July 28, 1953 R. B. MELLER 2,646,916

CORNER CONSTRUCTION FOR FOLDING BOXES

Filed Nov. 30, 1949 4 Sheets-Sheet 1

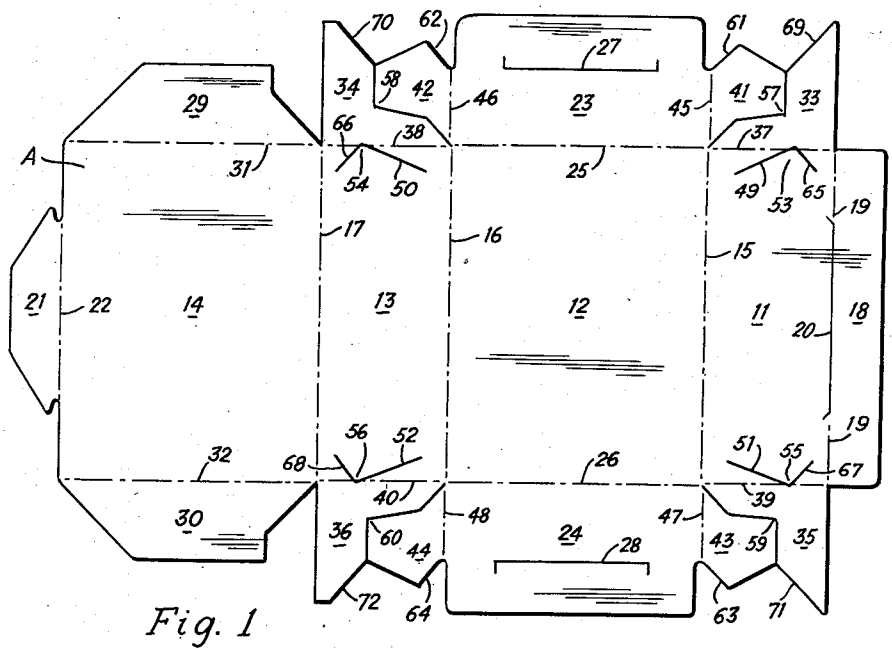


Fig. 1

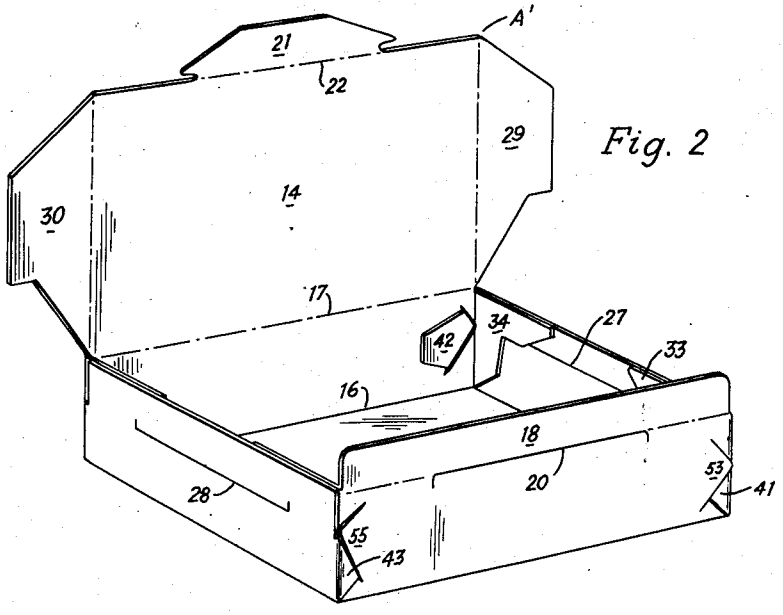


Fig. 2

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CORNER CONSTRUCTION FOR FOLDING BOXES

