

Dec. 11, 1962

T. R. BAKER ET AL

3,067,924

CLOSURE CONSTRUCTION OF FOLDING BOXES

Filed May 4, 1959

6 Sheets-Sheet 1

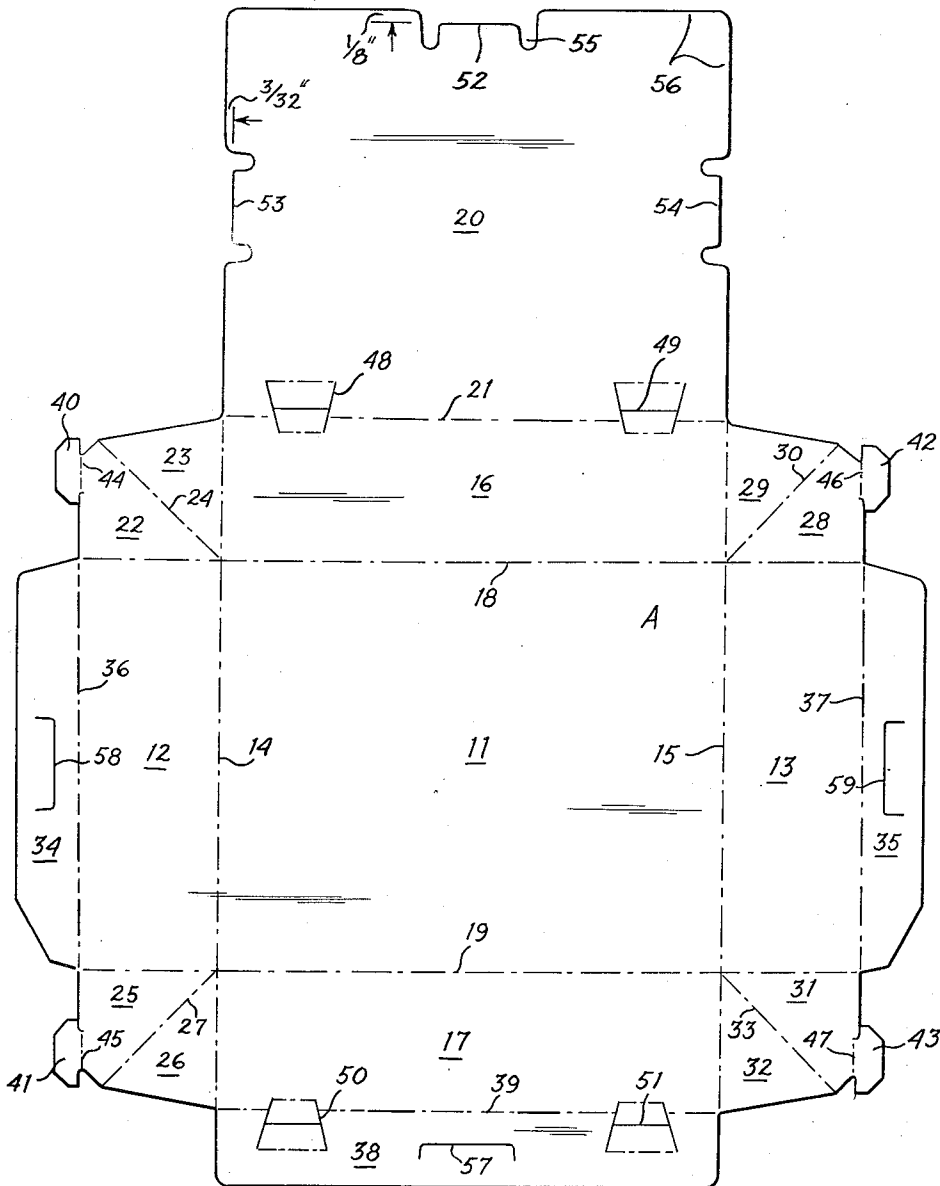


Fig. 1

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6 Sheets-Sheet 2

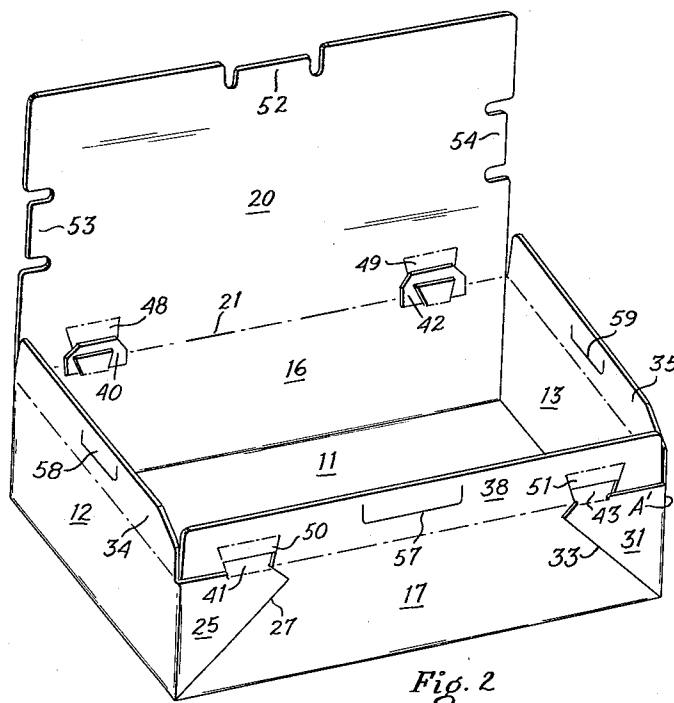


Fig. 2

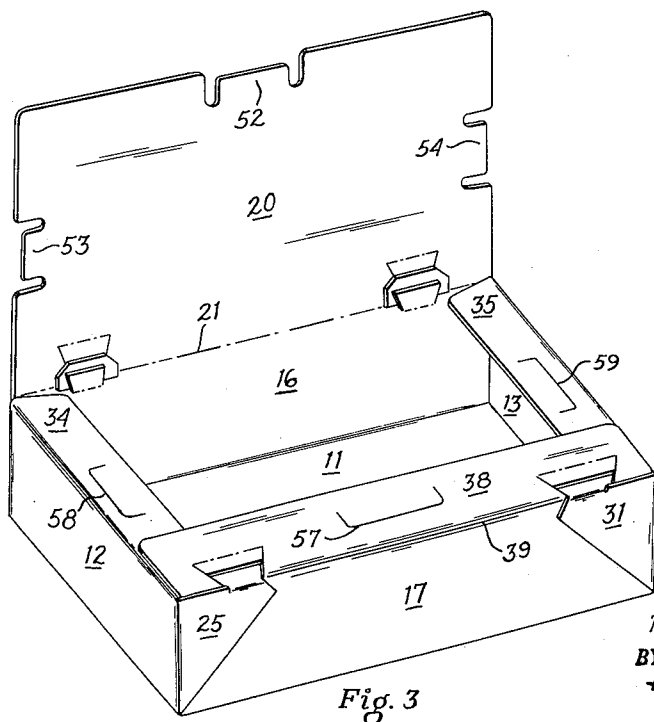


Fig. 3

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6 Sheets-Sheet 3

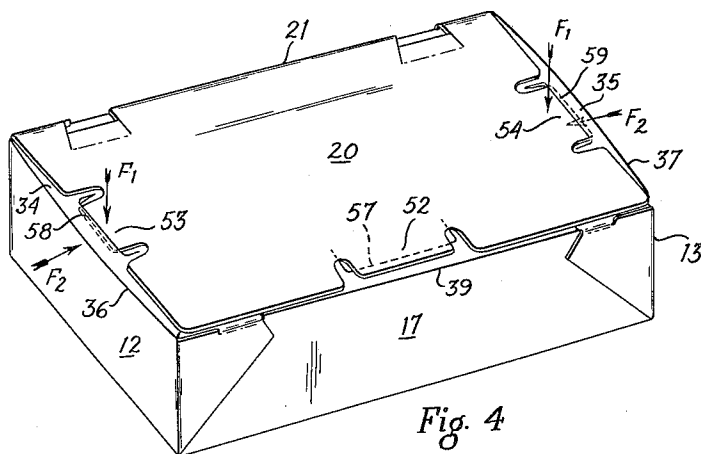


Fig. 4

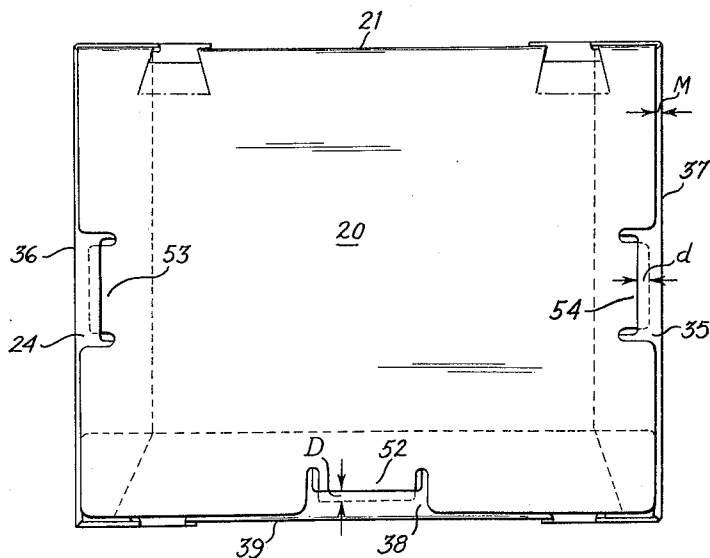


Fig. 5

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6 Sheets-Sheet 4

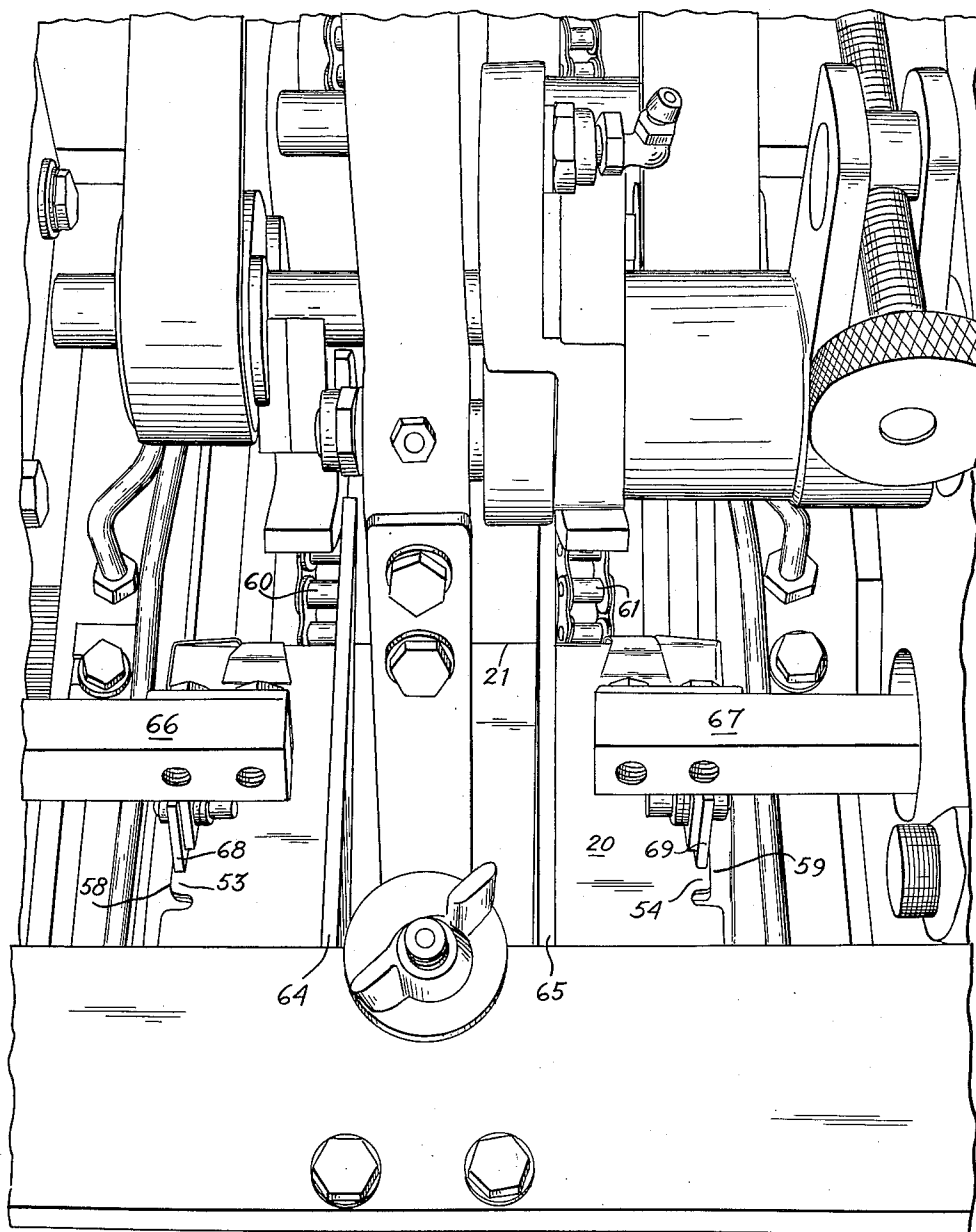


Fig. 6

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6 Sheets-Sheet 5

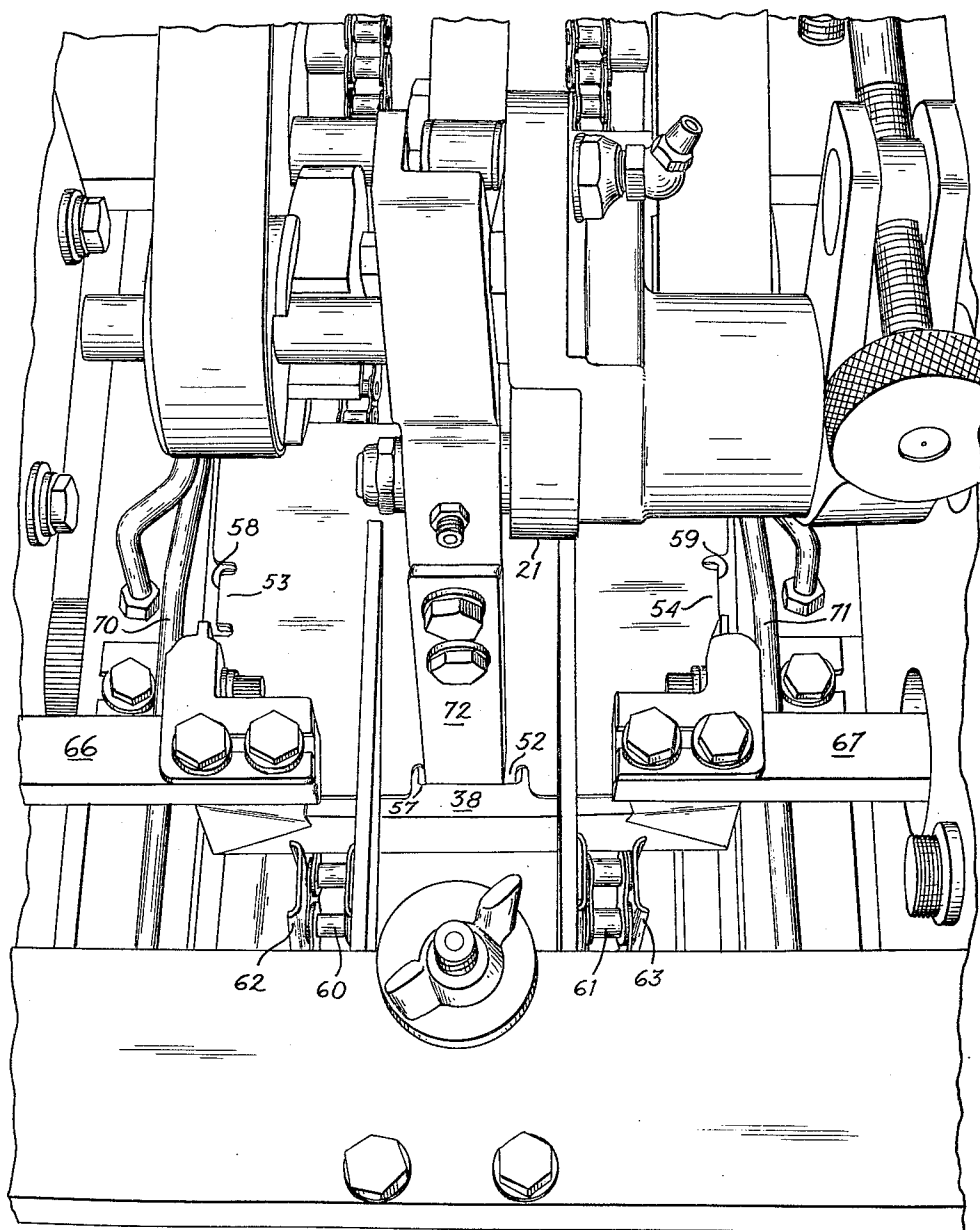


Fig. 7

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6 Sheets-Sheet 6

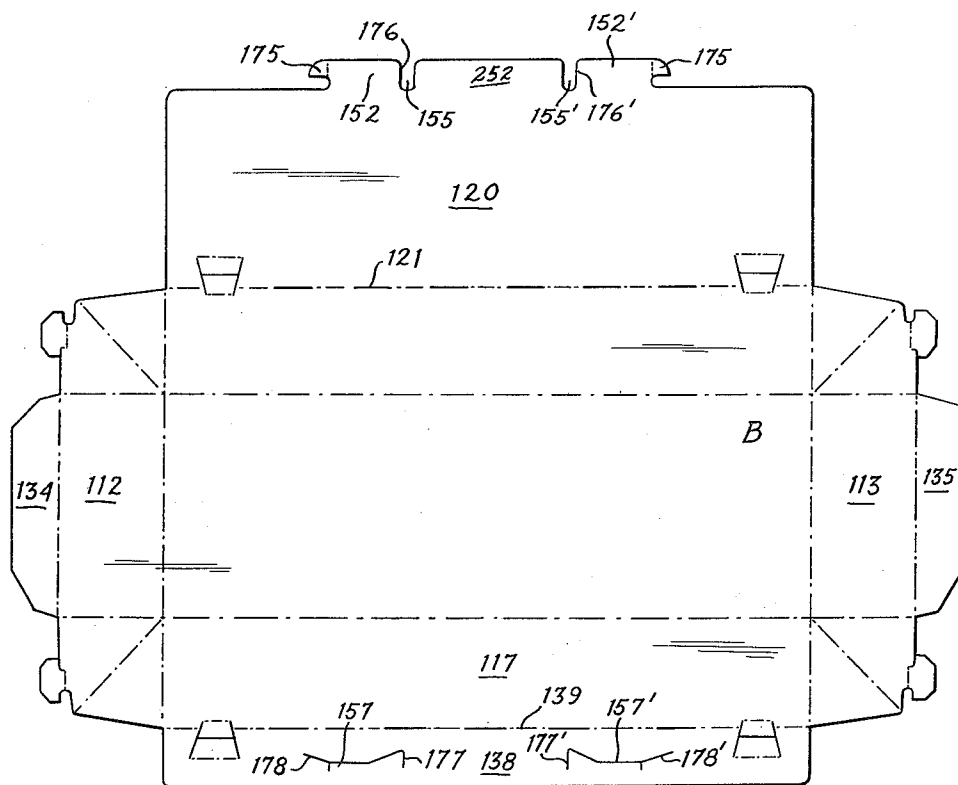


Fig. 8

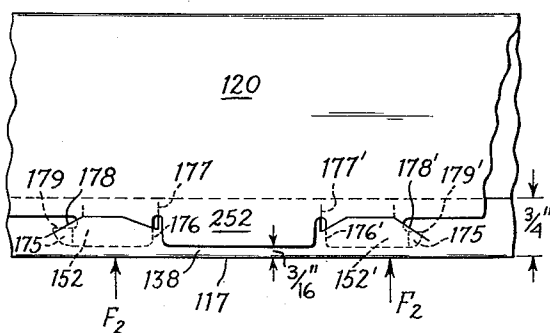


Fig. 9

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3,067,924

CLOSURE CONSTRUCTION OF FOLDING BOXES

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Filed May 4, 1959, Ser. No. 810,838

10 Claims. (Cl. 229—35)

