Oct. 6, 1959 R. M. THIOLAT 2,907,513

CARDBOARD BOXES AND THE LIKE

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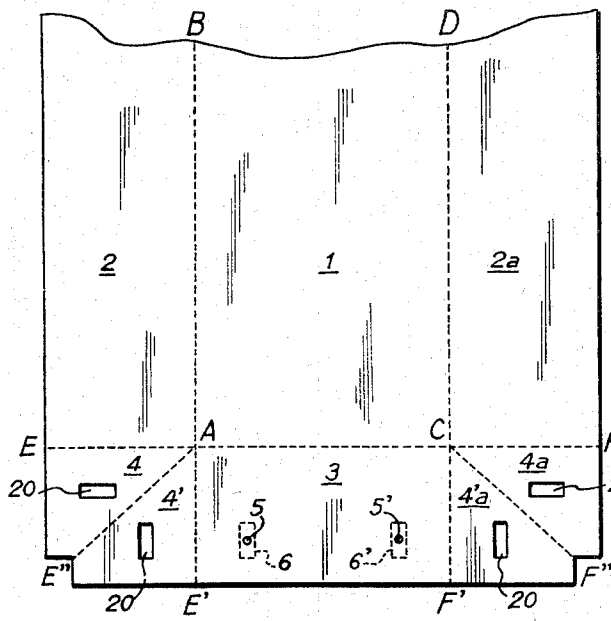


Fig. 1

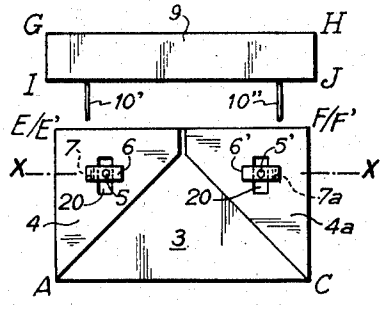


Fig. 3

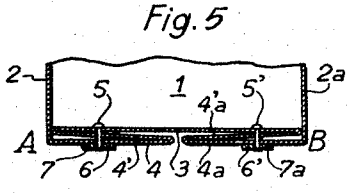


Fig. 5

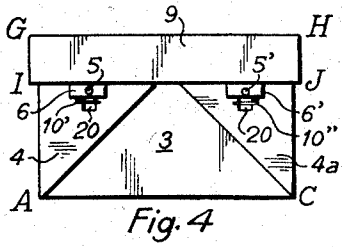


Fig. 4

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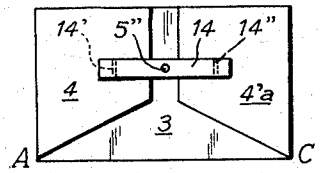
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Fig. 6



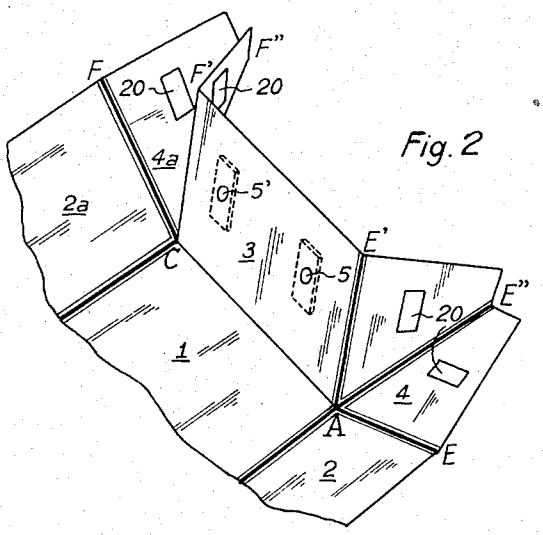
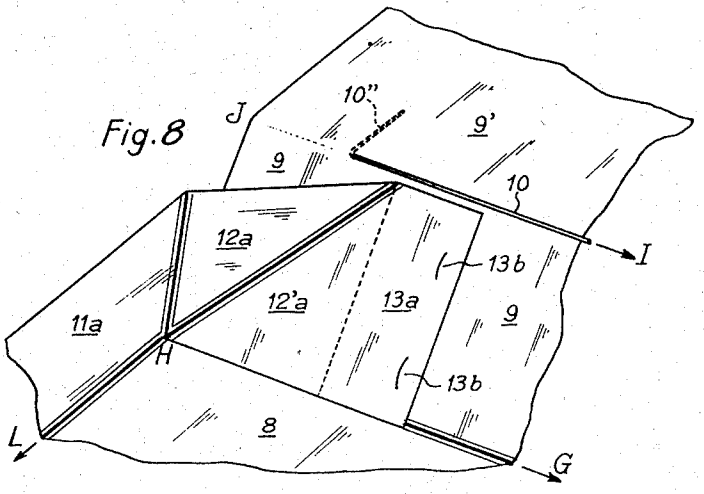


