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A. GREENE ET AL

3,477,633

BOX CONSTRUCTION

Filed Oct. 10, 1967

2 Sheets-Sheet 1

FIG. 1

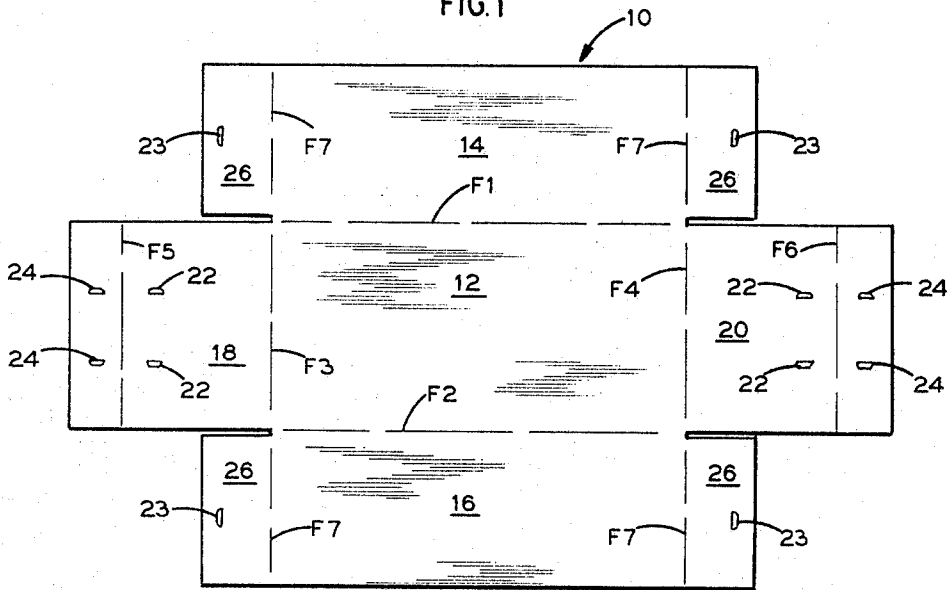


FIG. 3

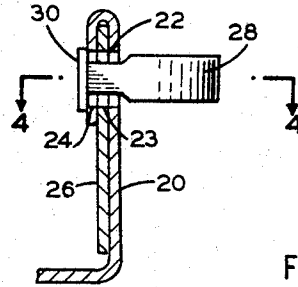


FIG. 2

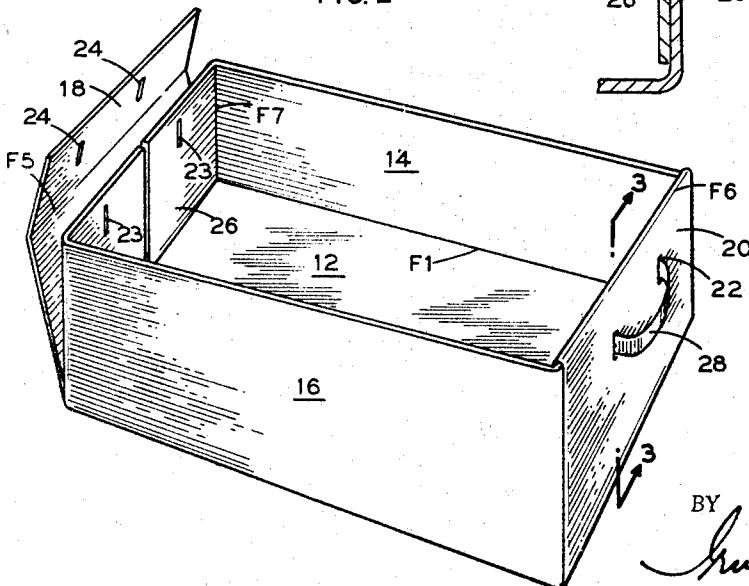
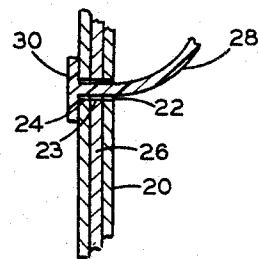


