

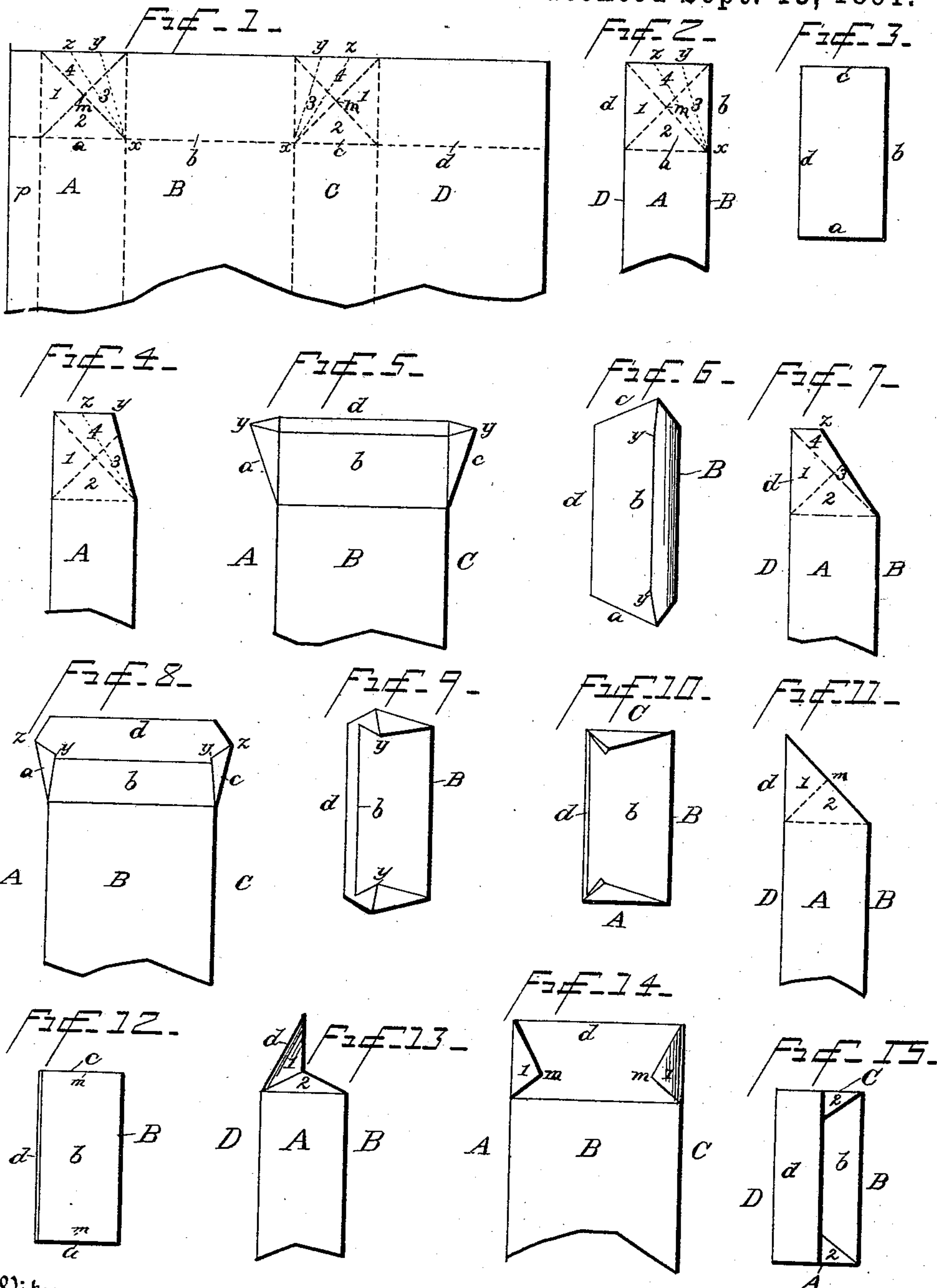
(No Model.)

2 Sheets—Sheet 1.

D. S. CLARK & J. W. OSBORNE.  
ANGULAR PAPER BOX.

No. 459,543.

Patented Sept. 15, 1891.



