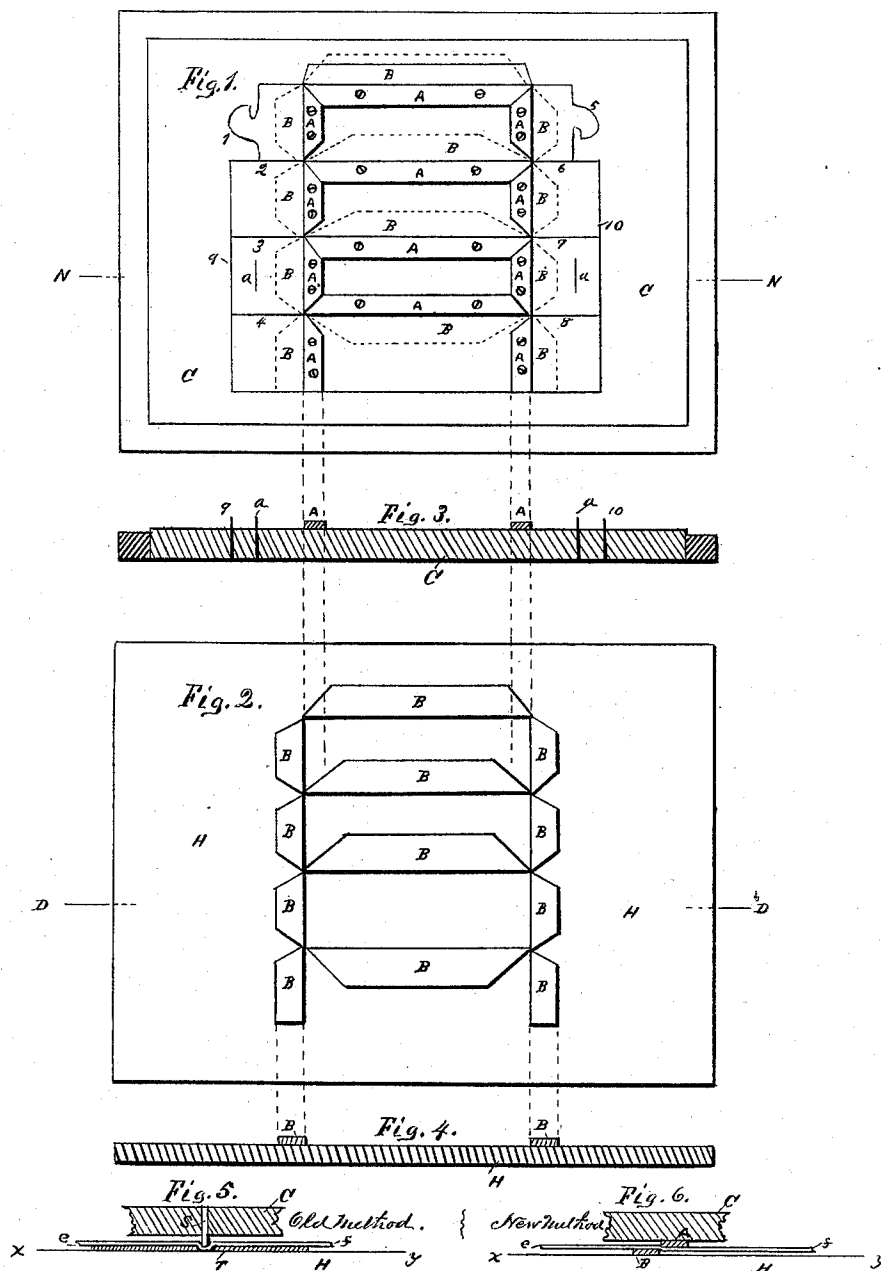


(No Model.)

M. GALLY.
MANUFACTURE OF PAPER BOXES.

No. 540,242.

Patented June 4, 1895.



WITNESSES:

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MANUFACTURE OF PAPER BOXES.

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To all whom it may concern:

Be it known that I, MERRITT GALLY, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in the Manufacture of Paper Boxes, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to the manufacture of boxes from paper, pasteboard and similar materials, in cutting said material to form the box-blanks, and in performing the initial process for producing the foldings of the boxes in their proper positions.

In the accompanying drawings, Figure 1 is a plan view of the cutting form or die, having die-plates attached to the body of the form. Fig. 2 is a plan view of the platen or cutting-plate of a press on which are counter-bending plates. Fig. 3 is a longitudinal section taken on line N of Fig. 1. Fig. 4 is a longitudinal section taken on line D of Fig. 2. Fig. 5 is a sectional view showing creasing-die, box material, and channeled packing, forming a counter-die on face of platen or cutting-plate, exhibiting old method of creasing; and Fig. 6 is a sectional view showing the body of form with die-plate attached, box material, and counter-bending plate, exhibiting the new process for producing the initial bend, securing the line of final folding.

