Nov. 12, 1940. R. A. MAIRSON ET AL 2,220,972

BOX UNIT

Filed March 18, 1939 2 Sheets-Sheet 1

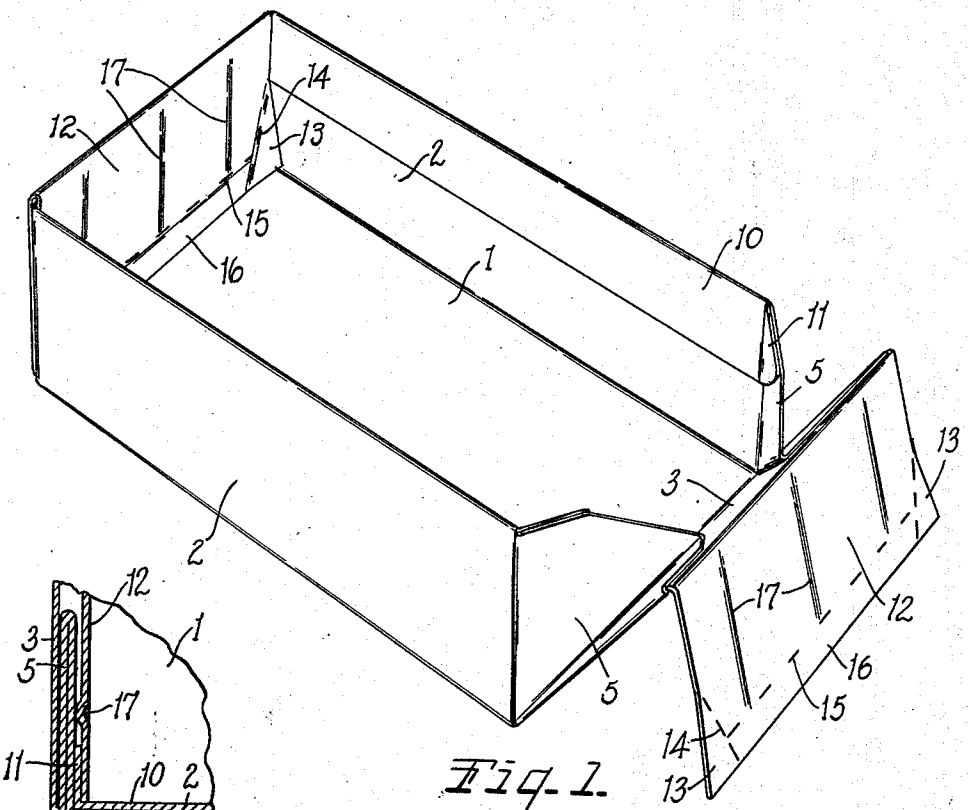


Fig. 1.

Fig. 3.

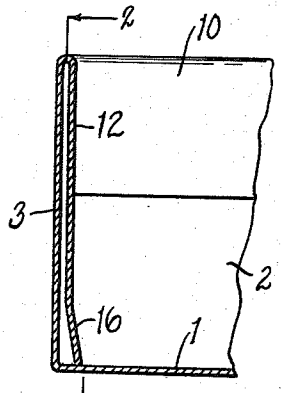


Fig. 4.

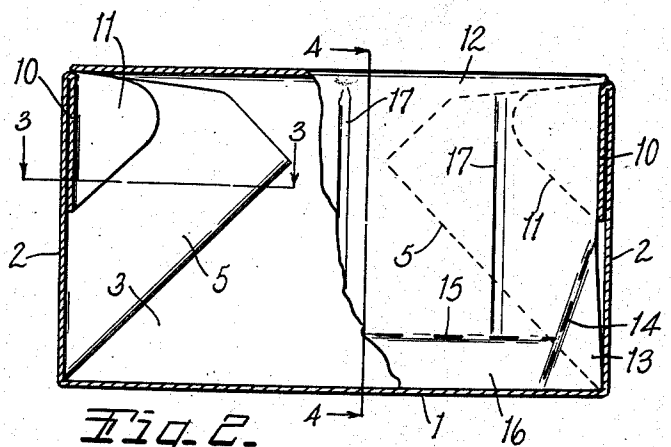


Fig. 2.

