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DOUBLE-WALL FOLDING BOX WITH A LOCKING CLOSURE THEREFOR

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FIG. 1

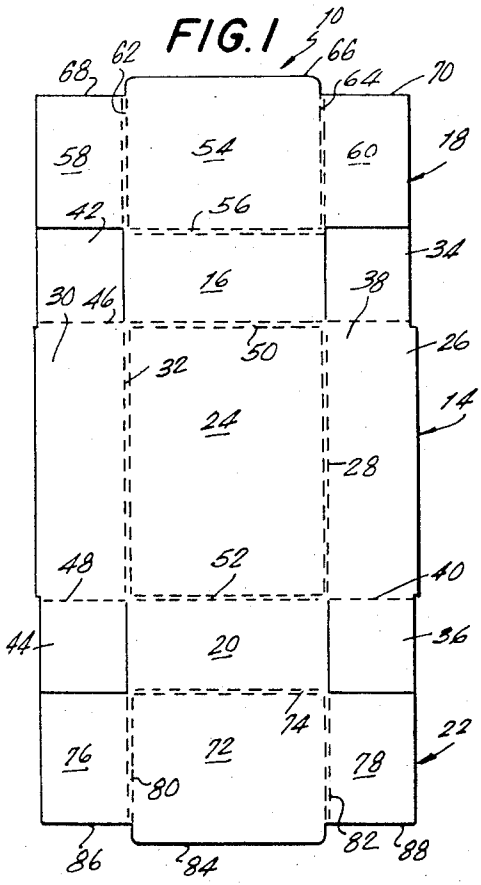



FIG. 2

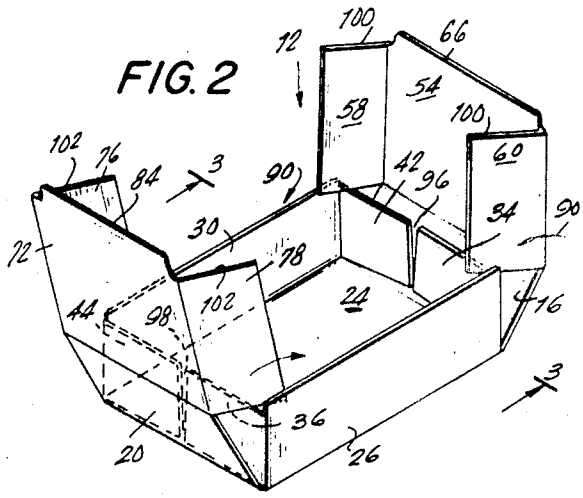
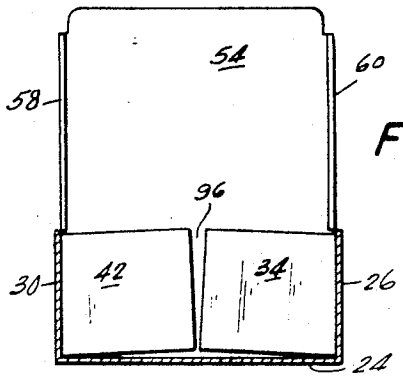



