

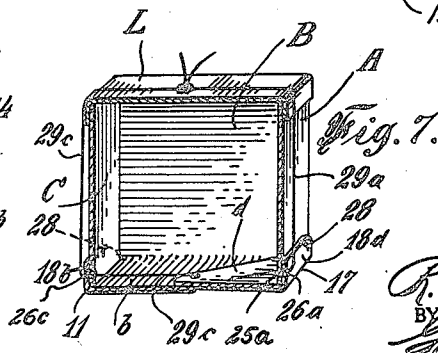
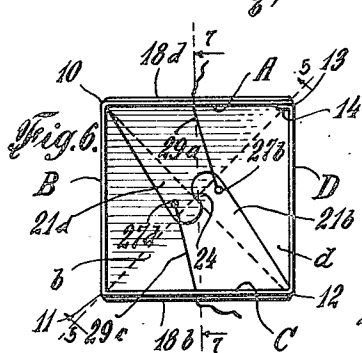
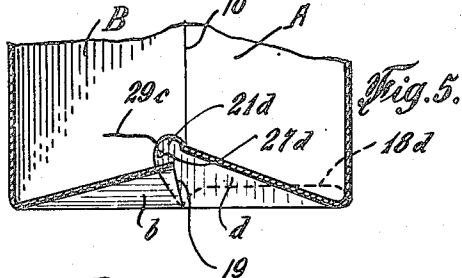
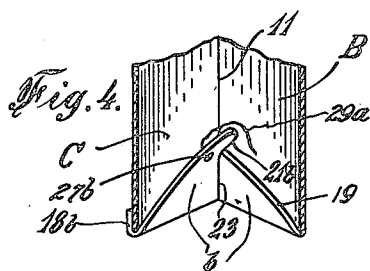
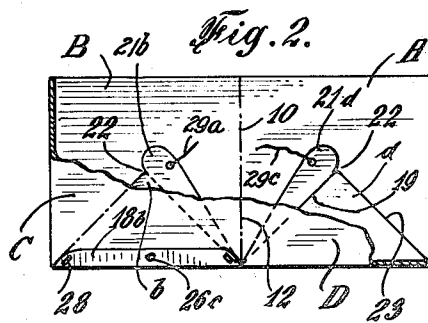
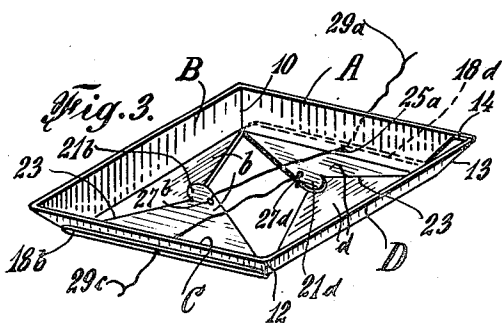
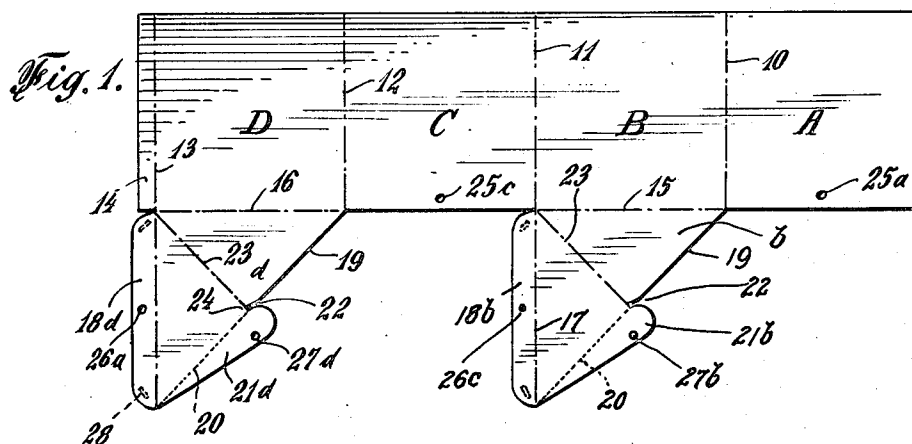
Feb. 5, 1929.