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BOX UNIT

Filed March 18, 1939 2 Sheets-Sheet 2

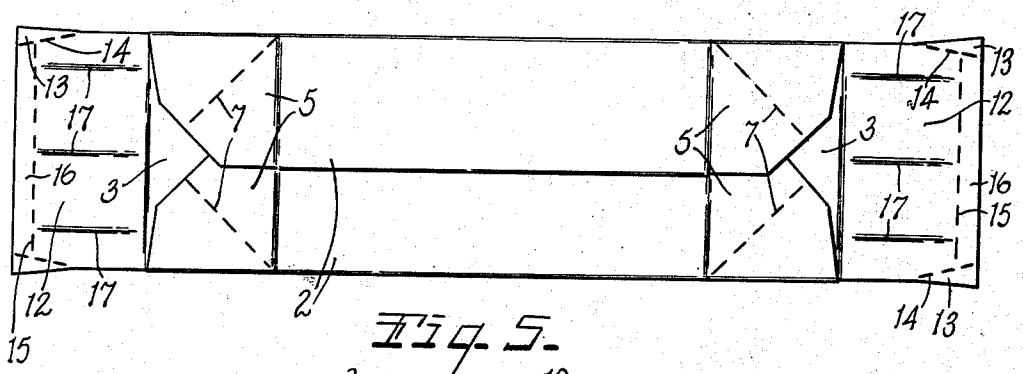


Fig. 5.

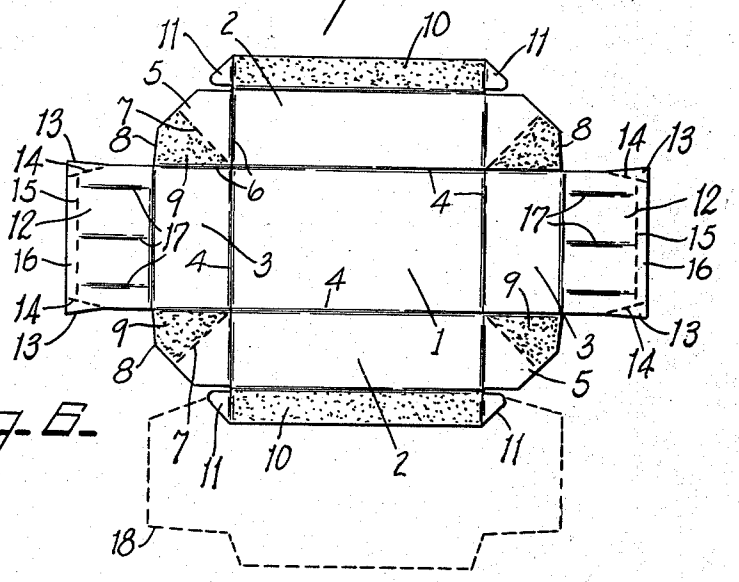


Fig. 6.

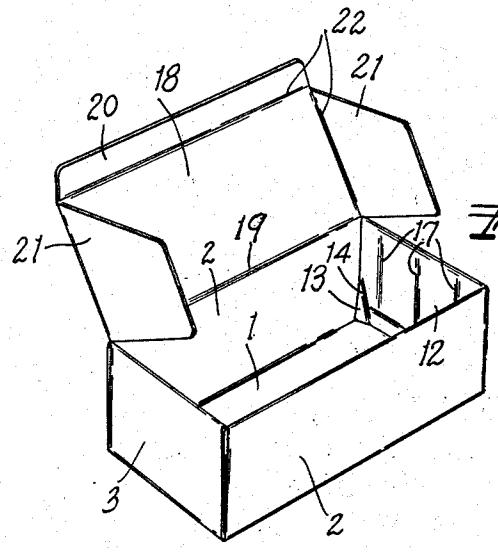


Fig. 7.