This invention is concerned with improvements in the hinge cover construction of folding boxes, particularly of boxes suited for the packaging of frozen foods, although the invention is not limited to such boxes, but may advantageously be employed in any box designed to be handled in large numbers on automatic filling and closing machines.

One of the principal considerations in the design of any improved folding box is economy of board. In the design of an improved hinge cover construction it is therefore most desirable to maintain the area of the cover and locking structure as small as possible. As will be seen, the present invention permits the use of a cover panel whose overall dimensions do not exceed the corresponding dimensions of the box bottom, yet permits locking of the cover with the box body after filling of the box.

A small cover panel offers numerous other advantages besides economy of board. It facilitates formation of the box on automatic box forming equipment, because no cover flaps such as tuck flaps, charlottes, etc. need be folded, guided, or otherwise handled, nor is the problem presented of avoiding protruding portions of the blank or box by moving parts of the machine, for example the blank feeder, the forming plunger etc. A further advantage of a cover panel devoid of flaps, particularly charlottes, is that boxes moving end to end in the filling and closing line do not become entangled by their covers as do hinge covered boxes with laterally projecting cover charlottes.

Most frozen food boxes are overwrapped after closing. The overwrapping operation as well as the machinery for overwrapping are simplified considerably if the end surfaces of the box are flat and free from projections of any kind and if no flaps, such as charlottes, are to be folded over held down, or inserted into cuts in order to keep them in downfolded position.

The present invention provides a box whose end surfaces are flat and unbroken and, in addition, are reinforced against caving in under the sealing pressure.

The absence of cuts in the box walls has other important advantages. Many frozen food boxes, particularly boxes for fruits, or other food containing a liquid component, must be liquid tight, at least during the stages of filling and closing, prior to deep freezing. In conventional boxes employing charlottes or cover tuck flaps interlocking with cuts in the box walls, it was necessary to provide a liquid tight liner, for example a sheet of cellophane or other suitable plastic material in order to prevent leakage.

The invention provides a box which is free from cuts in all four side walls yet permits locking of the cover with the box body. No flaps of any kind are employed on the cover, and the box may be provided with gusset cor-

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ners in order to make it liquid tight in itself without resort to a liner. Conventional waxed board is well suited for producing a liquid tight box according to the invention.

In the use of waxed board it is normally desirable to prevent cut edges of the board from entering the zone in which the liquid component is, or may be, present, since even waxed board tends to "wick" to a limited extent, thus allowing the liquid component to enter the board at the cut edges by capillary attraction. For this reason boxes incorporating the present invention are superior to gusset-corner boxes whose cover is locked by means of a tuck flap whose bottom edge extends a considerable distance into the box body.

