F. A. SCRUBY.

COLLAPSIBLE BOX.

APPLICATION FILED JUNE 22, 1908.

906,310. Patented Dec. 8, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

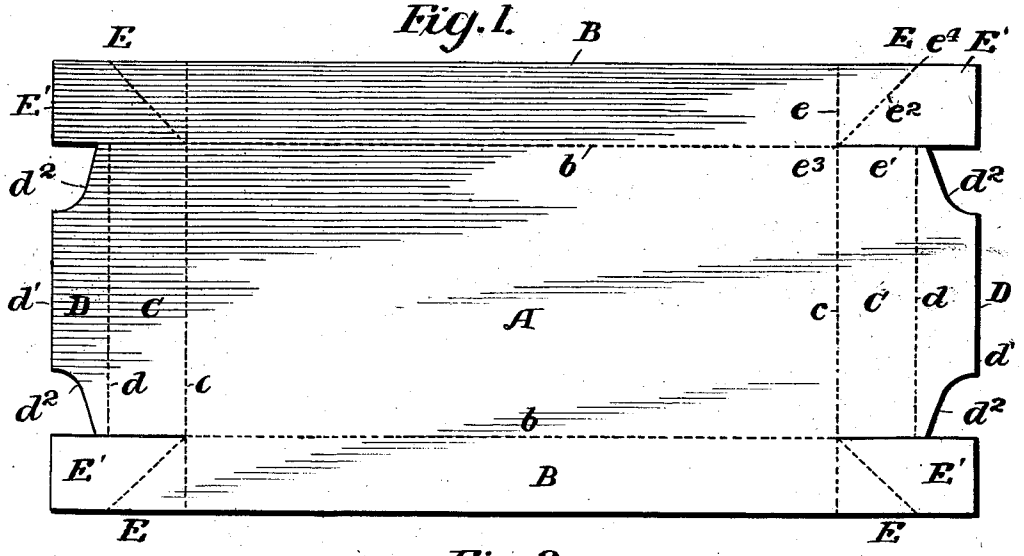


Fig. 2.

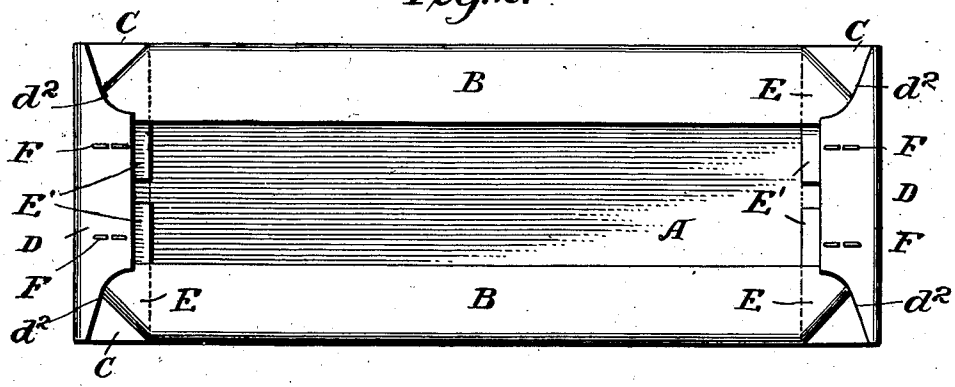
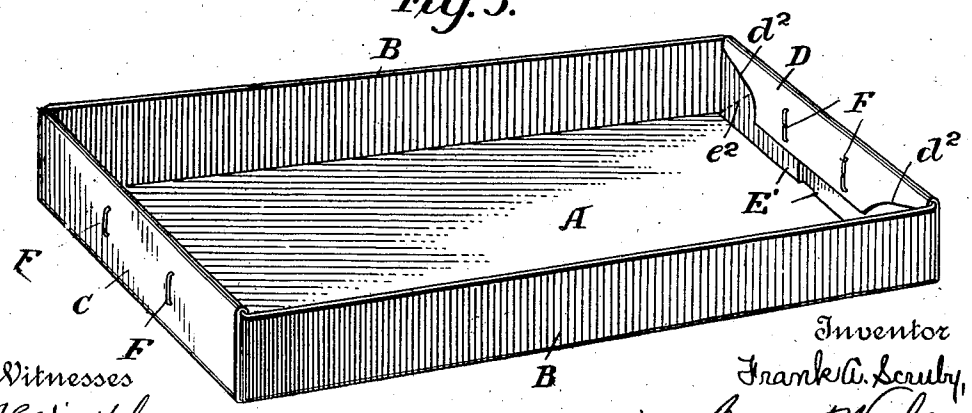


