

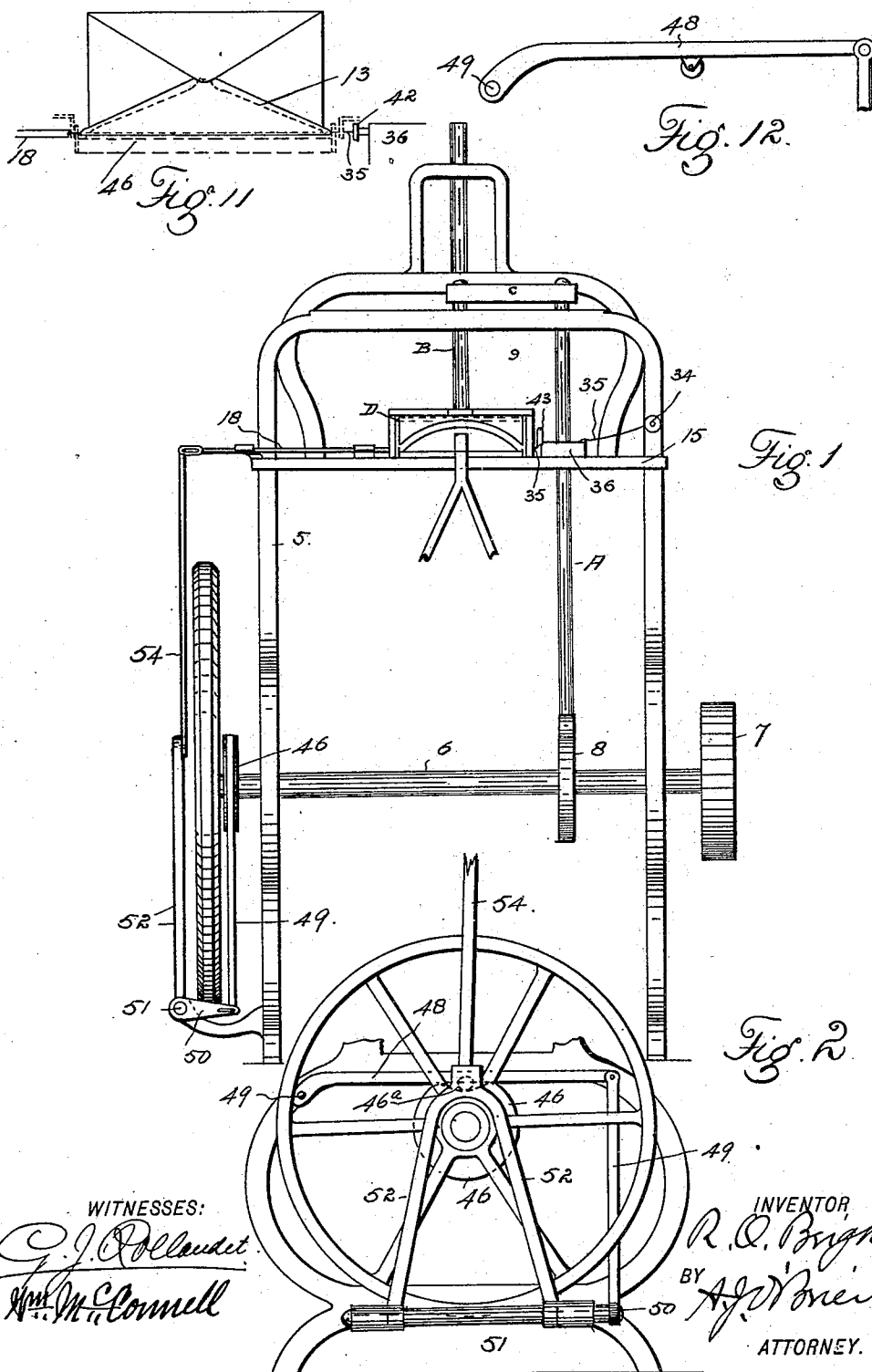
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3 Sheets—Sheet 1.

R. O. BRIGHAM.
ATTACHMENT FOR ENVELOPE MACHINES.

No. 511,675.