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Patented Nov. 12, 1940 2,220,972

UNITED STATES PATENT OFFICE

2,220,972

BOX UNIT

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Application March 18, 1939, Serial No. 262,739

2 Claims. (Cl. 229—34)

This invention relates to improvements in box units.

The main objects of this invention are:

First, to provide an improved box unit—that is, top or cover unit which may be assembled in the knockdown and very quickly set up for use.

Second, to provide a box unit having these advantages which is very rigid when set up even when made of relatively light material.

Third, to provide a box unit which is economical in the matter of material.

Fourth, to provide a box having these advantages and having an integral cover.

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.

Preferred embodiments of the invention are illustrated in the accompanying drawings, in which:

Fig. 1 is a perspective view of a box unit embodying the features of our invention, partially erected.

Fig. 2 is a fragmentary view partially in transverse section on line 2—2 of Fig. 4.

Fig. 3 is an enlarged fragmentary view in horizontal section on line 3—3 of Fig. 2.

Fig. 4 is a fragmentary section on line 4—4 of Fig. 2.

Fig. 5 is a plan view of the box in the knockdown and with the end wall extensions in extended position. They may be folded upon the collapsed side walls if desired.

Fig. 6 is a plan view of the blank from which the box unit is formed, certain portions being indicated as supplied with adhesive preliminary to the securing of the parts together, an integral cover being indicated by dotted lines.

Fig. 7 is a perspective view of the box with the integral cover, the cover being shown in open position.

In the accompanying description, it will be understood that the box unit illustrated in Figs. 1 to 5 inclusive may be duplicated in a cover unit or the cover may be formed integrally with the box as shown in Fig. 7.

Referring to the drawings, 1 designates the body or top panel, 2, 2 the side walls, and 3, 3 the end walls. These parts are hingedly connected together, the hinge or folding lines being provided for scoring, as conventionally illustrated at 4.

The sides and end walls are connected with corner flaps designated generally by the numeral 5 of the bellows or foldable type joined to the ends of the side and end walls by the folding lines or scorings 6. These corner flaps are foldable along predetermined lines by diagonally disposed lines of slits or perforations 7 which are preferred to scoring as they permit a more compact folding of the corner flaps.

The end wall segments 8 of these corner flaps are provided in the structure illustrated with a suitable adhesive as indicated at 9 and these segments are folded upon the inner sides of the end walls and secured thereto by the adhesive.

The side walls are provided with reinforcing flaps 10 at their outer edges folded upon and adhesively secured to the inner sides thereof. These reinforcing members are provided with reinforcing corner tabs 11 which, when the box is erected, overlap the folded corner flaps but are not secured thereto. These are found effective in preventing tearing of the box at the corners and also prevent the end wall extensions 12 from becoming engaged with the reinforcing flaps 10. These end wall extensions 12, when the box is set up, constitute inner end walls and also locking means for holding the parts in erected position. These end wall extensions 12 have outwardly diverging portions 13 at their inner ends—that is, portions that are substantially wider than the end walls or the panel 1.

The end wall extensions 12 are also of a somewhat greater height than the end walls so that when they are swung to erected position their lower edges engage the panel 1 with an inclined wedging engagement and the flared portions 13 engage the side walls of the box with an inclined wedging engagement.

To facilitate erection of the box and to insure this inclined wedging engagement, the end wall extensions are provided with outwardly converging lines of perforations 14 arranged adjacent to the edges of the side wall wedging portions 13 for the purpose of weakening the extensions and causing the parts to assume the inclined wedging relation with the end walls.

A line of slits or perforations 15 is arranged in parallel relation to the outer ends of the end wall extensions and adjacent thereto to provide a flexing line for the inclined wedging portion 16 of the extensions, see Fig. 4. To further insure that the flexing will occur at a predetermined point, the end wall extensions are reinforced by corrugation-like scores 17 disposed vertically thereof and located within the perforations or slits.