Fig. 2

Fig. 8



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Fig. 7

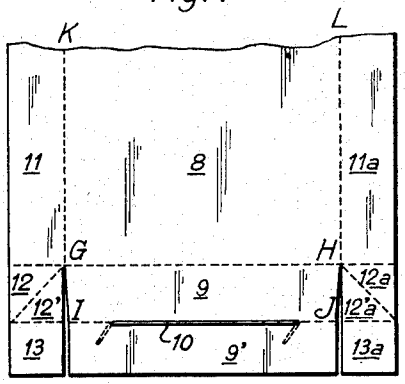


Fig. 9

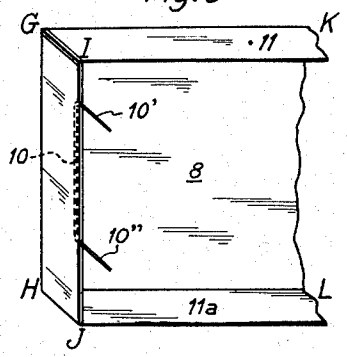
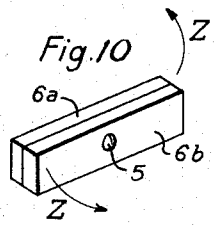


Fig. 10



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CARDBOARD BOXES AND THE LIKE

Robert M. Thiolat, Paris, France

Application June 20, 1957, Serial No. 666,903

Claims priority, application France June 25, 1956

2 Claims. (Cl. 229—31)

The present invention relates to a cardboard box or the like produced from a single blank or sheet of cardboard or other stiff foldable material, suitably cut and capable of folding. It is an object of the present invention to provide improved means for releasably securing a collapsible cardboard box or the like in assembled position.

It is another object of the invention to provide the box or the like with a separate lid which is likewise produced from a single sheet of cardboard, cut out and foldable along certain lines in such a manner that it can be stored flat or can be folded to form a rigid cover or lid secured to the body of the box or the like by securing means intended not only to secure the box in assembled position but also to secure the lid. In a preferred embodiment of the invention, such securing means assume the form of locking bars of wood or equivalent material, which pivot on two opposed panels of the box and are provided with bores to receive and secure the extremities of wires depending from the lid.

In the accompanying drawings embodiments of a box according to the invention are illustrated.

In the drawings:

Fig. 1 is a fragmentary view of a sheet, unfolded and laid flat, which is intended to produce a box with two locking bars at the ends;

Fig. 2 shows the box of Fig. 1 in process of assembly;

Fig. 3 is an end-view of the above box, completely assembled, with unsecured lid above it;

Fig. 4 shows the same box, with the lid in position;

Fig. 5 is a section on the line X—X of Fig. 3;

Fig. 6 is an end-view of a modified form of box with one single locking bar at the ends;

Fig. 7 is a fragmentary view of the flat sheet which forms the lid of the box shown in Fig. 3;

Fig. 8 shows the same, during assembly;

Fig. 9 is a fragmentary view of the assembled lid in perspective, seen from beneath; and

Fig. 10 is a diagram showing the theoretical structure of a locking bar.

Throughout the description it is to be understood that the sheets and folding panels are of cardboard and the securing elements of wood, but it is manifest that these may be replaced within the framework of the invention by any suitable equivalent material desired, whether natural or synthetic.

Referring to Figs. 1 and 2 the single sheet shown is of cardboard or equivalent material and comprises the base **1** of the box limited by the folding lines AB, CD etc., along which, when the box is being assembled, the longitudinal panels **2** and **2***a* and the end panels are raised, only one of these being illustrated at **3**, the other end of the box being identical to this one.

Each end panel is connected to the longitudinal panels **2** and **2***a* by corner pockets, each comprising two panels of generally triangular form limited by the folding lines of the pocket. Thus, between the panel **3** and the panel **2**, the corner pocket is formed by a panel **4** adjoining

the panel **2** beyond the line AE, and a panel **4'** adjoining the panel **3** beyond the line AE'; the panels **4** and **4'** are contiguous along their common line of folding AE''. Likewise, between the panel **3** and the longitudinal panel **2***a*, the corner pocket comprises the panels **4***a* and **4'***a*, bounded by the folding lines CF, CF' and CF'' corresponding to the lines AE, AE' and AE'' of the first pocket. An identical system exists at the other end of the box; it would therefore appear unnecessary to burden the drawings with illustrations thereof.

The end panel **3**, in the embodiment described, is pierced by two rivets **5**, **5'**, upon which the two halves of a locking bar **6** or **6'** of light wood and of elongated shape (rectangular in the drawing but may be oval for example) are freely rotatable.