1,700,733

R. BERKOWITZ

FOLDING BOX WITH SELF LOCKING BOTTOM

Filed Feb. 7, 1925



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1,700,733

UNITED STATES PATENT OFFICE.

REBECCA BERKOWITZ, OF NEW YORK, N. Y.

FOLDING BOX WITH SELF-LOCKING BOTTOM.

Application filed February 7, 1925. Serial No. 7,461.

This invention relates to shipping boxes or the like made in a collapsible nature from relatively cheap material such as strawboard, cardboard, or the like, and used extensively for the packing or shipping of merchandise such as millinery.

Among the objects of the invention are to provide a box of maximum strength and facility for setting up into operative position from the folded position; to make a locking means for the parts that are relatively movable when being set up, the locking means being made effective automatically by the unfolding action; to provide a combination fastener for the lid of the box and means for holding the box in set up or unfolded position; to provide a box or container of the general nature set forth that is more economical of material than boxes heretofore made in this class, and to provide various other novel features of construction and advantage.

With the foregoing and other objects in view the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed or suggested herein, still for the purpose of illustrating a practical embodiment thereof reference is had to the accompanying drawings in which like reference characters designate the same parts in the several views, and in which—

Figure 1 is a plan view of a blank of one box complete except for the top.

Fig. 2 is a side elevation, partly broken away indicating one flat form or position.

Fig. 3 is an inside perspective view indicating the manner of unfolding the box or setting it up for filling.

Fig. 4 is a fragmentary elevation corresponding to the left half of Fig. 3 and looking horizontally toward the left.

Fig. 5 is a fragmentary vertical section approximately on the line 5—5 of Fig. 6 just prior to completed set up position.

Fig. 6 is a plan view showing particularly the bottom construction when fully set up and with the bottom parts interlocked.

Fig. 7 is a vertical section on the line 7—7 of Fig. 6, but with the remote half of the box indicated in perspective with the cover thereon.

Referring now more specifically to the drawings which are to be interpreted as being illustrative rather than in a specific

sense, I have indicated a box having four rectangular sides A, B, C, and D, connected along intermediate bending or hinge lines 10, 11, 12, and 13, the last being adjacent to a securing flange 14 adapted to make connection with the otherwise free edge of the side panel A as is well understood in the box practice. For the reader's convenience Fig. 1 will be understood as being the inner face of the stock.

As shown the box is so designed as to comprise two bottom sections or wings *b* and *d* shown as extensions of the vertical side panels B and D respectively, and these wings are preferably made precisely alike in size and design and each is slightly greater in area than half the bottom space of the box. The wing *b* is connected to the bottom edge of the side B along the bending line 15, while the wing *d* is similarly connected to its side wall D along the bending or hinge line 16.

In general each of these wings may be described as of isosceles triangular form, one of the equal sides being the hinge line aforesaid, while the other is a bending line 17 through which is attached a reinforcement flange 18, these two flanges being distinguished by the corresponding letters *b* and *d*. The hypotenuse or diagonal of each bottom wing is shown composed of a straight edge portion 19 and an imaginary extension 20 thereof leading to that corner of the wing remote from the line through which it is hinged to its side wall. Each wing, however, is provided with an extension 21^b or 21^d coextensive with the diagonal extension 20 and extending far enough in a direction parallel to the straight edge 19 to provide an interlocking notch 22. The aforesaid description of a bottom wing structure of isosceles form will be understood as being pertinent only to that form of box in which the bottom is substantially square. The construction, moreover, is equally applicable to box bottoms of oblong as distinguished from square construction, but the manner of manufacture and manipulation will in all cases be practically the same.

In the formation of the box I provide a bending line 23 leading from that corner of the bottom wing at the end of the hinge line remote from the straight edge 19 and of a length equal to said straight edge. In other words, the straight edge and the bending line 23 form the two equal sides of another isosceles triangle whose hypotenuse is the hinge line 15 or 16 as the case may be. The straight

edge and the bending line, moreover, intersect substantially at the bottom of the notch 22 in a point constituting the center 24 of the completed box bottom.

