J. B. DUFF.

GUMMING AND FEEDING ENVELOP BLANKS.

No. 45,397. Patented Dec. 13, 1864.

Fig. 2

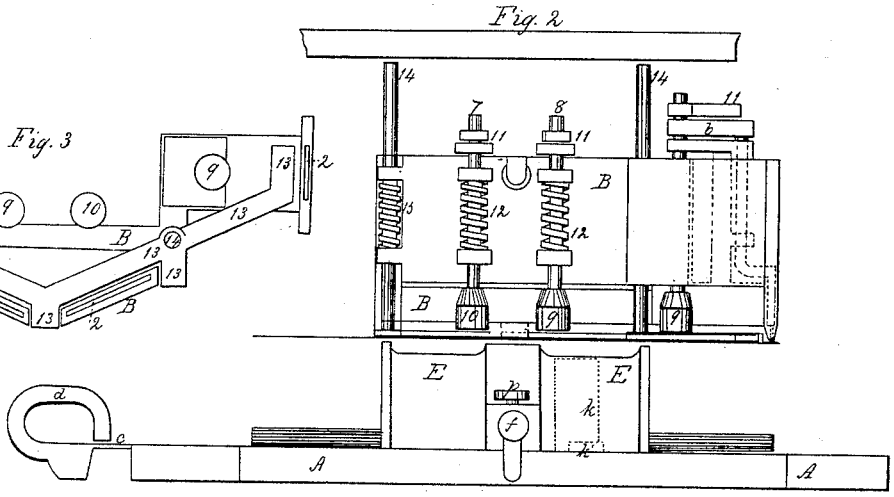


Fig. 3

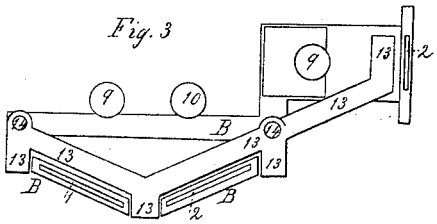
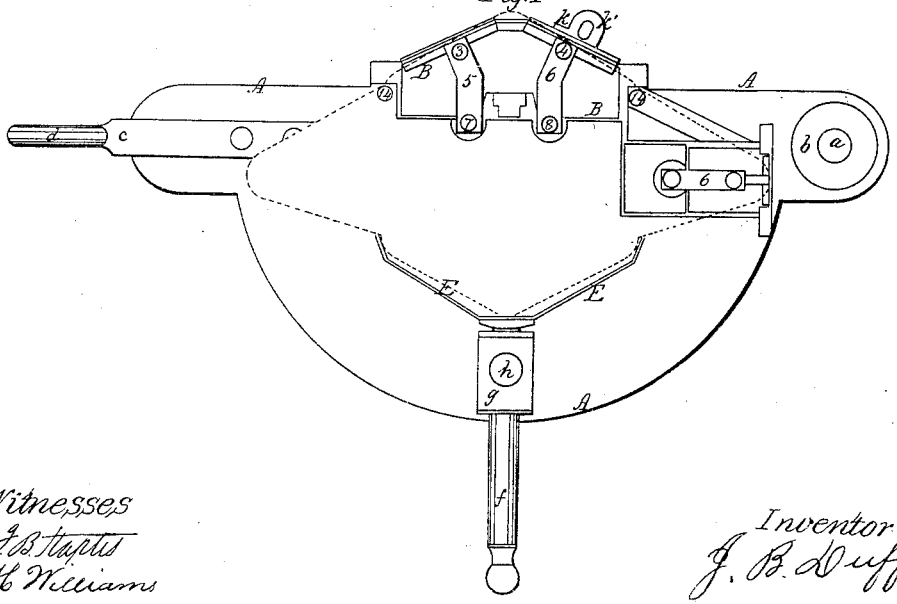


Fig. 1



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UNITED STATES PATENT OFFICE.

JAMES B. DUFF, OF PATCHOGUE, NEW YORK.

IMPROVEMENT IN GUMMING AND FEEDING ENVELOPE-BLANKS.

Specification forming part of Letters Patent No. 45,397, dated December 13, 1864.

To all whom it may concern:

Be it known that I, JAMES B. DUFF, of Patchogue, county of Suffolk, State of New York, have invented certain new and useful Improvements adapted to the Feeding and Gumming of Envelope-Blanks; and I do hereby declare that the following is a full and exact description of my said improvements, reference being had to the drawings accompanying and making part of this my specification.