It is normally desirable to construct the cover lock in such a way that it imparts additional rigidity to the box, particularly rigidity against twisting. The present invention accomplishes this and permits the box corner to be locked with the box body at the front as well as at the two sides. A single lock is normally sufficient at the front although in long and narrow boxes, for example boxes for packaging fish fillets, two spaced front locks may be provided and the side locks be omitted. The front locks may be constructed in such a way that they impart the required twist resistance to the box by limiting the extent to which the cover panel may slide or shift relatively to the front flange.

The lock may be engaged by very simple mechanical equipment due to an ingenious method according to which the box wall is temporarily distorted by bulging it out by proper application of a locking force, the distortion being sufficient to permit the locking elements to engage. Thereafter the locking force is relieved so that the elements return to their normal position in which the cover panel remains locked to the box body. Optionally, a second force may be applied in a direction to eliminate the previously applied distortion.

These and other objects, features and advantages of this invention will appear more fully from the detailed description which follows accompanied by drawings showing, for the purpose of illustration, a preferred embodiment of the invention. The invention also resides in certain new and original features of construction and combination of elements as well as steps and sequences of steps as hereinafter set forth and claimed.

Although the characteristic features of this invention which are believed to be novel will be particularly pointed out in the claims appended hereto, the invention itself, its objects and advantages and the manner in which it may be carried out, may be better understood by referring to the following description taken in connection with the accompanying drawings forming a part of it in which:

FIG. 1 is a plan view of a representative form of blank embodying the invention;

FIG. 2 is a perspective view of a box formed from the blank of FIG. 1, the box being ready for filling;

FIG. 3 is a perspective view of the box of FIG. 2 after folding of top flaps which are a part of the box body;

FIG. 4 is a perspective view of the box after folding of the cover into closing position, the figure showing the box end walls bulged out during the phase of locking;

FIG. 5 is a plan view of the box of FIG. 4 with all three cover locks engaged;

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FIG. 6 is a perspective view of a box closing machine at the moment of closing of the side locks;

FIG. 7 is a perspective view of the same machine at the instant of locking of the front lock;

FIG. 8 is a plan view of a blank for a narrow and long box provided with a double front lock; and

FIG. 9 is a plan view of a closed box made from the blank of FIG. 8 after engagement of the locks, the box ends being broken away.

In the following description and in the claims various details will be identified by specific names for convenience. The names, however, are intended to be generic in their application. Corresponding reference characters refer to corresponding parts in the several figures of the drawings.

The drawings accompanying, and forming part of, this specification disclose certain specific details of construction of the invention for the purpose of explanation of broader aspects of the invention, but it is understood that constructional details may be modified in various respects without departure from the principles of the invention and that the invention may be incorporated in other structural forms than shown.

The blank A of FIG. 1 may be cut and scored from rolls of sheets of foldable sheet material, for example paperboard, on automatic cutting and creasing machines. Adjacent blanks may be interlocked in the sheet or roll as is customary in the art, so that a maximum number of blanks may be cut from the board with a minimum of waste material left around the edges of the individual blank.

The blank A comprises a bottom panel 11 to which end wall panels 12 and 13 are articulated along bottom end fold lines 14 and 15. A back wall panel 16 and a front wall panel 17 are articulated to the bottom panel along bottom back and bottom front fold lines 18 and 19, respectively. The back wall panel 16 has a cover panel 20 articulated thereto along a cover hinge line 21. It is readily apparent that the total dimensions of the cover panel 20 are substantially equal to those of the bottom panel 11.

A pair of corner gusset panels 22, 23 articulated along a gusset fold line 24 are articulated to the end wall 12 and to the back wall 16 along extensions of the bottom fold lines 14 and 18, and similar pairs of gusset panels 25, 26; 28, 29; and 31, 32 are provided at the other three corners of the blank, the respective gusset fold lines being numbered 27, 30, and 33, respectively.

Top flaps 34, 35, commonly called dust flaps in the end position, are articulated to the end wall panels 12 and 13 along flap fold lines 36 and 37 and a similar top flap 38, commonly called a front flange in the front position, is articulated to the front wall panel 17 along a front flange fold line 39.

In order to lock the box corners in assembled position, after formation of the flat blank into box form, substantially T-shaped corner lock tabs 40, 41, 42 and 43 are articulated to gusset panels 22, 25, 28 and 31 along tab fold lines 44, 45, 46 and 47, extending across a neck portion of the tab of a narrower width than the width of the tab head. Substantially H-shaped locking cuts 48, 49, 50 and 51 are provided in the cover panel 20 and in the front flange 38 providing apertures into which the corner lock tabs may be inserted in order to lock the box corners in assembled condition.

The cover 20 is provided with three cover lock tabs 52, 53, and 54 which are conveniently formed by cutting U-shaped notches 55 into the outer cut edges 56 of the cover panel. Preferably the tip of each tab is set back slightly with respect to the adjacent edge of the cover. The illustrated blank is that of a frozen food box having a bottom area of 5" x 4" (125 x 100 mm.) and a depth of 1 7/8" (35 mm.). In the illustrated box the set-back of the front lock tab 52 was chosen to be 1/8" (or 4 mm.), whereas the set-back of the side tabs 53 and 54 was chosen as 3/32" (or 2 mm.).

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The top flaps have locking edges formed thereon past which the tips of the cover locking tabs 52, 53 and 54 may be snapped into cover locking position. These locking edges extend in the general direction of, but are spaced from, the respective flap fold line and may conveniently be formed by internal cuts 57, 58 and 59 in the front flange 38, and in the dust flaps 34 and 35, respectively. In the illustrated form of blank the internal cuts have the shape of flat U's, the legs of the U extending towards the outer edge of the blank. The shape of the internal cuts may be varied according to the specific requirements, as will readily be seen by comparing the configuration of the internal cuts provided in the blank B of FIG. 8 with the cuts of the blank A of FIG. 1.

