March 4, 1924. 1,485,584

S. BERGSTEIN

PAPER FOLDING BOX

Filed March 23, 1922

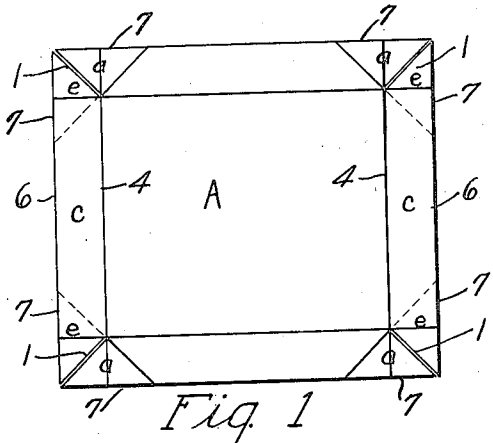


Fig. 1

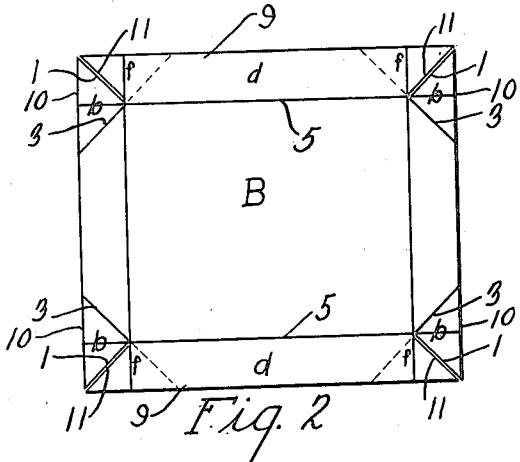


Fig. 2

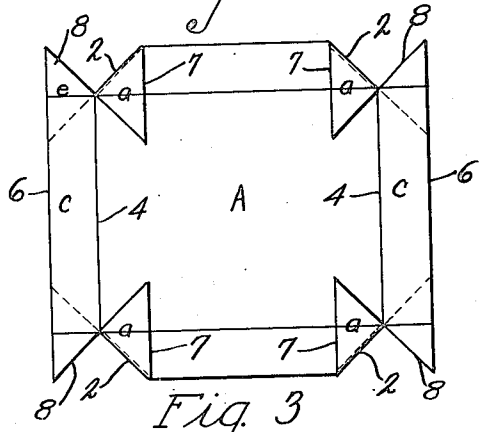


Fig. 3

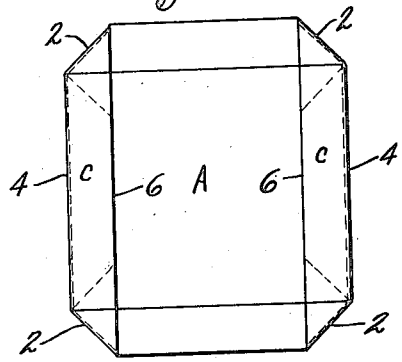


Fig. 4

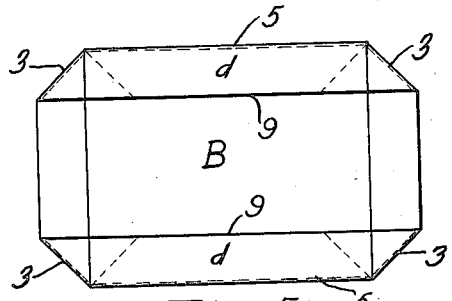


Fig. 5

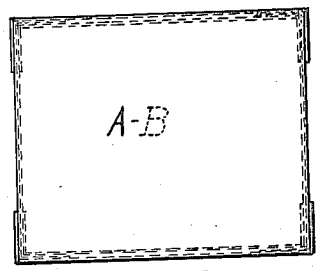


Fig. 6

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BY

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Patented Mar. 4, 1924. 1,485,584

UNITED STATES PATENT OFFICE.