FIG. 4



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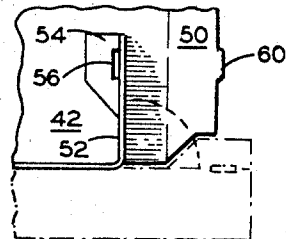
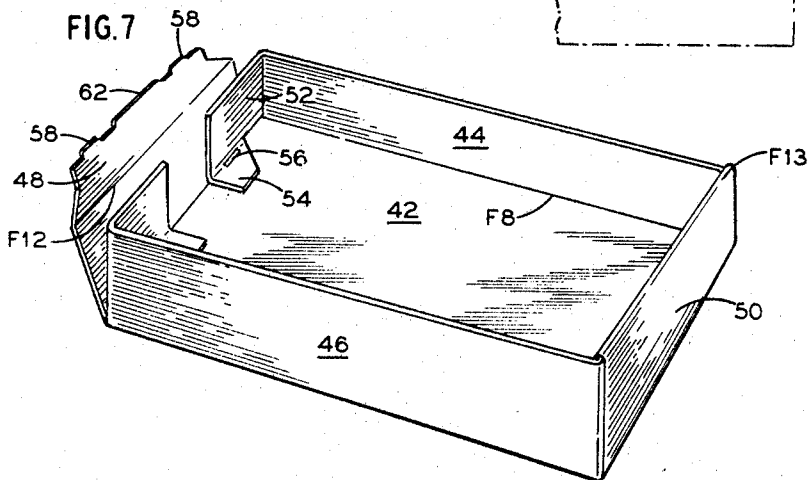


FIG. 7



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BOX CONSTRUCTION

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2 Claims

ABSTRACT OF THE DISCLOSURE

An open end box and cover therefor, each of which is formed of a single blank of sheet material constructed and arranged with improved fastening means when it is in the erected condition.

BACKGROUND OF THE INVENTION

This invention relates in general to a box construction, and more particularly to an open end box and cover therefor.

DESCRIPTION OF THE PRIOR ART

Heretofore, open end boxes and covers have been proposed which consisted of relatively complex shapes and forms that were relatively difficult to construct and/or assemble. Another difficulty and disadvantage of these known constructions reside in the interlocking means employed which have not provided sufficient strength and rigidity to the box and cover respectively, when they are in the erected condition. In addition, the assembly of these known constructions in many instances constituted a relatively tedious and time consuming task.

It has further heretofore been proposed to assemble an open end box whereby a handle member is provided for securing each end panel and the adjacent corner flaps in their respective folded conditions. In this connection, the end portions of said handle member are threaded and are passed through an end panel and its adjacent corner flaps, whereupon a fastener member, such as a nut, is screwed on to each threaded end portion of said handle member to maintain the box in its assembled condition. It will be appreciated that the hardware required to assemble a box as described above not only increases the manufacturing cost but constitutes a tedious and time consuming operation.

The present invention eliminates the above difficulties and disadvantages by providing an open end box and cover therefor, each of which is formed of a single blank of sheet material constructed and arranged with improved fastening means for respectively maintaining same in the erected condition.

SUMMARY OF THE INVENTION

The open end box and cover of the present invention each includes a blank of sheet material defining a center panel and integrally connected side panels, end panels and corner flaps. The end panels of the cover are provided with tongue elements which are received within openings formed in the blank sheet of material when the cover is in the erected condition. The complementary co-operation between said tongues and openings provides an improved interlocking means for said cover and renders possible a construction of greater strength and rigidity. The box is provided, at opposite ends thereof, with a flexible handle member having end portions which are passed through aligned openings in the respective end panel and the adjacent corner flaps; said end portions terminating in anchor means for securing the end panels and their adjacent corner flaps in their respective folded conditions.

Accordingly, an object of the present invention is to provide an open end box construction and cover therefor, each of which is formed of a single blank of sheet material that is relatively simple in form and easy to assemble.

A further object of the present invention is to provide a cover for an open end box which is constructed and arranged with improved interlocking means which renders possible a cover construction of greater strength and rigidity.

Another object of the present invention is to provide an open end box construction and a handle therefor to facilitate carrying the same and for maintaining the box in its assembled condition.

A further object and feature of the present invention is to provide an open end box and cover therefor, each of which can be readily assembled with a minimum of effort.

Another object and feature of the present invention is to provide an open end box and cover therefor, each of which is economical to manufacture and has improved durability when subjected to rough handling and repeated usage.

