

Nov. 22, 1949

K. T. BUTTERY ET AL

2,488,705

COLLAPSIBLE TRAY OR BOX AND BOX MEMBER

Filed Sept. 10, 1948

2 Sheets-Sheet 2

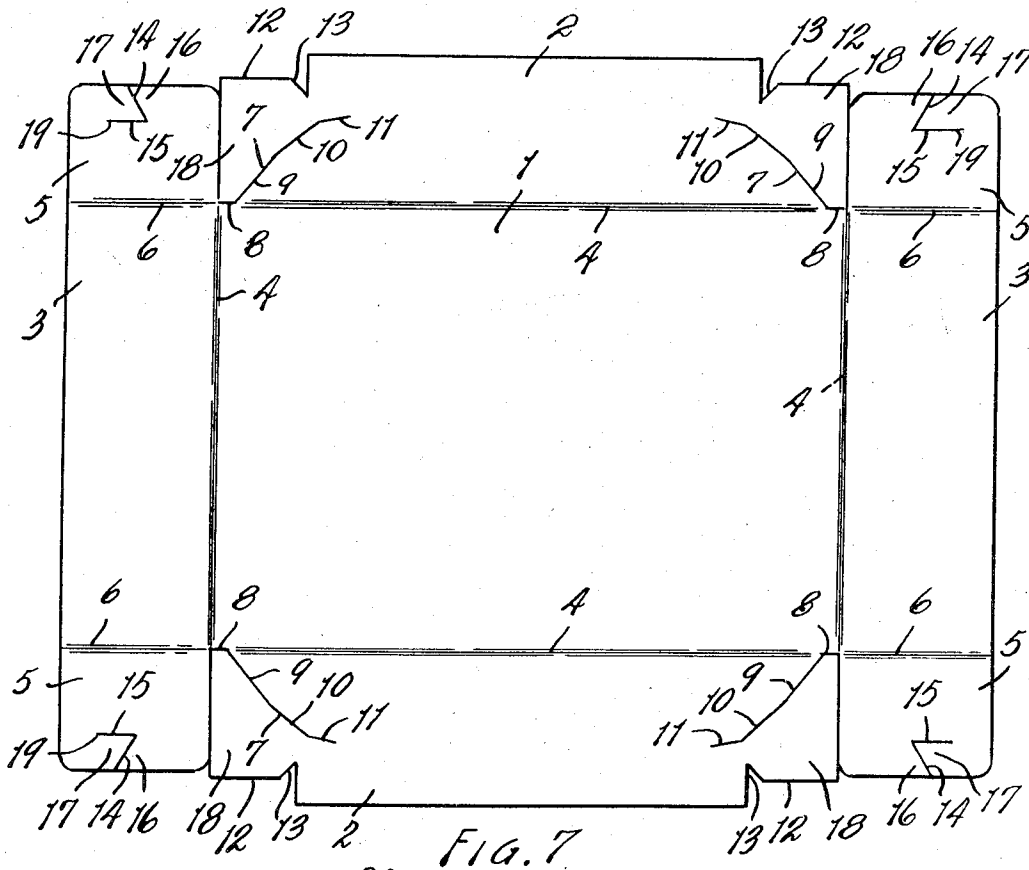


FIG. 7

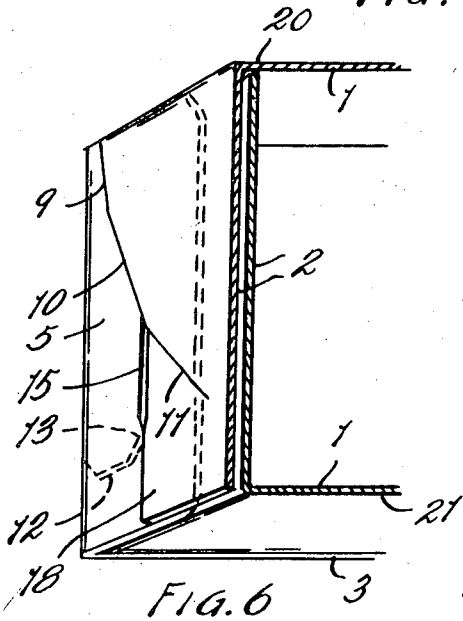


FIG. 6

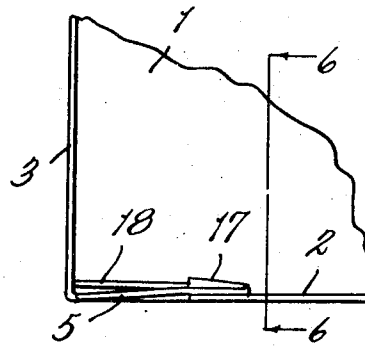


FIG. 5

INVENTORS.
Kenneth T. Buttery
Richard C. Stenger
By *Arthur Earl*
Attorney.

UNITED STATES PATENT OFFICE

2,488,705

COLLAPSIBLE TRAY OR BOX AND
BOX MEMBERKenneth T. Buttery and Richard C. Stenger,
Kalamazoo, Mich., assignors to Sutherland
Paper Company, Kalamazoo, Mich.

Application September 10, 1948, Serial No. 48,666

6 Claims. (Cl. 229—35)

1

This invention relates to improvements in collapsible trays or boxes and box members.

The main objects of this invention are:

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

Second, to provide a tray or box or box member formed of an integral blank which may be shipped or transported in the knockdown and quickly set up manually or by machine and when erected is relatively 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 defined and 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 telescoping type of box or carton embodying our invention.

Fig. 2 is a perspective view of one of the box members in fully erected position.

Fig. 3 is an enlarged perspective view illustrating one of the stages in erecting.

Fig. 4 is a fragmentary side elevational view illustrating a succeeding stage in erecting, parts being shown in dotted lines.

Fig. 5 is an enlarged fragmentary plan view.

Fig. 6 is an enlarged vertical section on a line corresponding to line 6—6 of Fig. 5 of a covered box embodying our invention with the cover in completely telescoped position as distinguished from being partially telescoped as shown in Fig. 1.

Fig. 7 is a plan view of the blank.

Our present invention is an embodiment of and in some respects an improvement on the Buttery application, Serial No. 638,165, filed December 29, 1945.