SAMUEL BERGSTEIN, OF MIDDLETOWN, OHIO, ASSIGNOR TO THE INTERSTATE FOLDING BOX COMPANY, OF MIDDLETOWN, OHIO.

PAPER FOLDING BOX.

Application filed March 23, 1922. Serial No. 546,019.

To all whom it may concern:

Be it known that I, SAMUEL BERGSTEIN, a citizen of the United States, residing at Middletown, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Paper Folding Boxes and the like, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in paper folding boxes,—having particular reference to paper folding boxes of the knock-down type.

The main object of my invention is to effect better construction and, at the same time, cheaper production of paper boxes of this character than is being realized by the present general practice.

To this end the improved box of the present invention, is designed to minimize waste of material; to produce a box of relatively greater strength; and for production on an automatic paper box folding machine having far greater output at a given cost of operation than has been possible heretofore by the best known practices in this art. A suitable automatic apparatus for manufacturing the boxes forms the subject matter of a co-pending application for Letters Patent—Serial No. 546,044, filed March 23, 1922.

The improved box, as herein illustrated and described distinguishes from the present known practice of paper folding box making in the manner of effecting the folds of the box, and the manner of joining coacting portions of the folds one with another,—a complete unit of the box, joined and folded ready for distribution, being produced by a single series of successive operations of one machine, as distinguished from the heretofore common practice in this art of alternate machine and hand operations required to produce folding boxes of this general character. The separate units for the top and bottom of the box, as delivered from the folding machine, are immediately ready for assembling one with the other, as required in boxes made by the common practice,—thus the improved boxes of the present invention are far more convenient for handling as used by the trade, than ordinary boxes of the usual types.

The novel features of my improved box are illustrated in the accompanying drawings,—the principle of the invention and specific features of construction and arrangement being defined in the appended claims.

In the drawings:

Figs. 1 and 2 illustrate the blanks for the bottom and top units respectively of the box, opened out, and slotted and scored for folding;

Fig. 3 illustrates the first step of folding the blank shown in Fig. 1;

Fig. 4 illustrates the final fold of the blank shown in Fig. 1;

Fig. 5 illustrates the final fold of the blank shown in Fig. 2, and

Fig. 6 illustrates the assembly of the two units.

As here shown, both blanks —A and —B are slotted at each corner on diagonal lines —1,—blank —A representing the bottom and blank —B the top unit for the box. In the first forming operation of blank —A, the portions —*a* are folded on diagonal lines —2, as illustrated in Fig. 3,—the folds being made flat to the face of the blank. Corresponding folds are made of portions —*b* on lines —3 of blank —B,—this operation, not illustrated in the drawings, being the same as that illustrated in Fig. 3 except that the folds are made from the opposite end edges, as distinguished from the folds of blank —A which are made from the opposite side edges of the blank.

The final folds of blanks —A and —B are illustrated in Figs. 4 and 5, and consist in folding marginal portions —*c* and —*d*, on lines —4 and —5, over folded portions —*a* and —*b* of the respective blanks. Thus the side edges —6 of the opposite marginal portions —*c* of blank —A will be brought to register with the aligned edges —7 of the two adjacent folded portions —*a*, and the diagonally-cut edges —8 to register with the folding lines —2. In like manner, in making the corresponding folds of blank —B, the side edges —9 will be brought to register with edges —10, which will be aligned in folding of portions —*b*, and the diagonal edges —11 with the folding lines —3. Thus the overlapping portions —*a* —*c* of blank

—A and —*b* —*f* of blank —B will have double thickness of material and all the corners of both units of the box, accordingly, will have double strength.

Before the final folds are made on blanks —A and —B, the portions —*e* and —*f* are supplied with a suitable adhesive, as glue, paste, cement, etc.,—this being a feature of operation of the automatic box folding machine to which reference has been made herein.