Filed Nov. 30, 1949 4 Sheets-Sheet 2

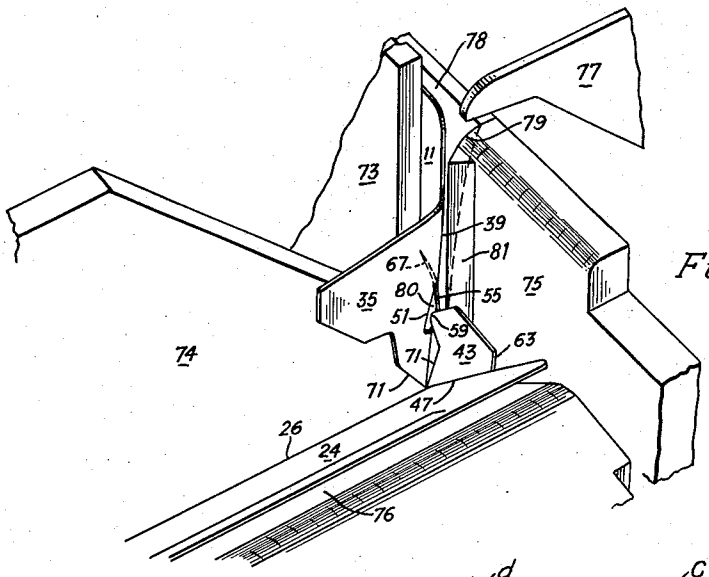


Fig. 3

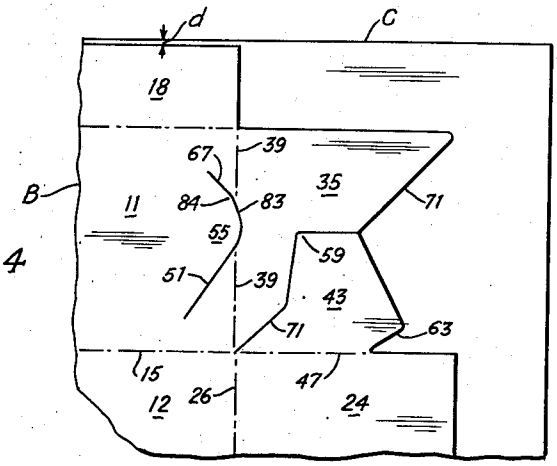


Fig. 4

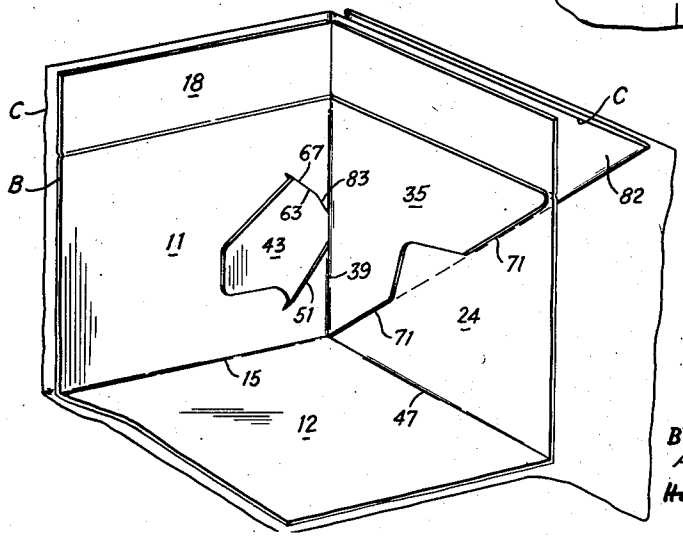


Fig. 5

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CORNER CONSTRUCTION FOR FOLDING BOXES

Filed Nov. 30, 1949 4 Sheets-Sheet 3

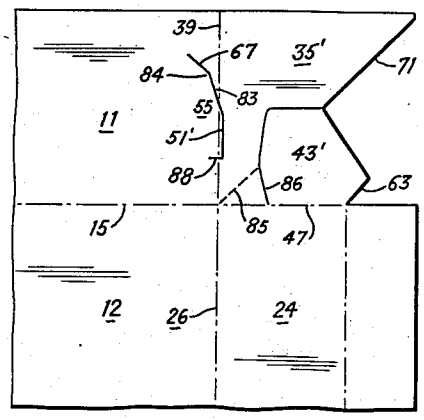


Fig. 6

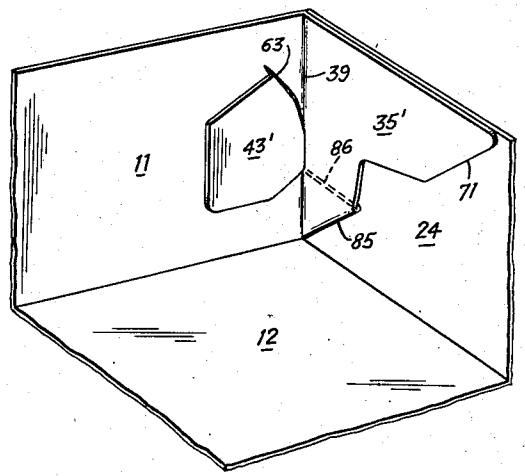


Fig. 7

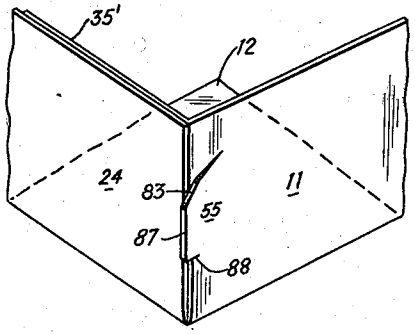


Fig. 8

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CORNER CONSTRUCTION FOR FOLDING BOXES

