956,418.

J. G. REBER, DEC'D.
O. S. REBER, ADMINISTRATRIX.
PAPER BOX.
APPLICATION FILED JULY 7, 1904.

Patented Apr. 26, 1910.
4 SHEETS—SHEET 1.

Fig. 1

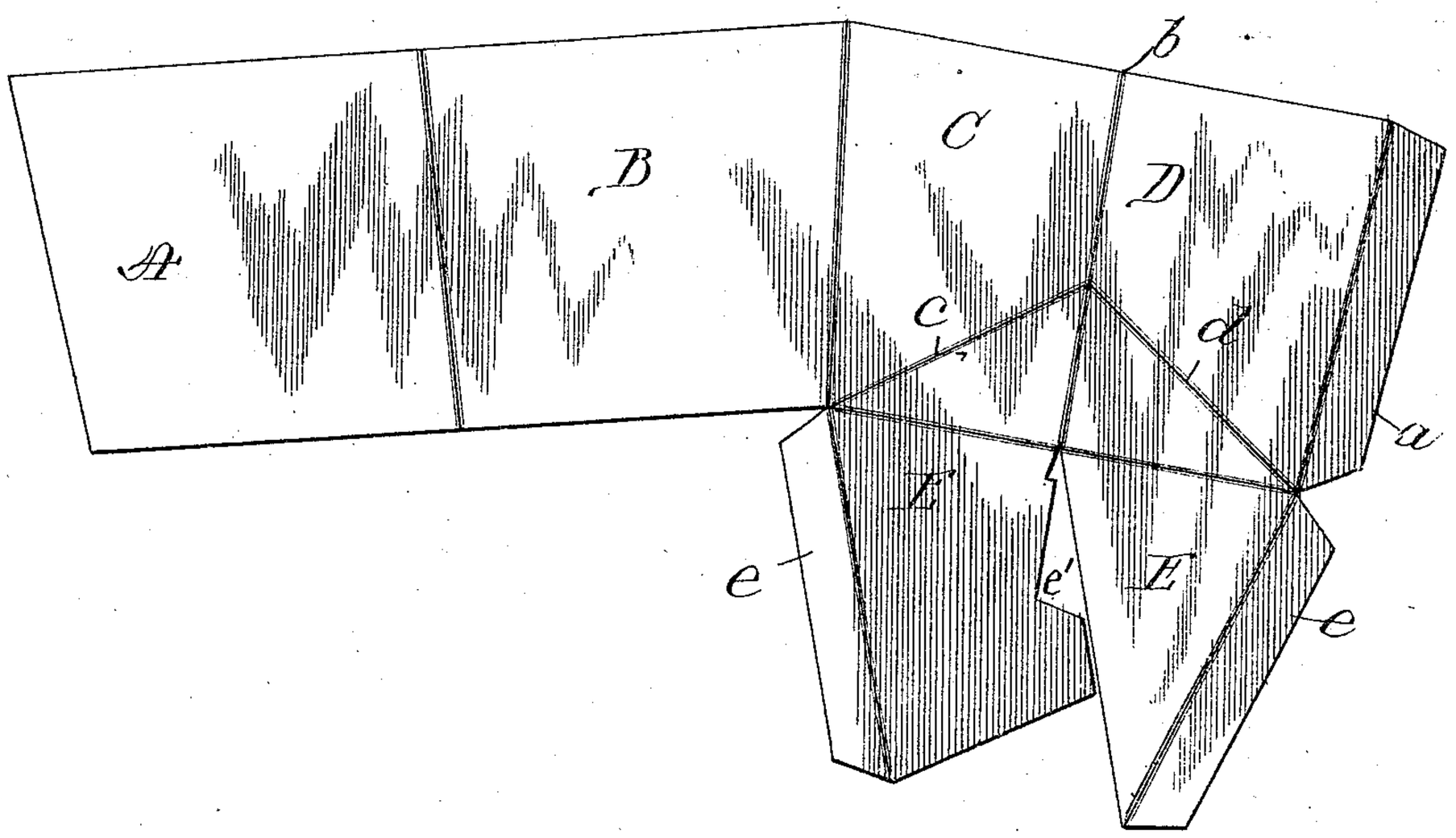
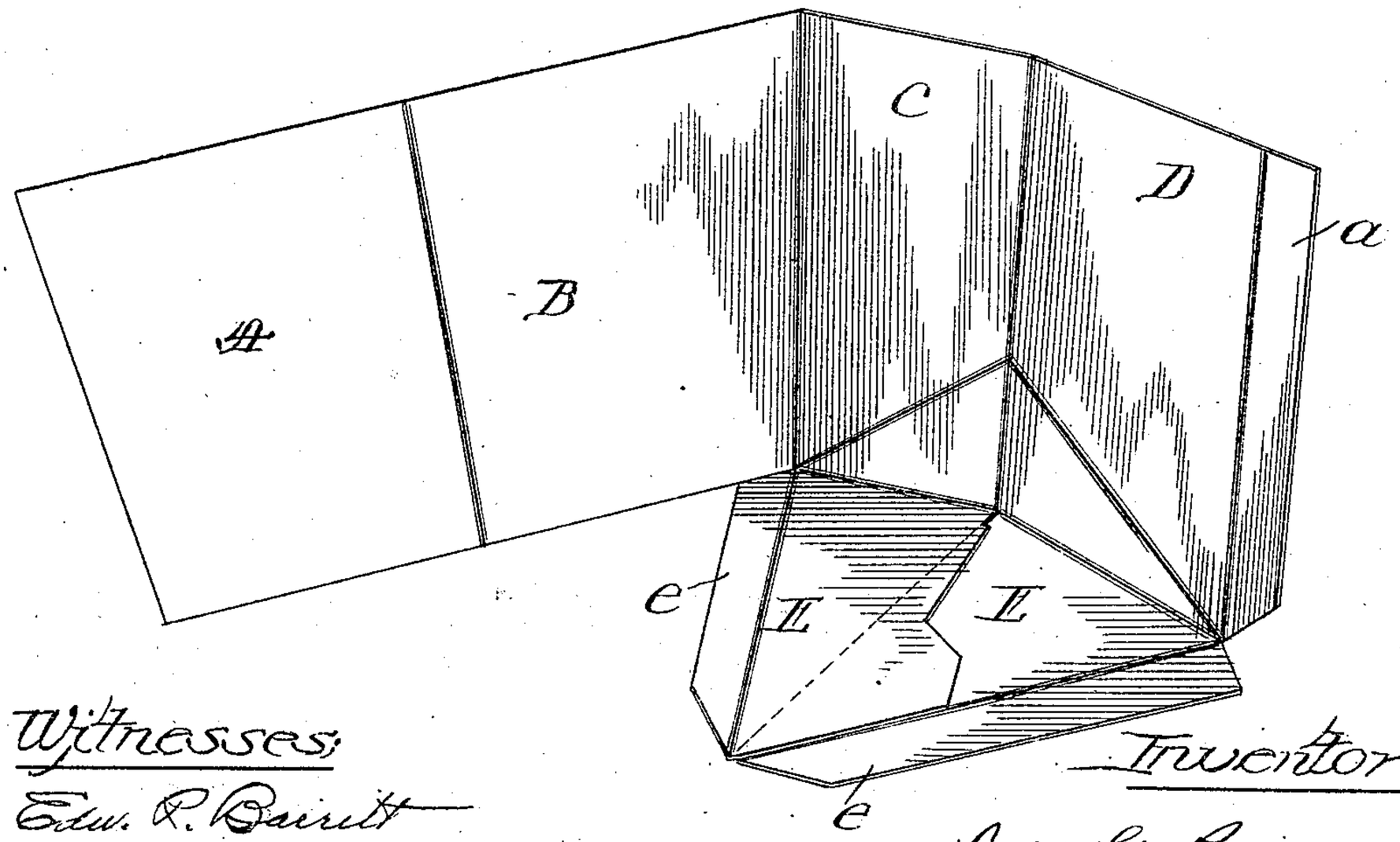