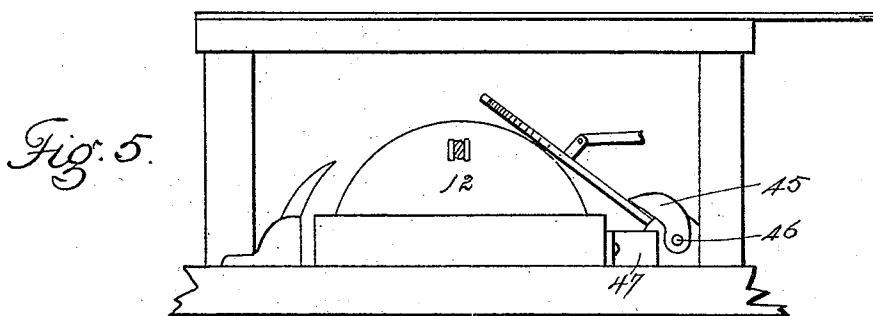
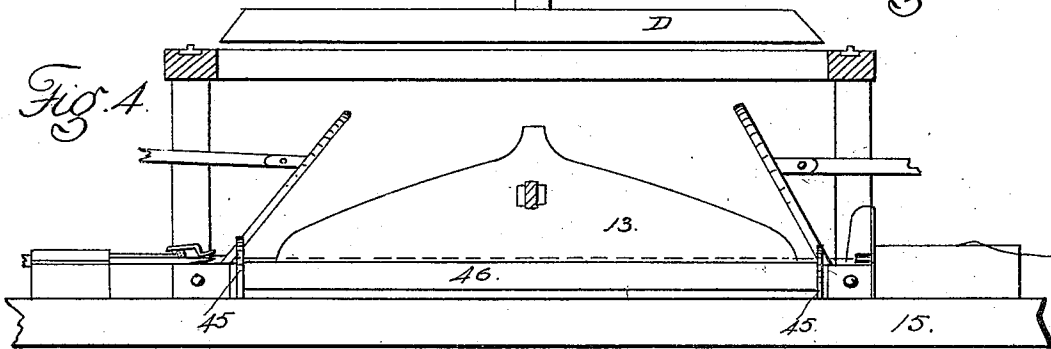
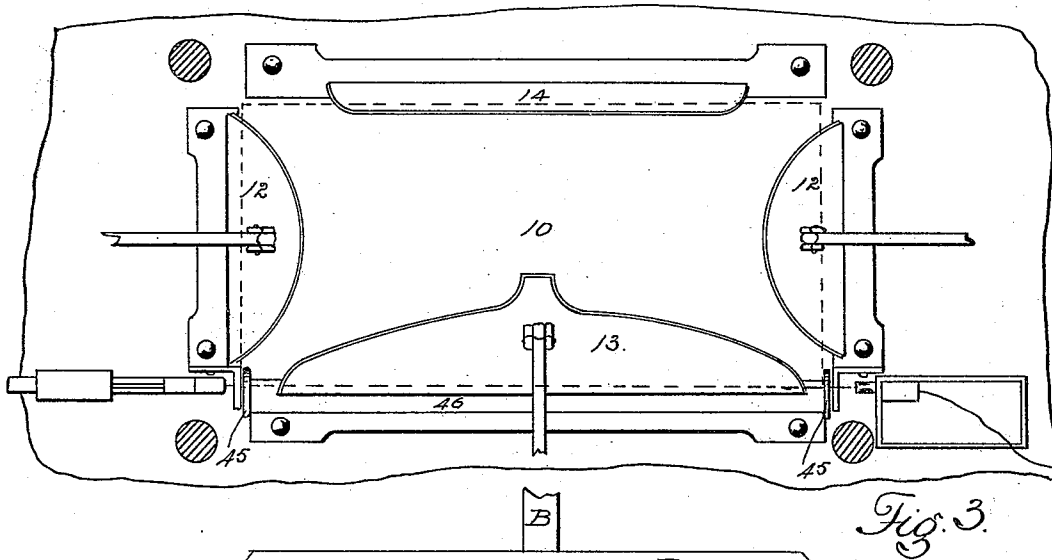
Patented Dec. 26, 1893.