Filed Nov. 30, 1949 4 Sheets-Sheet 4

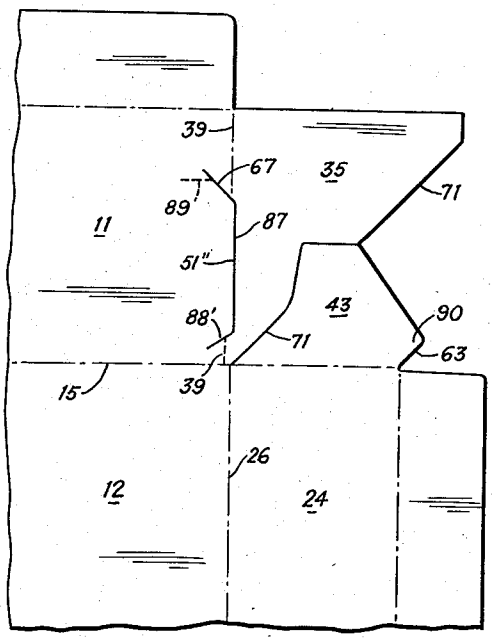


Fig. 9

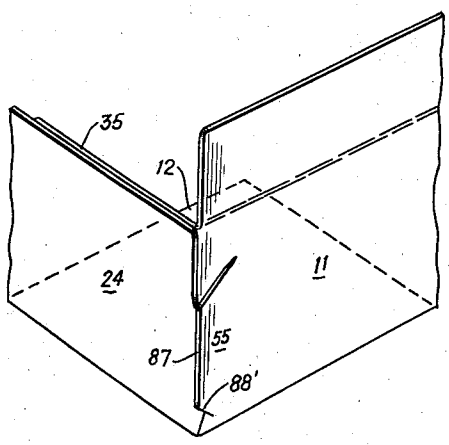


Fig. 10

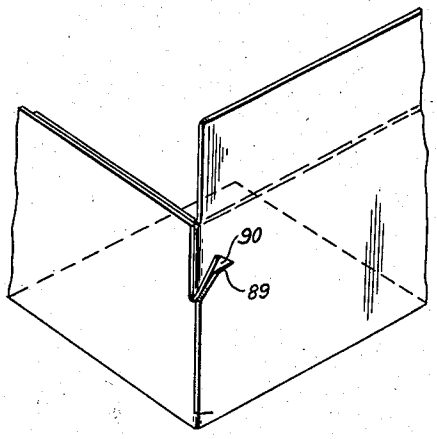


Fig. 11

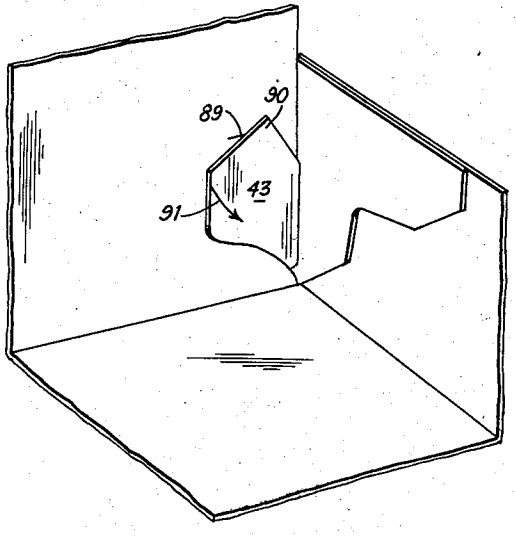


Fig. 12

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UNITED STATES PATENT OFFICE

2,646,916

CORNER CONSTRUCTION FOR FOLDING BOXES

Reginald B. Meller, Oakland, Calif., assignor to Bemiss-Jason Company, San Francisco, Calif., a corporation of California

Application November 30, 1949, Serial No. 130,229

9 Claims. (Cl. 229—35)

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This invention relates to improvements in cartons, boxes, trays, and other structures, hereinafter collectively referred to as "boxes" or "folding boxes," made, by folding, from blanks of cardboard, paperboard, or other suitable folding sheet material.

The invention has particular application to the type of folding boxes which are maintained in assembled condition by glueless interengagement of certain portions of the box blank.

The art of assembling folding boxes by interengagement of portions of the box blank without the use of adhesive is many decades old, and many different forms of locks have been proposed for forming box corners. The majority of the locks heretofore proposed are designed for hand assembly. Considerable difficulties are encountered when it is attempted to set up and engage conventional locks by mechanical equipment. Other known forms of locks suited for assembly by machines generally require equipment which is complex or slow.

The present invention is concerned with certain improvements in the corner construction of folding boxes which result in a more secure lock than has heretofore been available, and a lock which can be formed on automatic high speed machinery of compact design and relatively simple construction. The invention more particularly provides an interlock, or box corner construction, which is far more attactive in appearance than corner constructions of previously known design, in that flaps or tabs by which the interlocking is accomplished, and which is known forms of locks are quite conspicious, are arranged in such a way as to be practically concealed. This improvement opens to boxes of the glueless type a larger field of application which heretofore was closed, either because of consumers' resistance to conspicious lock flaps or tabs, or because of technical difficulties encountered with exposed flaps and tabs which interfere, at least in some measure, with the use of telescoping covers, the use of overwraps, the use of hinged covers, and the packaging of such boxes in larger receptacles because of the danger of flaps or tabs of one box becoming entangled with those of another.

The invention further provides an improved form of corner construction which is particularly rigid and resistant to pressure by the contents of the box against the inside of the box corner. This is accomplished by a construction in which two plies of stock are provided and an arrangement such that pressure of the box contents does

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not tend to disengage the interengaging portions of the lock itself.

Glueless interlocks incorporating the present invention can be formed on automatic machinery at extremely rapid rates, of the order of 80 to over 200 boxes a minute, depending on box size.

Boxes equipped with the improved corner lock incorporating this invention may be set up, and the box walls locked simultaneously at all four corners by a plunger and die arrangement of relatively simple and dependable construction containing very few parts which are so arranged that it is practically impossible for them to get out of adjustment. This is a feature of considerable importance for machines installed in a customer's plant where the production of the box forming machine is used immediately for the packaging of goods produced in a continuous process. It is evident that in such plants the dependability of the box machine is a factor of even greater importance than the dependability of a box machine operating in a box maker's plant, since the production of the box machine is not stocked, but used immediately.

