J. N. DAVIS.

FOLDING BOX.

APPLICATION FILED FEB. 4, 1920.

1,375,489. Patented Apr. 19, 1921.

2 SHEETS—SHEET 1.

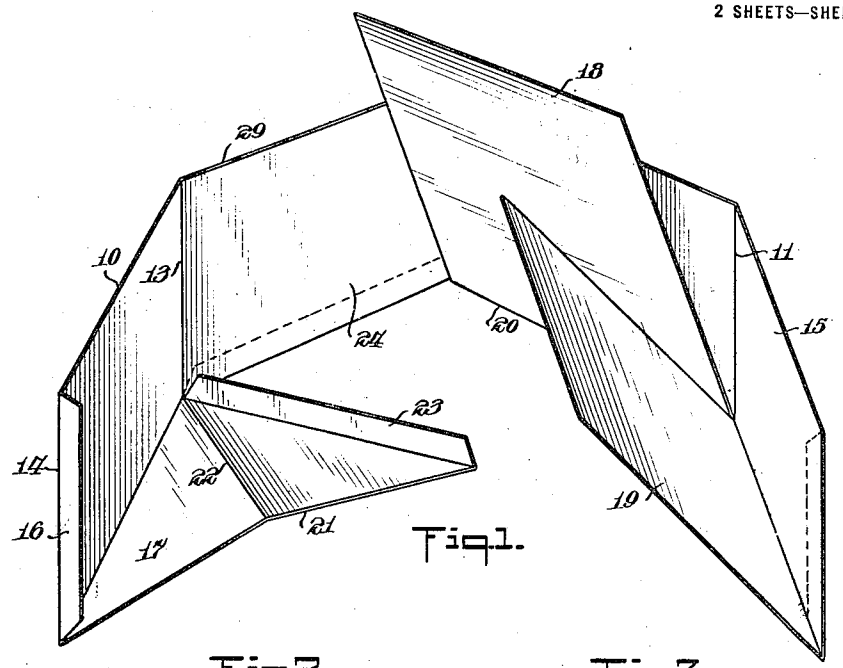
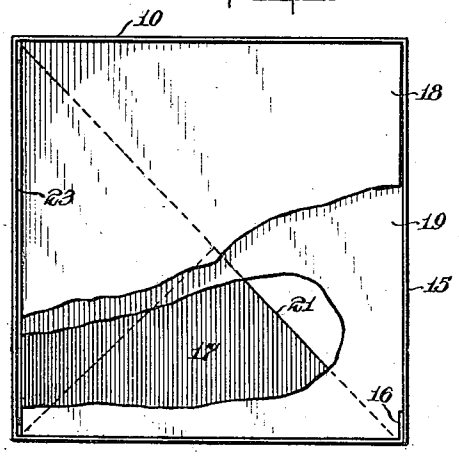
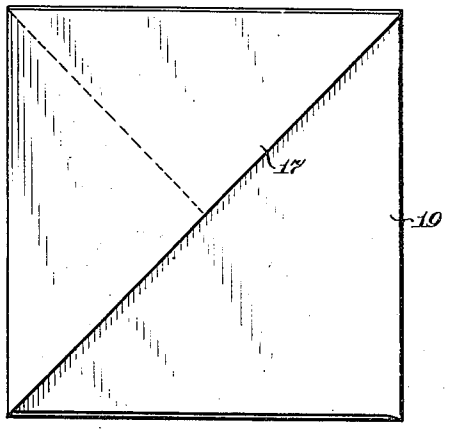



Fig. 1.

Fig. 2.

Fig. 3.



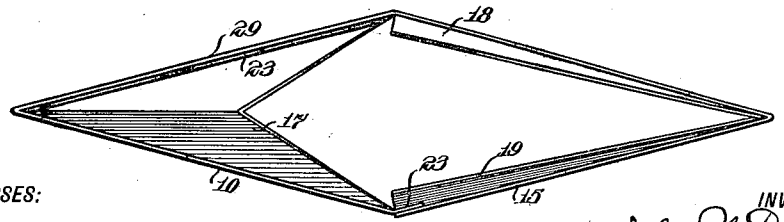




Fig. 4.

