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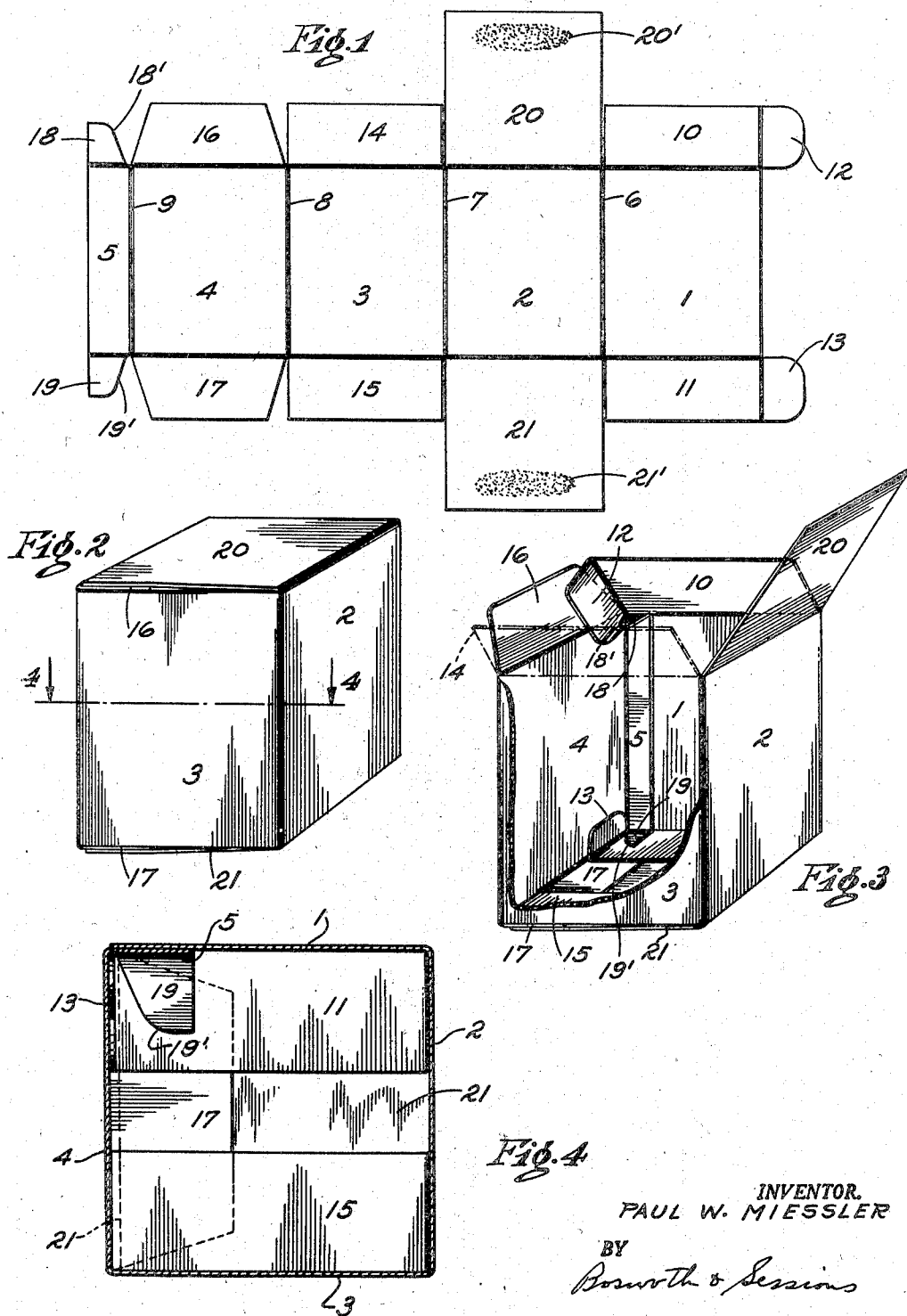
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2,471,883

BOX AND CORNER LOCK THEREFOR

Filed Nov. 22, 1946

2 Sheets-Sheet 1



May 31, 1949.