Figure I of the drawings represents a top view of the bed for holding the envelope-blanks and the parts attached to it, of the feeding-box for gumming the blanks, and of the heads of the valve and disengaging rods. Fig. II represents a front elevation of the same parts, the red lines showing the envelope-blanks. Fig. III represents the under side or bottom of the gumming-box, showing the openings for the gum to pass out, and also the disengaging-plate.

In all the figures the same letters represent the same parts.

The first part of my invention relates to the bed or table upon which the envelope-blanks are placed for being gummed, and afterward carried to the folders. This bed is usually made of hard wood, but may be of metal. It is of the shape shown at A A, Fig. I. At one end of this table is an opening, *a*, bushed with a metal ring, *b*, for receiving a pin, which passes through the opening and holds it to the bed-plate of the machine, and at the same time permits it to be turned and traverse freely in a horizontal direction. At the opposite end of A is inserted the spring-latch *c*, which shuts upon a catch prepared to receive it at the exact point where the table or bed is to remain, for holding the blanks under the gumming-boxes. At the end of the spring-latch is a handle, *d*, by which the latch is raised from the catch, and is turned back or replaced as required. Upon the surface of the bed A is placed the brass plate *e*, standing upon its edge upright. Its lateral shape is, as shown in the drawings, made to conform as nearly as possible to the outline of the edge of the flap of the envelope-blank, so that it will fit the blank at that part with great nicety. This plate *e* is movable and adjustable by means of the horizontal iron rod *f*, which is fast to the outer surface of the plate *e* nearly at the bottom. The rod *f* passes through a bearing, *g*, which is fast to the surface of the bed A. This bearing has a thumb-screw, *h*, fitted in it, by which the position of rod *f* and plate *e*, attached to it, can be fixed at any desired point. Underneath the projecting part of rod *f*, I fix a spiral spring, attached at one end, *i*, to the rod *f*, and at the other end to the edge of A, by means of which the plate *e* may be made to keep a gentle pressure upon the edges of the envelope-blanks, so as to hold them and keep their edges perfectly even.

Upon the upper surface of the bed of the machine (not shown in the drawings) I place an upright finger or stem, *k*, having a horizontal arm at the bottom, in which is a slot, through which passes a thumb screw into the plate below, by which the finger or stem *k* is made adjustable and held in the precise place required. This is shown in top view at *k k'* in Fig. I, and at the dotted lines *k k'* in Fig. II. This finger *k* is to be adjusted to the edge of the bed A, so that when the bed is in place and the latch *c* closed the inner surface of the finger will just press lightly upon the edges of the blank envelopes. This inner surface of the finger *k*, I cover entirely with a piece of sheet india-rubber. This india-rubber comes in contact with the edges of the envelope-blanks and by its contact and frictional effect it holds or detains them, so that when the top blank is gummed and lifted, as hereinafter described, the other envelopes underneath will not be lifted with it. Although I believe india-rubber to be the best material for the purpose, yet I do not confine myself to the exclusive use of that, but I may use woolen cloth, or any material having a rough but not rigid surface, which will press gently upon the edges of the blanks and retain them, as above described.

For the purpose of gumming the envelope-blanks, to which the second part of my invention relates, I construct a metal box of the shape shown at B B, Figs I, III, the angular sides of which correspond in shape to the shape of the part of the blank which is to be gummed. In the bottom of this box are constructed long narrow slots 1 2, Fig. III, at the proper places for distributing or spreading the gum upon the blanks. Over each of these slots I place a valve. These valves are con-

nected with valve-stems within the box, the upper ends or heads of which are seen at 3 4, Fig. I. They extend from the valve to the top of the box, having proper bearings within the box to keep them vertically over the openings. These stems have at their heads cross-heads 5 6, fast to them at one end, the other end being attached to a vertical rod sliding vertically in brackets fast to the gum-box on its outer side, to keep them in place. At the bottom of these rods 7 8 they are enlarged, so as to have a larger base than the rod itself, the under side of which is flat. The enlarged bases are shown at 9 10, Fig. II. Their purpose and operation will be hereinafter described. The amount of play which these rods will have (and consequently the extent of opening the valves) is adjusted by means of the screw 11 on the head of the rods and nut.

For the purpose of causing the valves to be shut as soon as the gum is distributed upon the blank, and at the instant of the lifting of the gum box, the spiral springs 12, Fig. II, are placed so as to force the rods downward.