Our improved collapsible tray or box or box member is formed of an integral blank and comprises a bottom 1, side walls 2—2 and end walls 3—3 which are hingedly connected to the bottom along the scoring lines 4. The end walls are provided with corner flaps 5 hingedly connected to their end edges by the scores 6. The side walls have diagonally disposed slits, designated generally by the numeral 7, which open at the end edges of the side walls, desirably by short horizontal slits 8 at the inner ends of the diagonal portion of the slits, the slits 8 being aligned with

2

the hinging scores connecting the side walls to the bottom.

The slits 7 in the preferred embodiment illustrated comprise inner sections 9, intermediate sections 10 angularly disposed relative to the sections 9, and outer sections 11 angularly disposed relative to the intermediate section 10. The purpose of this is to secure a camming action when the corner flaps are erected at the outer sides of their side walls with the lower or bottom edges extending through the slits and provide effective engagement with interlocking parts when the box is erected.

The side walls have end recesses 12 opening to their outer or top edges and end edges. These recesses terminate at their inner ends in V-shaped notches 13. The corner flaps have outwardly inclined slits 14 therein and vertical slits 15 extending upwardly from the inner ends of the slits 14. This provides upwardly facing tongues 16 and downwardly facing tongues 17.

The slits 7 provide deflectable end portions 18 on the side walls. When the box is erected these are deflected inwardly and the lower edges of the corner flaps pass through the slits to a position on the inner side of the side walls as shown in Fig. 2, with the tongues 16 in interlocking engagement with the upper edges of the slits 7. As the corner flaps are swung to erected position the tongues 17, which are of substantial length, are deflected inwardly to the inner side of the recessed portions of the side walls and when fully erected, the ends 19 of the vertical slits 15 engage in the notches 13.

