

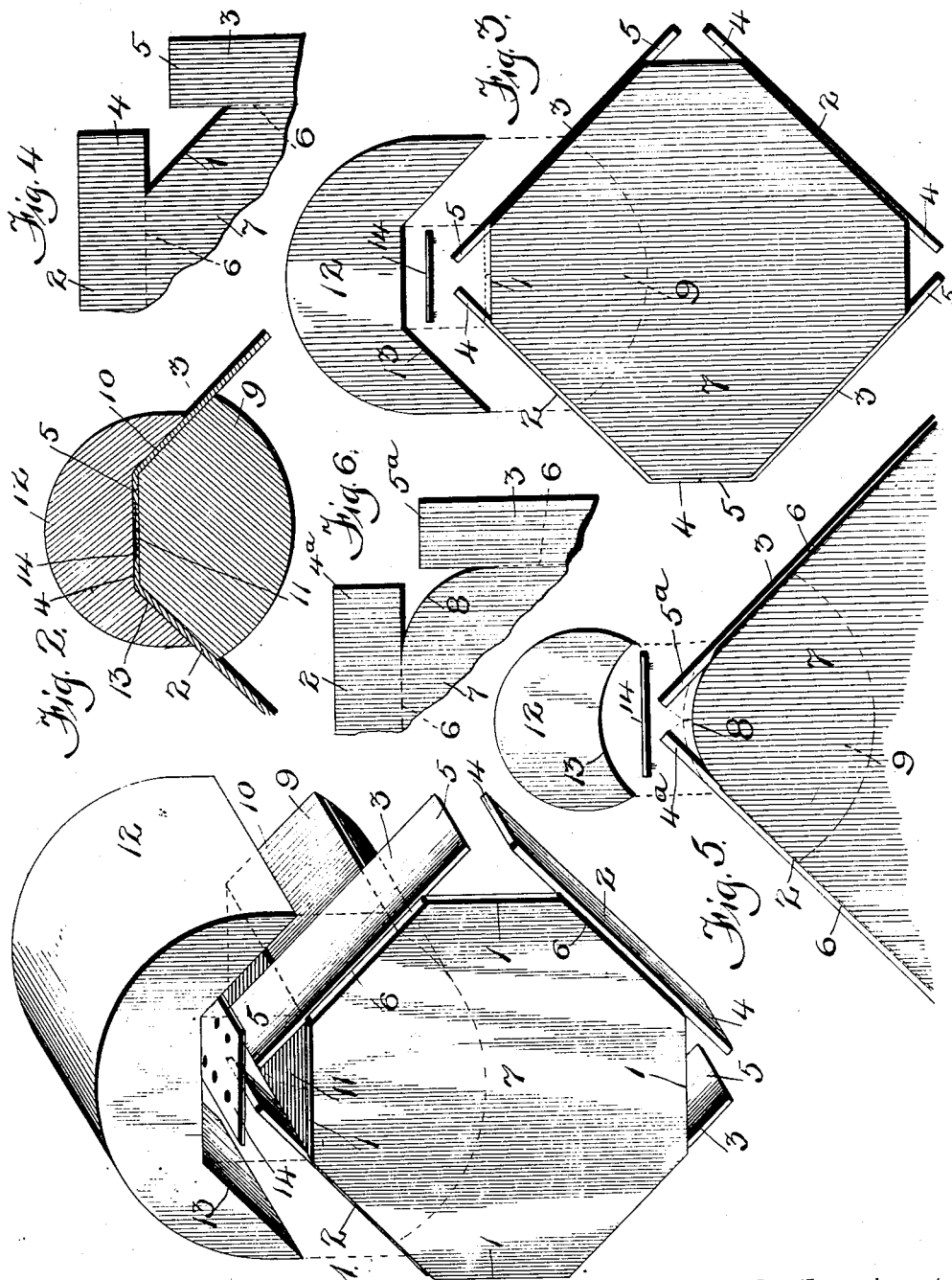
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Patented May 1, 1900.

H. B. SMITH.
METHOD OF MAKING BOXES.

(Application filed Nov. 11, 1899.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

HARRY B. SMITH, OF NEW YORK, N. Y.

METHOD OF MAKING BOXES.

SPECIFICATION forming part of Letters Patent No. 648,637, dated May 1, 1900.

Application filed November 11, 1899. Serial No. 736,661. (No model.)

To all whom it may concern:

Be it known that I, HARRY B. SMITH, a citizen of the United States, residing at New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful improvements in methods of shaping and securing the flaps of box-blanks in the manufacture of boxes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the manufacture of paper boxes, and especially to a novel method of shaping and securing together the adjacent corner-flaps of the box-blank; and it has for its object to simultaneously bend and shape the corner-flaps to conform to the configuration of the corners of the bottom of the blank and apply the corner-stays or fastening-strips thereto to secure the corner-flaps together.

To this end the invention consists in the novel method of simultaneously bending said corner-flaps and applying corner-stays thereto at a single operation in the manner hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a perspective view of a sufficient portion of one form of apparatus to illustrate the manner in which my improved method may be carried into effect. Fig. 2 is an end view thereof, showing the parts in the position they assume after the flaps have been shaped and the stay or fastening device applied thereto. Fig. 3 is an end view showing the parts in position to shape and apply the stay or fastening device to one of the corners of the box, one of the corners being shown as having been shaped and fastened. Fig. 4 is a detail view of one corner of a box-blank having an angular cut-away portion and adapted to be shaped on the die and anvil shown in Fig. 3. Fig. 5 is an end view of a slightly-modified form of anvil and die, and Fig. 6 is a detail view of one corner of a box-blank having a round cut-away portion and adapted to be shaped on the die and anvil shown in Fig. 5.