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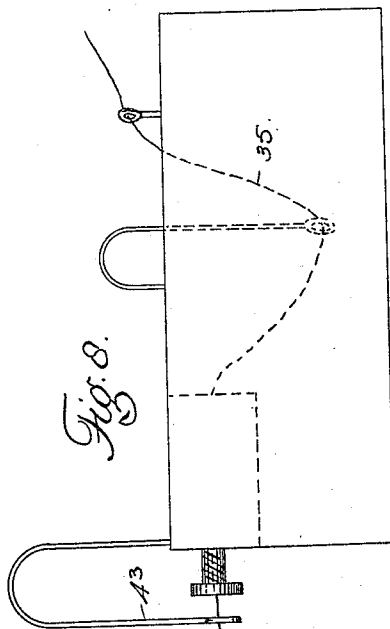
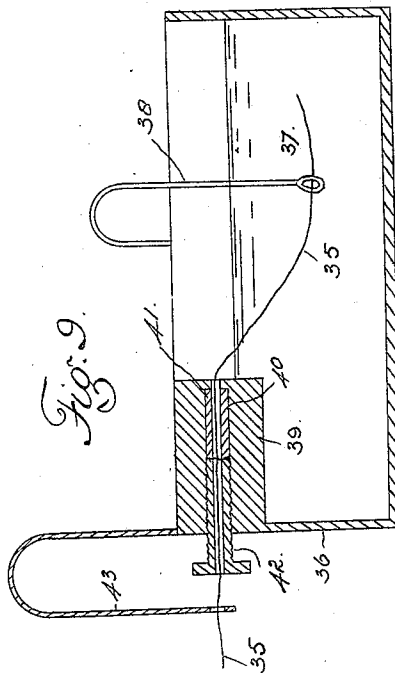
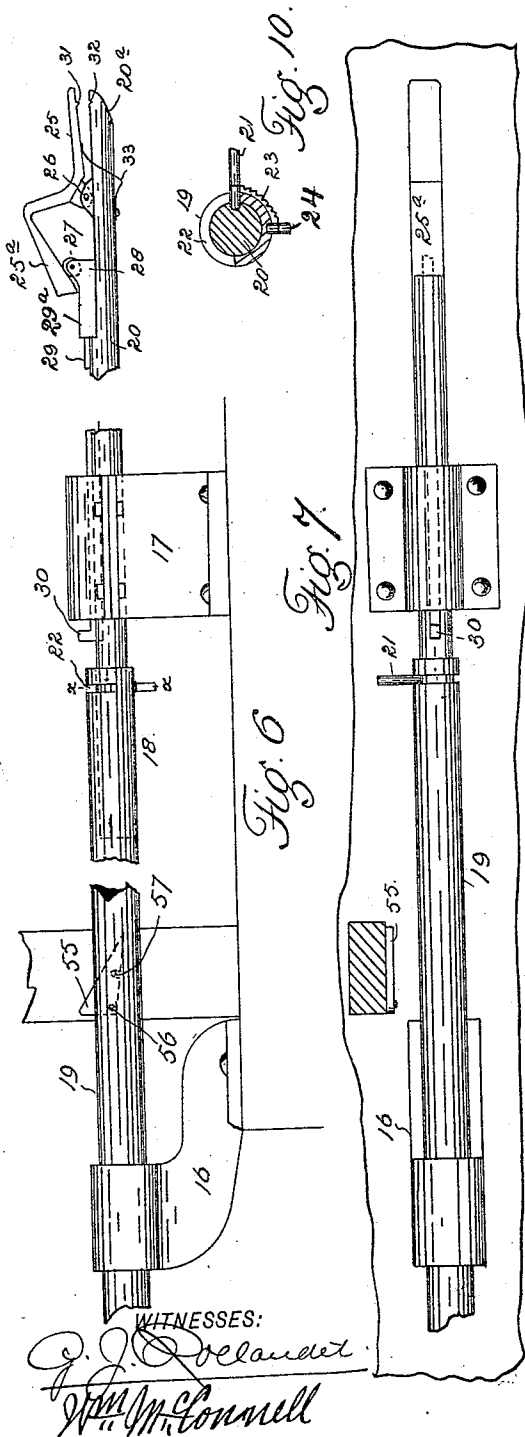
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3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

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ENVELOPE OPENER COMPANY, OF SAME PLACE.

ATTACHMENT FOR ENVELOPE-MACHINES.

SPECIFICATION forming part of Letters Patent No. 511,675, dated December 26, 1893.

Application filed November 21, 1892. Serial No. 452,755; (No model.)

To all whom it may concern:

Be it known that I, ROBERT O. BRIGHAM, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Attachments for Envelope-Machines; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in envelope machines and consists of an attachment for inserting a flexible opener, as a thread, fine wire or small cord in the folding crease of one of the flaps just before the flap is turned down by the folder, in combination with means acting in conjunction with the folding mechanism for severing the thread on each side of the envelope. Hence the object of this invention is to make practicable the manufacture of an envelope having a flexible opener and particularly that protected by Letters Patent No. 459,461, and bearing date September 15, 1891.