The corner construction provided by this invention is particularly suited for lined boxes, the construction of the various elements of the box corner being such that the liner is automatically guided into formation of a neat bellows or gusset while the box is being set up. A particular feature of the invention resides in the fact that lined boxes can be set up by the same mechanical equipment which is used for setting up boxes without a liner.

These and other objects, features and advantages of the invention will appear more fully from a consideration of the detailed description which follows accompanied by drawings showing, for the purpose of illustration, preferred embodiments and applications of this invention.

The invention also consists in certain new and improved details of construction as hereinafter set forth and claimed.

Although the characteristic features of the invention which are believed to be novel will be particularly pointed out in the claims appended hereto, the invention, 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:

Figure 1 is a plan view of a flat box blank embodying the invention, the inside surface of the blank facing the observer;

Figure 2 is a perspective view of the box set up from a blank shown in Figure 1, the box being shown in the position in which it leaves the automatic box forming and corner locking machine;

Figure 3 is a perspective view illustrating the formation and locking of a box corner as the blank is being forced through a folding and locking die by a plunger;

Figure 4 is a plan view, on an enlarged scale, of the corner portion of the blank of Figure 1 with a liner;

Figure 5 is a perspective view of a box corner formed from the lined blank of Figure 4;

Figure 6 is a plan view of the corner portion of a blank, the construction of the blank being modified to provide for a bellows fold at the box corner;

Figure 7 is a perspective view of the inside of a box corner made from the blank of Figure 6;

Figure 8 is a perspective outside view of the box corner of Figure 7;

Figure 9 is a plan view of a corner portion of a blank including a modified form of lock which is particularly inconspicuous in appearance;

Figure 10 is a perspective view of a corner set up from the blank of Figure 9;

Figure 11 is an outside view of a box corner made from the blank shown in Figure 9 and including a safety locking tip, the lock being shown before movement of the tip into its operative position; and

Figure 12 is a perspective inside view of the box corner of Figure 11 with a locking tip in operative position.

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

In the drawings accompanying, and forming part of, the specification, certain specific disclosure of the invention is made for the purpose of explanation of broader aspects of the invention, but it is understood that the details may be modified in various respects without departure from the principles of the invention and that the invention may be applied to other structures than the ones shown.

The blank A shown in Figure 1 is particularly designed for the packaging of frozen foods. It illustrates the applicability of the invention to folding box of relatively complex construction including a box body, a hinge cover and numerous flaps on the body and on the cover. Blanks of the type represented by blank A can be set up on a fully automatic box machine at the rate of about 100 boxes per minute, assuming a blank size for a box of one pound average content. Automatic box machines for setting up the box of this size at the given rate are rather small and do not require more than approximately 3 feet by 4 feet of floor space.

High production rates are obtainable by reason of certain structural details of the corner construction of the box which permit the box to be formed into shape and the corners to be locked within a fraction of a second. The assembly operations are performed blank by blank, in the sense that the assembly operation on one blank does not begin before the assembly operations on the preceding box are completed. This procedure is in contrast with the procedure of a conventional folding and gluing machine in which ordinarily several blanks are being handled simultaneously. With this in mind the importance of structural details of the blank will be appreciated.

The blank A shown in Figure 1 may be cut, in multiple, from large sheets or rolls of paperboard, cardboard, or other suitable foldable sheet material on automatic cutting and creasing machines. The blank A is subdivided by scored fold lines into a plurality of panels, flaps, and tabs articulated to one another. A front panel 11, a bottom panel 12, a back panel 13 and a cover panel 14 are hingedly interconnected along fold lines 15, 16 and 17. A front flap 18 is hingedly connected to the front panel 11 along a fold line 19 interrupted by a cut 20 for insertion of a locking tab 21 therethrough, the locking tab being hingedly connected to the cover panel 14 along a fold line 22. Side wall panels 23, and 24 are hingedly connected to the bottom panel 12 along fold lines 25 and 26. These side wall panels have internal cuts 27 and 28 therein for insertion of side flaps 29 and 30 hinged to the cover panel 14 along fold lines 31 and 32.

The box corner construction includes corner flaps 33, 34, 35 and 36 hinged to the wall panels 11 and 13 along side fold lines 37, 38, 39 and 40 respectively. These side fold lines may be slightly offset with respect to the base fold lines 25 and 26 to compensate for the thickness of the board.

The corner construction further includes lock tabs 41, 42, 43 and 44 hingedly connected to the side wall panels 23, 24 along side fold lines 45, 46, 47 and 48. These side fold lines may also be offset slightly with respect to the base fold lines 15 and 16 for the same reason. The lock tabs 41, 42, 43 and 44 are insertable into internal cuts 49, 50, 51 and 52. These internal cuts are of bent outline and form internal tongues 53, 54, 55 and 56 in the wall panels 11 and 13 pointing towards the box corner. The internal cuts extend substantially to the side fold lines 37, 38, 39 and 40. Preferably they extend slightly beyond the side fold lines to provide for a self opening aperture at the side fold line, when the corner flaps 33, 34, 35 and 36 are folded with respect to the wall panels to which they are attached. However, it is not absolutely necessary that the internal cuts 49, 50, 51 and 52 extend beyond, or even exactly to the side fold lines 37, 38, 39 and 40, it being sufficient that the cuts extend close enough to the side fold lines that an aperture is automatically formed upon folding of the corner flaps. This result is obtainable even with an internal cut which does not extend entirely to the side fold line, since the inherent stiffness of the board causes the stock above and below the internal tongue defined by the cut to curve slightly at the fold line at which the corner flap is folded, whereas no curving occurs within the body of the internal tongue. The curving of the stock may be sufficient to expose an aperture at the internal cut of a width sufficient for ready insertion of the lock tab associated with the internal cut. Nevertheless, it is generally preferred to extend the internal cut to, or slightly beyond, the side fold line about which the corner flap is folded.