Fig. 2



Witnesses;
Edw. P. Bartlett
Louis B. Erwin

Inventor
John G. Reber
By Rector & Nicholson
His Attorneys

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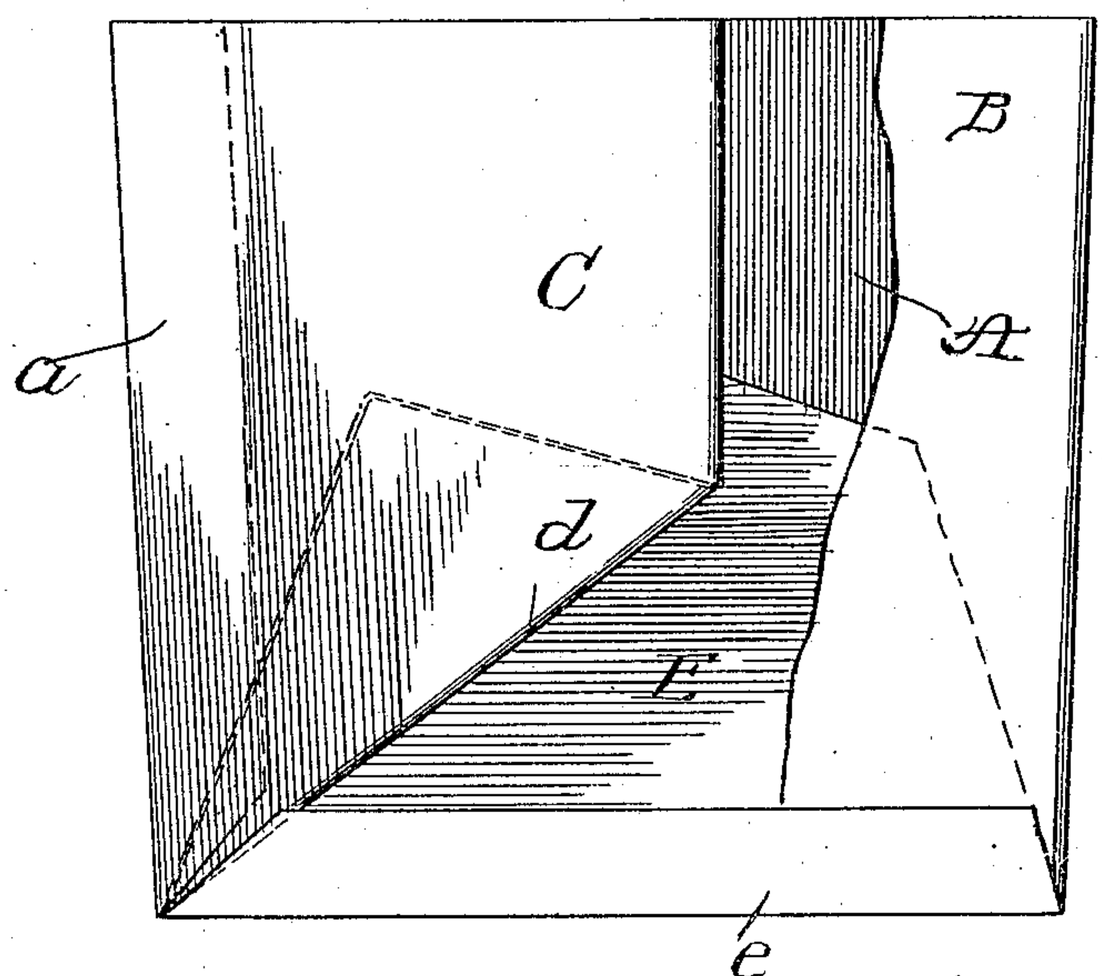
Fig. 3