The valve-stoppers for closing the valve-apertures are made of india-rubber of a shape to completely cover and close the aperture when down upon it. The piece of rubber composing the stopper is attached to the stem by means of two plates of metal uniting at the angle, so as to form a jaw of a V shape, the rubber being cut also to conform to this shape. The jaw or sides of the V, when firmly pressed together, inclose and fasten the rubber tightly, and it is usual to put powdered shellac between the rubber and jaws to insure a permanent adhesion.

Upon the under side of the gum-box, just back of the apertures for the gum, I place the flat piece of iron 13, Fig. III, shaped as shown in the drawings. This is fast to the vertical rods 14, the tops of which are somewhat higher than any of the other parts attached to the gumming-box. These rods are also provided with spiral springs 15, Fig. II, which raise the rods and the plate 13, attached to them, immediately after the rods have been acted upon, as described hereinafter.

It should be observed that these improvements are particularly adapted to the envelope machinery described in Letters Patent of the United States, bearing date the 1st day of February, 1859, issued to James B. Duff and Thomas W. Keating; but I do not intend to confine my invention and claim to them in connection with that machinery, or any other particular machines, as these improvements may be applied to almost any envelope-machines.

The operation of the improvements above described is as follows: The gum-box is placed in its proper position so as to be directly over the part of the bed A which is to hold the envelope-blanks while being gummed. The pile of blanks is laid upon the bed A, as represented by the red lines in Figs. I, II. The gum-box, being filled with gum, is attached to the working and operating parts of the envelope-machine so as to have a vertical motion to correspond with the folding apparatus as required. The valves are closed, the gum-box being raised. A pile of blanks is placed upon the bed A, it having been turned from its position under the gum-box to receive them, the finger *k* and the plate *e* being adjusted so that when the bed A, carrying the envelope-blanks, is put back and fastened in place by the catch, the edges of the blanks will be gently pressed by the plate *e* and the finger *k* in oposite directions. By the motion of the machine the box B is made to descend until the lower side of the box or bottom strikes upon the top of the upper envelope-blank. As the box descends, 9 and 10 strike upon the pile of envelopes, and are raised vertically, carrying with them the valve stems and stoppers attached, by which the valves are opened, and the gum passes out the instant the box reaches the bottom of its stroke. The box is then instantly lifted by the motion of the machine, when the valves are instantly closed by the operation of the springs 12. The adhesiveness of the gum lifts the top envelope with the box as it rises, and it is carried with the box until the tops of the rods 14 come in contact with the standard or bracket placed above them, when the rods 14 are caused to descend, carrying with them the plate 13, which, coming in contact with the envelope-blank, disengages it from the box, and it falls upon the arms beneath, which carry it to the folders.

The india-rubber or other material upon the finger *k*, by its frictional quality, exercises a very useful and important part by keeping down the blanks under the top blank, which would otherwise sometimes rise with the top blank and stop the machine and spoil the blanks. The spring 15 instantly raises the plate 13 to its place as soon as it has discharged the envelope-blank just gummed.

In order to lessen the flow of the gum and to prevent its spreading more than is required upon the blank, I draw over the bottom of the aperture of the valve cloth or muslin, fastening it by means of plates screwed onto the B by screws.

The bed-piece A may be turned out from under the box B while the machine is in operation to replenish the pile of blanks or for any other purpose without stopping the motion of the machine, as the valves will not open while the bed is not under the box.

Having thus described my improvements and the manner of operating the same, what I claim therein as my invention, and for which I desire Letters Patent, is—

1. The manner of constructing and fixing by a latch and catch the movable bed A, so that it can be turned under the gumming-box and fixed in its place and turned back out of the action of the gum-box without the necessity of stopping the machine.

2. The arrangement of the parts consisting

of the plate *e*, the rod *f*, and the spring, and combining them, as described, so as to make the plate *e* adjustable, and at the same time to keep an easy pressure upon the tops of the blanks.

3. The application of the india-rubber cloth or other similar material having a rough but not a rigid surface upon the upright finger *k*, for the purpose of holding down the blanks by frictional action and elastic or yielding contact, as described, and at the same time allow the top blank to be carried away from the pile by the gum-box above.

4. The form and construction of the gum-box B for holding and distributing the gum.

5. The combination of the valves, stems, and rods with said box so that by the vertical motion of the box the valves will be made to open and close in the manner and for the purposes described.

6. The combination of the plate 13 and the rods and springs with said box, so that by the vertical motion of said box the plate will descend and disengage the envelope-blank, as described.

7. The covering of the valve aperture with cloth to prevent the glue spreading or flowing in excess, as described.

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Witnesses:

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