In addition, each of the panels of the pockets **4**, **4'**, **4***a* and **4'***a* is provided with a small window **20** corresponding to the shape of the locking bars. Fig. 10 shows the structure of the two halves **6***a* and **6***b* of a locking bar **6**; the half **6***a* lodges in the corresponding window **20** whilst the half **6***b* projects beyond this and is freely rotatable on the rivet **5** as indicated by the arrows Z. Thus, when the box is assembled, the locking bars can enter these windows, in each of which the portion **6***a* or **6'***a* lodges, and beyond which each projecting portion **6***b*, **6'***b* is rotated through 90° in order to secure each group of superimposed panels, i.e., the panels **4** and **4'** upon one side of the panel **3**, and the panels **4***a* and **4'***a* on the other side, as shown in particular in Figs. 4 and 5. Furthermore, each locking bar is provided with a bore **7** or **7***a* respectively, for securing the wires of the lid, as will be explained later.

The lid (see Figs. 7, 8 and 9) consists of a sheet of cardboard or equivalent material and comprises the upper lid portion **8** and panels or flaps attached thereto and suitably cut and folded.

At each end (only one is illustrated, the other being identical), a panel **9/9'** is provided, forming an end wall corresponding to the panel **3** of the box, and meeting the main panel **8** along the line of folding GH. This end panel is itself divided by the line of folding IJ into two flaps **9**, **9'** of the same height, whilst, over a certain extent of the line IJ, a steel or brass wire is fitted on the inner face of the fold. The two ends of the wire are bent off at right-angles and pass through the cardboard, as shown in particular in Fig. 9. When the lid is placed in position, the two extremities **10'**, **10''** of the wire engage in the bores **7**, **7***a* of the locking bars **6**, **6***a* and are once again bent along these bars, as shown in Fig. 4 to secure the lid to the body of the box.

Sufficient tightness and rigidity are imparted to the lid by the arrangement of lateral panels **11** and **11***a* which meet the main panel **8** on the lines of folding GK and HL. These panels are each extended by a two-panel pocket **12**, **12'** and **12***a*, **12'***a* respectively, which are folded in the normal manner and each extended in turn by an end flap **13**, **13***a*, said flaps being all compressed between the portions **9** and **9'** when assembling (Figs. 8 and 9). Thus, the folding line IJ (which forms, for all practical purposes, a relatively thick channel to receive the wire **10**) becomes the lower edge of the end wall of the lid when it is in position.

Fig. 8 shows only one corner of the lid (the others being identical) in the process of assembly. In particular, the end flap **13***a* is seen which is stapled at **13***b* to the panel **9**, against which the triangular flaps **12***a*, **12'***a* of the corresponding corner pocket are placed and compressed when the flap **9'** is folded over. The completed lids can be stored, i.e. with flaps **13** and **13***a* stapled to the panel **9**. In this case, however, to enable the lids to be stored flat, the lateral panels are folded over the main panel **8** and the flaps **12**, **12***a* over the flaps **12'**, **12'***a*

respectively, the panels **9**, **9'** remaining however in the plane of the main panel **8**. By this arrangement stapling at the last moment is no longer necessary.

In Fig. 6 a modified embodiment of the invention is illustrated. The box is secured by one single locking bar **14** at each end. This bar pivots on the single rivet **5''** of the panel **3**. The panels **4'** and **4'a**, corresponding to the panels **4** and **4a** of the first embodiment, are not provided with windows, since these would serve no purpose. They are simply moved sufficiently apart to enable the bar to pass between them in the vertical position during assembling, whereupon the bar is rotated over them as shown in Fig. 6. The locking bar **14** is provided with two bores **14'**, **14''** to receive the securing wires of the lid.

I claim:

1. In combination a collapsible cardboard box or the like and a separate lid therefor, said box comprising a base, side and end walls, two pockets foldable against each of said end walls and means for releasably securing said pockets against the end walls, said means comprising at least one rivet extending outwards from each end wall, and a locking bar pivotally mounted on each of said rivets, said locking bars being adjustable to secure and release said pockets, and said lid being secured on the box by lengths of wire depending from the lid and anchored to the locking bars on the box, said locking bars having transverse apertures receiving the ends of said lengths of wire, which ends are subsequently bent along the locking bars to anchor them in position.

2. The combination according to claim 1, said lid being formed from a single blank and comprising a main panel, side panels and end panels, said end panels consisting of double and, at places, quadruple thicknesses of cardboard and the depending edges of said panels having laterally spaced apertures for egress of the ends of a wire housed within said end panels, the free ends of said wire being anchored to the box to secure the lid in position.

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