The lock tabs 41, 42, 43 and 44 include tip portions 57, 58, 59 and 60 preferably arranged at the same distance from the base of the box corner proper, as the widest portion of the self opening aperture formed by the internal cuts 49, 50, 51 and 52.

The lock tabs have locking edges 61, 62, 63 and 64 adapted to engage the portion of the respective

internal cut which lies immediately adjacent the respective side fold line. Thus for example, the locking edge 61 is adapted to engage the edge 65 formed by the internal cut 49, the corresponding edges at the other corners being 66, 67 and 68.

The corner flaps 33, 34, 35 and 36 are preferably of substantially triangular shape although other shapes are suitable. The edges 69, 70, 71 and 72 of the corner flaps extend substantially at an angle of 45 degrees with respect to the side fold lines 37, 38, 39 and 40. The advantages of the triangular shape will become apparent hereinafter.

Mechanical equipment for setting up the blank of Figure 1 in a box shape may be of relatively simple construction and consists, basically, of a plunger for engaging the bottom panel 12 and forcing the blank through a substantially rectangular die aperture. This causes the front and back walls 11 and 13 as well as the side walls 23 and 24 to be folded into vertical position with respect to the bottom panel 12. Simultaneously the corner flaps 33, 34, 35 and 36 are also folded with respect to the wall panels to which they are attached. This opens apertures at the side fold lines 37, 38, 39 and 40 into which the lock tabs 41, 42, 43 and 44 are guided, with their tip portions 57, 58, 59 and 60 leading.

A particularly simple and reliable form of folding and locking die with its associated plunger, as far as it is pertinent to the understanding of the assembly operation is shown in Figure 3.

The plunger is essentially a box-like structure preferably made of welded steel plates and comprising a base plate for engaging the bottom panel 13 and four upright or side plates against which the wall panels of the blank may be folded. Two of these upright portions are visible at 73 and 74, respectively. Against these portions the wall panels 11 and 24 of the blank are folded.

The die through which the plunger passes comprises, in essence, four die portions of which two are visible at 75 and 76. The die portion 75 folds the wall panel 11 towards the plunger portion 73 and the die portion 76 folds the wall panel 24 towards the plunger portion 74.

Four brackets may also be provided for supporting the flat blank above the die prior to the engagement of the blank by the plunger. These brackets may also assist in the folding operation. One of these brackets is shown at 77.

Turning now to the operation of the apparatus, the flat blank resting upon the brackets 77 is first engaged at the bottom panel 12 by the bottom surface of the plunger. The downward movement of the plunger causes the blank to fold first at the fold lines 15 due to the fact that the die portion 75 is somewhat taller than the die portion 76. The die portion 75 is recessed at 78 for length sufficient to accommodate the width of the wall panel 11. As the blank moves downwardly towards the die aperture, the corner flap 35 is engaged by the side wall 79 of the recess 78 and is folded towards the plunger, whereby an opening 80 is automatically formed, into which the lock tab 43 is subsequently inserted. Shortly after folding of the corner flap 35 the wall panel 24 of the blank is engaged by the lower die portion 76 and is folded towards the plunger wall 74. Immediately prior to the folding of the wall panel 24 about its fold line 26 the lock tab 43 becomes engaged by the die portion 75 initiating folding of the lock tab about its fold line 47.

As the folding of the wall panel 24 proceeds, the lock tab 43 moves towards the aperture 80.

On its path the lock tab is deflected by a prismatic portion 81 on the die member 75 into the aperture 80 and past the internal tongue 65.

During the final stage of the assembly operation the wall panel 24 is swung into upright position with respect to the bottom panel 12 of the box. This causes the lock tab 43 to enter fully into the aperture 80 until its bordering locking edge 63 engages the corresponding locking edge 67 in the wall panel 11.

It is quite apparent that insertion of the lock tab 43 into the aperture requires a certain amount of force which must be exerted against the wall panel 24 by the die portion 76. Also the folding of the wall panel 24 at the fold line 26 requires a certain amount of force. As a result, the wall panel 24 has a tendency of curving slightly in the same sense as the top surface of the die portion 76 is curved. This is somewhat undesirable since, if the curving is substantial, it is likely to result in an insertion of the lock tab 43 not quite far enough for the locking edge 63 to engage the locking edge 67 in the panel 11.

In order to overcome the tendency of curling of the panel 24, the side fold line 47, along which the lock tab is hinged to the wall panel 24, is made as long as possible, and preferably extends to the box corner proper, that is to the point of intersection of the fold lines 15 and 26.

A similar stiffening effect is produced upon the wall 11 by the corner flap 35. It is thus apparent that the 45 degree edge at the lock tab 43 and the corner flap provides advantages in the setting up of the blank into box form.