With this arrangement, the operator, in setting up the box, can fold the end wall extensions inwardly merely by pressing this reinforced cen-

tral portion of the end wall extensions to bring the end walls firmly in overlapping relation to the corner flaps. The wedging portions referred to are brought into the inclined clutching or wedging engagement with the side walls and the main panel of the box, and it will be appreciated that pressure on the ends of the box which might tend to swing the end extensions of the inner walls inwardly serves to force these clutching or wedging portions more firmly into engagement with the coacting parts. When the end wall extensions 12 are in erected position they not only overlie the bellows type corner flaps but they also overlie the corner tabs 11 with the result that the box is effectively reinforced at the corners.

In the embodiment shown in Fig. 7, an integral cover 18 is provided. This cover is joined to one side wall of the box by the bendable connection 19. In this embodiment, one of the reinforcing flaps 10 is omitted and the blank is extended to form the cover. The cover is provided with a tucking flap 20 at its outer edge and with end flaps 21 joined to the cover by suitable score lines 22 to facilitate folding. While the flaps 20 and 21 are primarily designed to be tucked into the box they are sometimes folded upon the outside thereof and retained by a cord, ribbon, or the like, ordinarily depending upon the use that is made of the box.

Our improved box is simple and economical in its parts, is economical in the matter of stock, and very quickly set up and when set up is very securely locked in set-up position.

We have not attempted to illustrate or describe the various modifications or adaptations of which our invention is capable as it is believed that this disclosure will enable those skilled in the art to embody or adapt our improvements as may be desired.

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

1. In a knockdown box or cover unit cut and scored from a blank of suitable material, the combination of a bottom or top panel, and sides and ends foldably joined thereto, the sides and ends being connected by integral diagonally foldable corner flaps foldably joined thereto, the end wall segments of the corner flaps being folded upon the inner sides of the end walls and secured thereto, the side walls having reinforcing flaps folded inwardly thereon and secured thereto, said reinforcing flaps being provided with corner tap projections at their ends lapping upon the side wall segments of said corner flaps, the end walls being provided at their outer edges with inner end wall extensions foldable over the corner flaps and the said corner tabs when the walls of the box unit are erected, the end edges of said end wall extensions being diverged outwardly for a substantial distance from the outer edge thereof to provide wedging members of a width greater than the width of the panel, said end wall extensions being of greater height than the end walls to provide wedging engagement of the ends thereof with the panel, there being outwardly converging lines of perforations extending from the point of divergence of said end extension end edges to the outer edges of the extensions and a line of perforations parallel with the edges of said extensions spaced from the line on which the extensions are folded a distance less than the height of the end walls to facilitate the positioning of said end wall extensions with their outer and end edges in inwardly inclined wedging locking engagement with the side walls and panel of the box, said end wall extensions having vertical score-like corrugations within the lines of said perforations constituting reinforcing and stiffening means for said end wall extensions.

2. In a knockdown box or cover unit cut and scored from a blank of suitable material, the combination of a bottom or top panel, and sides and ends foldably joined thereto, the sides and ends being connected by integral diagonally foldable corner flaps foldably joined thereto, the end wall segments of the corner flaps being folded upon the inner sides of the end walls and secured thereto, the end walls being provided at their outer edges with inner end wall extensions foldable over the corner flaps when the walls of the box unit are erected, the end edges of said end wall extensions being diverged outwardly for a substantial distance from the outer edge thereof to provide wedging members of a width greater than the width of the panel, said end wall extensions being of greater height than the end walls to provide wedging engagement of the ends thereof with the panel, there being outwardly converging lines of perforations extending from the point of divergence of said end extension end edges to the outer edges of the extensions and a line of perforations parallel with the edges of said extensions spaced from the line on which the extensions are folded a distance less than the height of the end walls to facilitate the positioning of said end wall extensions with their outer and end edges in inwardly inclined wedging locking engagement with the side walls and panel of the box, said end wall extensions having vertical score-like corrugations within the lines of said perforations constituting reinforcing and stiffening means for said end wall extensions.

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