

F. H. STRIEBY.
Paper-Box Machine.

No. 223,406.

Patented Jan. 6, 1880.

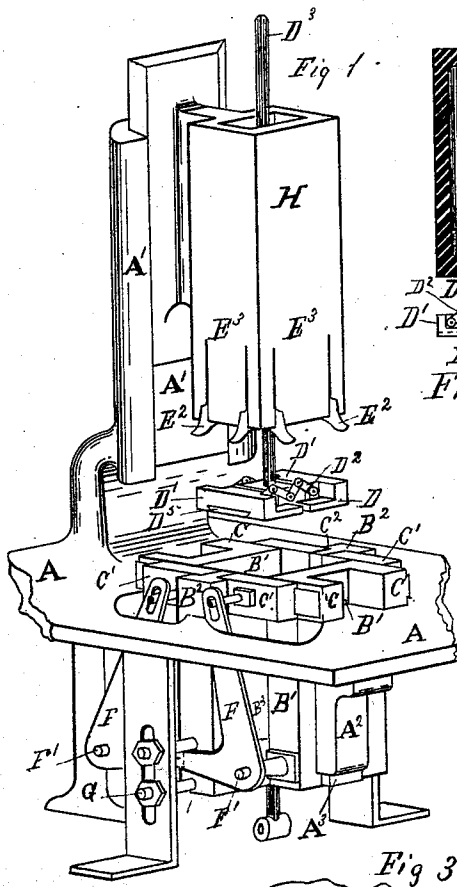


Fig 3

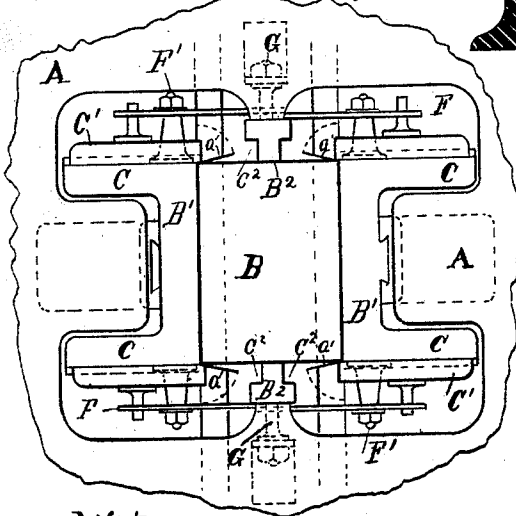


Fig 4

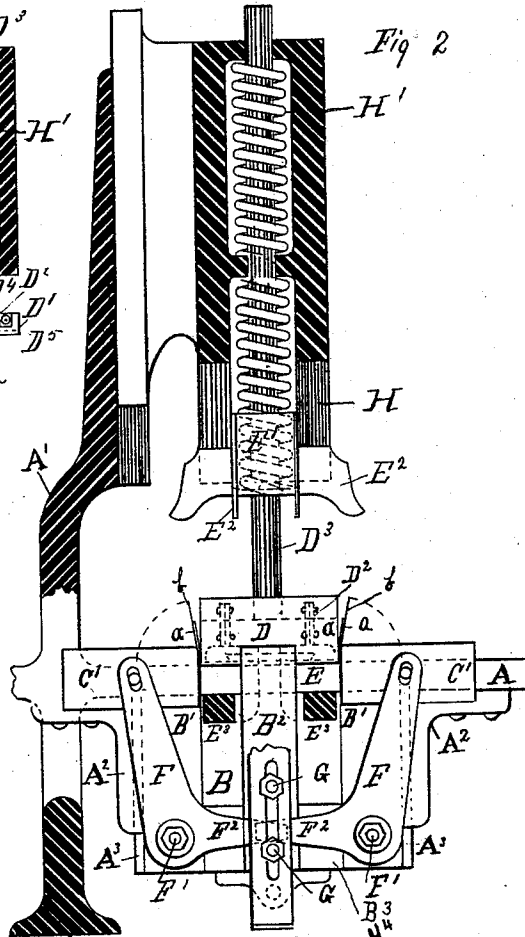


Fig 2

Fig 5

Witnesses
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UNITED STATES PATENT OFFICE.