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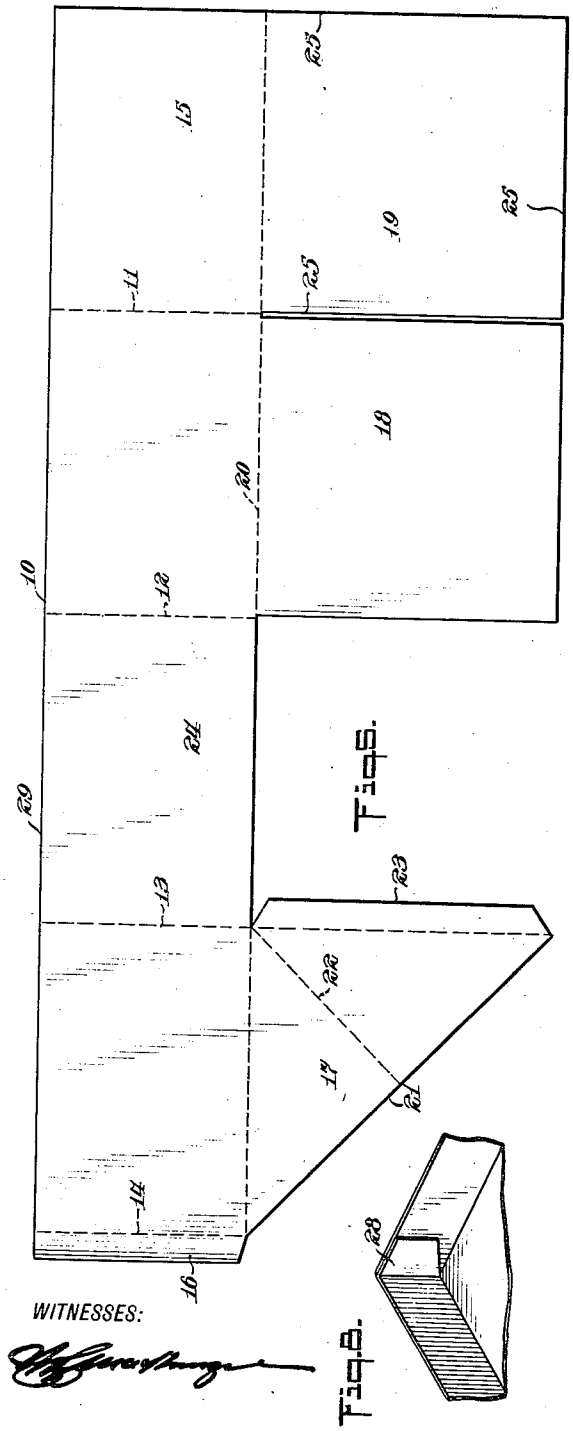



Fig. 5.

Fig. 8.

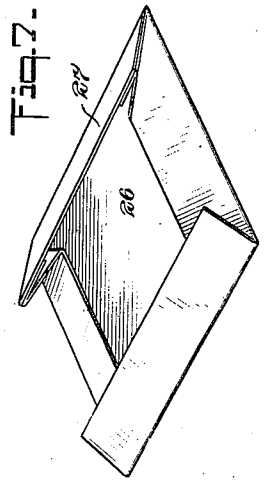



Fig. 7.

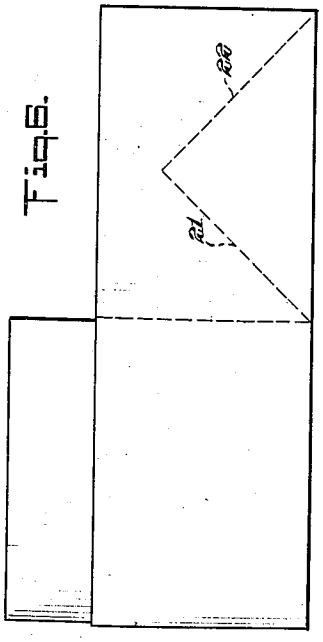



Fig. 6.

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# UNITED STATES PATENT OFFICE.

JOHN N. DAVIS, OF THREE RIVERS, MICHIGAN, ASSIGNOR TO O. B. ANDREWS COMPANY, OF CHATTANOOGA, TENNESSEE, A CORPORATION OF TENNESSEE.

## FOLDING BOX.

1,375,489. Specification of Letters Patent. Patented Apr. 19, 1921.

Application filed February 4, 1920. Serial No. 356,312.

*To all whom it may concern:*

Be it known that I, JOHN N. DAVIS, a citizen of the United States, and resident of Three Rivers, in the county of St. Joseph and State of Michigan, have invented certain new and useful Improvements in Folding Boxes, of which the following is a specification.

The invention relates to a box or carton of the type which is usually constructed from a one-piece blank of card-board or the like.

One of the objects of the invention is to provide a simple form of box of the type outlined, the blanks of which can be formed economically with the least possible loss of material when formed from a proper sized strip of card-board.

Another object of the invention is to provide such a structure which can be manufactured economically, with the least possible expenditure of labor and which can be readily folded into a closed collapsed position convenient for storing and transporting and which can be readily opened into extended position when desired for use.

Another object of the invention is to provide in such a structure the maximum possible strength and rigidity of form with the least possible amount of material.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of mechanism embodying my invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawings:—

Figure 1 is a perspective view of the cut, scored and partly folded blank prior to the fastening together of the attaching parts hereinafter described;

Fig. 2 is a plan view looking down upon the formed box when in open position and with parts of the upper bottom and intermediate bottom sections broken away to show structures therebelow;

Fig. 3 is a plan view of the underside of the open box and showing the reverse of Fig. 2;

Fig. 4 is a top plan view of the box partly collapsed;

Fig. 5 is a plan view of the blank from which the device shown in Fig. 1 is constructed;

Fig. 6 is a view in side elevation of the box when folded or collapsed;

Fig. 7 is a perspective view of the cover element of the box shown in partly collapsed position; and

Fig. 8 is a perspective view of one of the corners of the cover shown in Fig. 7.