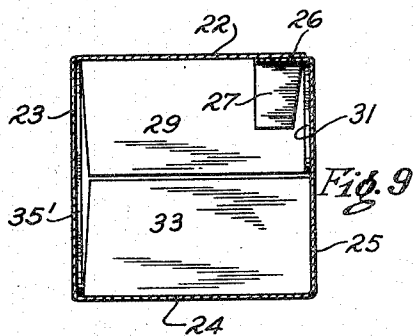
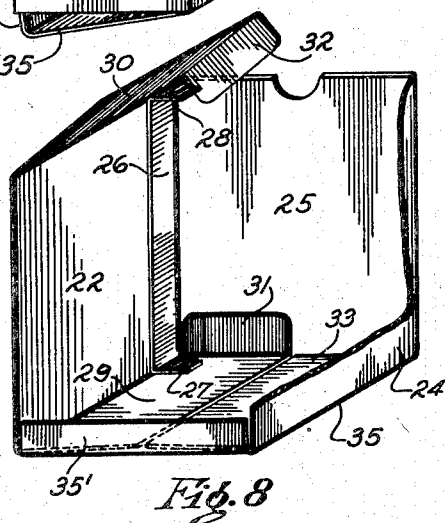
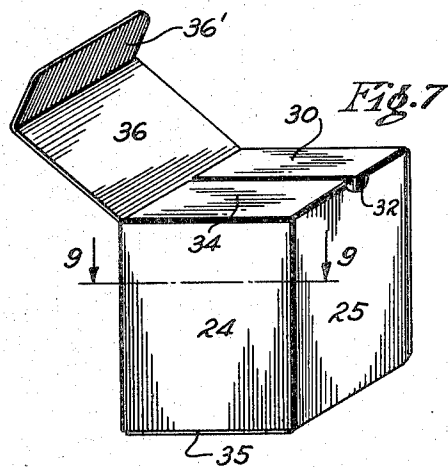
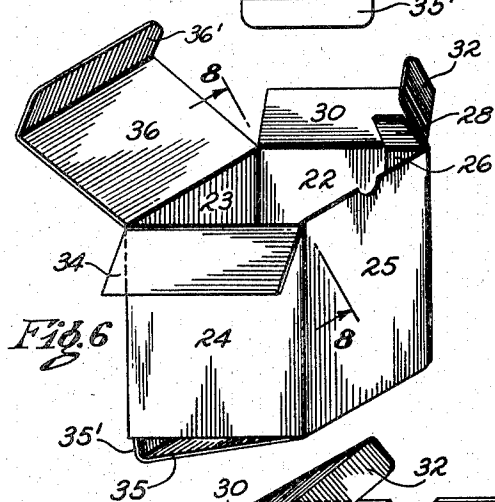
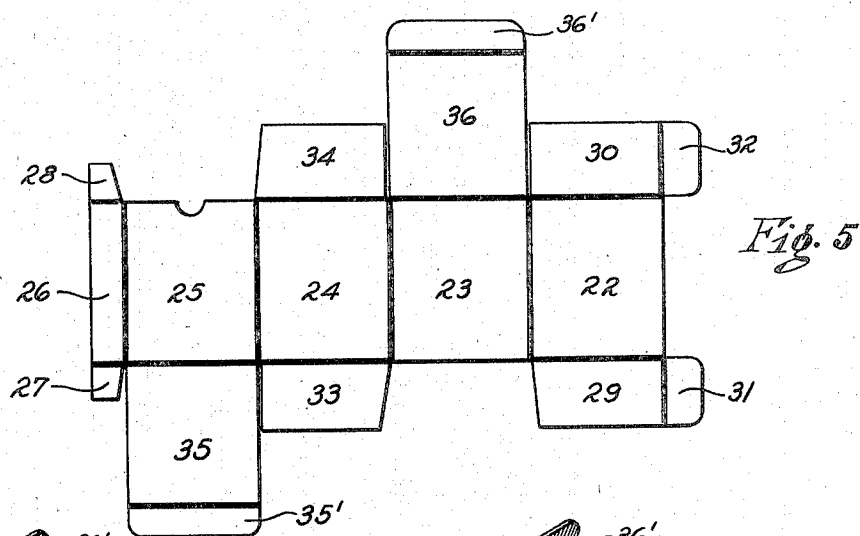
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BOX AND CORNER LOCK THEREFOR

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2 Sheets-Sheet 2



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BOX AND CORNER LOCK THEREFOR

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6 Claims. (Cl. 229—45)

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This invention relates to containers and more particularly to an improved box blank and box construction.