The blank A may be shipped and stored in flat condition and may readily be converted into hollow box form by automatic box forming and corner locking equipment. Machines for this purpose generally comprise a plunger which forces the flat blank through a folding die, causing the box walls to assume an upright position with respect to the box bottom 11. The corner gussets are folded either simultaneously or immediately thereafter and are then fixed in their final corner forming position by forcing their respective corner lock tabs through the corresponding H-shaped cuts in the cover 20 and in the front flange 38, respectively.

The resulting box A' is shown in FIG. 2. Its cover panel 20 is upright and the dust flaps 34 and 35, as well as the front flange 38, extend upwardly for easy filling of the box. The filling operation may take place on conventional filling equipment, and the box contents may be compacted by a machine fitted with a paid or plunger which bears down on the box contents as the box moves along the conveyor line, as is well known in the art. No modifications are required in the filling and compacting machinery in order to handle the closure construction provided by this invention.

After filling of the box, the dust flaps 34, 35 and the front flange 38 are folded over into a position substantially parallel to the bottom panel 11, or normal to the side walls 12, 13 and 17 from which the flaps extend. In this position the flaps stiffen the box walls considerably. FIG. 3 shows the box after folding of the top flaps, but without contents, in order to show the interior of the box body.

The folding of the top flaps may be accomplished by conventional folding equipment mounted alongside a conveyor line carrying the box. Next, the box cover 20 is folded into closing position in which the cover 20 overlies the top flaps.

A locking force F_1 is then exerted on the lock tabs 53 and 54 in a direction substantially normal to the plane of the tabs and the top wall panel 20 of which the tabs are a part. The force tends to deflect the lock tabs 53 and 54 slightly. Since the lock tabs bear down on the dust flaps 34 and 35 which also tend to fold slightly beyond the 90 degree position with respect to the side wall panels, they present slightly downwardly inclined surfaces which then cause the end walls 12 and 13 to belly or bulge out as indicated in FIG. 4. The bulging out continues until the engagement edges 58 and 59, which in the illustrated form of box are formed by internal cuts, permits the tips of the lock tabs 53 and 54 to snap past them. At this moment, which is the one illustrated in FIG. 4, the end walls 12 and 13 tend to return to their normal position due to the resiliency of the stock, so that the marginal portion of the dust flaps between the cuts 58, 59 and the fold lines 36, 37 slides above the tips of the lock tabs 53 and 54.

The flattening out of the end walls may be assisted by application of further forces F_2 against the end walls in a direction substantially normal to the end walls. This is conveniently accomplished by moving the box between lateral rails which are spaced from the box at the station where the end walls are bulged out and which then

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narrow down to the actual length of the box, the normal distance between the end panels 12 and 13. When entering the narrow portion between the rails the end walls are flattened out and the lock is complete. This will be further explained in connection with FIGS. 6 and 7.

In a similar manner the front tab 52 is moved under the locking cut 57 by application of a force on the tab 52 substantially normal to the flange of the tab, causing the front wall 17 to bulge out until the tip of the tab 52 snaps past the edge of the cut 57. The box is then completely locked and is ready for overwrapping, if overwrapping is intended.

FIG. 5 shows the locked box. The tips of the three locking tabs 52, 53 and 54 underlie the top flaps, more particularly the dust flaps 24, 35 and the front flange 38. The margin of overlap may vary with the dimensions of the box. In a box having the aforegiven dimensions, an overlap d of the order of $\frac{3}{32}$ " (or 2 mm.) has been found practical at the dust flaps and an overlap D of $\frac{1}{4}$ " (or 4 mm.) has been found practical at the front flange.

The locked box has surprising rigidity and twist resistance. Rigidity is imparted to the box primarily by the returned top flaps and is of particular value in boxes which are subsequently overwrapped and heat sealed at the ends. The end walls 12, 13, which are flat and reinforced by the dust flaps against caving in, form an excellent support over which the ends of an overwrap may be heat sealed.

The box derives its twist resistance from the tab locks of the cover. Twisting of the box tends to displace the lock tabs in the direction of the long dimension of the top flaps and is resisted when the lateral edges of the tabs engage the lateral portions of the cuts, the legs of the U in the illustrated form of cuts. As is also seen from FIG. 5, the overall dimensions of the cover are preferably made slightly smaller than the corresponding dimensions measured between the box walls. For example, a marginal space M of the order of 1 mm., or roughly $\frac{1}{32}$ ", may be left between the cut edge of the cover and the fold line 36, 37, 38 which becomes the top edge of the box. The margin M is very small yet sufficient to prevent cutting of the overwrap by the edge of the cover which might conceivably occur if the edge of the cover were to project beyond the end wall.

It is readily apparent from FIGS. 4 and 5 that the box is liquid tight up to the level of its cover, since there are no cuts or slits in any of the side walls. Furthermore, no cut edges extend into the box space below its top level, hence the danger of cut board edges absorbing liquid contents or imparting board flavor to the contents are minimized.

FIGS. 6 and 7 show the locking station of a box closing and locking machine. FIG. 6 illustrates the engagement of the lateral lock tabs of the cover with the dust flaps, and FIG. 7 shows the locking of the cover with the front flange.

The machine comprises a pair of conveyor chains 60 and 61 provided with lugs 62, 63 (see FIG. 7) which advance the boxes in the direction away from the observer with the cover hinge 21 leading and the cover 20 trailing. A pair of rails 64, 65 hold the cover down as the box approaches a pair of rotating shafts 66, 67 whose square ends carry blunt knives 68 and 69 adapted to bear down on the lock tabs 53 and 54 to exert the locking force F_1 (see also FIG. 4). The direction of peripheral motion of the blunt ends of the knives is the same as the direction of advance of the boxes. This is also seen by comparing FIG. 6 with FIG. 7, FIG. 7 showing the shafts after approximately a quarter of a turn beyond the position shown in FIG. 6. In the instant illustrated in FIG. 6, the tabs 53 and 54 are about to snap past the edges 58 and 59 of the cuts and the end walls are bulged out.