FRANK H. STRIEBY, OF CLEVELAND, OHIO.

PAPER-BOX MACHINE.

SPECIFICATION forming part of Letters Patent No. 223,406, dated January 6, 1880.

Application filed March 29, 1879.

To all whom it may concern :

Be it known that I, FRANK H. STRIEBY, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Machinery for Making Paper 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 it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to a machine for making paper boxes; and it consists in the arrangement of a reciprocating mold or die provided with arms having movable paper-turners attached thereto; of a reciprocating molding-block provided with a movable sliding center, having guards attached thereto and projecting outwardly through openings provided for them in the molding-block.

In the drawings, Figure 1 represents a perspective view of that part of a machine to which my invention relates. Fig. 2 is a partial sectional view in a vertical plane, showing the pressure-foot holding a blank while the mold or die is turning the sides of a box. Fig. 3 is a partial plan, showing the manner in which the paper-turners fold the flaps around the corners of a box. Fig. 4 is a partial sectional view of the molding-block, showing how the sliding center and guards operate to turn the marginal paper of a box. Fig. 5 is a partial sectional view, showing the molding-block and presser-foot adapted to make plain paper boxes—that is, without trimmings or marginal paper.

A A is a general frame, of any form or material suitable for holding, containing, and accommodating the various operative parts of my device.

The part of the frame A serving as the table of the machine has an opening in it, through which the mold or die passes to fold the box. This opening is provided with a central plate, E, supported by the bars E³ E³. This plate, against which the blank is held while the box is being formed, is also the bottom of the mold or die B. This mold or die B consists of the four sides B' B' and B² B², attached to and projecting at substantially right angles from the

plate B³, to which a reciprocating movement is imparted by any suitable mechanism, preferably by means of cams. This mold or die B is guided in its movements by the guides A² A², which are arranged to receive the slides A³ A³, attached to the sides B' B' of the mold or die B. These sides B' B' are provided with arms C C, which are arranged to hold the paper-turners C' C' and permit them to slide thereon.

The sides B² B² of the mold or die B are provided with notches C² C², into which the paper-turners C' C' are thrust by the levers F F, and in this position, combined with the sides B² B², form the wall against which the pressure is applied by the pressure-foot.

The levers F F, which move the paper-turners C' C', are attached to the mold or die B by the pins F' F'. These pins form the fulcrum upon which the levers F F swing, and are adapted to engage with the paper-turners C' C', either by pins, as shown, or a notch in said paper-turners, or by any other suitable method, and movement is imparted to these levers by the ends F² F² being brought into contact and bearing against the stationary pins G G by the reciprocating movement of the mold or die B. The pins G G are made adjustable, as by this means the levers F F are adjusted.

D is the pressure-foot, and it performs two functions—first, to hold the blank from which the box is made, and, second, to press the sides of the box against the flaps a' a'. These functions may be employed separately or in combination, as the requirements of the different boxes to be made shall be found necessary. When the pressure-foot D is used simply to hold the blank to the central plate, E, the pressing mechanism may be dispensed with, and the plate D⁵, of any suitable size or form, may be used. This pressure-foot D consists of a plate, D⁵, connected to the molding-block H by the rod D³, which is held in place by the spring H'.

Attached to the plate D⁵ and sliding thereon are the pressure-blocks D' D', provided with toggle-hinges D² D², having their knuckles D⁴ projecting above the pressure-blocks D' D', and are pressed down by the molding-block H coming in contact and pressing down upon the said knuckles. This movement causes the

blocks D' D' to spread apart, and the force may be regulated by the height of the knuckles D⁴.