The position of the parts as they are swung to erected position is illustrated in Figs. 3 and 4, that is, these figures show certain stages of erection. The tongues 16 are relatively short and designed to effectively engage the upper edges of the slits 7 locking the end walls in erected position. Desirably, the bottom edges of the corner flaps in this erected position rest on the bottom as shown in Fig. 2 and end walls abut the ends of the side walls, thereby effectively supporting the end walls against inward collapsing as well as locking them in erected position.

The tongues 17 engage the inner side of the side walls and sustain the side walls against inward collapsing as well as outward bulging in handling and against the stress of the contents. They also serve to interlock the corner flaps with the deflectable portions 18 of the side walls so that those portions are in effect reinforced.

The tongues 17 perform the additional function of constituting a guide when the pair of box

3

members are used to provide a closed telescoping box. One of the box members, designated by the numeral 20 in Fig. 1, then becomes a cover, and the coacting box member, designated by the numeral 21 in Fig. 1, constitutes the body of the box. The box members 20 and 21 are duplicates with the exception that the member 20 is of such dimensions as to telescope over the body member 21.

We have therefore described only one box member or unit. The trays or boxes are very widely used as open boxes or trays, the covering if used commonly being in the form of a transparent wrapper, wrapped around the box or tray after it has been filled.

The supporting of the side and end walls as we have pointed out is of advantage in that it facilitates the wrapping either by machine or by hand, and minimizes bulging of the sides in wrapping and handling.

We have illustrated and described our invention in a highly practical embodiment thereof. We have not attempted to illustrate or describe various embodiments and adaptations which we contemplate as it is believed 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 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 extending diagonally outward, the slits having intermediate portions angularly disposed relative to their inner portions and outer portions angularly disposed relative to their inner portions, the slits being adapted to receive the inner edges of the corner flaps when the box is erected, the side walls having recesses at their ends opening to their top and end edges, the inner edges of the recesses terminating in notches, 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 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 edges of said side wall recesses and depending on the inner sides of the side walls in opposition to said outwardly projecting tongues, the upper ends of said vertical slits being engaged with said notches of said side wall recesses when the structure is fully erected, said interengaging parts coacting to maintain the side and end walls and flaps in upright position.

2. 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 extending diagonally outward, the slits being adapted to receive the inner edges of the corner flaps when the box is erected, the side walls having recesses at their ends opening to their top and end edges, the inner edges of the recesses terminating in notches, the corner flaps having

4

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 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 edges of said side wall recesses and depending on the inner sides of the side walls, said interengaging parts coacting to maintain the side and end walls and flaps in upright position.

3. 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 extending diagonally outward, the slits having intermediate portions angularly disposed relative to their inner portions and outer portions angularly disposed relative to their inner portions, the slits being adapted to receive the inner edges of the corner flaps when the box is erected, the side walls having edge recesses opening at their ends and terminating in notch-like extensions, 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 engageable with the inner sides of the side walls with the upper ends of said vertical slits engaged with said notches of said side wall recesses when the tray is fully erected.

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 extending diagonally outward, the slits having intermediate portions angularly disposed relative to their inner portions and outer portions angularly disposed relative to their inner portions, the slits being adapted to receive the inner edges of the corner flaps when the box is erected, the side walls having edge recesses opening at their ends, 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 engageable with 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 side walls having recesses at their ends opening to their side and end edges, the corner flaps having upwardly projecting tongues at their side edges engageable with the upper edges of said slits of said side walls, and opposed downwardly projecting elongated

5

gated tongues engageable over the bottom edges of said recesses with the downwardly projecting tongues on the inner sides of the side walls to resist collapsing stresses and to provide guides for the sides of telescopically associated box members.

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

5

10

15

6

flaps when the box is erected, the side walls having recesses at their ends opening to their side and end edges, 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 with the bottom edges of said recesses and disposed on the inner sides of the side walls in opposition to said upwardly projecting tongues.

KENNETH T. BUTTERY.
RICHARD C. STENGER.

No references cited.