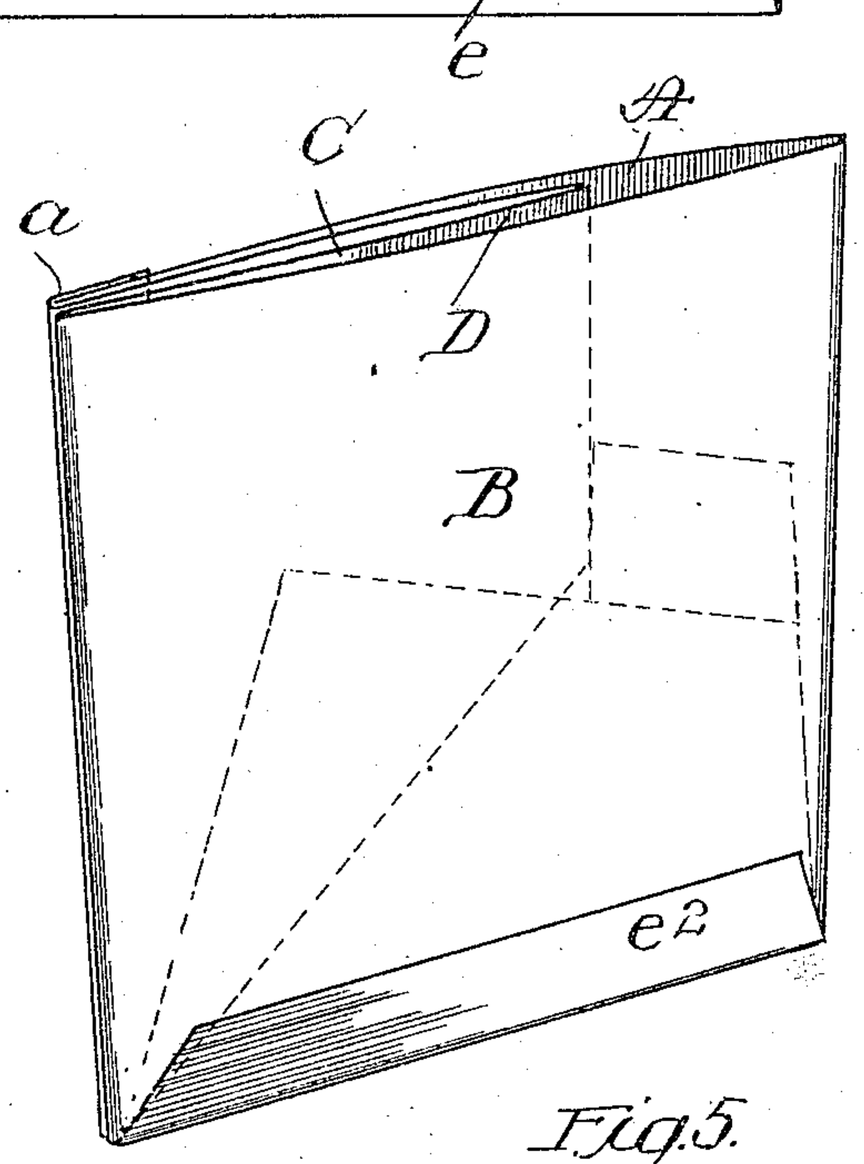
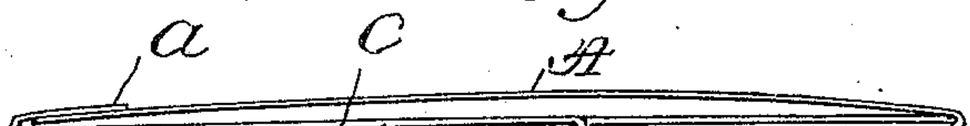


Fig. 4

Fig. 5.