FIG. 3



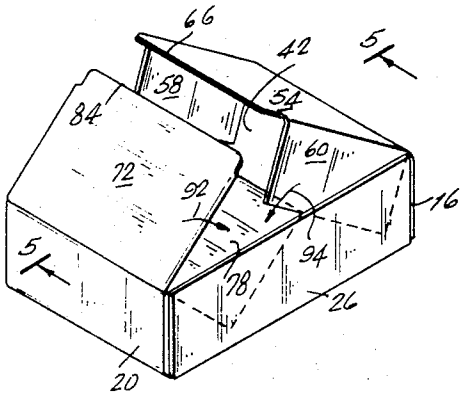




FIG. 4

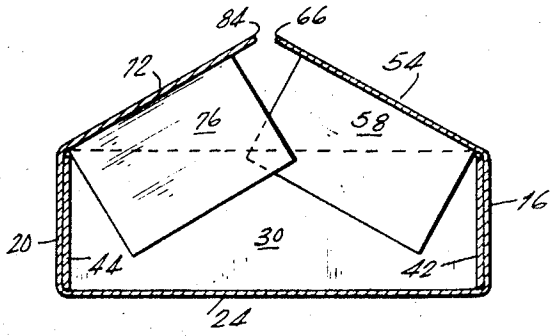



FIG. 5

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FIG. 6

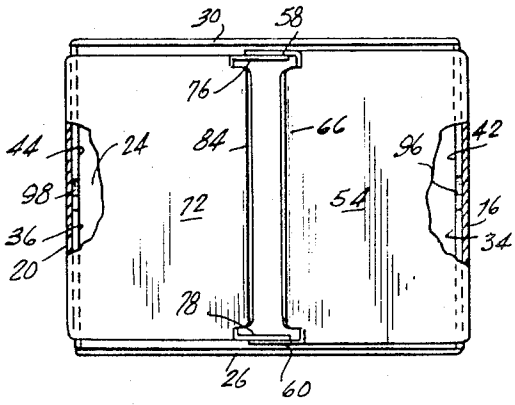



FIG. 7

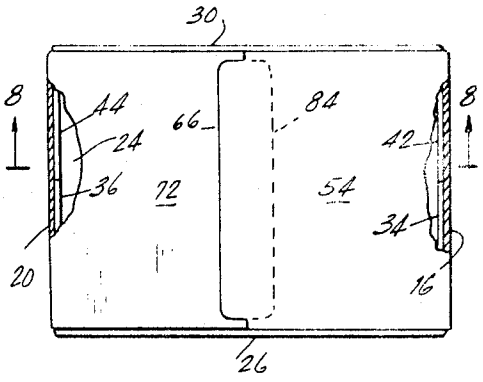
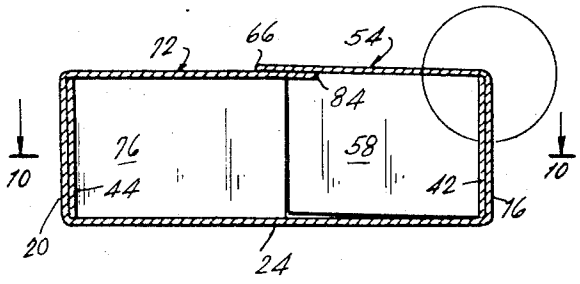



FIG. 8



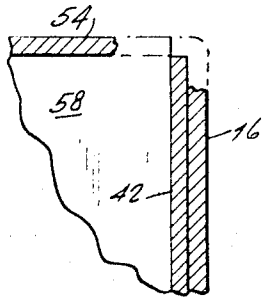




FIG. 9

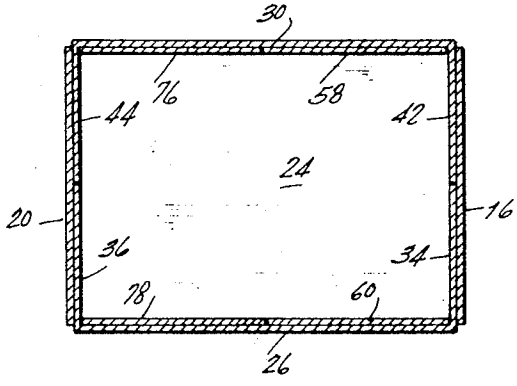



FIG. 10

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# DOUBLE-WALL FOLDING BOX WITH A LOCKING CLOSURE THEREFOR

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Int. Cl. B65d 5/22
U.S. Cl. 229—33 1 Claim

## ABSTRACT OF THE DISCLOSURE

The invention is concerned with providing a double-wall folding box having hinged cooperating cover means and means to wedge said cover means against each other to secure said cover means in releasably locked position.

The present invention relates in general to boxes formed of corrugated paper or the like and in particular, to a box structure having hinged cooperating cover segments which provide the advantages of a double-wall folding box with an inherent locking closure therefor and unique advantages derived from the use of unusual die-cut geometric shapes found in folding box structures.

It is an object of the present invention to provide a double-wall box structure having cooperating cover elements which serve to keep the box in closed condition.

Other and further objects and advantages will be readily apparent to one skilled in the art from a consideration of the following specification taken in connection with the appended drawings.