Attention is called to the fact that this pressure, being from the inside of the box, gives a smoother and better-formed box than if applied from the outside, as pressure from the inside has a tendency to stretch the box, thus squaring the corners and drawing out the wrinkles on the surface.

H is the molding-block, attached to the frame A by the guide A', in which it slides. The molding-block H has its base or molding part of the size and shape of the bottom of the box required. This block is hollow, and is provided with a sliding center, E', having guards E² E² attached to it and projecting outwardly through the slots E³ E³ in the molding-block H. Its movements are as follows: As the molding-block H descends the marginal paper b b strikes against the guards E² E², turning it inward. The guards, having touched the mold or die B, rest there, holding the paper b b bent inward, and the continued descent of the molding-block H thrusts the marginal paper b b into and around the interior of the box, the spring H' returning the sliding center E' to its normal position as the molding-block H rises to its starting-point.

In making boxes not requiring a marginal paper, b b, the sliding center E' may be dispensed with.

The operation of my invention is as follows: A blank previously prepared is placed upon the central plate, E, in such a position that the movement of the mold or die B will bind the blank where it has been scored. The pressure-foot D then descends, clamping the blank to the central plate, E. The mold or die B then rises, pressing against and bending up the four sides of a box. (See Fig. 2.) When the mold or die B has risen sufficiently to bend the sides of the box against the pressure-foot D, the end of the levers F F comes in contact with and bear against the stationary pins G G. This movement draws down the ends F² F² of the levers F F, and at the same time the other end of said levers throws forward the paper-turners C' C', which turn the flaps a' a' around the corners of the box and pass into the notches C² C² in the sides B² B² of the mold or die B, and in this position forms a complete receptacle, with a box inclosed therein.

The blanks which my invention is adapted to use may be made in the following manner, preferably, by cutting the paper from which said blanks are made with a knife-die made in the exact shape of the blank required. They are then scored and nicked as the size of the box may require. The marginal paper

or trimmings may be cut out in the same way; but the scoring is dispensed with.

The molding-block H then descending, the guards E² E² bend the marginal paper a' a' of the box inward, and hold it there until the continued descent of the molding-block H thrusts it into and around the interior of the box. The molding-block H, striking upon the knuckles D⁴ D⁴ of the toggle-hinges, presses them down. This movement spreads the blocks D' D' apart and presses them against the sides of the box, causing the paste or glue by which the box is held together to set. The pressure-foot D holds the box down until the molding-block H has withdrawn itself from the box, then rises with the said molding-block. The mold or die B then descends, leaving the box on the central plate, E, from whence it is thrust by the succeeding blank, and the operation is repeated.

What I claim is—

1. In machinery for making paper boxes, a reciprocating mold or die adapted, by mechanism substantially in the manner shown, to actuate the mechanism for operating the flap-folders, which are removably attached to and form a part of said mold or die, substantially as shown and described.

2. In a paper-box machine, the combination, with a suitable frame or body, the sides B' B' having arms C C attached thereto, of the paper-turners C' C', adapted to engage the levers F F, and the levers F F, fulcrum F' F', attached to the body, and the stationary adjustable pins G G, and the central plate, E, substantially as and for the purpose described.

3. In a paper-box machine, the combination, with a vertically-reciprocating molding-block, H, arranged to receive and guide the sliding center E', provided with guards E² E², projecting outwardly through openings provided for them in the molding-block H, and the pressure-foot D, provided with suitable pressing mechanism for the purpose set forth, and connected to the molding-block H by the rod D³, substantially as shown.

4. In a paper-box machine, the combination, with the reciprocating mold or die B, provided with the sliding paper-turners C' C', of a reciprocating molding-block, H, provided with a sliding center, E', having guards E² E² attached thereto, and the pressure-plate D⁵, connected to the molding-block H by the rod D³, substantially as shown.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK H. STRIEBY.

Witnesses:

M. M. HOBART,
ADELPHOS ALEXANDER.