The above and other objects, features and advantages of the present invention will become more apparent from a consideration of the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of the blank from which the box of this invention is formed;

FIG. 2 is a perspective view of the assembled box with one end thereof shown in final assembled form, and the other end thereof shown in partial assembled form;

FIG. 3 is a sectional view taken through line 3—3 of FIG. 2;

FIG. 4 is a sectional view taken through line 4—4 of FIG. 3;

FIG. 5 is a plan view of the blank from which the cover of the box is formed;

FIG. 6 is a fragmentary plan view of the blank construction of FIG. 5 illustrated in an intermediate folded condition; and

FIG. 7 is a perspective view of the assembled cover with one end thereof shown in final assembled form, and the other end thereof shown in partial assembled form.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, there is shown in FIG. 1 a blank of sheet material 10, such as cardboard or the like, from which the box is formed. It includes a center or bottom panel 12 having its periphery defined by fold lines F1, F2, F3 and F4. Accordingly, a pair of opposed side panels 14 and 16 are connected to opposed edge portions of the center panel 12 along fold lines F1 and F2 respectively. As shown, the side panels 14, 16 and center panel 12 are substantially co-extensive in length. Connected to the other opposed edge portions of the center panel 12 along fold lines F3 and F4 are end panels 18 and 20, respectively. End panels 18, 20 are creased along lines F5 and F6, respectively, so as to be reversely folded inwardly of the box about its respective crease line in the folded condition of blank 10; said crease lines F5, F6 being parallel to fold lines F3 and F4.

As shown in FIGS. 1 and 2, the end panels 18, 20 are each provided with first and second pairs of aligned spaced slots or openings 22 and 24, respectively, located on opposite sides of each of the crease lines F5 and F6. Referring to end panel 18, the slots or openings 22 and 24 are laterally spaced from each other and equally spaced from crease line F5. With respect to end panel 20, openings 22 and 24 are similarly laterally spaced from

each other and equally spaced from crease line F6. Accordingly, it will be appreciated that the laterally related openings 22, 24 of the pairs of openings in each end panel have been arranged so as to locate said laterally related openings in alignment when each end panel is reversely folded inwardly of the box about its respective crease line in the folded condition of the blank. The openings 22 and 24 will be utilized in connection with a handle forming member to maintain the box in its assembled condition in a manner hereinafter described.

Integrally connected to the opposed end edges of side panels 14, 16 are corner flaps 26. As shown, each corner flap 26 extends from its adjacent side panel along fold lines F7 which constitute extensions of fold lines F3 and F4; and is provided with a slot or opening 23. The openings 23 are located so as to be in registry with a pair of laterally related openings 22, 24 in the adjacent end panel when said corner flaps 26 and end panels 18, 20 are in their respective folded conditions.

To assemble the box, one need only raise the side panels 14, 16 along their respective fold lines F1 and F2 to a position normal to the center panel 12. In this condition, the corner flaps 26 adjacent each side panel 14, 16 are likewise normal to center panel 12. Corner flaps 26 are then folded inwardly along their respective fold lines F7 approximately 90 degrees as shown in FIG. 2. With the box in this condition, the end panels 18, 20 are folded upwardly along their fold lines F3 and F4 toward each other, and then reversely folded inwardly along crease lines F5, F6. As shown in FIGS. 3 and 4, the corner flaps 26 are thus positioned between the reverse folds of the adjacent end panels whereby the openings 23 in each of said corner flaps 26 are in registry with a pair of laterally related and aligned openings 22, 24 in the adjacent end panels.

According to this invention, a handle forming member 28 is provided at opposite ends of the box for securing each end panel and the adjacent corner flaps in their respective folded conditions. In this connection, handle 28 is preferably a flexible strap having end portions which terminate in anchor means 30 which are normally biased to a position extending transversely of the longitudinal extent thereof. Accordingly, the anchor means 30 can be readily deflected to a position to permit the passage thereof through the pairs of aligned openings 22, 23 and 24 of an end panel and the adjacent corner flaps whereupon the anchor means 30 will then assume its normally biased position. Since the anchor means 30 straddles the openings 22, 23 and 24 when in its normally biased position, said anchor means serves to secure the end panel and its corner flaps in their respective folded conditions. Thus, the open end box is firmly secured in assembled condition with a minimum of effort by means of a unique handle member; thereby eliminating the heretofore existing difficulties and expenses encountered with fastening screws.

FIGS. 5, 6 and 7 illustrate a cover for the box herein described.

