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S. M. LIBIT

2,335,345

FOLDING BOX CONSTRUCTION

Filed June 18, 1943

Fig. 1.

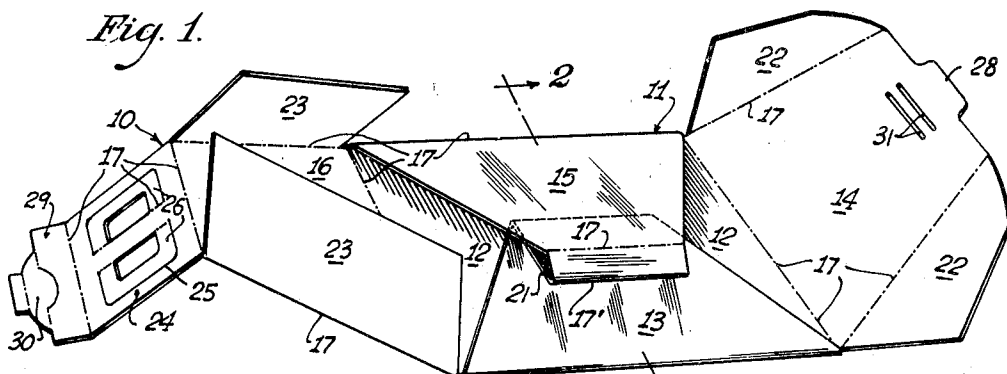


Fig. 2.

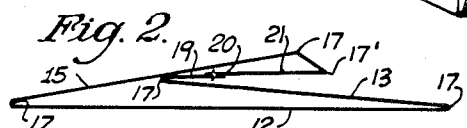


Fig. 4.

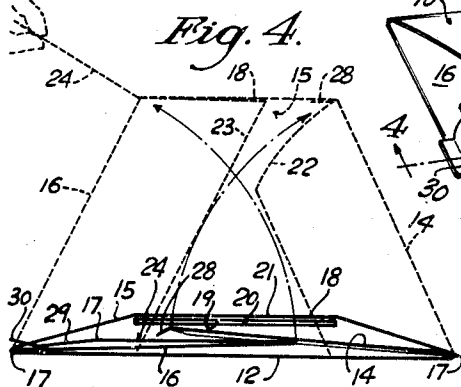


Fig. 3.

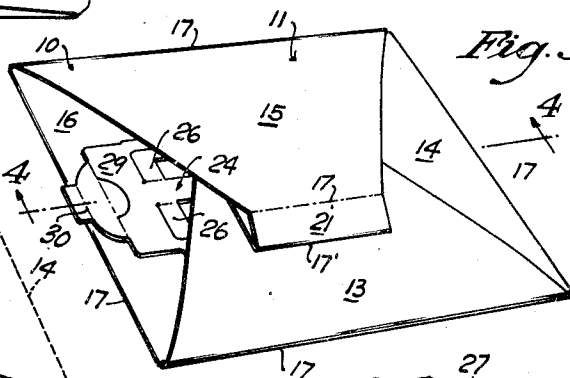


Fig. 5.

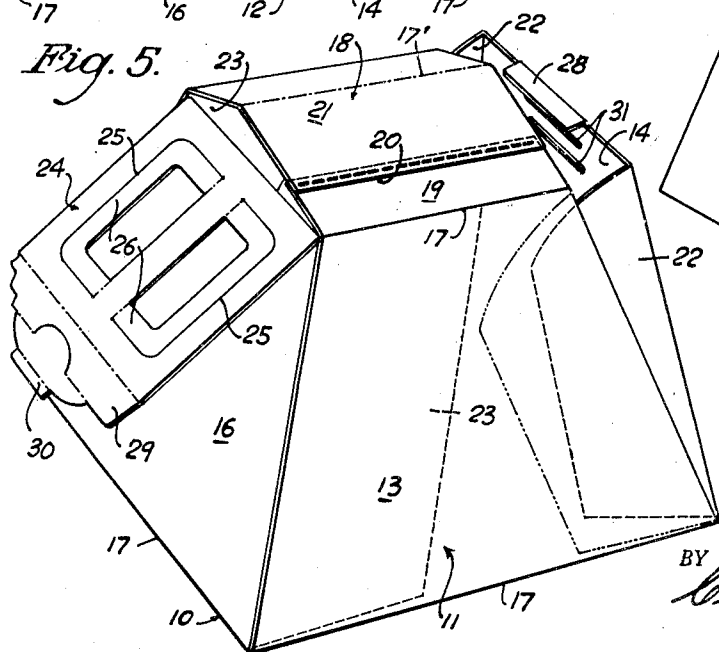
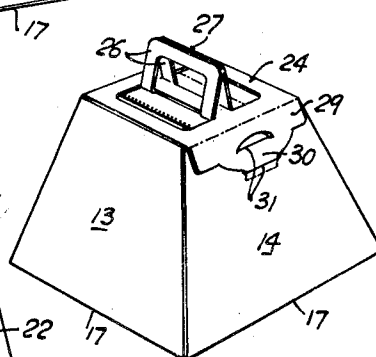


Fig. 6.