Witnesses:

Edward L. Barrett

Louis B. Ewin

Inventor:

John G. Reber

By Reber & Nissen

His Attorneys.

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4 SHEETS—SHEET 3.

Fig. 6.

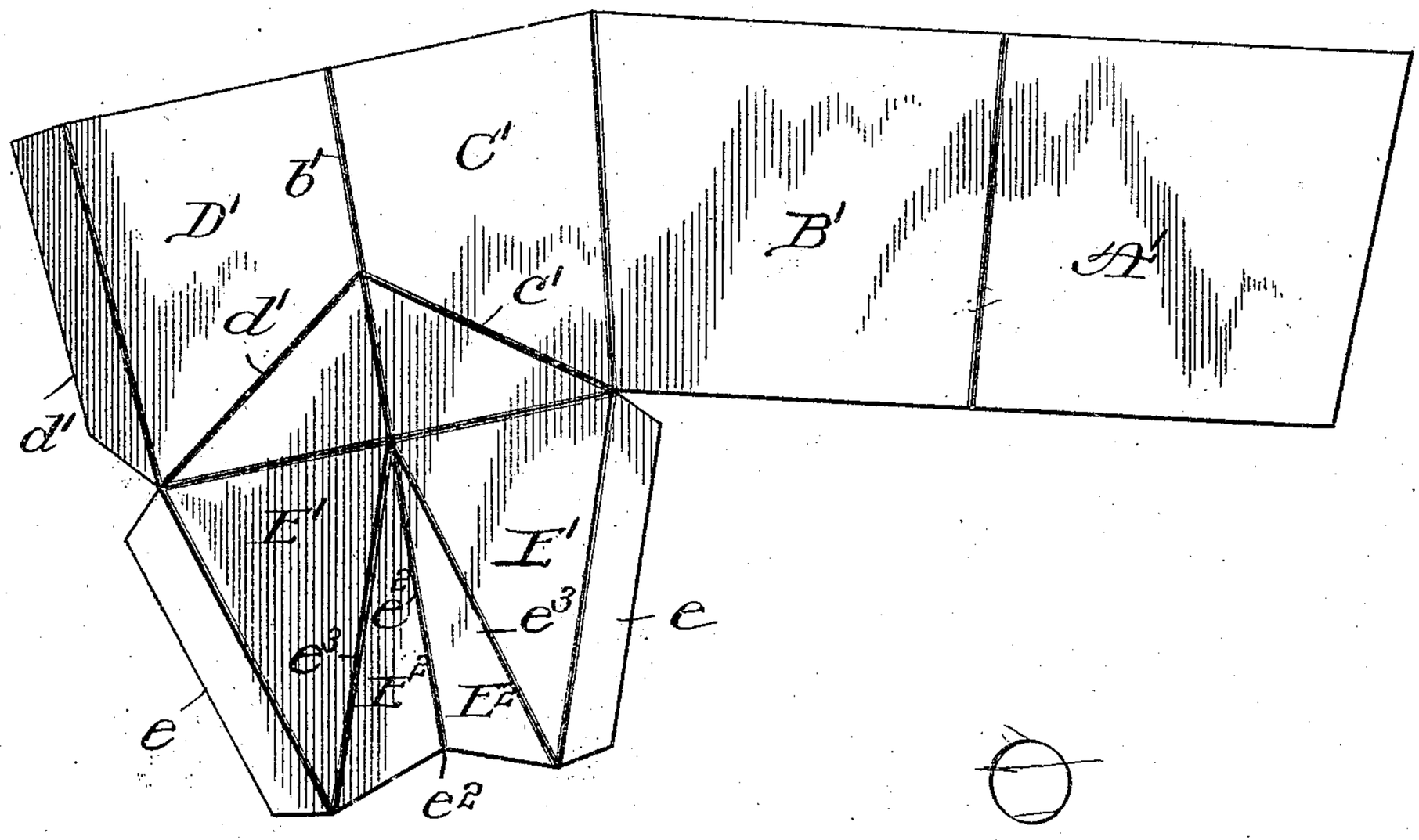
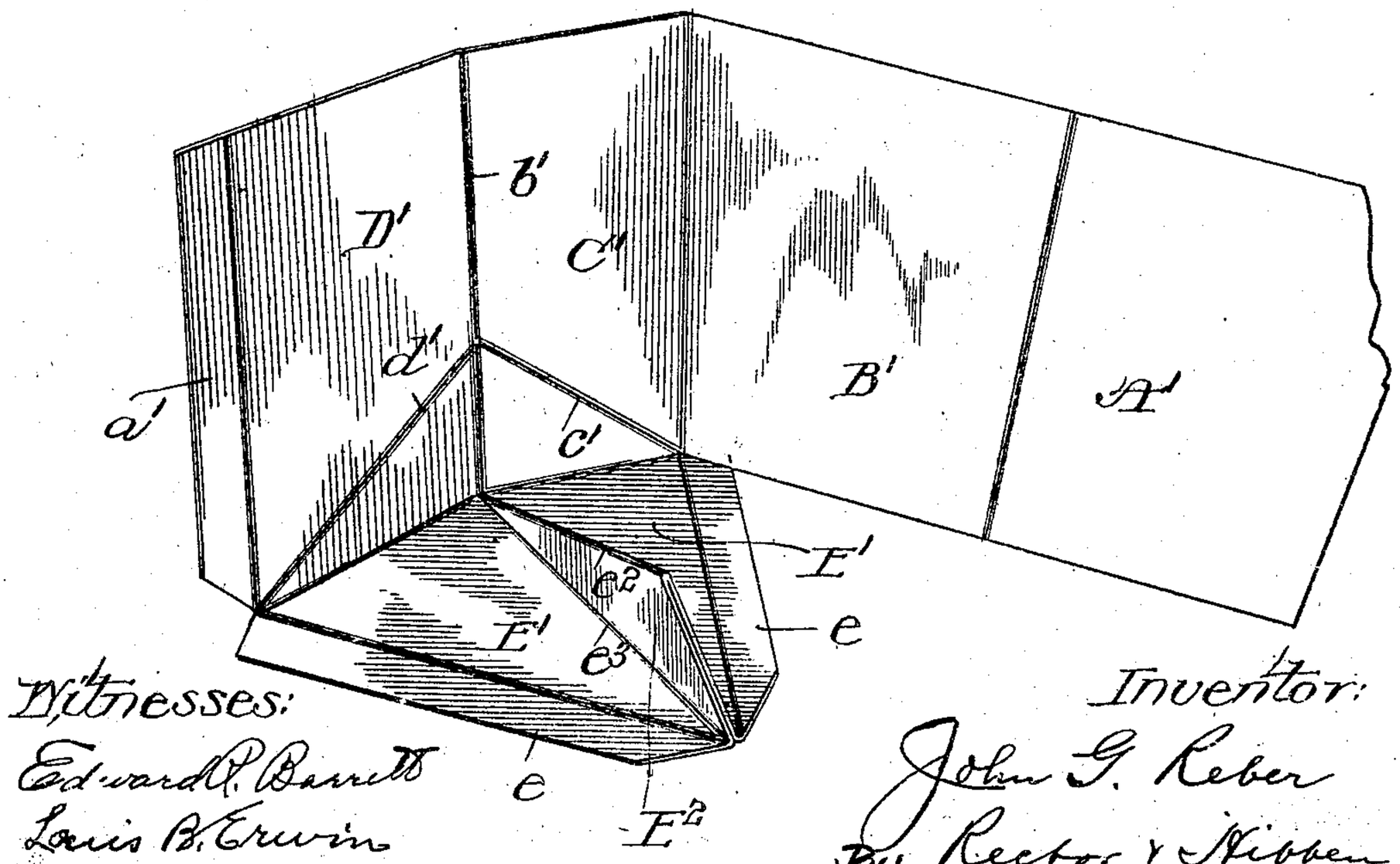