In the drawings, which illustrate the best mode presently contemplated for carrying out the invention,

FIGURE 1 is a plan view of a blank according to the present invention;

FIGURE 2 is a perspective view which illustrates the blank in partially set-up condition;

FIGURE 3 is a sectional view taken on the line 3—3 of FIGURE 2;

FIGURE 4 is a perspective view of the box in the process of being closed;

FIGURE 5 is a sectional view taken on the line 5—5 of FIGURE 4;

FIGURE 6 is a top plan view of the box in the condition thereof illustrated in FIGURE 5 with portions being broken away for purposes of illustration;

FIGURE 7 is a top plan view of the box showing the latter in the fully closed condition thereof;

FIGURE 8 is a sectional view taken on the line 8—8 of FIGURE 7;

FIGURE 9 is a fragmentary detail view of the box on an enlarged scale; and

FIGURE 10 is a sectional view taken on the line 10—10 of FIGURE 8.

Referring now to the drawings in detail, there is shown in FIGURE 1 a blank 10 from which there is formed a box 12 pursuant to the present invention. The blank 10 is preferably formed of corrugated cardboard or other suitable rigid sheet material. The blank 10 comprises a tray forming portion which is generally indicated by the reference numeral 14, a first hinge portion 16 provided with a first cover portion generally indicated by the reference numeral 18, and a second hinge portion 20 provided with a second cover portion generally indicated by the reference numeral 22.

The tray forming portion 14 comprises a substantially rectangular floor or base 24 having a first side wall 26 secured thereto along a hinge line 28 and a second side wall 30 secured thereto along a hinge line 32. It will be noted that the floor or base 24 is substantially rectangular



in conformation and that the hinge lines 28 and 32 constitute the elongated marginal side edges thereof. This side wall 26 of the tray forming portion 14 is provided with a pair of end wall flaps 34 and 36 which extend from the opposite marginal end edges thereof constituted by the fold or hinge lines 38 and 40 respectively. The opposing side wall 30 of the tray forming portion 14 is similarly provided at its opposite marginal ends with the end wall flaps 42 and 44 which are secured thereto along the hinge or fold lines 46 and 48 respectively. It will be understood that the end wall flaps 34 and 42 cooperate to form one end wall for the tray portion 14 and that the end wall flaps 36 and 44 cooperate to form a second end wall for the tray forming portion as hereinafter described in detail.

The hinge portion 16 is secured to one transverse marginal edge of the floor 24 along a hinge or fold line 50 and the hinge portion 20 is secured along the opposite marginal transverse edge of the floor 24 along a hinge or fold line 52.

The cover portion 18 comprises a ceiling portion 54 which is secured to the hinge portion 16 along a hinge or fold line 56. The ceiling portion 54 is provided with a pair of cover side wall flaps 58 and 60 which are secured thereto along the opposing fold lines 62 and 64 respectively. It will be noted that the ceiling portion 54 is provided with an integral tab extension 66 which projects outwardly beyond the adjacent marginal end edges 68 and 70 of the end wall flaps 58 and 60 respectively.

The cover portion 22 is provided with a ceiling portion 72 which is secured thereto along a hinge line 74. The ceiling portion 72 is provided with a pair of opposing cover end wall flaps 76 and 78 which are secured thereto along the opposing hinge lines 80 and 82 which form the opposing marginal edge of the ceiling portion 72. The ceiling portion 72 is also provided with a tab projection 84 which extends beyond the adjacent marginal edges 86 and 88, respectively, of the end wall flaps 76 and 78 respectively.

In order to form the box 12, the blank 10 is folded into the condition thereof shown in FIGURE 2. As here shown, the box 12 comprises a tray 14 provided at its opposite ends with hinge portions 16 and 20. The tray 14 comprises a floor of base 24 having the opposing elongated side walls 30 and 26 which extend upwardly from the floor 24. The end wall flaps 34 and 42 cooperate to define one upstanding end wall between the side walls 30 and 26 and the other pair of end wall flaps 36 and 44 cooperate to form an opposing end wall extending upwardly from the floor 24. It will be noted that the end wall 34–42 is disposed inwardly of the hinge 16 and that the second end wall 36–44 is disposed inwardly of the other hinge 20 in the set-up open condition of the box illustrated in FIGURE 2.