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FOLDING BOX CONSTRUCTION

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5 Claims. (Cl. 229—41)

This invention relates to folding box construction and has as its principal object the provision of an improved box construction which is simple, economical in assembly and highly efficient in use.

Another object of this invention is to provide a folding box construction in one piece of fibrous board which when collapsed will assume a flat compact condition and which upon a single hand pulling operation will unfold into a completed box ready for the reception of an article to be carried thereby.

A further object of this invention is to provide a one piece folding box requiring but a single joint of simple construction and requiring little added material thereby reducing the cost of the box construction both as to manufacturing operations and material.

A still further object of this invention is to provide a box with an integral handle portion formed of the material of which the box is made at the time the blank is cut by die operations. Other objects will appear more fully hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawing showing my preferred form of construction, and in which:

Fig. 1 is a perspective view of the blank forming my new and improved box construction in partially assembled condition;

Fig. 2 is a single line diagrammatical section illustrating the relationship of certain parts of the box when viewed along line 2—2 in Fig. 1;

Fig. 3 is a perspective view of my improved box construction in folded or total collapsed condition;

Fig. 4 is a single line diagrammatical section illustrating the relationship of the parts of the box as seen along line 4—4 in Fig. 3 and illustrating the distending operation of the box structure;

Fig. 5 is a perspective view of the box structure distended and ready to receive an article to be carried; and

Fig. 6 is a perspective view, at slightly reduced scale, of my improved box construction locked in distended condition ready to be carried by the handle.

As shown in the drawing the box structure is constructed of a single piece of fibrous material such as cardboard 10 which is stamped or cut by die operation into the desired shape of

blank 11 whereby to form a bottom section 12; four side sections 13, 14, 15 and 16, each of which is trapezoidal in form, having their lower parallel sides integrally formed with the respective side of the bottom section 12 and defined therefrom by a crease line which are generally indicated as 17; a crown section 18 consisting of an extension 19 of the upper end of the side 13 which is joined as at 20 to a fold section 21 extending from the upper end of the side 15; a pair of wing sections 22 extending from the non-parallel sides of the trapezoidal side 14, and a similar pair of wing sections 23 extending from the non-parallel sides of the trapezoidal side 16; and a head section 24 extending from the upper parallel side of the side wall 16.

In addition to the general formation of the blank 11 as above explained the head section 24 is cut out as at 25 to form U-shaped sections 26 adapted to be folded up for abutting relation with respect to each other to provide a handle 27 for the box. The head section being formed on the side wall 16 is arranged to overlie the crown section 18 thus closing the normal opening between the crown section and the upper edge of the side wall 16. The free end of the head section has a flap section 29 formed integrally therewith and defined therefrom by crease line 17 and is so constructed as to overlie the normal opening between the crown section 18 and the upper edge of the side wall 14 there being a supporting lip 28 formed on the wall 14 to brace up the adjoining edge of the crown section 18; the flap 29 having a latch tab 30 of any well-known form adapted to interlock with keeper slots 31 formed in the side wall 14 at the point of disposition of the latch tab 30 as shown in Fig. 6.

Having thus described the general form of my improved box construction I will now proceed to explain the novel arrangement thereof and method of folding the various sections thereof whereby to produce a folding box which is easily distended by a single operation.

As hereinbefore stated the crown section 18 is composed of the two extensions 19 and 21 which are joined as at 20. I prefer to accomplish this joint by stitching 32 although other forms of interlocking means may be employed to attain the same result. However, by reason of the particular formation of the crown section 18, the overlapping elements 19 and 21 may be sewed on a conventional sewing machine by reason of the trapezoidal cross section of the box formed. By this arrangement there is no need of employ-

ing metal in the assembly of the box as is the usual practice.

Referring now to Fig. 1 it will be noted that the crown section has an intermediate crease line 17' formed thereacross whereby to permit the homogeneous top and side walls 13 and 15 to be folded down flatly upon the bottom section 12. (See also Fig. 2). The novel folding of the side sections is as follows: Reference being had to the diagram of Fig. 4. The side wall 16 has its wing portions 23 folded back upon the inner face of the section 16 and the latter folded down upon the bottom section 12. The head section 24, it will be noted, is folded back upon the outside face of the side wall 16 in such a manner as to expose the tab portion 30 thereof for reasons to be hereinafter explained. The wings 22 of the side wall 14 are folded inward to lie against the inner face of the section 14 and the latter folded flatly down upon the upper region of the side wall 16. The aforementioned side walls 13 and 15 are then folded in the manner hereinbefore explained with the side wall 13 overlying the section 14 and 16 and the crown section 18 folded upon the outer face of the wall 13, the side wall 15 being flat upon the folded sections 13, 14 and 16 as shown in Fig. 3.

