

Aug. 10, 1943.

W. A. BECKER

2,326,281

BOX CONSTRUCTION

Filed Feb. 23, 1942

3 Sheets-Sheet 1

Fig. 1

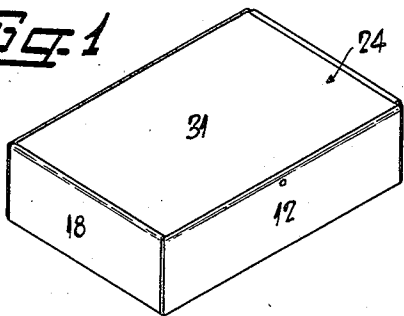


Fig. 4

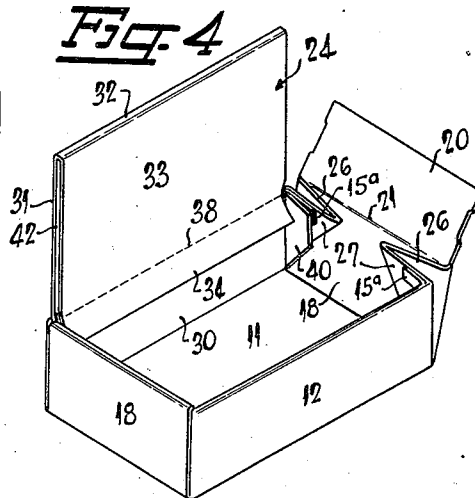


Fig. 2

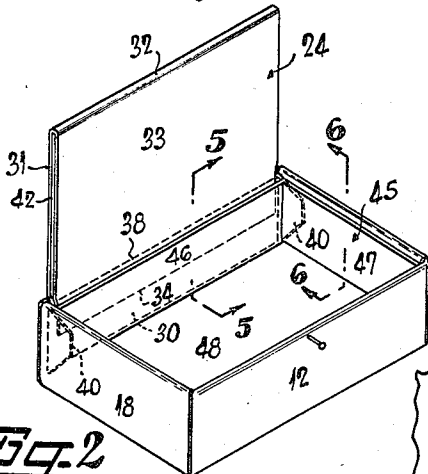


Fig. 3

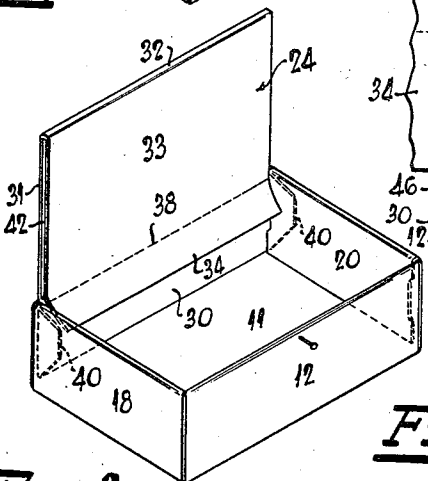


Fig. 6

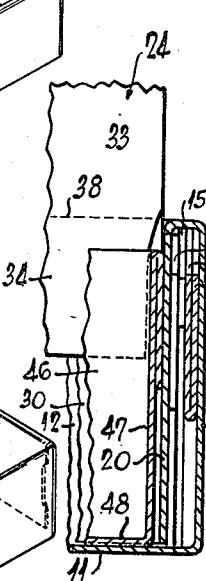
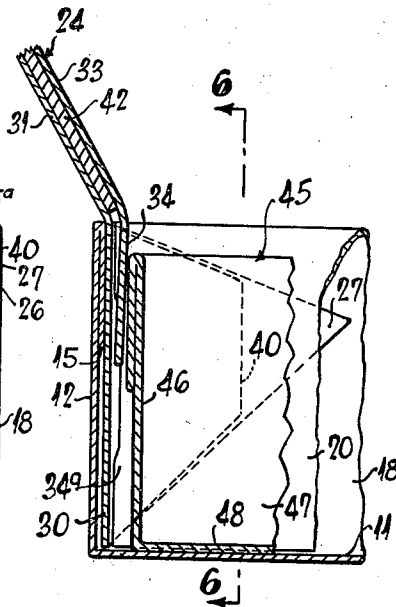