Fig. 3.



Witnesses
J. Gstinkel
M. S. Adams.

Inventor
Frank A. Scruby,
By Baldwin Wright
his — Attorneys

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2 SHEETS—SHEET 2.

Fig. 4.

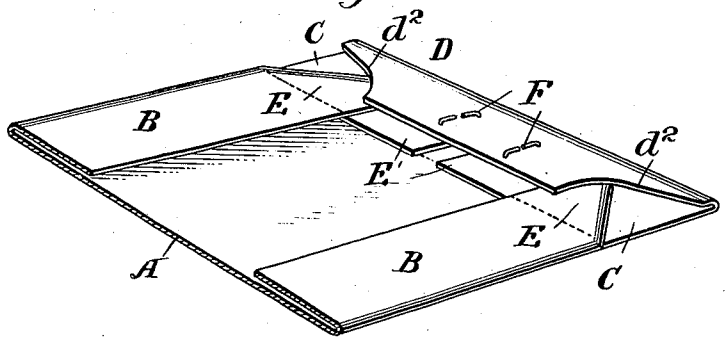


Fig. 5.

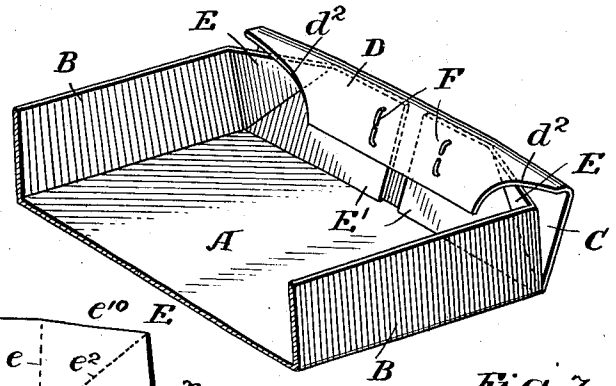


Fig. 6.

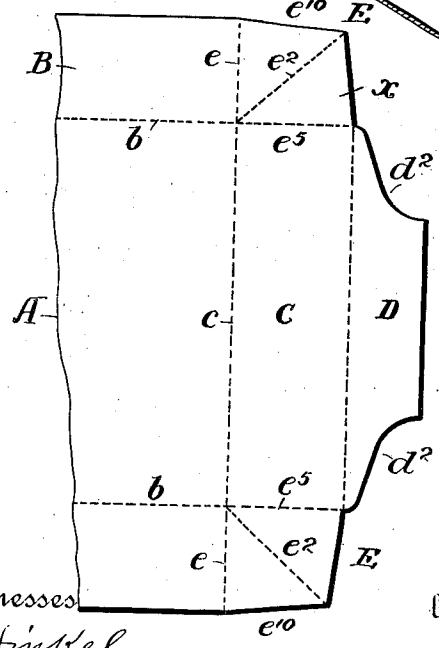
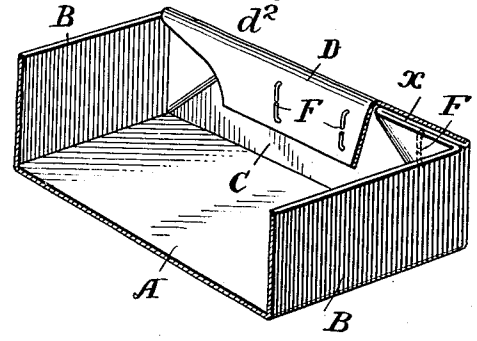


Fig. 7



Witnesses

J. G. Strickel

M. S. Adams.

Inventor

Frank A. Scruby,

Baldwin & Wright.

his Attorneys

UNITED STATES PATENT OFFICE.