With the box collapsed in the condition just explained there results a flat unit all confined within the area of the bottom section 12 which unit can be stored away in a minimum amount of room with like units until a box is needed.

When a box is required the flat unit is taken from storage and the tab 30 grasped with one hand while the free hand steadies the unit. The tab 30 is then raised to swing the side wall 16 counterclockwise as seen in Figs. 3 and 4. As a result of this movement of the side wall 16 the wall 14 will likewise be raised (clockwise) and with it the two side walls 13 and 15 will be distended until the box assumed the condition shown in Fig. 5. The resiliency of the fibrous material 10 is such that when the two side walls 14 and 16 are in distended condition as in Fig. 5, the wings 22 and 23 flare out until they engage the inner faces of their respective adjacent side walls 13 and 15. The side wall 14 then forms a closure element for the box and may be swung out and away from the box proper to permit entrance of an article to be carried thereby.

In closing the box the side wall 14 is swung back toward the box portion and the supporting lip 28 bent inward and under the crown section 18 to bear upward against the latter and maintain the crown section in horizontal alignment with the upper margin of the side wall 14. The head section 24 is then swung to overlie the crown section 18 and the latch tab 30 interlocked with the slots 31 to lock the box in distended condition. The two U-shaped sections 26 are then bent upwardly to abut one another and form the handle 27. The box thus formed presents a truncated pyramid as shown in Fig. 6 which is sturdy and rugged and which will withstand considerable abuse to prevent crushing of the article therein contained.

Having thus described my new and improved box construction it is apparent that I have provided a novel arrangement of folding sections forming a unitary structure which normally assumes a flat condition confined within the area of its bottom section and which can be readily and easily distended by a single manipulation of one wall portion thereof to produce an article

receiving box ready for use without any further assembly operations.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. A folding box construction comprising a bottom section having side sections formed integrally therewith, one pair of opposite side sections having extended portions at their upper ends, means for joining said extended portion to form a crown section, the other pair of opposite side sections having wing portions normally flaring in the direction of the contiguous one pair of side sections, a head section formed integrally on the upper end of one of said other side sections and adapted to overlie said crown section, a latching tab formed at the free end of said head section, and keeper means adjacent the upper end of the opposite one of said other side sections and adapted to receive said latching tab to maintain said box construction in distended condition.

2. A folding box construction comprising a bottom section having side sections formed integrally therewith, one pair of opposite side sections having extended portions at their upper ends, means for joining said extended portions to form a crown section, the other pair of opposite side sections having wing portions normally flaring in the direction of the contiguous one pair of side sections, a head section formed integrally on the upper end of one of said other side sections and adapted to overlie said crown section, a latching tab formed at the free end of said head section, keeper means adjacent the upper end of the opposite one of said other side sections and adapted to receive said latching tab to maintain said box construction in distended condition, U-shaped sections formed in said head section and adapted to be bent outwardly of the latter to provide a handle for said box construction.

3. A folding box comprising a unitary blank having a bottom section and two pairs of oppositely disposed side sections extending therefrom, a crown section joining the upper edges of one pair of said oppositely disposed side sections, said other pair of side sections having wing portions along the side edges thereof and normally urged toward the inner face of said one pair of side sections, a head section formed on one of said other pair of side sections and adapted to overlie said crown section, a tab formed on the free end of said head section and adapted to extend over the meeting edges of said crown section and the other one of said other pair of side sections, and means for latching said tab with said last named side section.

4. A folding box of the type having a quadrilateral bottom wall with side sections extending therefrom adapted to be distended from a collapsed condition by a single operation, a head section extending from one of said side sections and normally bent back upon the outer surface of the latter, said one of said side sections normally lying upon said bottom wall, a second

side section opposite said one of said side sections normally lying upon said last named side section, the other side sections having extensions at the upper ends thereof and joined to form a crown section, said other side sections being folded one upon the other with the crown section therebetween whereby to automatically raise said other side sections and said second side section when an outside force is applied to said head section to raise the latter into distended position.

5. In a folding box arrangement adapted to be raised from collapsed to distended condition by a single manual operation, the combination of a quadrilateral base section having side sections extended therefrom, one of said side sections having a head section extending from its upper

5 edge and normally disposed to overlie said one of said side sections when the latter is folded down upon said base section, a second side section opposite said first named side section normally overlying the latter, a crown section joining the remaining pair of opposite side sections at the upper edges thereof one of which remaining side sections overlies said second side section, said crown section having an intermediate crease line formed therein parallel with respect to the upper edges of the said remaining side sections and permitting the other one of said remaining side sections to lie flatly upon the superimposed sections whereby to raise said superimposed sections when a lifting force is applied to said head section.

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