In the manufacture of boxes or cartons from cardboard, corrugated paperboard, etc. it is a usual practice to cut a box blank from flat stock which blank includes the various side and end portions, together with the necessary overlapping flaps and tabs for achieving the desired results in the folded box. The blanks are customarily scored or creased on the fold lines to facilitate bending them into box form. In a common and popular type of folded box the blank is formed with the side panels arranged in adjoining relation and with the top and bottom flaps and cover panels projecting laterally from the side panels. In this type of box blank it also has been a common practice to provide an overlap flap which projects from the end of one of the outer side panels of the series. When the panels are arranged in box form this overlap flap is glued, stapled, or otherwise secured to the outer end of the side panel which is at the other end of the series of panels as they are located in the blank, thus closing the side wall structure of the box. In a rectangular box of this type the side panels form a four sided box, three of the box corners being formed merely by folds in the material and the fourth corner being formed by positively securing the overlap flap to the adjacent panel.

As the box blanks above described are economical to produce and the resulting box is rugged and light in weight as well as being adapted to be readily decorated or imprinted while in flat or blank form, it is among the objects of my present invention to provide an improved form of box blank and box construction of this general type in which the necessity for gluing, stapling, or otherwise rigidly and permanently attaching the free ends of the side panels together is eliminated. Other objects of my invention include: the provision of a box blank which may be easily and quickly folded into box form and which, when the box is closed, has great strength and rigidity; the provision of a box which may be shipped or stored in flat or blank form; the provision of a simple, strong and easily assembled corner lock construction for corrugated paperboard boxes or the like; and the provision of a simple, economical, easily assembled box which may be manufactured for low cost and with a minimum of manufacturing and assembling steps or operations.

The above and other objects of my invention will appear from the following description of

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several embodiments thereof, reference being had to the accompanying drawings in which:

Figure 1 is a plan view of my improved box blank adapted to be folded into a finished box in which the top and bottom cover panels are glued or otherwise secured in final position to form a sealed container.

Figure 2 is a perspective view of a finished box formed from the blank of Figure 1.

Figure 3 is a view generally similar to Figure 2 but showing the top of the box open and having one of the side panels broken away to show my improved corner lock construction.

Figure 4 is a vertical cross-sectional view taken on line 4—4 of Figure 2.

Figure 5 is a view generally similar to Figure 1 but showing a box blank embodying my invention and adapted to be folded into a box having top and bottom panels which normally are not sealed so that they may be opened or closed at will by the user.

Figure 6 is a perspective view of a box formed from the blank of Figure 5, the top being open and the bottom being only partially closed.

Figure 7 is a view similar to Figure 6 but showing the top end flaps in closed position.

Figure 8 is a fragmentary perspective view taken substantially on line 8—8 of Figure 6 and illustrating my improved corner lock construction.

Figure 9 is a horizontal cross-sectional view taken on line 9—9 of Figure 7.

Referring now to Figure 1, the box blank comprises a series of connected and adjoining side panels 1, 2, 3, and 4. The outer or end side panel 4 carries the overlap flap 5 which, when the side panels are folded on the fold lines 6, 7, 8, and 9, to form a box, lies adjacent to and inside of the end portion of the other outer or end side panel 1 (see Figures 3 and 4). Top and bottom end flaps 10 and 11 extend laterally from the opposite sides of the side panel 1 and these end flaps carry corner interlocking tabs 12 and 13 which extend longitudinally from the outer ends of the end flaps. Another pair of end flaps 14 and 15 extend laterally from the side panel 3 and a third pair of end flaps 16 and 17 extend laterally from the side panel 4. Corner lock tabs 18 and 19 extend laterally from the opposite edges of the overlap flap 5. Tabs 18 and 19 have their inner edge portions disposed immediately adjacent the junction or fold line 9 between the outer side panel 4 and the overlap flap 5 and preferably have these inner edges relieved or cut at an angle as seen at 18' and 19' to facilitate interlocking

engagement with the tabs 12 and 13 as will later appear.