At about the center of the lower edge portion of the walls A and C, just above the bottom edge thereof, are formed holes 25^a and 25^c with which register similarly formed and placed holes 26^a and 26^c respectively when the box is assembled. The wing extensions 21^b and 21^d are formed with holes 27^b and 27^d located preferably along the strongest portion of each extension somewhat remote from that portion of the extension forming the notch.

In the assemblage of the box, each two parts connected by a hinge line 10, 11, 12, 13, 15, 16, or 17, may be regarded as being bent upward from the position of Fig. 1 toward each other around such hinge line, while each two parts of each wing member will be regarded as being bent downward with respect to each other and the bending line 23 between them. No bend or break takes place at any time along the imaginary extension 20 of the diagonal. The four sides of the box will be understood as being set up in rectangular form and with the flange 14 overlapping the free edge of the side A, either outside or inside as preferred, and secured by any suitable means. The flange 18^b is brought upward so as to receive the bottom edge of the side C between it and the wing *b*, while the flange 18^d is bent upward bringing the bottom edge of the side A between it and the wing *d*, see Figs. 4 and 7. These bottom wing flanges may be fastened securely as by staples 28 or the like passing through the same and the adjacent edge portions of the side walls.

Binding or tying means in the form of cords 29^a and 29^c are secured in any suitable manner in the holes 27^b and 27^d and are threaded outward through the holes 25^a and 25^c, registering respectively with the holes 26^a and 26^c as aforesaid, the intermediate portions of the cords extending each across the upper surface opposite the bottom wing from the starting point thereof. For the flattest form of the box it may be left as indicated in Fig. 2, or if desired it may be folded again along the hinge lines 10 and 12. As shown in Fig. 2 the bottom wing *d* is folded upward directly between the two walls A and D, while the bottom wing *b* is similarly folded between the walls B and C. To set up the box for filling it is set upright as will be understood from Fig. 3 and the operator will grasp the corners thereof at the upper ends of the hinge line 10 and 12 and

draw the same apart somewhat sharply with the result that the hinge lines or corners 11 and 13 will be brought toward each other while the bottom wings *b* and *d* will snap downward into flat position, each wing extension 21^b or 21^d gliding directly and easily over the straight edge 19 of the opposite wing and coming directly into interlocking engagement with the opposite wing in the notch 22, but is effectively supported by integral connection along the hinge line 15 or 16 with one side wall and with overlapping and interlocked engagement with the bottom edge portion of the next wall through the flange 18^b or 18^d, and, moreover, the extension 21^b or 21^d lies directly upon the other wing. Thus irrespective of the auxiliary locking and fastening means, the cords, the bottom structure is not only self locking and self holding to resist stress thereon tending to open the bottom by pressure either upward or downward at the bottom or as a result of stresses applied to the bottom in any other direction, but, moreover, is made of the least possible amount of material and consists of only two structural parts. However, the tie means, and some tying means must be provided for every box in order to hold the lid L in place, threaded through the box structure as above explained, serves immediately two important functions, first, to make it positively impossible for the bottom wing structure to become unlocked or separated even though the interlocking hooks might not be used, and, secondly, as a means for tying the cover L upon the box which in turn serves not only as a closure for the box, but also as a means tending to resist undesired collapse thereof. Moreover, the cords threaded as shown through the wing flanges 18^b and 18^d, serve additionally to strengthen or reinforce the connection between said flanges and their respective side walls.

I claim:

In a folding box, the combination of a series of side walls connected each to each along hinge lines, a plurality of bottom wings hinged to opposite side walls, each wing having a hook nearer that wall of the box to which the other wing is connected, and separate cords connected individually to said hooks, each of said cords extending through said nearer side of the box, said hooks being offset from the center of the box so that said cords produce a torque to effectively interlock the hooks.

In testimony whereof I affix my signature.

REBECCA BERKOWITZ.