At the end of its stroke the plunger clears the lower edge of the die and the formed and locked box A' is stripped off. The box is shown in perspective in Figure 2. It is ready for filling with merchandise, whereafter it may be closed. Closing of the box involves infolding of the front flap 18, folding of the cover side flaps 29 and 30, folding of the cover panel about its fold line 17, and insertion of the flaps 29, 30, and 21 into the slots 27, 28 and 20 respectively. These operations may be performed on automatic box closing machinery which does not form a part of the present invention.

Since the box folding and the locking operations occur simultaneously at all four box corners, the time for setting up the box and locking its corners is extremely short, and requires no more than a fraction of a second. The complete absence of the gluing operations eliminates the necessity of maintaining the box in the machine for a predetermined period of time. The box machine can for this reason be extremely small and can be operated at a rapid rate. The small size of the machine which only stands approximately sixty inches tall is an important factor since size of the machine enters the production cost of the boxes in two respects, firstly as required factory space, and secondly, as machine cost since the cost of a machine is, to some extent, proportional to its size.

The invention thus provides an extremely economical type of box. The box is attractive in appearance since its corner locks are practically concealed. In the specific form of box shown in Figure 2 only small portions of the lock tabs are visible. This is not objectionable in boxes of the illustrated type since such boxes are generally overwrapped after filling. Nevertheless, as will be shown further below, the form of the internal cut at the corner may be modified in such a way as to conceal the lock tab in its entirety. Before

turning to such modifications the formation of a lined box corner will be considered.

The corner construction of the box blank B shown in Figure 4 corresponds essentially to that of A shown in Figure 1 and the same reference numerals are used to identify corresponding portions. The box blank B is combined with a liner C which may be of any suitable lining material, for example, cellulose acetate or any other film commonly employed as box lining material. The liner C may be spot glued to the blank B, or it may be combined with it without an adhesive bond between the board and the liner. The edges of the liner may coincide with the edges of the blank or they may extend a short marginal distance *d* beyond the edge of the box blank. When the box corner is formed in the manner shown in Figure 3, the liner C is automatically folded into a neat bellows fold or gusset 82 by reason of the edge 71 of the corner flap acting as a guide or rule determining the creasing of the liner.

The internal cut 51 which borders the internal tongue 55 comprises the locking portion 67 which engages the locking edge 63 of the lock tab 43. The direction of the cut 67 is preferably of the order of 45 degrees with respect to the side fold line 39, but may be less. In order to facilitate entry of the lock tab into the internal cut, it is advantageous to provide an angular outline for the internal cut 51 such that a point 84 is formed within the body of the panel 11 rather than within its attached corner flap 35. This may be accomplished by a cut portion 83 which forms a sloping guiding edge on the flap 35. This sloping edge continues without change in direction past the fold line into the body of wall panel 11 and guides the lock tab 43 into its proper position without danger of jamming or crowding of the board at the fold line 39. The guiding edge provided by the portion 83 may assume various other forms depending on the specific configuration of the internal cut 51, the basic principle being that two angularly disposed portions such as 67 and 83 are provided which form between them an angle or point 84 lying within the body of the panel 11 rather than within the body of the flap 35. This particular structure facilitates insertion of the lock tab 33, it being manifestly optional what particular shape the internal cut 51 assumes below the portion 83, that is between the portion 83 and the fold lines 15, 47.

Figure 6 shows a modification of the corner construction shown in Figures 1 and 4 which provides for the formation of a bellows fold by the board itself at the base of the corner. Identical reference characters identify identical parts and primed reference characters are applied to identify modified parts of the corner construction.

The corner flap 35' is bordered by a sloping cut edge 71 extending at approximately 45 degrees from the end of the corner flap 35 to the lock tab 43'. The extension of the edge 71 between the lock tab 43' and the corner proper is formed by a score 85 which may be a cut score to provide for easy folding. The cut edge bordering the lock tab 43' is extended at 86 to the fold line 47. The internal cut 51' may be of the same general configuration as shown in Figure 4. It is shown in Figure 6 with a slight modification of shape resulting in complete concealment of the lock tab 43' after formation of the corner. The internal cut 51' includes a locking portion 67, a guiding portion 83, and then continues substantially parallel to the fold line 39 at 87 extending back into the body of the side wall at 88. The corner is formed and locked in the same manner as previously described. Figures 7 and 8 illustrate the inside and the outside appearance, respectively, of the locked corner.

Figures 9 and 10 show a minor modification of the lock of Figures 6, 7 and 8. In the forms shown in Figures 9 and 10 the bellows fold at the base of the box corner is omitted, but the lock tab is concealed in its entirety.

In the blank shown in Figure 9 the internal cut 51'' extends closer to the base of the corner, the intersection of fold lines 15 and 26. The end of the cut 88' is spaced from the fold line 15 a distance sufficient to provide a secure hinge portion for the corner flap 35 at the base of the corner. It is advantageous in this connection to offset the fold line 39 with respect to the fold line 26. The offset is preferably greater at the base of the corner than it is at the top of the panel 11. The finished box corner is shown in Figure 10. Its resemblance to a glued box corner is striking, there being a complete absence of conspicuous lock flaps overlying the wall panels on the outside. This not only enhances the appearance of the box but also provides mechanical advantages because of the absence of protruding parts.