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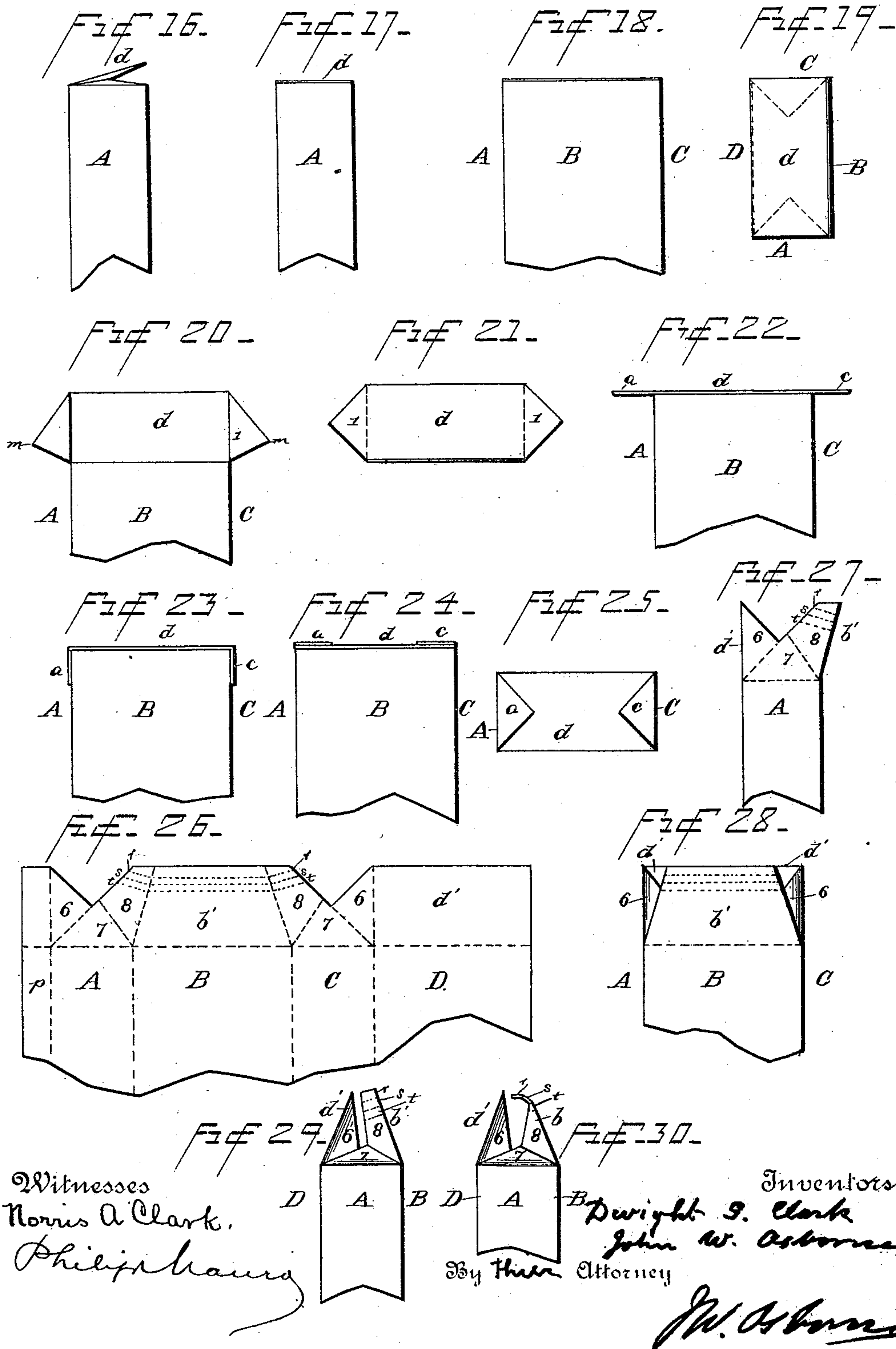
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# UNITED STATES PATENT OFFICE.

DWIGHT S. CLARK, OF CAMBRIDGE, MASSACHUSETTS, AND JOHN W. OSBORNE, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNORS TO EMMA L. FORBES, OF BOSTON, MASSACHUSETTS.

## ANGULAR PAPER BOX.

SPECIFICATION forming part of Letters Patent No. 459,543, dated September 15, 1891.

Application filed August 6, 1889. Serial No. 319,883. (No model.)

*To all whom it may concern:*

Be it known that we, DWIGHT S. CLARK, a citizen of the United States, and a resident of Cambridge, in the county of Middlesex and State of Massachusetts, and JOHN W. OSBORNE, a subject of the Queen of Great Britain and Ireland, and a resident of Washington, in the District of Columbia, have invented certain new and useful Improvements in Angular Paper Boxes, of which the following is a specification.

This invention is related to those forming a class of receptacles made of paper or cardboard, which are designed to contain goods of various kinds in a powdered or broken condition; and its object is to provide for the rapid and secure closing of an angular package of the kind.