Fig. 5



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Fig. 7

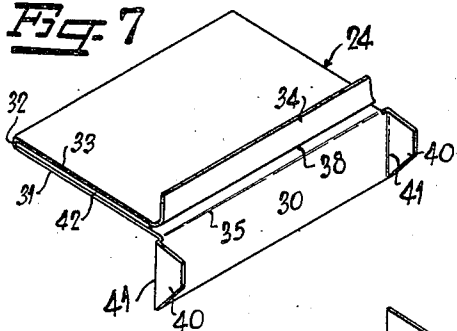


Fig. 8

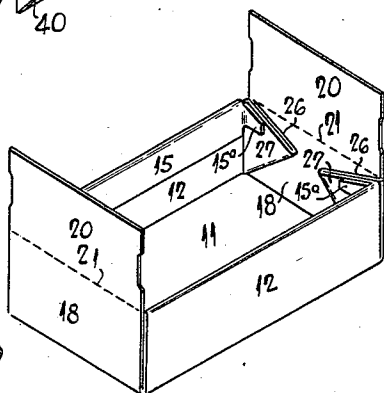
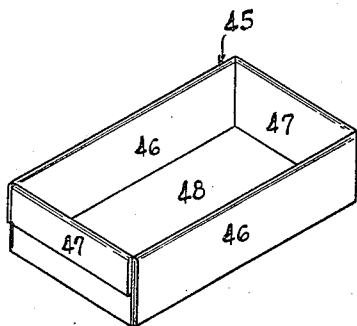