FRANK A. SCRUBY, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR OF ONE-HALF TO GEORGE E. SCRUBY, OF GRAND RAPIDS, MICHIGAN.

COLLAPSIBLE BOX.

No. 906,310. Specification of Letters Patent. Patented Dec. 8, 1908.

Application filed June 22, 1908. Serial No. 439,857.

To all whom it may concern:

Be it known that I, FRANK A. SCRUBY, a citizen of the United States, residing in Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Collapsible Boxes, of which the following is a specification.

My invention relates to that class of boxes which are formed from a blank of pasteboard, or the like, which is shaped, slit and scored in such manner that it may be conveniently bent into box form and certain parts attached to each other so that it will retain such form. Such boxes have heretofore been so constructed that they may be collapsed for packing or transportation and my invention relates particularly to boxes of this latter kind.

My improvement consists in giving such shape and form to the blank and so connecting the parts that the box may be very quickly changed from its distended to its collapsed condition in a novel way without disconnecting the attached parts.

The blank from which the box is formed has a general rectangular shape. It is scored or creased to define the sides and ends which are bent to assume positions at right angles to the body of the box in the usual way. The end portions of the blank have flaps with inclined or curved edges which are important factors in the operation of bending the blank into box form, or in collapsing it. At each end of each side portion there is a corner piece which is separated from the adjacent side part by a score or crease and from the adjacent end part by a slit or crease, and each corner piece is scored or creased diagonally to assist in folding the end portions of the box in the manner hereinafter described. The corner parts of the box are attached to the end pieces in such manner that the sides and ends of the box are so connected by the corner pieces that the box may be collapsed into a flat condition or distended into box form by very simple movements, viz.; by merely drawing the end parts away from each other, or by pushing them towards each other, the curved edges of the flaps hereinbefore referred to serving as guides acting on the corner pieces to cause them to so move that the blank may be bent into box form or reduced to its collapsed condition.

In the accompanying drawings,—Figure 1 shows a blank which may be made of paperboard, pasteboard or other similar material and from which my improved box is made. Fig. 2 is a top plan view of the box in its collapsed condition. Fig. 3 is a perspective view of the box in shape for use. Fig. 4 is a detail view in perspective illustrating more clearly how the parts are folded and connected. Fig. 5 is a perspective view illustrating the manner in which the curved edges of the end flaps operate. Fig. 6 is a plan view of one end of a modified form of blank; and Fig. 7 is a perspective view of one end of a box made from a blank of the kind shown in Fig. 6.

The box illustrated in the drawings is of the general kind commonly used by tailors, dressmakers and others, but my improvements may be embodied in boxes of other kinds. In the class of boxes illustrated, it is common to form the top or cover in substantially the same way as the body of the box. It will be understood, therefore, that when I describe a box, I mean to include also a box cover.

The blank shown in Fig. 1 consists of a central or body portion A, sides B, and ends C. The sides and ends are separated from the central or body portion A by means of creases or scores *b*, *c*. Each of the end sections C is provided with a flap D between which and the outer edge of the end piece there is a line of scores or a crease *d*. The outer edge *d'* of each flap is straight, as shown, while the side edges d^2 are inclined or curved. The corner pieces E are all alike. In the form shown in Fig. 1, each corner piece is separated from the adjacent side piece B by a score or crease *e*, and from the adjacent end piece C by a slit *e'*. Each corner piece in Fig. 1 is prolonged beyond the edge of the adjacent side piece to provide a wing E'. Each corner piece is creased or scored at e^2 diagonally from the angle formed by the creases *b* and *c* at e^3 outwardly to the point e^4 which is substantially in line with the crease *d*.