In the drawings forming part of this specification, Figure 1 represents a blank cut out and scored for the manufacture of our box. Figs. 2 and 3 show in side elevation and plan the quadrangular open tube first formed by uniting the pasting-strip *p* with the inner surface of the side *D*. The several steps in closing the end are shown in side elevation in Figs. 4, 7, 11, 13, 16, and 17, in front elevation in Figs. 5, 8, 14, and 18, and in plan in Figs. 6, 9, 10, 12, 15, and 19. Figs. 20 to 25 exhibit variations in the manner of finally laying down the folded flaps; and Figs. 26 to 30, inclusive, illustrate the application of a principle used in connection with this box to one totally different in mode of operation.

The blank shown in Fig. 1 is a rectangular piece of heavy paper or card-board uncut or notched in any way, save by the scoring, indenting, or creasing necessary to cause it to bend at the right places to form the sides and ends of the box.

The large letters *A*, *B*, *C*, and *D* represent the sides. These are united to form a four-sided open tube by uniting the pasting-strip *p* with the inner surface of *D* in a manner common to all boxes of this sort and well understood. The flaps which form the ends are shown for one end only, the other being identical with it. These flaps (marked *a*, *b*, *c*, and *d*) are all full flaps separated from the

sides and from each other by indented lines, which in the drawings are shown heavily dotted. The back and front flaps *d* and *b* are each full size, as are also the side flaps *a* and *c*; but the latter are subdivided by scoring each into four triangular fields, (marked 1, 2, 3, and 4.) To close the end, the front flap *b* is flexed at its junction with the side *B* and made to take a position at right angles to the sides and completely filling the end. To do this one of the scored diagonals of each of the side flaps has to be flexed throughout its length and the halves of the flaps folded on each other. This step in the process of folding the end is shown completed in side elevation in Fig. 11 and in plan in Fig. 12. An examination of what takes place in performing this act will make evident the fact that when the front flap *b* is forced inward the side flaps *a* and *c* must give way, bulge out, and bend, so as to allow the half-flaps consisting of the fields 4 and 3 to roll over on themselves on each edge of *b* and finally take their place inside the half-flaps consisting each of the fields 1 and 2. To accomplish this requires considerable force, which strains the material out of which the flaps are made to such an extent as to endanger cracking and breaking the same when poor stock, as straw-board, is employed. This danger is especially great—is indeed fatal—when the straw or paste board is thick.

To increase the facility with which this box may be closed, we introduce one or more scored or indented lines, which are so placed as to insure the angular bending of the stock where the same is calculated to relieve the strain upon it and help the movement of the parts. This principle may be applied in many like cases. In the box shown in the drawings two auxiliary lines in each of the side flaps are indented for this special purpose. They are shown lightly dotted to distinguish them from the scored and indented lines separating the parts essential to the construction of the box and the proper folding of its closed ends. These auxiliary lines are marked *xy* and *xz*, and they subdivide the fields 3 and 4, taken together, into three triangles. Under these



circumstances the closing of the end can be easily and quickly accomplished. When the front flap *b* is pressed inward, the indented line *x y* is bent outward, as in Figs. 4, 5, and 6, which show the change so far in side and front elevation and from above. When the large flap *b* is pressed still farther inward, the next auxiliary line *x z* is flexed, as well as *x y*, and the end takes the form seen in Figs. 7, 8, and 9, which correspond, respectively, to Figs. 4, 5, and 6. As the movement continues the sides pass through the position shown in plan in Fig. 10, until finally the flap *b* takes its last position at right angles to the sides of the box, and the side flaps *a* and *c* are folded each upon itself across the diagonal separating-fields 1 and 2 from 3 and 4, as may be seen in Figs. 11 and 12. The auxiliary lines have now performed their complete function. They all lie in the same plane and play no part whatever in the construction of the end. It will also be seen that the number of such lines necessary to give flexibility to rigid material forming flaps which have to bend in their substance may be varied to suit the circumstances of the case. In the box we have here shown two auxiliary lines in each side flap are scored or indented; but one such line only would help the closing immensely, and three or four might be used with good effect were the stock unusually thick or rigid. The stage shown in Figs. 11 and 12 being reached, the next step is to approach the points in the folded side flaps marked *m m* and at the same time cause the back flap *d* to come forward. This change is shown in Figs. 13, 14, and 15, where the box is represented in side and front elevation and in plan. After this the back flap is simply pressed down, and, passing through the phase shown in side elevation in Fig. 16, the closed box, as in Figs. 17, 18, and 19, is reached, and paste may be applied to those surfaces which should be held in contact to insure the tightness of the box; but from the position shown in Figs. 11 and 12 this box may be differently closed. When, for instance, the back flap *d* is pressed forward and inward to the inclined position seen in Fig. 13, the points *m m* on the doubled side flaps, in place of being approached, may be separated from each other and made to assume the position shown in front elevation in Fig. 20. When the flap *d* is now pressed down flat, the whole of the side flaps will extend beyond the box, as in the elevation Fig. 22, such projections taking the form of triangles similar in outline to each of the fields 1, 2, 3, and 4. (Seen in the blank, Fig. 1.) These projecting triangles may now be laid down flat against the sides *A* and *C* of the box and glued there fast, as in Fig. 23, which is a front elevation, or they may be turned over on the top flap *d*, as in Figs. 24 and 25, and glued there. In either case the resulting box will be exceedingly tight and substantial, though its appearance may not be as com-