Fig. 9

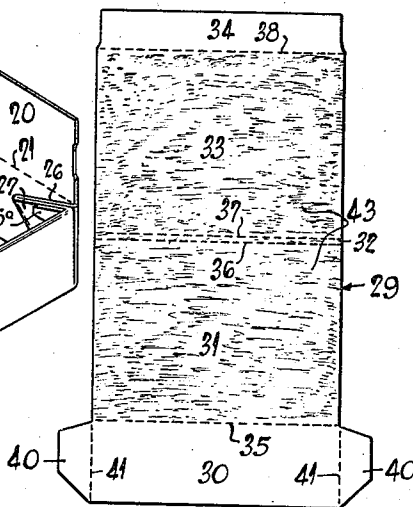


Fig. 10

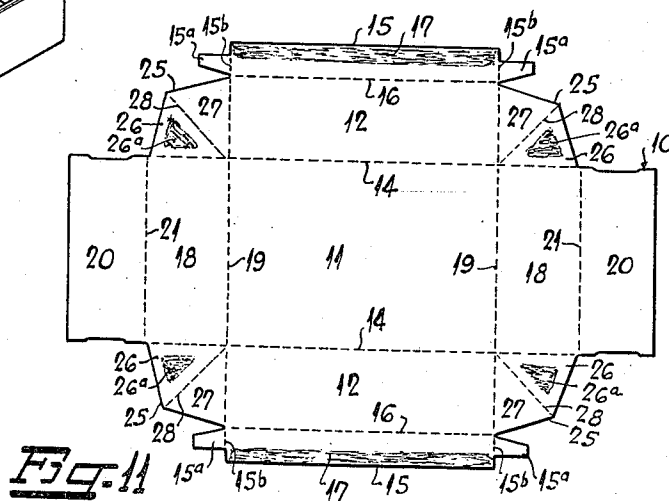


Fig. 11

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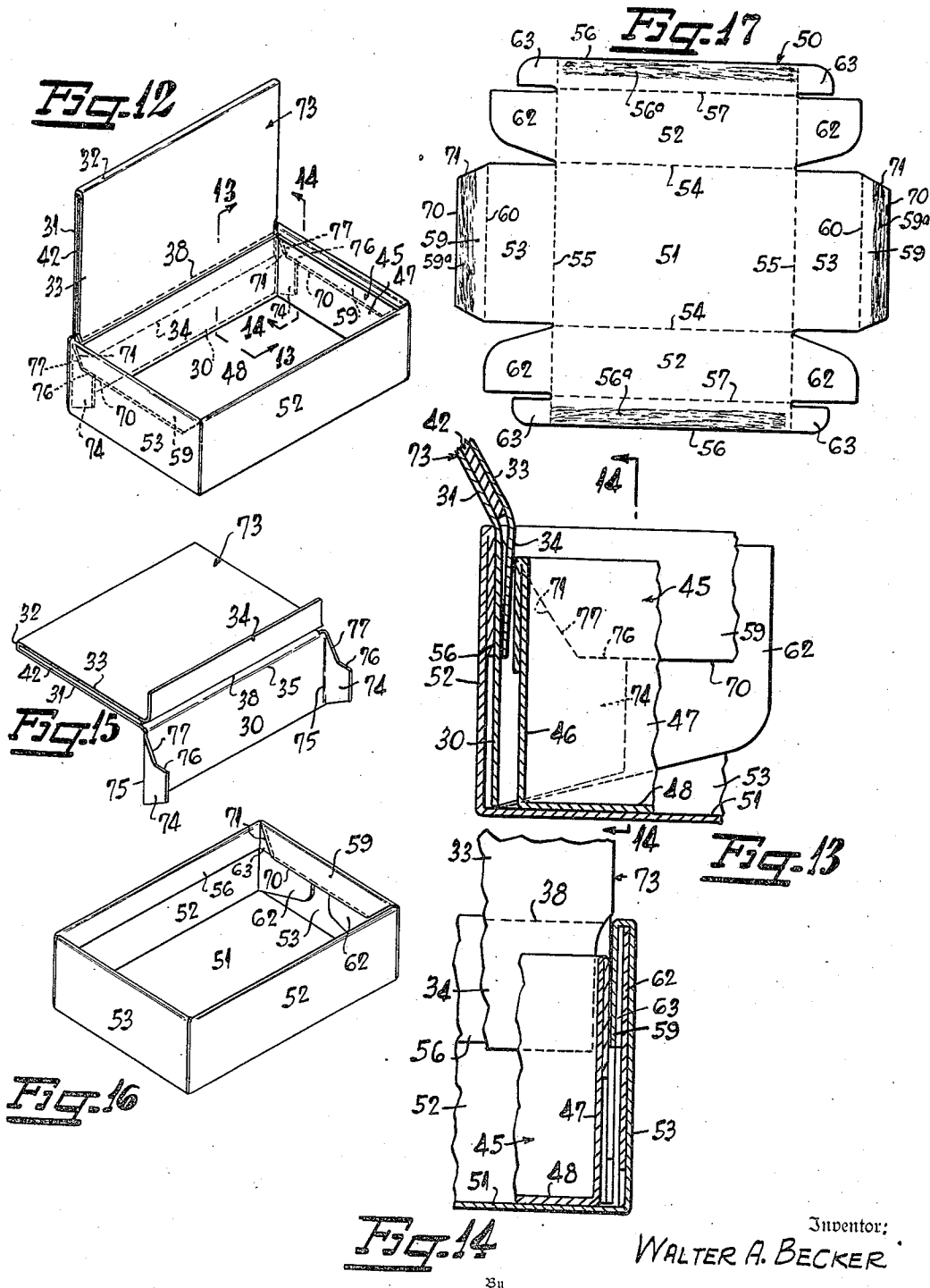
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UNITED STATES PATENT OFFICE

2,326,281

BOX CONSTRUCTION

Walter A. Becker, Charlotte, N. C.