As shown in FIG. 5, the cover is formed of a single precut blank of sheet material 40, such as cardboard or the like. It comprises a center panel 42, having its periphery defined by fold lines F8, F9, F10 and F11. Accordingly, a pair of opposed side panels 44 and 46 are connected to opposed edge portions of the center panel 42 along fold lines F8 and F9 respectively. Connected to the other opposed edge portions of the center panel 42 along fold lines F10 and F11 are end panels 48 and 50 respectively. End panels 48, 50 are longitudinally creased along medial lines F12 and F13, respectively, so as to be reversely folded inwardly of the cover about its respective crease line in the folded condition of blank 40.

Integrally connected to the opposed end edges of side panels 44, 46 are corner flaps 52. As shown, each corner flap 52 extends from its adjacent side panel along fold lines F14 which constitute extensions of fold lines F10

and F11. Each corner flap 52 is provided with a tab portion 54 foldable on a crease line F15 which is in longitudinal alignment with the fold line between the center panel 42 and the respective side panel. A slot or opening 56 is provided in each crease line F15. As shown in FIG. 5, the end edge of each tab portion 54 is preferably coterminous with the end edge of its associated corner flap. There is also provided a pair of spaced tongues 58 and 60 extending from the end panels 48, 50 respectively, said tongues being interlockingly received within the slots 56 when the cover is assembled as hereinafter described.

To assemble the cover, one need only raise the side panels 44 and 46 along their respective fold lines F8 and F9 to a position normal to the center panel 42. Tab portions 54 of corner flaps 52 are also raised at this time along their respective fold lines F15 to facilitate raising of the side panels. Corner flaps 52 are then folded inwardly along their respective fold lines F14 approximately 90 degrees, as shown in FIGS. 6 and 7, with the tab portion 54 of each corner flap overlying the center panel 42. With the cover in this position, the end panels 48 and 50 are folded upwardly along their fold lines F10, F11 toward each other, and then reversely folded inwardly along crease lines F12, F13. This enables tongues 58 and 60 to be interlockingly received within the slots or openings 56. It will be appreciated that the corner flaps 52 are positioned between the reverse folds of the adjacent end panels when the cover is assembled.

According to the preferred embodiment of the cover, there is also provided centrally located elongated projections 62, 64 extending from end panels 48, 50 respectively; said projections being frictionally engaged with the center panel 42 when the end panels 48, 50 are reversely folded inwardly of the cover. For example, referring to FIG. 7, the end edges of laterally opposed tab portions 54 are spaced from each other for receiving therebetween projection 62 which frictionally engages center panel 42 when end panel 48 is reversely folded inwardly of the cover. It will thus be appreciated that the cover is firmly secured in assembled position with a minimum of effort.

It will further be appreciated that the construction of the box and cover are such as to readily permit the shipping and storing of same in a relatively flat or knocked-down condition.

We claim:

1. An open end box construction comprising:

- (a) a blank of sheet material forming a center panel having opposed side panels and end panels connected thereto along respective fold lines;
- (b) corner flaps extending from the end edges of the side panels along fold lines that constitute extensions of the fold lines between the center panel and the end panels so as to fold inwardly of the box in the folded position of the blank;
- (c) each corner flap having a tab portion foldable on a crease line in longitudinal alignment with the fold line between the center panel and the respective side panel, each said crease line having an opening formed therein;
- (d) each end panel being longitudinally creased along a medial line thereof so as to be reversely folded inwardly of the box about its respective fold line in the folded position of the blank;
- (e) said corner flaps being folded inwardly of the box between the reverse folds of the adjacent end panels, with the tab portions of each corner flap overlying the center panel;
- (f) a pair of spaced tongues extending from each end panel, said tongues being interlockingly received within the openings when the end panels are reversely folded inwardly of the box;
- (g) each end panel further including a centrally located elongated projection extending therefrom, each said projection being frictionally engaged with the

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center panel when the end panels are reversely folded inwardly of the box;

(h) the end edges of laterally opposed tab portions being spaced from each other for receiving respectively therebetween the projection extending from the adjacent end panel when said end panels are reversely folded inwardly of the box.

2. The cover for an open end box construction as recited in claim 1, wherein the end edge of each tab portion is coterminous with the end edge of its associated corner flap.

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References Cited

UNITED STATES PATENTS

2,217,503	10/1940	Bergstein.	
1,747,980	2/1930	Kondolf.	
2,136,184	11/1938	Fellowes	----- 229—34

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U.C. Cl. X.R.

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