Fig. 7.



Witnesses:
Edward P. Barrett
Louis B. Erwin

Inventor:
John G. Reber
By Rector & Hibben
His Attorneys.

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O. S. REBER, ADMINISTRATRIX.
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4 SHEETS—SHEET 4.

Fig. 8

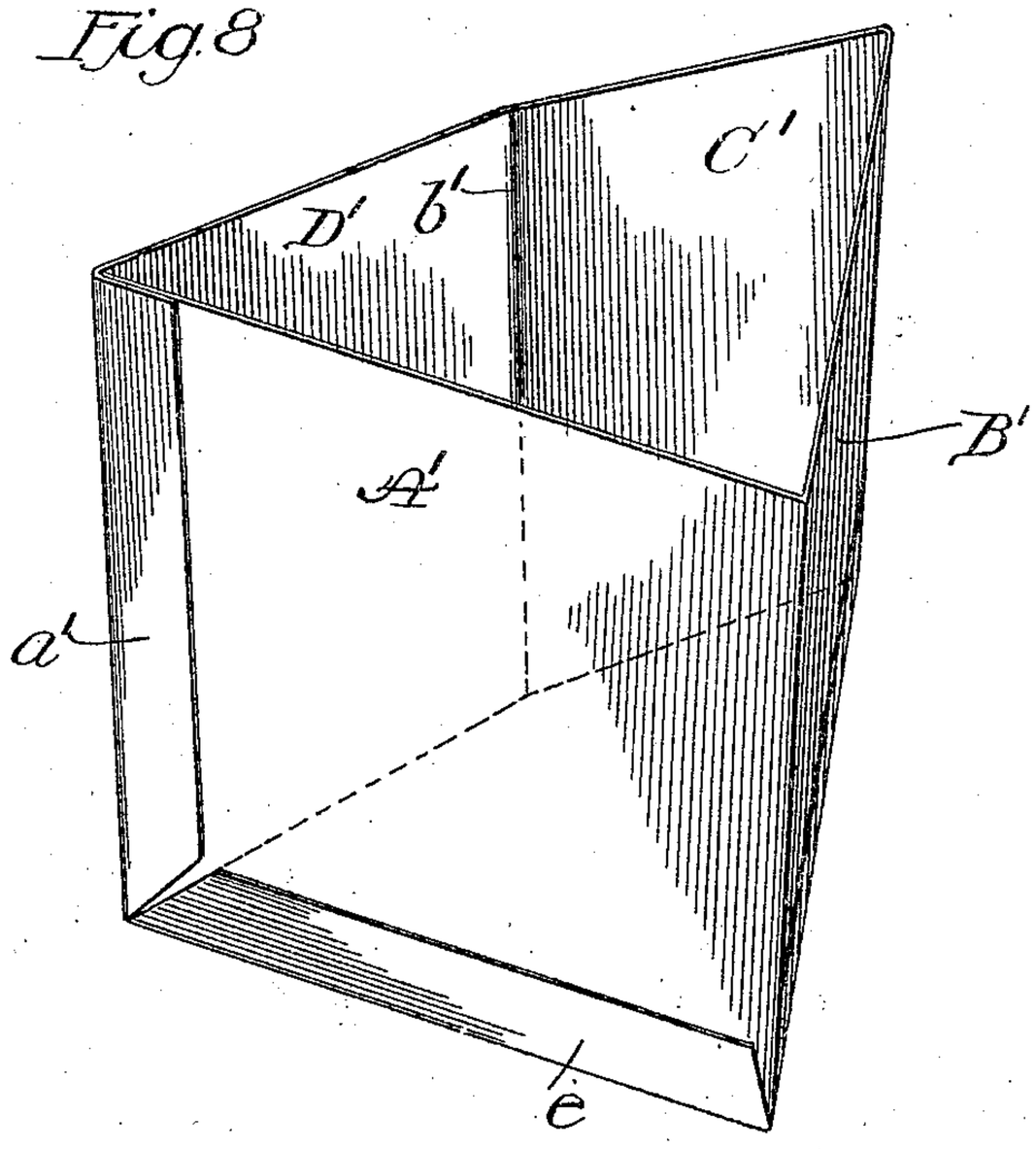
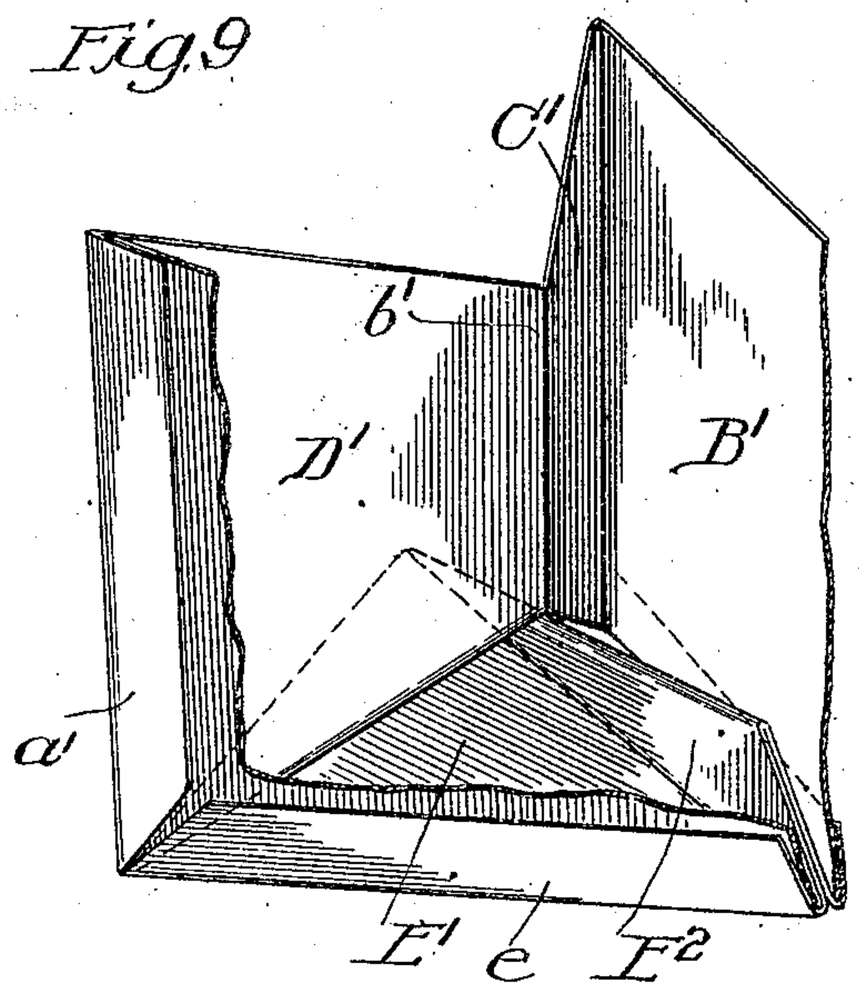


Fig. 9



Witnesses:
Edw. R. Benedict
Louis B. Erwin

Inventor:
John G. Reber
By Rector & Nissen
His Attorneys.