In bending the blank into box form, the two sides B are first bent upwards until they assume a parallel position with each other and at right angles with the body A, the cor-

ner pieces E and wings E′ being carried with the side pieces, then the corner pieces are bent inwards along the creases *e*, then the end pieces C are bent along the creases *c* until they assume positions at right angles to the body A and lie against the corner pieces E and wings E′. The flaps D are then bent over and made to lie close against the corner pieces E and wings E′, and then staples or other securing devices F are applied to secure firmly together the sides C, wings E′, and flaps D, in the manner illustrated in Fig. 3. Each end of the box is formed in the same way, and when the parts are thus brought together and connected, as shown in Fig. 3, the box will retain its proper form, there being no danger of the box being collapsed accidentally. The ends are reinforced or strengthened by the construction shown, and the corners are neatly produced. There are no interlocking slits and tongues on the outside of the box, the latter having a pleasing appearance with no projecting parts that are likely to tear.

In order to collapse the box, it is only necessary to take hold of the two end parts and pull them away from each other, when the box will assume the condition shown in Fig. 2 where the parts all lie flat upon each other. To further explain this operation, referring now to Fig. 5, as one end of the box is moved away from the other end, the sides bend over towards the body of the box upon the creases *b*, *e* and e^2, the wings E′ and the end portions of the corner pieces in front or outside the creases e^2 not being bent, while the outer edges of the inner parts of the corner pieces engage the inclined or curved edges d^2 of the flaps D, and are so guided thereby as to be turned down upon the end pieces C, carrying with them the sides B. When in the flat condition, shown in Fig. 2, the collapsed boxes may be packed into a small space for shipment or storage.

The collapsed boxes may be very quickly changed to their distended condition by merely applying pressure upwards and inwards to the end portions of the box. This pressure causes the edges of the corner pieces to bear upon the inclined or curved edges d^2 of the flaps which, as the ends move upwardly and inwardly toward each other, cause the sides to move upwards and outwards until they, with the end pieces, assume the position shown in Fig. 3. It will thus be seen that without disconnecting any of the attached parts, but by merely applying pressure in one direction or the other to the end pieces of the box, the latter may be collapsed or distended, as desired.

In Figs. 6 and 7 a slight modification is shown. In this case each corner piece E instead of being separated from the adjacent end piece C by a slit, is separated by a crease e^5 and the wing E′, shown in Fig. 1, is omitted. Otherwise the formation is the same as in Fig. 1.

In attaching the parts shown in Fig. 6, the outer part *x* of the corner piece is bent over against the end piece C and secured thereto by a suitable fastening device F, and the other section of the corner piece is bent outwards, as indicated in Fig. 7, but this portion of the corner piece is not attached by fastening devices to either the part *x* or to the end C. The flap D which, as before stated, is the same in construction as that shown in Fig. 1, operates in substantially the same way as heretofore described, the edge d^2 acting on the edge e^{10} of the corner piece to guide it. In this case also the box may be distended or collapsed by merely pulling apart or pressing toward each other the ends of the box.

I claim as my invention:—

1. A box comprising a body portion, sides, ends, and diagonally creased corner-pieces connecting the sides with the ends, flaps on the ends bent over upon the end-pieces of the box and having curved or inclined opposite edges coöperating with the corner-pieces of the box to guide the parts when the box is being collapsed or distended, and fastening devices for attaching the outer portions of the corner-pieces to the ends of the box and for also attaching the bent-over portions of the flaps thereto.

2. A paper box comprising the body portion, sides and ends, diagonally creased corner pieces having portions permanently fastened to the ends of the box and flaps formed on the end portions of the box which are bent over upon the corner pieces, are attached to the ends of the box and are formed with curved or inclined opposite edges coöperating with the outer edges of the corner pieces to cause the box to be collapsed or distended by merely pulling the ends of the box apart or by pushing them towards each other.

In testimony whereof, I have hereunto subscribed my name.

FRANK A. SCRUBY.

Witnesses:

VERA J. PARK,

FRED G. BECKER.