The internal cut whose locking portion 67 in the previous figures were shown as being in substantial line-to-line coincidence with the locking edge 63 of the lock tab may be modified slightly by providing an angular end portion 89 shown in broken lines in Figure 9. The modification is illustrated in detail in Figures 11 and 12 showing the blank after setting up into corner shape. The angular portion 89 provides an edge beyond which the tip portion 90 of the lock tab projects after insertion of the lock tab 43 into the internal cut 51''. The tip portion 90 may then be pulled to the inside of the box by moving the lock tab 43 in the direction of the arrow 91. This causes the tip portion 90 to snap past the edge 89 thus providing a safety catch, so to speak, preventing accidental disengagement of the corner lock even under the most unfavorable conditions.

The invention thus provides an improved corner lock for setting up folding boxes without the use of adhesive possessing numerous features and advantages which make the novel lock superior to glueless constructions heretofore proposed and more economical to produce than a glued box construction.

Obviously various modifications, additions, omissions, substitutions and other changes are possible within the scope of the invention without departure from its principles.

What is claimed is:

1. A glueless corner construction for folding boxes, comprising a base panel; a first wall panel hingedly extending from the base panel along a first base fold line; a second wall panel hingedly extending from the base panel along a second base fold line forming an angle with said first base fold line; a corner flap hingedly extending from said first wall panel along a first side fold line, said first wall panel having an internal cut of bent outline therein forming an internal tongue in said first wall panel, the tongue pointing towards, and extending substantially to, said first side fold line, whereby an aperture is automatically formed at the corner upon folding of said flap with respect to said first wall panel; and a lock tab hingedly extending from said second wall panel along a second side fold line which second side fold line lies in substantial coincidence with said first side fold line when said

panels are in corner forming position, said lock tab being insertable through said aperture and said cut to underlie said first wall panel and said internal tongue and having a bordering locking edge extending from said second side fold line adapted to engage said internal cut in said first wall panel adjacent said first side fold line when said panels are in corner forming position.

2. A glueless corner construction for folding boxes, comprising a base panel; a first wall panel hingedly extending from the base panel along a first base fold line; a second wall panel hingedly extending from the base panel along a second base fold line forming an angle with said first base fold line; a substantially triangular corner flap joined to said first wall panel along a first side fold line, said first wall panel having an internal cut of bent outline therein forming an internal tongue in said first wall panel, the tongue pointing towards and extending with its tip portion beyond, said first side fold line, whereby an aperture is automatically formed at the corner upon folding of said flap with respect to said first wall panel; and a lock tab hingedly extending from said second wall panel along a second side fold line which second side fold line lies in substantial coincidence with said first side fold line when said panels are in corner forming position, said lock tab being insertable through said aperture and said cut to underlie said first wall panel and said internal tongue and having a bordering locking edge extending from said second side fold line adapted to engage said internal cut in said first wall panel adjacent said first side fold line when said panels are in corner forming position.

3. A glueless corner construction for folding boxes, comprising a base panel; a first wall panel hingedly extending from the base panel along a first base fold line; a second wall panel hingedly extending from the base panel along a second base fold line forming an angle with said first base fold line; a corner flap hingedly extending from said first wall panel along a first side fold line, said first wall panel having an internal cut of bent outline therein forming an internal tongue in said first wall panel, the tongue pointing towards, and extending substantially to, said first side fold line, whereby an aperture is automatically formed at the corner upon folding of said flap with respect to said first wall panel; and a lock tab hingedly extending from said second wall panel along a second side fold line which second side fold line lies in substantial coincidence with said first side fold line when said panels are in corner forming position, said lock tab extending to said second base fold line at the point of intersection of said second side fold line with said second base fold line and being insertable through said aperture and said cut to underlie said first wall panel and said internal tongue and having a bordering locking edge extending from said second side fold line adapted to engage said internal cut in said first wall panel adjacent said first side fold line when said panels are in corner forming position, said lock tab by reason of its extending to said second base fold line also stiffening said second wall panel against curving during insertion of the tab into said aperture.

4. A glueless corner construction for folding boxes, comprising a base panel; a first wall panel hingedly extending from the base panel along a first base fold line; a second wall panel hingedly extending from the base panel along a second base fold line forming an angle with said first base fold line; a substantially triangular corner flap joined to said first wall panel along a first side fold line, the edge of the flap which extends from the intersection of said first side fold line with the first base fold line forming an angle of substantially 45 degrees with said first side fold line, said first wall panel having an internal cut of bent outline therein forming an internal tongue in said first wall panel, the tongue pointing towards, and extending substantially to, said first side fold line, whereby an aperture is automatically formed at the corner upon folding of said flap with respect to said first wall panel; and a lock tab hingedly extending from said second wall panel along a second side fold line which second side fold line lies in substantial coincidence with said first side fold line when said panels are in corner forming position, said lock tab being insertable through said aperture and said cut to underlie said first wall panel and said internal tongue and having a bordering locking edge extending from said second side fold line adapted to engage said internal cut in said first wall panel adjacent said first side fold line when said panels are in corner forming position.