Application February 23, 1942, Serial No. 431,959

3 Claims. (Cl. 229—31)

This invention relates to containers such as cartons, boxes and the like and comprises an improvement in my co-pending patent application, Serial No. 370,370 filed December 16, 1940. More specifically, the invention relates to a hinged cover construction whereby the cover may be readily attached to, or detached from the body of the container.

In most instances, it is desirable to ship cartons in a knocked-down position so that a minimum amount of shipping space will be required. Before shipping the knocked-down cartons, however, it is a usual practice to finish the same by placing certain printed matter on the body and cover so that the user will only have to erect the carton and place the goods therein. Due to the fact that the cover often requires a different printing operation from that necessary for the body, it is desirable to have the cover detachable so that the body and cover can be handled separately during the printing.

Where a carton having a flexible cover extending from one of its side walls is employed, much difficulty is encountered due to the lack of rigidity of the supporting side wall. The lack of rigidity is partially due to the cover and side wall being of the same thickness throughout. When a carton of this nature is employed for displaying merchandise such as cigars or the like, it is desirable that the wall to which the cover is attached be much stronger than the other walls. For example, when making a sale of cigars, the opened container is usually handled by grasping the cover with one hand and the body of the box with the other. Therefore, each time a sale is made, an added strain is applied to the side wall, as well as a bending of the cover about its hinge.

It is an object of this invention to provide a carton having a rotatable cover, one edge of which extends downwardly from its axis of rotation along the inner face of one of the side walls to supply the necessary rigidity.

It is another object of this invention to provide a carton of the class described in which a releasable interlocking arrangement is provided between the downwardly extending cover edge and the end walls of the carton.

It is another object of this invention to provide a two-piece carton comprising a box and a rotatable cover, said cover having tabs detachably interlocked with opposite walls of the box.

Some of the objects of the invention having been stated, other objects will appear when the description proceeds, when taken in connection with the accompanying drawings, in which—

Figure 1 is an isometric view of one form of my improved carton construction;

Figure 2 is an isometric view showing the cover of the carton in an open position;

Figure 3 is an isometric view similar to Figure 2, but with the liner removed from the body of the carton;

Figure 4 is an isometric view showing the carton partially erected and as the same appears before one end of the cover is locked in position by one of the end walls;

Figure 5 is an enlarged transverse sectional view taken along the line 5—5 in Figure 2;

Figure 6 is an enlarged sectional longitudinal view taken along the lines 6—6 in Figures 2 and 5;

Figure 7 is an isometric detail view of the carton cover as it appears before attaching the same to the carton body;

Figure 8 is an isometric view of the body of the carton showing the end wall locking flaps in an extended position;

Figure 9 is an isometric view of the carton liner;

Figure 10 is a developed view of a blank from which a portion of the lid as shown in Figure 7 is formed;

Figure 11 is a plan view of the blank from which the carton body as shown in Figure 8 is formed;

Figure 12 is an isometric view of a slightly modified form of carton construction showing the cover in an opened position;

Figure 13 is an enlarged transverse sectional detail view taken along the line 13—13 in Figure 12;

Figure 14 is an enlarged longitudinal sectional detail view taken along the lines 14—14 in Figures 12 and 13;

Figure 15 is an isometric view showing the cover as it appears prior to attaching the same to a carton body;

Figure 16 is an isometric view of the carton body which is adapted to receive the cover structure shown in Figure 15;

Figure 17 is a view of the body blank from which the container shown in Figure 16 is formed.

Referring more specifically to the drawings, and especially to Figure 11, the numeral 10 denotes a blank from which the body of a carton is made. This blank is divided into sections by crease lines, and when it is desired to form an erected carton body, the sections are bent about their respective crease lines and glued or otherwise fastened in position.