Top and bottom cover panels 20 and 21 extend laterally from the opposite sides of the side panel 2 of the box blank and may be provided with adhesive as indicated at 20' and 21' to permit sealing the cover panels down onto the end flaps 16 and 17 when the box is completely closed as seen in Figure 2.

In forming the blank of Figure 1 into box form the side panels are folded on the score line 6, 7, 8 and 9 to form a rectangular structure, as is clearly seen in Figures 3 and 4, with the overlap flap 5 extending along and overlapped by the adjacent side panel 1. The corner lock tabs 18 and 19 are folded inwardly substantially at right angles to flap 5. To lock the corner of the box which is formed between the two outer side panels 1 and 4 it is only necessary to fold the interlocking tabs 12 and 13 inwardly and then fold the top and bottom end flaps 10 and 11 into closed position. In Figure 3 the bottom of the box is completely closed and it will be seen that the edge 19' of the lock tab 19 is engaged by the interlocking tab 13 in such a manner that separation of the panels 1 and 4 is prevented. The top end flap 10 is shown in partly closed position in Figure 3, the interlocking tab 12 having just entered the V-shaped slot or groove formed between the edge 18' of the lock tab 18 and the side panel 4. It will be understood from the above description that when the end flaps 10 and 11 are fully closed a double lock is provided for the corner formed between the side panels 1 and 4. These panels are firmly locked together at both the top and bottom of the box structure and, when the other end flaps are folded into closed position and the top and bottom cover panels are folded down and secured as shown in Figure 2, a very neat, compact and rugged container is provided.

As previously noted, in prior boxes of this general type it has been necessary to glue or staple the overlap flap to the adjacent side panel. If this operation is done in the factory the boxes are bulky for storage and shipping as, although they may be flattened, they necessarily comprise two layers of stock. On the other hand, if this old type box is assembled at the place of use the gluing or stapling of the overlap flap to the adjacent side panel must be carried out by the user which is relatively expensive and time consuming. With my improved box blank and corner interlock arrangement the single thickness blanks can be shipped flat as they appear in Figure 1 and may readily be assembled by unskilled labor at the place of use.

In Figures 5 to 9 inclusive, I have illustrated a somewhat modified form of box in which my improved corner lock is incorporated. The blank of Figure 5 includes side panels 22, 23, 24 and 25. The overlap flap 26 extends from the outer end of side panel 25 and carries laterally projecting lock tabs 27 and 28. End flaps 29 and 30 are integrally formed with the side panel 22 and carry the longitudinally projecting interlocking tabs 31 and 32. Another pair of end flaps 33 and 34 are formed integrally with the side panel 24 in the same manner as the end flaps 14 and 15 of Figure 1. The bottom cover panel 35 is formed integrally with and extends laterally from the side panel 25 and the top cover panel 36 is similarly integrally formed with the side panel 23 but extends laterally in the opposite direction. Securing tabs 35' and 36' are formed on the end cover panels 35 and 36 and serve to hold the

covers closed by fitting in between the side panels and the edges of the end flaps of the box in well-known manner (see Figures 6 and 9). In this embodiment of my invention the corner lock is formed in the same manner as previously described in referring to Figures 1 to 4 but the top and bottom cover panels are hinged from opposite sides of the box instead of from the same side of the box as are the end panels 20 and 21.

The box of Figures 5 to 9 inclusive may be folded into closed position in the same manner as previously described and forms a rugged container which will not come apart or open up in use and which does not require any glued, stapled or otherwise secured joints between the various parts.

It will be seen from the above description of several embodiments of my invention that I have provided a corner lock construction for folded boxes of the type described which positively retains the adjacent side panels in position and prevents any relative movement thereof after the box is closed. Opening and unpacking of the contents of the box is easily effected by opening the top cover panel and end flaps and even when the top is fully open the bottom corner lock will hold the box together.