FIG. 7 shows the box further advanced. The lateral locks 53, 58 and 54, 59 are engaged. A small residual

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amount of bulge is about to be eliminated as the box moves into the narrowing portion between opposite rails 70 and 71 adapted to engage the end walls and exert a force F_2 (see also FIG. 4). At the illustrated moment a tucker 72 is about to engage the central lock tab 52 to depress it and force the tab past the edge of the locking cut 57 in the front flange 38, thereby bulging out the front flange in a similar manner as the end walls were bulged out in FIG. 6.

The end of the tucker performs a rather complex motion which approximates an orbital motion, the important phases of the motion being a downward approach to bear down on the tab 52 whereafter the end of the tucker depresses the tab while following along with the advancing box. After the lock is engaged the end of the tucker rises to clear the box and then continues in a vertical orbit to bear down on the next box approaching on the conveyor.

FIG. 8 is a plan view of a blank from which a relatively narrow but long box may be formed. The relatively short dimension of the end panels 112 and 113 which, reinforced by dust flaps 134 and 135 are of considerable rigidity, permits less bulging of the end walls than in the blank A of FIG. 1. For this reason only the cover panel 120 is locked with the front flange 138.

The cover has two lock tabs 152 and 152' formed thereon by notches 155. The lock tabs 152 and 152' have hook shaped extensions 175 and 175' on one side pointing in opposite directions. On the other side lateral edges 176 and 176' extend substantially at right angles to the cover hinge line 121. A central projecting tongue 252 is provided between the lock tabs 152, 152' to overlie the front flange 138 when the box is closed and locked (FIG. 9).

The front flange 138 has two locking cuts 157 and 157' in it extending substantially in the direction of the major dimension of the front flange 138 articulated to the front panel 117 along the fold line 139. The cuts comprise inner end portions 177 and 177' adapted to form abutments for the edges 176 and 176' of the tabs. The other ends of the cuts 157 and 157' extend at an angle as shown at 178 and 178'.

The cover 120 of the blank B is interlocked with the front flange 138 in the same manner as previously described and illustrated in FIG. 7. After the tabs 152 and 152' are inserted under the front flange 138, the tips 179 and 179' of the hook shaped extensions 175 and 175' tend to protrude in a position above the dust flap. Application of a force F_2 , slightly greater than necessary to remove the bulge in the front panel 117 causes the tips to slide underneath the dust flap, whereafter the lock is secured against accidental withdrawal by the tips 179, 179' which act as safety catches.

When the box is twisted the abutment edges 176 and 176' engage the inner end portions 177 and 177' of the cuts and limit shifting or sliding of the lock tabs in the direction of the hinge line 117 of the front flange.

The length of the top panel 120, shown for the purpose of illustration, is $8\frac{1}{2}$ " (215 mm.), the width of the front panel is $\frac{3}{4}$ " (19 mm.) and the set-back of the tip of the tab 152 from the fold line 139 is roughly $\frac{3}{16}$ " (about 4 mm.).

Manifestly the closure construction according to this invention may advantageously be employed in a wide variety of folding box styles of different body and particularly corner design.

What is claimed is:

1. A hinge cover folding box comprising, in combination, a bottom panel; four wall panels articulated to and substantially upright with respect to said bottom panel; a single-panel, substantially flat hinge cover articulated to one of said wall panels, the cover panel being of substantially the length and the width of the bottom panel; a top flap articulated to at least one of the other wall panels and folded inwardly into a position substantially

parallel to the bottom panel to underlie the cover panel in closed-box-position, the top flap being of a length less than half the distance from its hinge line to the opposite wall panel, so as to cover the box opening only marginally adjacent the top flap fold line, the top flap having an internal locking cut therein comprising a central cut portion extending in a general direction of the hinge line of the top flap, but spaced from said hinge line, and end portions extending at an angle to the central portion and defining the lateral edges of a tongue whose tip is directed towards said top flap hinge line, said cover panel having two notches extending into the panel from its edge overlying said top flap, which last named edge is substantially in alignment with the top flap hinge line in the closed box, said notches defining between them a lock tab in substantial register with said tongue and normally extending with its tip beyond said central portion of the internal cut by a margin permitting the tip of the tab to snap past the edge formed by the central portion of said locking cut when pressure is exerted on the tab substantially normal to the plane of the tab sufficient to deflect said tongue which underlies the tab and also bow out the wall panel carrying the top flap until the tip of the tab passes into the cut, the edge portions of the cover panel on the far side of the notches with respect to the tab projecting at least as far as the tip of the tab and overlying the top flap in locked-cover-condition, said tab remaining uncreased with respect to the top panel and lying entirely within the rectangular area of the cover panel as defined by its said length and width.

2. A hinge cover folding box as set forth in the preceding claim 1 in which the tip of the lock tab is set back with respect to the end edge of the cover panel.

3. A hinge cover folding box comprising, in combination, a bottom panel; side wall panels and end wall panels articulated to, and substantially upright with respect to, said bottom panel; a hinge cover panel articulated to a side wall panel, the cover panel being of substantially the length and width of said bottom panel; dust flaps articulated to the adjacent end wall panels and folded inwardly into a position substantially parallel to the bottom panel to underlie the cover panel in closed-box-position, each dust flap having an internal locking cut therein extending in a general direction parallel to the hinge line of the dust flap, but spaced from said hinge line, the side edge of the cover panel overlying said dust flap being notched to form a lock tab thereon in substantial register with said locking cut, said lock tab extending beyond said locking cut by a margin permitting the tip of the tab to snap past the far edge of said locking cut in response to pressure exerted on the tab substantially normal to the plane of the tab to bow out the respective end wall panel until the tip of the tab passes through the locking cut underneath the dust flap, the lateral edge of the cover panel, on either side of said tab, extending substantially to, and terminating at, the dust flap fold lines as a cut edge.