In the following description and in the claims, parts will be identified by specific names for convenience of expression but they are intended to be as generic in their application to similar parts as the art will permit.

In the drawings, and particularly referring to the disclosure in Fig. 5 for convenience in identifying the parts, it will be understood that the blanks are formed conveniently from a long strip of paper or card-board having the width of the blanks shown in this figure. By analyzing the blank it will be understood that it comprises a relatively long strip 10, scored transversely along the lines 11, 12, 13 and 14 to form four similar side sections 15 and, at one end, a relatively narrow fastening flap 16. The flap is suitably affixed to the opposite end of the strip, such as by gluing the parts together, so that the strip in the completed box is in the form of an endless, four-sided band. Three separate extensions 17, 18 and 19 constitute continuations from the strip and project laterally from one edge thereof; the joint being scored along the straight line 20 so as to permit the folding of the extensions at right angles to the adjacent side of the side sections as shown in Fig. 1.

The extension 17 which projects from the side section adjacent the flap 16 is in the form of a right triangle with the hypotenuse 21 extending from the edge of the section 15 adjacent the flap 16. This triangular section is scored along the line 22 in a direction perpendicular to the hypotenuse and bisecting the right angle formed by the free edge of the extension and the line 20.

By means of this scoring of the triangular extension, it is possible in the folding of the box, as hereinafter described, to break joint along the line 22, as shown in Fig. 1. At the opposite end of the strip the projections 18 and 19 projects respectively from the next to the last and from the last side

section 15. The extension 19 is herein identified as the intermediate bottom section, the extension 18 is identified as the top bottom section and the extension 17 is identified as the lower bottom section, as this is the order in which the bottoms are superimposed upon each other when the box is in open position as shown in Fig. 2.

The free right angled side of the lower bottom section 17 is provided with an attaching flap 23 which is fastened to the left intermediate side section 24 (see Fig. 1) and along the line shown by the dotted line in Fig. 1.

It will be understood that the sections 18 and 19 are each of such a design and size that their outlining edges 25 will fit between the side wall sections 15 when the box is in opened position. The sections 18 and 19 are separated slightly to permit the folding along the line 11 and to accommodate the thicknesses of material at the joint. By causing the bottom sections to fit between the side sections, the strength of the extensions flatwise is such as to prevent the accidental collapse of the box until the sections 18 and 19 have been raised off of the lower section 17 and this section folded as suggested in Fig. 1 and the sections 18 and 19 raised as shown in Fig. 6. The box is then folded along the scored lines 11 and 13 and the box is collapsed into the position shown in Fig. 6.

The box thus described has an open top which is designed to be closed with any conventional form of cover. However, the box constituting the subject-matter of this disclosure, can be strengthened and reinforced against the distorting actions of the commodities stored thereby, by utilizing a form of cover 26 such as is shown in Fig. 7. This cover, when opened from the position shown in Fig. 7, includes an endless band 27, the parts of which at the corners are lap joints, as shown at 28 in Fig. 8 to strengthen the same. When this form of cover is positioned to inclose the upper free edges 29 of the box sides it tends to prevent spreading of this upper edge and thus acts to maintain the configuration of the box when in opened position.

The boxes, as collapsed in the form shown in Fig. 2, and with the covers assembled therewith in collapsed form, as suggested in Fig. 7, may be readily stored and shipped in compact form. The squared arrangement shown in Fig. 6 permits the packing of the collapsed boxes with square boxes thus economizing in packing space. To open the box and place the same in condition for use, the sides are distended thus straightening out the lower bottom 17 so as to bring the same flat and in a plane perpendicular to the plane of the sides. The intermediate bottom is then lowered into engagement with the lower bottom and the top bottom 18 lowered into engagement and lapping the intermediate bottom 19, thus completing the opening of the box.

Having thus described my invention, I claim:

A one-piece blank for forming a folding box including a relatively long strip scored to form four side sections and a securing flap at one end, one side edge of said strip provided with three extensions separated from each other by spaces at least as wide as two thicknesses of the blank and scored at the joint to permit ready bending, two of said extensions being of rectangular form and forming continuations respectively of two of the side sections at one end of the strip and adapted to form respectively an intermediate bottom and a top bottom section of the completed box, the other extension being of right triangular shape with one side edge joined to the side section at the end of the strip opposite to the end provided with the intermediate and top bottom sections, said triangle shaped extension having its hypotenuse facing away from the other extensions and said triangular shaped extension constituting the lower bottom section of the completed box and said lower bottom section provided with a securing flap on that edge thereof which extends perpendicularly from the length of the strip and facing the other extensions.

Signed at Three Rivers in the county of St. Joseph and State of Michigan, this 16th day of January, A. D. 1920.

JOHN N. DAVIS.