5. A glueless corner construction for folding boxes, comprising a base panel; a first wall panel hingedly extending from the base panel along a first base fold line; a second wall panel hingedly extending from the base panel along a second base fold line forming an angle with said first base fold line; a substantially triangular corner flap joined to said first wall panel along a first side fold line, the edge of the flap which extends from the intersection of said first side fold line with the first base fold line forming an angle of substantially 45 degrees with said first side fold line, said first wall panel having an internal cut of bent outline therein forming an internal tongue in said first wall panel, the tongue pointing towards and extending substantially to, said first side fold line, whereby an aperture is automatically formed at the corner upon folding of said flap with respect to said first wall panel; and a lock tab hingedly extending from said second wall panel along a second side fold line which second side fold line lies in substantial coincidence with said first fold line when said panels are in corner forming position, said lock tab having a tip portion cut from the stock of said corner flap and extending, in the flat blank, beyond said 45 degree edge, said lock tab being insertable, with its tip portion leading, into said aperture and said cut to underlie said first wall panel and said internal tongue and having a bordering locking edge extending from said second side fold line adapted to engage said internal cut in said first wall panel adjacent said first side fold line when said panels are in corner forming position.

6. A glueless corner construction for folding boxes, comprising a base panel; a first wall panel hingedly extending from the base panel along a first base fold line; a second wall panel hingedly extending from the base panel along a second base fold line forming an angle with said first base fold line; a corner flap hingedly extending from said first wall panel along a first side fold line, said first wall panel having an internal cut of bent outline therein forming an internal tongue in said first wall panel, the tongue pointing towards, and extending substantially to, said first side fold line, whereby an aperture is automatically formed at the corner upon folding of said flap with respect to said first wall panel; a lock

tab hingedly extending from said second wall panel along a second side fold line which second side fold line lies in substantial coincidence with said first side fold line when said panels are in corner forming position, said lock tab being insertable through said aperture and said cut to underlie said first wall panel and said internal tongue and having a bordering locking edge extending from said second side fold line adapted to engage said internal cut adjacent said first side fold line when said panels are in corner forming position; and a substantially triangular gusset panel adjacent the intersection of said first side fold line with said second side fold line, said gusset panel being hingedly connected to said second wall panel and to said corner flap respectively.

7. A glueless corner construction for folding boxes, comprising a base panel; a first wall panel hingedly extending from the base panel along a first base fold line; a second wall panel hingedly extending from the base panel along a second base fold line forming an angle with said first base fold line; a corner flap hingedly extending from said first wall panel along a first side fold line, said first wall panel having an internal cut of bent outline therein forming an internal tongue in said first wall panel, the tongue pointing towards, and extending substantially to, said first side fold line, whereby an aperture is automatically formed at the corner upon folding of said flap with respect to said first wall panel; and a lock tab hingedly extending from said second wall panel along a second side fold line which second side fold line lies in substantial coincidence with said first side fold line when said panels are in corner forming position, said lock tab being insertable through said aperture and said cut to underlie said first wall panel and said internal tongue and having a bordering locking edge extending from said second side fold line, said locking edge being in substantial edge-to-edge alignment with the portion of said internal cut immediately adjacent said first side fold line when said panels are in corner forming position.

8. A glueless corner construction for folding boxes, comprising a base panel; a first wall panel hingedly extending from the base panel along a first base fold line; a second wall panel hingedly extending from the base panel along a second base fold line forming an angle with said first base fold line; a corner flap hingedly extending from said first wall panel along a first side fold line, said first wall panel having an internal cut of bent outline therein, said cut extending beyond said first side fold line and forming an internal tongue in said first wall panel, the tongue pointing towards, and extending beyond, said first side fold line whereby an aperture is automatically formed at the corner upon folding of said flap with respect to said first wall panel, said internal cut including a substantially straight engagement portion remote with respect to said first base fold line and a second portion closer to said first base fold line, said second portion extending at an angle with respect to said engagement portion, the said two portions defining a tip on said tongue, said tip lying within said first wall panel; and a lock tab hingedly extending from said second wall panel along a second side fold line which second side fold line lies in substantial coincidence with said first side fold line when said panels are in corner forming position, said lock tab being insertable through said aperture and said cut to underlie said first wall panel and said internal tongue and having a bordering locking edge extending from said second side fold line adapted to engage the engagement portion of said internal cut adjacent said first side fold line when said panels are in corner forming position.

9. A glueless corner construction for folding boxes, comprising a base panel; a first wall panel hingedly extending from the base panel along a first base fold line; a second wall panel hingedly extending from the base panel along a second base fold line forming an angle with said first base fold line; a corner flap hingedly extending from said first wall panel along a first side fold line, said first wall panel having an internal cut of bent outline therein, said cut comprising two distinct portions, a first portion extending substantially parallel to said first side fold line, and a second portion extending at an angle with respect to the first portion into the body of the said first wall panel, said second portion being farther remote from the intersection of the first base fold line with the second base fold line than the first portion of the cut, the cut forming an internal tongue in said first wall panel, the tongue pointing towards, and extending substantially to, said first side fold line, whereby an aperture is automatically formed at the corner upon folding of said flap with respect to said first wall panel; and a lock tab hingedly extending from said second wall panel along a second side fold line which second side fold line lies in substantial coincidence with said first side fold line when said panels are in corner forming position, said lock tab being insertable through said aperture and said cut to underlie said first wall panel and said internal tongue and having a bordering locking edge extending from said second side fold line adapted to engage the second portion of said internal cut when said panels are in corner forming position.

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