4. A hinge cover folding box as set forth in the preceding claim 3 in which the tip of the lock tab is set back with respect to the side edge of the cover panel.

5. A liquid tight hinge cover folding box comprising, in combination, a bottom panel; four wall panels articulated to, and substantially upright with respect to, said bottom panel; corner gussets extending between, and articulated to, said wall panels; a hinge cover panel articulated to one of said wall panels, the cover panel being of substantially the length and width of said bottom panel; top flaps articulated to the tops of the other wall panels and folded inwardly into a position substantially parallel to the bottom panel, said top flaps being of a length less than half the distance from their respective hinge line to the opposite wall panel so as to cover the box opening only marginally adjacent the said respective hinge line and marginally underlie the cover panel in closed box position, at least one of the top flaps having an internal locking cut therein comprising a central cut portion ex-

tending in a general direction of the hinge line of the respective top flap, but spaced from said hinge line, and end portions extending at an angle to the central portion and defining the lateral edges of a tongue whose tip is directed towards said top flap hinge line, the edge of the cover panel having two notches extending into it intermediate the ends of the edge to form a lock tab thereon in substantial register with said tongue, the tip of said lock tab extending beyond the central portion of said locking cut into the area between the central portion cut and the flap fold line by a margin permitting the tip of the tab to snap past the far edge of said locking cut when a force is exerted on the tab substantially normal to the plane of the tab tending to depress the top flap resulting in bulging out of the wall panel which carries the top flap and deflection of the tongue underlying the tab until the tip of the tab passes through the locking cut underneath the flap, the edge of the cover panel on either side of said tab extending substantially to, and terminating at, the top flap fold line as cut edges, said tab remaining uncreased and lying entirely within the rectangular area of the cover panel as defined by its said length and width.

6. A hinge cover folding box as set forth in the preceding claim 5 in which the tip of the lock tab is set back with respect to the outer edge of the cover panel on either side of the tab.

7. The closure construction of a folding box having a bottom, and side walls and end walls extending upwardly from the bottom, the closure construction comprising, a single-panel, substantially flat cover panel articulated to one of the side walls, the panel being bounded by cut edges except at its line of articulation and being of a length and width substantially equal to that of the bottom panel; a front flange extending from the opposite side wall along a flap fold line constituting one of the top edges of the box, said front flange extending at substantially right angles from the respective side wall in closed-box-position, said front flange having a locking edge formed thereon by a cut of substantially U shape and comprising a central cut portion extending in the general direction of, but being spaced from, the front flange fold line and end portions extending at an angle to the said central cut portions; a dust flap articulated to each of the end walls along a dust flap fold line constituting a top edge of the closed box, said dust flap extending at substantially right angles from the respective end wall in closed box position, said dust flap having a locking edge formed thereon by a cut of substantially U shape and comprising a central cut portion extending in the general direction of, but spaced from, the dust flap fold line, and end portions extending at an angle to the said central cut portion of the dust flap cut, the edges of the cover being doubly notched to form lock tabs thereon whose tips project into the area between the central portion of the respective front flange fold line and dust flap fold line and the respective central cut portion when the box is undistorted, the tab being of such length as to be insertable under said flap, past said locking edge without creasing with respect to the remainder of the top panel, by a force exerted on said tab in a direction normal to the plane of the tab tending to depress said flap to cause the respective side wall to bulge out, whereby the respective central portion of the locking edge temporarily moves beyond said tip, and the tip slides underneath, the bounding cut edges of the cover panel, except for said lock tab, extending substantially to the top edges of the box, said tab remaining uncreased with respect to the top panel and lying entirely within the rectangular area of the top panel as defined by its said length and width.

8. The closure construction as set forth in the preceding claim 7 in which the tip of each lock tab is set back with respect to the edge of the cover panel in which edge the tab is formed.

9. A liquid tight hinge cover folding box comprising, in combination, a bottom, side walls and end walls extend-

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ing upwardly from the bottom, corner gussets extending between, and articulated, to, said side and end walls at the corners, a single-panel, substantially flat cover panel articulated to one of the side walls, the cover panel being of a length and width substantially equal to that of the bottom and bounded by cut edges except at its line of articulation; dust flaps extending from opposite end walls along dust flap fold lines constituting top edges of the box, said dust flaps extending at substantially right angles from the respective end walls in closed-box-position, each of said dust flaps having a locking edge formed centrally thereon extending in the general direction of, but being spaced from, the respective flap fold line, the overlying cover edge being doubly notched to form a lock tab centered with the locking edge, the tip of the tab projecting into the area between the respective flap fold line and the locking edge when the box is undistorted, the tab being of such length as to be insertable from a position overlying the dust flap, past said locking edge into a position under the dust flap by a force exerted on said tab in a direction normal to said tab tending to depress said flap to cause the respective end wall to bulge out, whereby each locking edge temporarily moves beyond the respective tab

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tip, the bounding cut edges of the cover panel on either side of said lock tabs extending substantially to the top edges of the box.

10. A liquid tight folding box as set forth in the preceding claim 9 in which the tips of the lock tabs are set back with respect to the outer edge of the cover panel on either side of the tab.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,067,924

December 11, 1962

Thomas R. Baker et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 45, after "over" insert a comma; column 3, line 25, for "of", first occurrence, read -- or --; column 4, line 32, for "paid" read -- pad --; column 8, line 42, for "control" read -- central --; lines 42 and 43, for "portions" read -- portion --; column 9, line 2, after "articulated" strike out the comma.

Signed and sealed this 3rd day of September 1963.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents