined slits extending from their side edges, and vertical slits extending vertically from the inner ends of the outwardly inclined slits providing upwardly projecting relatively short tongues engageable with the upper edges of the slits of the side walls and deflectable downwardly projecting relatively long tongues engageable over the side walls to depend on the inner sides thereof in opposition to said outwardly projecting tongues, said interengaging parts coacting to maintain the side and end walls and flaps in upright position.

2. A collapsible carton member formed of an integral blank and comprising a bottom and side and end walls hingedly connected thereto, the corner flaps being hingedly connected to the ends of the side walls and foldable on the outer sides of the side walls when they are in erected position, the side walls having slits opening at their end edges and extending diagonally outward, the slits comprising intermediate portions disposed angularly to the inner portions and outer portions disposed angularly to the intermediate portions, the end walls and corner flaps being of a width substantially exceeding the width of the side walls, the corner flaps having outwardly inclined slits extending from their side edges and vertical slits extending from the inner ends of the diagonal slits providing tongues at the inner sides of the diagonal slits engageable with said slits in the side walls, and deflectable elongated tongues at the outer side of said diagonal slits of said flaps engageable over the upper edges of the side walls whereby the side walls and flaps coact to support each other in upright position.

3. A collapsible carton member formed of an integral blank and comprising a bottom and side and end walls hingedly connected thereto, the corner flaps being hingedly connected to the ends of the side walls and foldable on the outer sides of the side walls when they are in erected position, the side walls having slits opening at their end edges and extending diagonally outward, the end walls and corner flaps being of a width substantially exceeding the width of the side walls, the corner flaps having outwardly inclined slits extending from their side edges and vertical slits extending from the inner ends of the diagonal slits providing tongues at the inner sides of the diagonal slits engageable with said slits in the side walls, and deflectable elongated tongues at the outer side of said diagonal slits of said flaps engageable over the upper edges of the side walls whereby the side walls and flaps coact to support each other in upright position.

4. A collapsible tray or box formed of an integral blank comprising bottom, side and end walls hingedly connected thereto and corner flaps hingedly connected to the ends of the end walls and foldable on the outer sides of the side walls when they are in erected position, the side walls having slits opening at their end edges and adapted to receive the inner edges of the corner flaps when the box is erected, the corner flaps having outwardly inclined slits extending from their side edges and vertical slits extending upwardly from the inner ends of the outwardly inclined slits providing upwardly projecting tongues engageable with the upper edges of the slits of the side walls and deflectable downwardly projecting tongues disposed on the inner sides of the side walls.

5. A collapsible box member formed of an integral blank comprising bottom, side and end walls hingedly connected thereto and corner flaps hingedly connected to the ends of the end walls and foldable on the outer sides of the side walls when they are in erected position, the side walls having slits opening at their end edges and extending diagonally outward, the slits being adapted to receive the inner edges of the corner flaps when the box is erected, the corner flaps having upwardly projecting tongues at their side edges engageable with the upper edges of said slits of said side walls, and downwardly projecting tongues engageable over the edges of the side walls and depending on the inner sides thereof and acting to resist collapsing stresses.

6. A collapsible box member formed of an integral blank comprising bottom, side and end walls hingedly connected thereto, and corner flaps hingedly connected to the ends of the end walls and foldable on the outer sides of the side walls when they are in erected position, the side walls having slits opening at their end edges and extending diagonally outward, the slits being adapted to receive the inner edges of the corner flaps when the box is erected, the corner flaps having upwardly projecting tongues at their side edges engageable with the upper edges of said slits of said side walls, and downwardly projecting tongues engageable over the bottom edges of the side walls and depending on the inner sides thereof.

7. A collapsible tray or box formed of an integral blank comprising bottom, side and end walls hingedly connected thereto and corner flaps hingedly connected to the ends of the end walls and foldable on the outer sides of the side walls when they are in erected position, the side walls having slits opening at their end edges and adapted to receive the inner edges of the corner flaps when the box is erected, the corner flaps having upwardly projecting tongues engageable with the upper edges of the slits of the side walls and downwardly projecting tongues engageable over the edges of the side walls to depend on the inner sides thereof.

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No references cited.