UNITED STATES PATENT OFFICE.

JOHN G. REBER, OF CHICAGO, ILLINOIS; OLIVE S. REBER, ADMINISTRATRIX OF SAID JOHN G. REBER, DECEASED, ASSIGNOR TO THE SEFTON MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, AND ANDERSON, INDIANA, A CORPORATION OF INDIANA.

PAPER BOX.

956,418. Specification of Letters Patent. Patented Apr. 26, 1910.

Application filed July 7, 1904. Serial No. 215,642.

To all whom it may concern:

Be it known that I, JOHN G. REBER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Paper Boxes, of which the following is a specification.

My invention has for its object the production of a collapsible paper box provided with a permanent bottom, that is, a paper box which may be collapsed or pressed into flat form for storage and shipment and which shall have a bottom permanently connected to the side walls of the box.

My invention is capable of application to boxes of different shape and character, but I have herein chosen to embody the same in a substantially triangular open-topped box such as commercially employed as "pail fillers."

In the accompanying drawings, Figure 1 is a plan view of the paper blank from which my paper box is folded; Fig. 2 a view in perspective of the blank partially folded; Fig. 3 an elevation of the box in collapsed form but with one of the side walls broken away to expose the folded parts within; Fig. 4 a perspective of the box in collapsed form; Fig. 5 an edge view of the box collapsed; Figs. 6 and 7 views similar to Figs. 1 and 2 but of a modified form of blank and box; Fig. 8 a perspective of such modified box in form for use; and Fig. 9 a view in perspective illustrating the partial inward folding of the bottom and one of the sides of the box.

The same letters of reference are used to indicate corresponding parts in the several views.

The triangular shaped box or "pail-filler" illustrated in Figs. 2 to 5 of the drawings is formed from the blank shown in Fig. 1, which blank comprises three main side walls A, B and C—D, the latter being separated into the two similar portions C and D, by a middle vertical crease or score line *b* provided for the purpose of permitting the box to be collapsed, and also permitting such side wall to be slightly convexed in forming the box, so that the outer sides of a circle of such boxes assembled in a pail will more nearly conform to the circle of the pail, as is usual in pail fillers of this general character. In addition to the vertical crease or score line *b*, I provide the two halves or portions C, D, of said side wall with the converging oblique score lines *c d* leading from the lower outer corners of these side wall portions and meeting at the vertical score line *b*, in the present instance about midway of its length.

The bottom of the box is, in the present instance, an integral portion of the blank and depends from the side wall C—D. The bottom is formed into two substantially triangular portions E E, whose bases are hinged to the side wall C—D and which, in the box when ready for use, lap over each other and thereby form a closed bottom, as shown in Fig. 2. The inner edge of one of these bottom portions is irregular because of the cutting therefrom of a triangular piece as indicated at *e'* in Fig. 1, which is done for a purpose hereinafter made apparent. The outer free edges of the portions E are provided with marginal pasting flaps *e*, which are adapted to be pasted to two of the side walls. The side wall C—D is also provided with a marginal pasting flap *a*, which might, of course, project from the outer edge of the side wall A instead.

In folding the described blank into box form ready for use, the two portions E of the bottom are lapped over each other in the manner illustrated in Fig. 2, whereupon the side walls are brought into proper relative position and the pasting flaps *e* secured thereto and likewise the pasting flap *a* is secured to the side wall A, thus completing the box with the bottom permanent and secured on all sides to the side walls thereof. Because of the cutting away of the triangular portion of the bottom as at *e'*, such bottom is permitted to fold inwardly freely and without interference with the side walls, one of which (C—D) also folds inwardly.

In collapsing my improved paper box into flat form for storage or shipment, the side wall C—D of the box is pressed inward at the point where the converging score lines *c d* meet at the vertical score line *b*. This causes the bottom of the box to be drawn upward between the side walls, collapsing upon itself with the outer surfaces of the two portions of the bottom face to face and with their base portions positioned between the portions of the side wall C—D, as shown in Figs. 3 and 4. The box is thus readily collapsed into the perfectly flat form shown in Figs. 4 and 5, which permits the boxes to

be stored or shipped in compact form with consequent economy of space.

When a box is desired for use, it can be instantly opened out from the collapsed form of Figs. 4 and 5 to open form, the bottom of the box in such operation requiring no attention or manipulation whatever, as has heretofore been required in collapsible boxes of this character having loose or detached bottoms which had to be folded into place preparatory to using the box. In addition to this advantage, the permanent or solid bottom of my improved box affords a tight closure for the lower end of the box.