In order to complete the closing of the box to the fully closed condition thereof illustrated in FIGURE 7, the ceiling or cover portions 54 and 72 are moved inwardly from the position thereof shown in FIGURE 2 in the direction indicated by the arrow 90 in said figure. The inward movement of the opposing cover portions will bring them to the intermediate position illustrated in FIGURES 4 and 5. It will be noted that in said condition of the various portions of the box 12, the end wall flaps 76 and 78 of the cover portion 72 are disposed inwardly of the end wall flaps 58 and 60 respectively of the cover portion 54. In order to effect the complete closure of the box, the cover portions are moved inwardly as indicated by the arrows 92 and 94 in FIGURE 4. It will be noted from FIGURE 6 that in the condition of the various parts shown in FIGURE 4, the tab projections 66 and 84 are spaced from each other. Furthermore, it will be noted that the end wall portions 34 and 42 are not

in complete abutment along their opposing marginal edges which are separated by a V-shaped space generally indicated by the reference numeral **96**. Similarly, the end wall portions **36** and **44** are not in complete abutment along their opposing marginal edges but are separated by the V-shaped space **98**. The complete depression of the cover or ceiling portions **54** and **72** will bring them to the position thereof shown in FIGURES 7 and 8. It will be noted that in said condition of the cover portions, the tab **66** of the cover portion **54** overlies the tab **84** of the cover portion **72**.

Pursuant to a highly novel feature of the present invention, the cover portions **54** and **72** are locked together in the condition thereof illustrated in FIGURES 7 and 8. This results from the fact that due to the dimensioning of the parts, the free marginal edges **100** of the cover side wall flaps **58** and **60** are wedged against the confronting adjacent free marginal edges **102** of the cover flaps **76** and **78** respectively. The cooperating wedging action of the free marginal edges **100** and **102** retain the cover for the box **12** in its closed condition as illustrated in FIGURES 7 and 8. In order to open the cover of the box, the tab **66** must be raised from the position thereof illustrated in FIGURE 7 to the position thereof illustrated in FIGURES 4 and 6 so as to disengage the wedged engagement of the cover flaps as described.

It will be also noted, as best shown in FIGURE 10, that when the cover flaps are in the fully closed condition thereof, the previously mentioned V-shaped spaces **96** and **98** are eliminated. More specifically, the end flaps **42** and **34** are in complete marginal edge engagement with each other as are the end flaps **36** and **44**. The closure of the cover is effected by a snap engagement by pressing down on the tab **66** in the condition thereof illustrated in FIGURES 4 and 6. This has a double effect by first causing the end flaps **34** and **42** and **36** and **44** to move toward each other to eliminate the spaces **96** and **98** respectively and also causes the marginal end edges **100** and **102** of the cover flaps **58** and **76** on the one hand and **60** and **78** on the other hand to wedge against each other. The overlying tab extension **66** is forced against the underlying tab extension **84** whereby to keep the cover in closed condition. In order to open the cover, a certain amount of pressure must be applied against the overlying tab to force it upwardly and away from the underlying tab **84** to destroy or break the previously described wedge. When this is done, the box immediately opens to the condition thereof shown in FIGURE 2 so as to readily make the contents of the tray accessible. The described wedging action also forces each of the end wall segments **42** and **34** on the one hand and **44** and **36** on the other hand against the adjacent hinges **16** and **20**, as the case may be, as best shown in FIGURE 9, so as to tightly close the tray forming portion **14**. It will be noted that the end wall segments



and the adjacent hinge portions provide a double-wall thickness at each end of the box as will be apparent from FIGURES 8, 9 and 10, and similarly, the various cover flaps combined with the side walls **26** and **30** also provide a double-wall thickness along the sides of the box as will be apparent from FIGURE 10.

It will be understood that various changes and modifications may be made within the present invention without, however, departing from the basic inventive concept thereof as set forth in the appended claim.

We claim:

**1.** A double-wall folding box with a locking closure therefor, comprising a tray having a floor, opposing side walls and opposing end walls extending upwardly from said floor, a first cover means hinged to said tray at one end thereof and a second cover means hinged to said tray at the other end thereof, and means to wedge said cover means against each other to secure said cover means in releasably locked position over said tray, said cover means having first portions which completely underlie said side walls and second portions which completely overlie said end walls to resultingly provide a double-wall thickness at the entire ends and sides of said box, said first portions further comprising mutually wedged side wall flaps and said second portions further comprising end wall hinge portions each of said cover means further comprising a cover member hinged to one end of said tray and provided with a pair of cover flaps which are disposed within the adjacent side walls of said tray in said locked position, the opposing marginal edges of said flap pairs being wedged together in said locked position, each of said cover members having a tab which projects beyond said marginal edges of the associated flap pair, one of said tabs being releasably locked in overlying relation to the other of said tabs in the wedged condition of said flap pairs.


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DAVIS T. MOORHEAD, Primary Examiner

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