The blank 10 has a bottom section 11, said bottom section having side wall sections 12 hingedly secured to opposed edges thereof along crease lines 14. The outer edges of the sections 12 have integral therewith tab sections 15, said tab sections being adapted to fold inwardly upon sections 12 along crease lines 16 and to be secured in folded position by any suitable means such as an adhesive 17. The remaining two edges of the bottom section 11 have end wall sections 18 attached thereto along crease lines 19. These end wall sections have a locking tab 20 attached to the outer edges thereof along the crease lines 21. The function of locking tabs 20 will be more completely described in the following specification, but it should be noted that they are employed in the present invention primarily for releasably securing the cover to the body of the carton.

Between the adjacent corners of the end wall sections 18 and sidewall sections 12, suitable gusset sections 25 are provided, each gusset section being divided into two triangular sections, i. e., 26 and 27 by means of a crease line 28. Each gusset 25 also is united to an end wall section along one of the previously mentioned crease lines 14, and to the sidewall section along one of the previously mentioned crease lines 19.

In order to erect a carton body from blank 10, the sidewalls 12 and the end walls 18 are bent inwardly and upwardly about their respective crease lines 14 and 19, and at the same time the sections 26 and 27 are folded upon themselves about crease lines 28, to thereby cause the box to assume a position substantially as shown in Figure 8. Of course, it is necessary to first fold the sections 15 inwardly upon the side wall sections 12 in the manner previously mentioned so that the top edges of the side walls will be reinforced. The sections 26 of the corner gussets 25 preferably have a suitable adhesive 26a applied thereto so that when the same is folded against the inner face of end wall sections 18, the contacting surfaces will adhere and thereby hold the side and end walls in an upright position.

It will be noted by referring to Figures 8 and 11 that each end section 15 has a tab 15a integral therewith. These tabs are attached to the sections 15 along crease lines 15b. Therefore, when the carton body is erected to the position shown in Figure 8, the tabs 15a will lie in a position substantially parallel to the sections 18, 26 and 27. The purpose of these tabs 15a is to add a substantial reinforcement to the corners of the erected carton body, and also to serve an important function in reinforcing the detachable cover structure hereinafter to be described.

When the blank 10 has been erected to the position as shown in Figure 8, it is then ready for the attachment of a suitable cover 24, such as shown in the accompanying drawings. This cover is partially formed from a blank 29 (Figure 10) which is divided into rectangular sections 30, 31, 32, 33, and 34 by parallel crease lines 35, 36, 37 and 38. The width and breadth of the section 31 is substantially the same as the width and breadth of the interior of the box structure as shown in Figure 8.

It will be noted that sections 31 and 33 are substantially the same size and shape; whereas the section 32 is of such a width as to account for the thickness of the cover. Each end of

cover section 30 has united thereto along a crease line 41, a short tab or flap 40.

When it is desired to fold blank 29 to form a cover structure 24 such as shown in Figure 7, the sections 31 and 33 are folded along lines 36 and 37 respectively. When properly folded they will be spaced apart a sufficient distance to permit a suitable rectangular filler member 42 to be inserted therebetween so that proper rigidity will be provided in the cover structure. The filler member 42 should be secured in place by any suitable means such as glue 43. The tabs 40 are then folded along lines 41 toward the observer in Figures 7 and 10 to a position where they will be substantially at right angles to section 30. Then the cover structure is in the proper shape for attaching the same to a carton body such as shown in Figure 8.

When attaching the cover structure 24 to the carton body, it is necessary to place the section 30 against the inside of one of the side walls 12 in the manner shown at the far side of Figure 4. At this time the end sections 40 of the cover structure will be disposed adjacent the interior proximate faces of corner sections 27. With the parts in the position shown in the right-hand portion of Figure 4, the end tab locking sections 20 are bent inwardly about bend lines 21 to thereby removably encase the end tabs 40 and to detachably anchor the same to the end walls of the carton body.

Since the free edges of the sections 20 fit snugly against the interior or side walls and bottom of the carton body, the frictional engagement will ordinarily be sufficient to hold the same in a folded position such as shown in Figure 3; however, as an additional means for holding the free ends of the sections 20 in folded or locked position, a suitable rectangular liner 45 is provided. This liner may be collapsed in any desired manner, such as the structure shown in my said co-pending application. This liner has side walls 46 and end walls 47 and a bottom 48; and the size and shape is such as to permit the same to snugly fit on the inside of the erected carton body to thereby cause the end walls of the liner to confine the locking flaps 20 in the proper position as shown in Figure 6. The side walls 46 of the liner will likewise serve to confine cover flap 34 in a slot 34a which slot is formed between liner side wall 46 and cover section 30 (Figure 5). The cover 24 is adapted to rotate about line 35, when opening or closing the same. Therefore, it is quite evident that the flap section 34 will slide up and down in slot 34a during this rotation and between the liner side wall 46 and the cover section 30. This form of construction makes it easy to attach or detach the cover to or from the carton body.

Figures 12 to 17 inclusive illustrate a modified form of the invention in which the carton cover is detachably secured to end walls of the container body in a different manner. The body blank from which the body of the carton is formed, as illustrated in Figure 17, is designated broadly by the reference character 50. This blank comprises a bottom section 51 having suitable sidewall sections 52 and end wall sections 53, which are joined to the bottom section along crease lines 54 and 55, respectively.

The side wall sections 52 have integral with the outer ends thereof suitable reinforcing sections 56. These sections 56 are adapted to be bent inwardly upon the inner faces of the side walls about suitable crease lines 57 and then se-

cured in position by any suitable means such as adhesive 56a. Likewise the outer ends of the end wall sections 53 have suitable reinforcing sections 59 which are adapted to be bent inwardly along lines 60 upon the inner faces of end wall sections 53 and secured in position by any suitable means such as adhesive 59a. These sections 59 and 56 are disposed at the top edges, or rim of the container body when erected, thereby making the open side of the container body sufficiently rigid to withstand use.

The ends of the side wall sections 52 have extending therefrom, tabs 62 which are adapted to be bent inwardly along previously mentioned bend lines 55 at substantially right angles to the side walls when the carton body is erected. In the erected positions, the tabs will be in a face-to-face contact with the inner faces of the end walls 53. A similar tab 63 extends from each end of said reinforcing side wall section 56 and likewise this tab is adapted to be bent about previously mentioned crease line 55, to cause the same to be disposed in parallel position and in face-to-face contact with the tabs 62 when the side walls and end walls are erected.

The purpose of the tabs 62 is to serve as uniting gussets between the side walls and end walls at the corner of the carton body, and the function of the tabs 63 is to add to the rigidity and the strength to the rim at the corners of the carton body.

To erect a carton body from the blank 50 so that it will assume a shape shown in Figure 16, it is first necessary to fold the side wall reinforcing sections 56 upon the inner faces of side wall sections 52 and glue, or otherwise, secure the same in position. At this time the tabs 63 will overlap the tabs 62. Then the tabs 62 and 63 are bent upwardly and inwardly to positions substantially at right angles to the side wall sections, after which the side wall sections 52 and the associated tabs are rotated about crease lines 54 until the side walls assume a right angle position to the bottom 51. At this time, the end wall sections 53 and 59 are bent upwardly about crease lines 55 until the inner faces are in face-to-face contact with the outer faces of side wall tabs 62 after which the end wall reinforcing sections 59 are folded downwardly about crease line 60 and over the ends of tabs 62 and tabs 63 substantially as shown in Figure 16.

When the carton body is erected, the end wall reinforcing section 59 will have its outer edge 70 disposed substantially in parallel relation to the bottom section 51. The adjoining beveled surface 71 at each end of sections 59 will slant downwardly at an acute angle from the upper corner of the carton body. The two surfaces 70 and 71 form ledges or projections for engaging a portion of the cover structure and removably holding it in position relative to the body of the carton.