It is this feature of corner construction that gives particular novelty and outstanding merit to the present invention. It will be observed that each corner of both box units is reinforced by double thickness of triangular-shaped portions of paper, the base of the triangle being at the open side, and the apex of the triangle intersecting the corner on the closed side of the box unit, as the same is opened or unfolded from the knock-down form illustrated in Figs. 4 and 5. This feature of corner construction, taken together with the further characteristic of adhesive junctures between the overlapping portions, results in a knock-down folding box of outstanding merit,—having particular reference to cheapness of production, symmetrical outline, and strength and durability in the assembled units of the box. As will be observed in Fig. 6, in the assembly of the top and bottom units of the box, all corners will have quadruple strength of material,—being further greatly strengthened by the triangular shapes of the adhering, overlapping portions.

Having described my invention, I claim:

1. In a folding box, including in combination with a blank for forming a unit of the box, a diagonal slot formed in each corner of said blank, a triangular-shaped portion folded inwardly over the face of the blank, adjacent each slot on a line substantially at right-angles thereto, a marginal portion of the blank folded over each two adjacent triangular-shaped portions, whereby the box is reinforced by said triangular-shaped portions of material, one portion overlapping the other equally on both sides of each corner of the box with the apex of the triangle turned inwardly toward the closed side of the box unit.

2. In a folding box, including in combination with a blank for forming a unit of the box, a diagonal slot formed in each corner of said blank, a triangular-shaped portion folded inwardly over the face of the blank, adjacent each slot on a line substantially at right-angles thereto, a marginal portion of the blank folded on a line parallel to an edge of said margin over each two adjacent triangular-shaped portions, whereby the box is reinforced by said triangular-shaped portions of material, one portion overlapping the other equally on both sides of each corner of the box with the apex of the triangle turned inwardly toward the closed side of the box unit.

3. In a folding box, including in combination with a blank for forming a unit of the box, a diagonal slot formed in each corner of said blank, a triangular-shaped portion folded inwardly over the face of the blank, adjacent each slot on a line substantially at right-angles thereto, a marginal portion of the blank folded on a line parallel to the edge of said margin over each two adjacent triangular-shaped portions with said edge brought to register with aligned edges thereof, whereby the box is reinforced by said triangular-shaped portions of material, one portion overlapping the other equally on both sides of each corner of the box with the apex of the triangle turned inwardly toward the closed side of the box unit.

4. In a folding box, including in combination with a blank for forming a unit of the box, a diagonal slot formed in each corner of said blank, a triangular-shaped portion folded inwardly over the face of the blank, adjacent each slot on a line substantially at right-angles thereto, a marginal portion of the blank folded on a line parallel to the side edge of said margin over each two adjacent triangular-shaped portions, with said edge brought to register with aligned edges thereof, and the diagonal edges of said marginal portion brought to register with the folding lines of said triangular-shaped portions, whereby the box is reinforced by said triangular-shaped portions of material, one portion overlapping the other equally on both sides of each corner of the box with the apex of the triangle turned inwardly toward the closed side of the box unit.

5. In a folding box, including in combination with a blank for forming a unit of the box, a diagonal slot formed in each corner of said blank, a triangular-shaped portion folded inwardly over the face of the blank, adjacent each slot on a line substantially at right-angles thereto, a marginal portion of the blank folded over each two adjacent triangular-shaped portions, the base line of each triangular-shaped portion being brought to register with an edge line, and the apex of each triangular-shaped portion being on the folding line of the coacting marginal portion, whereby the box is reinforced by said triangular-shaped portions of material, one portion overlapping the other equally on both sides of each corner of the box with the apex of the triangle turned inwardly toward the closed side of the box unit.

6. In a folding box, including in combination, two blanks for forming the top and bottom of said box, a diagonal slot formed

in each corner of said blanks, a triangular-shaped portion folded inwardly over the face of one of said blanks adjacent each slot therein on opposite sides thereof, and corresponding folds of the other of said blanks on opposite ends thereof, a marginal portion of each blank folded over each two adjacent triangular-shaped portions, whereby the box is reinforced by said triangular-shaped portions of material, one portion overlapping the other equally on both sides of each corner of the box with the apex of the triangle turned inwardly toward the closed side of the box unit.

In testimony whereof, I affix my signature.

SAMUEL BERGSTEIN.