Now referring to the modified form of blank and box illustrated in Figs. 6, 7, 8 and 9, such blank and box are substantially the same as the other form already described, with the exception of the bottom. In this modification the blank is formed of the three side walls A′ B′ and C′—D′ and the bottom formed of the two portions E′ E′ hinged to the portions of the side walls C′—D′, thereby forming an integral portion of the blank. As in the case of the blank of Fig. 1, the side wall C′—D′ is divided by the middle score line b' and such portions of the side wall are provided respectively with the oblique score lines c' d' intersecting the score line b' and extending to the corners of said portions respectively of the side wall C′—D′.

The bottom of the box is hinged to the side wall C′—D′ as already described and in the particular instance shown, such latter side wall is at the left hand side (Fig. 6), whereas in the blank of Fig. 1 such side wall is at the right hand end of the blank. The bottom of the box of said modification is divided by a middle score line e^2, which is practically a continuation of the score line b' and in addition is divided by the two oblique score lines e^3 converging at the top into score line e^2 and running diagonally to opposite corners of the bottom, with the result that such bottom is divided into two similar triangular portions E′ E′, whose bases are hinged to the side wall C′—D′ and into two smaller and similar triangular portions E^2 whose apexes extend to the hinge line of the bottom and side wall C′—D′. As illustrated in Fig. 6, a triangular piece is cut out from the lower end of the bottom, so that the altitude of the triangular portions E^2 is somewhat less than that of the other triangular portions E′, for a purpose hereinafter made apparent. In folding the blank into such modified form of box, the smaller triangular portions E^2 of the bottom are folded inwardly, so as to project upwardly as illustrated in Fig. 7, after which the side walls are brought into proper relative position and the pasting flaps secured thereto in the manner hereinbefore described. In collapsing such modified form of box into flat form for storage or shipment, the side wall C′—D′ of the box is pressed inwardly at the point where the converging score lines c' d' meet at the vertical score line b', at which time the bottom also begins to fold upwardly as illustrated in Fig. 9, which shows the box partly collapsed. The collapsing operation is continued with the result that the box will partake of the flat and compact form substantially as illustrated in Figs. 3 and 4. It is evident that the cutting away of the triangular portion at the end of the bottom permits the walls of the box to be folded or collapsed without interference from the bottom.

I claim:

1. A folding paper box having a series of three side walls hinged to each other, one of the outermost ones of which sides is creased to fold vertically intermediate its width and to collapse between the other two walls, and a bottom, two of whose sides are hinged to the lower edges of said creased side, said bottom being arranged to be inwardly folded within the compass of the other two walls and to permit the box to collapse; substantially as described.

2. A folding paper box having a series of three side walls, A, B and C—D, hinged to each other, the walls A and C—D being end walls and the wall B the intermediate wall, the wall C—D being arranged to fold inwardly to collapse between the other two walls, and a permanent bottom hinged to said wall C—D and arranged to be transversely and inwardly folded within the compass of the other two walls and permit the box to collapse, said bottom being formed in two portions one of which is hinged to the part C and the other to the part D of the side walls C—D; substantially as described.

3. A folding paper box having a series of three side walls, A, B and C—D, hinged to each other, the walls A and C—D being end walls and the wall B the intermediate wall, the wall C—D being arranged to fold inwardly to collapse between the other two walls, and a bottom hinged to said wall C—D, said bottom being formed of two overlapping portions arranged to be folded inwardly and between the side walls when the box is collapsed; substantially as described.

4. A folding paper box having a series of three side walls, A, B and C—D, hinged to each other, the walls A and C—D being end walls and the wall C—D being scored to fold inwardly between the other two walls, a pasting flap a on the free end of the side wall C—D, and a permanent bottom hinged to said wall C—D and comprising the two portions E—E adapted to overlap to form such bottom and having the marginal pasting flaps e—e, adapted to be secured to the

outer lower portions of the walls A, B said portions E E being arranged to fold inwardly when the box is collapsed, substantially as described.

5. A folding paper box having side walls, one of which has a middle score line *b* dividing it into two portions C D and also oblique score lines *c d* converging at the score line *b* and running to the two lower corners of the side wall, and a bottom hinged to said side wall C—D and divided into two portions E E adapted to overlap, one of which portions E has one edge cut away at *e'* to prevent interference with the side walls when the box is collapsed, the said portions E E being arranged to fold upwardly within the portions of the side wall C—D when the latter is folded inwardly and the box collapsed; substantially as described.

6. A folding box having a series of three side walls A, B and C—D hinged to each other, the walls A and C—D being end walls and the wall B the intermediate wall, the wall C—D having the central score line *b* and diagonal score lines *c* and *d* whereby the same is arranged to fold inwardly and partially upwardly to accommodate the bottom in its folding, and a bottom having two portions, one hinged to the portion C and the other to the portion D of the side wall C—D, said bottom in the collapsing of the box being arranged to fold upwardly between the walls A and B and between the lower portions of the wall C—D; substantially as described.

JOHN G. REBER.

Witnesses:
S. E. HIBBEN,
LOUIS B. ERWIN.