In a separate application for Letters Patent filed by me on the 12th day of September, 1899, and in the Letters Patent granted to me October 10, 1899, No. 634,507, I show and describe several different forms of boxes and blanks therefor, the corners of which are constructed in a novel and improved manner. In the box forming the subject-matter of the said application I cut away the corners of the box-blank on diagonal or oblique lines, as indicated at 1, Fig. 4 of the drawings, and form side and end flaps 2 and 3, respectively provided with extended free ends 4 and 5, the blank being scored on the lines 6 to facilitate bending up the side and end flaps at right angles to the bottom 7 to form the sides and ends of the box. The respective lengths of the flaps are such that after they have been bent up in the manner described and the free ends 4 and 5 have been bent toward each other to conform to the straight inclined or diagonal corner 1 of the bottom the vertical edges of the free ends 4 and 5 will abut, and said ends will lie flush with one another and form a smooth and unbroken surface. This forms a box having beveled or chamfered corners. In my patent above referred to I show and describe a box-blank constructed on the same principle; but the corners of the blank are cut away on the arc of a circle, as at 8, Fig. 5, and the ends 4^a and 5^a of the flaps are bent to conform to such curved corners, their edges abutting in the manner before described. This forms a round-cornered box. In both forms of box referred to the corner-flaps after being shaped or bent to conform to the cut-away corners of the box-bottom are secured together by applying to said flaps corner-stays, consisting of metallic or paper strips attached to the flaps and covering their meeting edges. According to my present invention the corner-flaps are bent toward each other, so that their edges will abut and so that said corner-flaps will conform to the cut-away corners of the bottom, (whether beveled or curved,) and the corner-stays or fastening-strips are simultaneously applied thereto and secured at one single operation.

In carrying my method into effect I employ an anvil 9, having flat sides 10, arranged at a right angle to one another, (see Figs. 1 and 2 of the drawings,) the apex conforming in

shape to the corner of the box. For example, as shown in Figs. 1, 2, and 3, the apex of the anvil 9 is flat, as at 11, and intersects the flat sides 10 at obtuse angles, thus conforming to the shape of the corner of the box shown in Fig. 3. Above the anvil 9 is arranged a reciprocating die 12, recessed or grooved on its under side, as at 13, to correspond to the shape of the anvil. Suitable means (not shown) are employed for forcing the die down upon the anvil, and suitable means are also employed for feeding a corner stay or strip 14 between the die and anvil.

In practice the side and end flaps of the box are first bent up at right angles to the bottom 7 on the scored lines 6, and the corners of the box are successively placed on the anvil, as shown in Fig. 1, in which position the side and end flaps will lie and rest on the inclined flat sides 10 of the anvil, and the extensions or free ends 4 and 5 will project above the upper portion of the anvil, converging toward each other. A stay or fastening-strip 14 having been fed between the anvil and the die 12 the latter is caused to descend, its recessed under side pressing the ends of the flaps against the flat apex 11 of the anvil, so as to cause them to conform to the cut-away portion of the corner of the box-bottom and their edges to abut. At the same time and by the same operation the stay or strip 14 is forcibly pressed down upon the bent ends of the flaps over their line of jointure and is attached to said flaps, securing the latter firmly together. The stay or strip may consist either of a paper strip, in which case its under side would be coated with an adhesive, or of a thin metallic strip having projecting spurs or prongs formed on its under side either by indenting the strip, striking up the prongs or spurs from the body of the strip, or in any suitable or preferred manner, the die when a paper strip is employed pressing the adhesive side of the strip in contact with the flaps, and in case a metallic strip is employed causing the prongs to enter or penetrate the flaps and flattening them down by pressure against the anvil.

From the foregoing it will be seen that the flaps are bent so as to cause them to conform to the shape of the cut-away corner of the box-bottom and their edges to abut flush with one another, and simultaneously therewith the stay or fastening device is applied to the flaps and secures the latter together, the

whole being formed at one single operation, thereby effecting an economy in both time and labor and insuring the flaps being fastened accurately in the position to which they are bent or shaped and also insuring their conformity truly to the formation of the cut-away portion of the corner of the blank.

While I have only shown the anvil-and-die construction for shaping and fastening the flaps of boxes having beveled or chamfered corners and round corners, it will be obvious that by employing an anvil and die of the proper shape the same method of operation may be carried into effect with boxes having corners of other fanciful or ornamental configuration, the anvil and die in all cases being shaped to correspond to the cut-away formation of the corners of the box-blank.

Any suitable apparatus for carrying my improved method into effect may be employed, that herein shown and described being merely given as a simple and convenient means for practicing the invention.

Having described my invention, what I claim is—

1. In the manufacture of paper boxes from blanks having the corners thereof cut away on a curved line, the herein-described method of shaping and securing together the adjacent corner-flaps of the blank, consisting in bending the said flaps toward each other so as to cause them to conform to the curved cut-away corners of the blank, and simultaneously applying a fastening-strip to said flaps over the line of jointure, the whole being performed by pressure at a single operation, substantially in the manner specified.

2. In the manufacture of paper boxes having cut-away corners, the herein-described method of shaping and securing together the adjacent corner-flaps of the box-blank, consisting in bending the corner-flaps toward each other so as to cause them to conform to the cut-away portion of the corner of the blank and their edges to abut, and simultaneously attaching a fastening device to said flaps over the line of jointure, the whole being performed by pressure at a single operation, substantially in the manner specified.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY B. SMITH.

Witnesses:

PERCY J. EGBERT,
STEPHEN J. GRISWOLD.