The top or cover for the carton body is very similar to the cover previously described which fits on the carton illustrated in Figures 1 to 11, inclusive. Therefore, like reference characters will be given to like parts and a detailed description will be made only of the parts which differ. The details of the cover 73 which is adapted to be associated with the container shown in Figure 16 are illustrated in Figures 12 and 15. This cover is divided by crease lines into sections 30, 31, 32, 33 and 34, as in the preceding case; however, the interlocking tabs on the end sections 30 differ slightly from the tabs in the preceding form. It is here seen that the section 30 of cover 73 has

suitable tabs 74 integral with each end thereof and these tabs are adapted to be bent about crease lines 75 to a position substantially at right angles to section 30 (Figure 15), when it is desired to attach the cover structure to the carton body.

Each of the tabs 74 has a substantially horizontal edge 76 which fits beneath the horizontal edge 70 of the container body. A beveled edge 77 is disposed adjacent the horizontal edge 76 and this beveled edge fits against the beveled edge 71 of the carton body.

There is a natural tendency for the tabs 74 to spring outwardly about the crease lines 74. Therefore upon placing the section 30 of cover 73 against the inside surface of side wall section 52 of the erected box, the tabs 74 will press outwardly against the inner faces of the end walls and thereby hold the edges 76 and 77 beneath the edges 70 and 71. The flap section 34 will also fit in parallel relation to the section 30 as in the preceding form. The purpose of showing this flap section is an upturned position in Figures 7 and 15 is to clarify the disclosure, but when the container is erected the flap 34 will always assume a down-turned position such as shown in Figures 13 and 14.

When flap 34 is disposed in downturned position as shown in Figures 13 and 14, a suitable liner 45 (Figure 9) is adapted to snugly fit on the inside of the container body to not only hold the flap 34 in downturned position, but to also additionally hold the tabs 74 against the end walls and beneath the edges 70 and 71. The container formed from the blank 50 is not what is commonly known as a collapsible box. Instead, it is usually cut out in a blank form such as shown in Figure 7 and then shipped to the user who erects the same by use of hand or by supplying suitable machinery. The cover however, is usually completed when shipped except for the bending of the tabs 34 and 74. In the preceding form, the body blank 10 is usually formed into a collapsed box before shipping, and of course, when the user is ready to attach the cover, it is only necessary for side walls and end walls to be raised to an erected position such as shown in Figure 8 and then the cover structure is attached.

In the drawings and specification, there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. In a rectangular box having a bottom, side walls and end walls, projections extending inwardly from the proximate faces of the end walls and forming a shoulder on the lower edge of each projection, a rotatable cover for said box, means for removably securing the cover to said box, said means including a flat member extending from the axis of rotation of the cover along one of the side walls and tabs extending from each end of said flat member, each upper edge of each tab fitting against the lower edge of said projections.

2. In a rectangular box having a bottom, side walls and end walls, projections extending inwardly from the proximate faces of the end walls, a rotatable cover for said box, said cover having a flap extending from the axis of rotation of said cover along the inner surface of one

of the side walls, means for removably securing said flap to said box including tabs extending from the ends of said flap and having their upper edges fitting against the lower edges of said end wall projections, and a rectangular liner fitting into said box and serving to hold the tabs in position below said projections.

3. In a rectangular paper box having a bottom, side walls and end walls, inwardly foldable flat sections rotatably secured to the top edge of each end wall, a rotatable cover for said box, said cover having a flap extending from its axis of rotation along the inner surface of one of the side walls, a flexible flap integral with said cover and adapted to slide along the inner face of said first

flap when the cover is rotated, means for removably securing said cover and flap to said box including tabs extending from the ends of said first flap and having their upper edges fitting against the lower edges of said inwardly foldable flat sections, and a liner comprising a second rectangular paper box adapted to fit snugly within said first box whereby the sliding movement of the said flexible flap will be confined between the sidewalls of the liner box and said first flap, and whereby said flat sections will be held in folded positions against the inner faces of said tabs.

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