In the ordinary method of preparing blanks for folded paper boxes, a "cutting and creasing" form or die is made up of sharp cutting rules, and thicker blunt-edged embossing rules, and printers' "furniture" or blocks of either wood or metal, in similar manner to the making up of a type-form for printing. This form is placed upon the bed of a printing or cutting and creasing press; and a thick paper packing is built up on the platen, made usually of several sheets of paper pasted one upon another, in similar manner to forming an ordinary embossing counter. The blunt embossing rules of the form are then beaten into the packing by repeated impressions, while the packing is drying, forming embossing-channels as a female counter-die, into which the blunt rules of the form register as a male die. The compressed material in the bottom of the channels is usually cut out, in order to deepen the channels to make room

for the embossed lines of the box-material to be embossed. The cutting rules sever the box material for the boundary lines of the box blank, and the embossing rules emboss deep groove-like lines in one side of the material which is pressed into the channels of the counter, the other side of the material showing raised ridges. The embossed grooves of the material form and determine the lines on which the material is finally to be bent for the foldings of the box to be formed, and as the material in the groove is stretched by the act of embossing, it is made more limp than the body of the box and is therefore easily bent. This method of construction I find to be defective, first, in the fact that the deep grooved lines in one side of the material, or the raised ridged lines on the opposite side of the material, mar the beauty of a fine box, and, secondly, that the stretching of the material in the grooved lines makes the angles of the box weaker than other parts of the material, while the contrary should be the case in order to produce a good box. Further, in using cheap material having short fiber, when dry, the material is broken in its fiber instead of being stretched, and is thus greatly injured. Preparing the forms and counters for this process, is also too expensive. It is very difficult to make up a form of both cutting and embossing rules and secure the exact relative positions of the cutting and the embossing lines. This requires not only expert workmen, but consumes a great amount of time. Much time is also used in "beating up" the counter, and in cutting out the channels, any of which, if not cut with careful exactness, produces defects in the angles of the box.

In my improved process, I use either a solid cutting die, or, if constructed of rules, use only the cutting rules, a block and furniture. In the latter case, a single block is usually sufficient for forming the body of the cutting die. This block, made of even thickness, I saw to the shape of the box-blank to be made, and make saw-cuts in or extending into the block to receive the pieces of cutting rule which are to produce the cuts in the box-blank which lie within its boundary line. The cutting rules then placed around the boundary line of the block and locked into the "chase" with "furniture" completes the

cutting form. The block used, is made of a thickness sufficiently less than the height of the cutting rules, to allow the surface of the die-plates A, Fig. 1 to be in a plane below the cutting edge of the cutting rules a little more than the thickness of the material to be cut. These die-plates I make of metal, or wood, or other hard substance, and screw or otherwise attach them to the body-block as shown in Fig. 1. The form of these plates is immaterial, except that a part of their outline shall conform to the desired folding line to be produced, and that room is left for the counter-bending plates B of Fig. 2 represented in Fig. 1 by the dotted lines. The form now being fully constructed the bending-plates B, Fig. 2 are glued or otherwise attached to the face of the platen H, Fig. 2. This may be done by first taking an impression of the cutting-form on a thin sheet of paper attached to the face of the platen, as a guide; or, by measurement, or, in the following preferable manner: I first attach to one of the surfaces of the plates B, two or three small pieces of pasteboard or card, sufficiently thick that when placed against the face of the die-block, they will bring the outer face of the plate B a little higher than the cutting-edge of the cutting-rules. Then, putting a small quantity of glue or paste on these small pieces of card, I attach the plates B, thus prepared, to the face of the die-block in position, line to line, with the die-plates A, as shown by the dotted lines in Fig. 1. In placing the plates B, I hold a piece of card between the edges of plates A and plates B, which card must be a little thinner than the material of which the blanks are to be made. I then coat the outer surface of all the plates B with thick glue, or other adhesive material, and then bring the platen of the press to an impression against them. The greater adhesiveness of the glued surfaces of the plates B to the face of platen, will, when the platen is removed, tear away the small pieces of pasted card, and leave the plates B in exact working position on the platen. I now remove the small pieces of card from the face of the plates B, and the entire apparatus is ready for use. The plates B may be constructed of metal, wood, hard card-board or any suitable, hard material. To insure smoothness in the initial bend of the material of the box-blank the sharp angle line of the plates A and B may be slightly rounded.

The devices for "creasing" the box-blanks to prepare them for folding as heretofore employed, are shown in Fig. 5. C is a part of

the form made up of blocks or "furniture" between which is held the blunt embossing-rule S. Upon the face of the platen represented by the line xy is the packing T. In the packing T is a channel into which the rule s is forcing the box material ef , stretching the material and making in it a deep sunken line on one side and a ridge on the other side.

My new and improved devices for producing an initial bend in the box-material for determining the position of the final foldings, are shown in Fig. 6. C is a part of the body-block of the form, and A is the die-plate attached thereto. The line xy represents the face of the platen and B is the bending-plate attached thereto. The box-material ef is shown with the initial bend made therein, pressed between the edges of the die-plate A and the bending plate B.

My process not only makes a much better and stronger box, but results in a great saving over the ordinary processes which produce embossed lines. By actual test with the same workmen, I find a saving of over fifty per cent. of time in constructing the form or die. I find also a saving of over sixty-five per cent. of time in making ready the platen.

What I claim as new and of my invention is—

1. In a form or die for shaping box-blanks, the combination with cutting-rules and a body-block or blocks, of die-plates laid flatwise on the body-block or blocks and attached thereto.

2. In an apparatus adapted to a bed-and-platen press, for simultaneously cutting and creasing box-blanks, the form or die made up of cutting-rules; a body-block or blocks and die-plates; in combination with the platen or platen-plate provided with coacting bending-plates; substantially as set forth.

3. In an apparatus adapted to a bed-and-platen press, for simultaneously cutting and creasing box-blanks, a form or die made up of cutting-rules, a body-block or blocks and die plates; in combination with the platen or platen-plate provided with coacting bending-plates for producing the initial lines on which the box-blank is to be folded; the face of the platen or platen-plate serving at the same time as a base against which the edges of the cutting-rules act in severing the material to form the blank; substantially as specified.

MERRITT GALLY.

Witnesses:

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