Although I have described the illustrated embodiment of my invention in considerable detail it will be understood that variations and modifications may be made in the proportions and arrangement of the parts without departing from the spirit of my invention. I do not, therefore, wish to be limited to the particular form of box blank and box construction herein described but claim as my invention all embodiments thereof coming within the scope of the appended claims.

I claim:

1. A box blank of paperboard or the like including a series of side panel portions in adjoining relation, an overlap flap extending from the free end of one of the outer side panels of said series, corner lock tabs extending laterally from the opposite sides of said overlap flap and having inner edge portions disposed immediately adjacent the junction of said overlap flap and said one of said outer side panels, top and bottom end flaps extending laterally from the opposite sides of the other outer side panel of said series, and corner interlocking tabs extending longitudinally from the outer ends of each of said end flaps.

2. A box blank of paperboard or the like including a series of side panel portions in adjoining relation, an overlap flap extending from the free end of one of the outer side panels of said series, corner lock tabs extending laterally from the opposite sides of said overlap flap and having inner edge portions disposed immediately adjacent the junction of said overlap flap and said one of said outer side panels, top and bottom end flaps extending laterally from the opposite sides of the other outer side panel of said series, corner interlocking tabs extending longitudinally from the outer ends of each of said end flaps, and top and bottom cover panels extending laterally from said series of said panel portions.

3. A box of the type described comprising four rectangularly arranged side panels, said panels being integrally joined at three corners and having an overlap flap extending from one of said side panels in adjacent but unattached relation to the adjacent side panel to form an overlapping joint at the fourth corner, top and bottom end flaps adapted to be folded inwardly from the top

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and bottom edges of said adjacent side panel, and corner locking means for retaining said fourth corner in closed position comprising corner lock tabs integral with and extending inwardly from the top and bottom edges of said overlap flap and corner interlocking tabs integral with and extending inwardly from said top and bottom end flaps, said corner lock tabs and corner interlocking tabs having locking engagement when said top and bottom end flaps are in closed position whereby said fourth corner is held closed.

4. A box of the type described comprising four rectangularly arranged side panels, said panels being integrally joined at three corners and having an overlap flap extending from one of said side panels in adjacent but unattached relation to the adjacent side panel to form an overlapping joint at the fourth corner, top and bottom end flaps adapted to be folded inwardly from the top and bottom edges of said adjacent side panel, and corner locking means for retaining said fourth corner in closed position comprising corner lock tabs integral with and extending inwardly from the top and bottom edges of said overlap flap and corner interlocking tabs integral with and extending inwardly from said top and bottom end flaps, said corner lock tabs and corner interlocking tabs having locking engagement when said top and bottom end flaps are in closed position whereby said fourth corner is held closed, and top and bottom cover panels each hinged at one edge to one of said side panels and adapted to overlie said top and bottom end flaps when in closed position.

5. A box of the type described comprising a series of connected side panels folded to form a multi-cornered box, the joint at one corner being open and including an overlap flap connected to one side panel and extending along the adjacent side panel, end flaps adapted to be folded in-

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wardly from the top and bottom edges of said adjacent side panel, and interlocking corner tabs on said overlap flap and said end flaps, said tabs on said end flap having edge portions disposed immediately adjacent the junction of said overlap flap and said one side panel, whereby when said end flaps are closed relative movement between said overlap flap and said adjacent side panel is substantially prevented.

6. A corner lock for folded boxes of the type described comprising an overlap flap connected to one side panel of the box and extending along the adjacent side panel, corner lock tabs connected to the opposite top and bottom edges of said overlap flap and folded inwardly to extend generally parallel to the box top and bottom, said corner lock tabs having edge portions disposed immediately adjacent the junction of said overlap flap and said one side panel, end flaps connected to said adjacent side panel on its opposite top and bottom edges and adapted to be folded inwardly over the ends of said box, and a corner interlocking tab secured to each of said end flaps, said corner interlocking tabs being adapted to be folded inwardly into position to engage said corner lock tabs when said end flaps are folded inwardly over the box ends whereby the box corner is locked against opening.

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