pact and neat as when the side flaps are kept within the edges of the top flap *d*.

The applicability of the herein-described auxiliary scores or indentations permitting of flexure to aid in the process of closing a box independently of the scored or indented lines necessary for its construction and the arrangement of its parts can be shown in the case of boxes which differ widely in principle from that described and claimed in this specification. On the 9th day of April, 1889, a United States patent was issued to Dwight S. Clark, numbered 401,009, for a paper box of peculiar construction, which will be found fully set forth in the specification of said patent.

Figs. 26 to 30, inclusive, of the drawings which are part of this specification represent certain views of the box referred to, which are sufficient to make intelligible the advantages due to auxiliary scoring. This box is made from a blank like that shown in Fig. 26. When the sides *A* and *D* are joined by the pasting-strip *p*, the open four-sided tube has the appearance shown in side elevation in Fig. 27. In Fig. 28 the same position is given in front elevation. When in closing the ends of this box the side flaps, consisting each of the three fields, 6, 7, and 8, are pressed inward toward each other, the two opposing large flaps *b'* and *d'* are also approached, and the position shown in side elevation in Fig. 29 is reached. The fields 8 8 of the side flaps and the front flap *b'* are together to be bent over and made to enter inside the back flap *d'* between the two fields 6 6 and into the angular space formed by those fields with *d'*. As the latter is then pressed down flat it takes all three fields with it, laying them flat, and the front flap *b'* also. This box is then closed and locked; but some dexterity and practice are required to get the apex of *b'* quickly and easily into the pocket that is to receive it, because, although the edges of *b'* are inclined together for this purpose, as seen in Figs. 26 and 28, it has attached to it the fields 8 8 at its sides, and these, when they should be bent over, are more or less on edge. This difficulty is removed by adding auxiliary scores or indentations, one or more, to the flap *b'* and the fields 8 8, as shown in the drawings and marked *r r s s t t*. When the blank is so treated, a touch to the apex of *b'* will throw it over, as illustrated in Fig. 30, and make its entry an easy and momentary operation.

When closed, this box is of course no better than if the manipulation of the end had been done in the ordinary way; but in the act of closure the saving in time and attention made by the auxiliary scores is considerable.

The instances in which scored lines unessential in the formation of a paper box prove very useful in closing the same might be multiplied; but the foregoing is sufficient.

By the expression a "full" or "full-sized"



flap used in this specification a flap is meant the width of which is equal to the width of that side of the box to which it is attached, and the height or length of which is equal to the least width of the box itself.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A blank for an angular paper box, scored or indented for folding to form the sides A, B, C, and D, and the pasting-strip *p*, with four connected full-sized flaps *a*, *b*, *c*, and *d*, two of which, placed alternately, are subdivided by scoring into the triangular fields 1, 2, 3, and 4, having their apices adjacent, and 3 and 4 further subdivided by the auxiliary scored lines *x y* and *x z*, which radiate from the intersection of the box-walls and corresponding flaps, substantially as described.

2. A blank for an angular paper box, scored or indented to form the sides thereof, with a pasting-strip for uniting the first and last side, and flaps to make the ends scored or indented to let said flaps fold in proper form and sequence, and provided with auxiliary scored lines in each of the side flaps, which subdivide the same into triangles, the apices of which meet in the front corners of the box,

and adapted to aid in the act of closing, substantially as described.

3. An angular paper box consisting of the sides A, B, C, and D, united to form a four-sided prism and closed by ends constructed of the full side flaps *a* and *c*, each flexed on its diagonals and folded in four thicknesses upon itself, together with the full unfolded front and back flaps *b* and *d* laid flat, substantially as described.

4. An angular paper box consisting of the sides A, B, C, and D, united to form a four-sided prism and closed by ends, each consisting of a full front and a full back flap laid flat across the end of the box, and of full side flaps, each folded angularly in four thicknesses upon itself above the front flap, substantially as described.

DWIGHT S. CLARK.

JOHN W. OSBORNE.

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