Briefly stated the appliance consists of a reciprocating rod or bar provided with jaws or pliers, one extremity of which is made to pass in front of the folders and close upon the exposed extremity of the thread or other opener material, after which the rod moves backward, drawing the thread in front of the envelope flap just before the folder moves down upon it. The thread is unwound from a spool or spindle and drawn under suitable tension through a mucilage receptacle from which it absorbs or retains a sufficient amount of the sticky substance to seal it fast in the folding crease of the envelope flap after the latter has been pressed down upon it. To each extremity of the folder's axis is attached a knife which acting in conjunction with a stationary knife, cuts the thread just as the folding of the envelope is completed.

The attachment consists further of the features, arrangements and combinations hereinafter described and claimed, and the same will be fully understood by reference to the

accompanying drawings in which is illustrated an embodiment thereof.

In these drawings, Figure 1 is a front elevation of an envelope machine provided with my improvement. Fig. 2 is a fragmentary side view of the same. Fig. 3 is a top or plan view of the folding mechanism, the framework of the machine being shown in section. Fig. 4 is a front view of the same. Fig. 5 is a side view of the same. Fig. 6 is an enlarged fragmentary side view in detail of the appliance for placing the flexible opener in position. Fig. 7 is a top or plan view of the same. Fig. 8 is an enlarged detail view of the mucilage cup through which the opener is drawn preparatory to placing it in position. Fig. 9 is a longitudinal section taken through this cup. Fig. 10 is a cross section taken on the line *x-x*, Figs. 6 and 7. Fig. 11 shows the completed envelope. In this view the folder is shown in dotted lines and the adjacent parts of the attachment on a reduced scale. Fig. 12 is a detail view of the cam lever adapted to engage the main shaft of the envelope machine.

Similar reference characters indicating corresponding parts or elements of the mechanism in the several views let the numeral 5 designate the upright framework of the machine in which is journaled the shaft 6 carrying the pulley 7 and the cam 8. This cam actuates the vertically reciprocating frame 9 composed of beams A and B connected by a cross-head C. Bar A engages the cam and bar B carries the plunger head D. This mechanism places the envelope blanks in position upon plate 10 where they are acted upon by the folders 12, 13 and 14 hinged to the top plate 15.

Supported by guides 16 and 17 secured to plate 15 is the reciprocating bar 18, composed of rods 19 and 20. One extremity of rod 19 is tubular to receive the adjacent extremity of rod 20 which is provided with a short pin 21 protruding through a transverse slot 22 formed in the shell of the hollow part of rod 19. This connection allows rod 20 a partial rotary movement but no longitudinal movement within rod 19. Rod 20 is held in its normal position with reference to rod 19 by a coil spring 23 connected with pin 21 at one ex-

tremity and with a stationary pin 24 secured to rod 19 at the opposite extremity. To the free extremity of rod 20 is pivoted a jaw 25 as shown at 26. The portion 25^a of this jaw is of angular shape, being bent outward so as to leave a space 27 between the rod and this part of the jaw for the reception of a cam 28 secured to one extremity of a small slide 29 having a longitudinal movement in a groove formed in rod 20. The rear extremity of slide 29 or that farther from the jaw is bent outward forming a stop 30 adapted to engage the guide 17 as bar 18 is moved forward, thus drawing slide 29 and its cam backward, or rather stopping the slide, while the jaw moves forward over the cam, the latter engaging the rear portion of the jaw 25 and closing its forward part upon the rod 20, which is fashioned to form a stationary counterpart jaw. As the reciprocating bar or rod moves backward, a shoulder 29^a formed on the slide 29 in the rear of the cam-roller 28, engages the guide stop 17 just before the bar 18 reaches its backward limit of movement. The movement of the slide being thus arrested, the bar continues to move until the movable jaw is drawn backward to the position shown in Fig. 6, when the jaw is opened by the action of a spring 33 attached to a rod 20 at one extremity and bearing against the movable jaw at the opposite extremity. The normal tendency of this spring is to maintain the movable jaw in the open position. Near its forward extremity jaw 25 is provided with a small projection or tooth 31 adapted to engage a counterpart recess 32 formed in rod 20 opposite the movable jaw. The portion of rod 20 engaged by jaw 25 may be termed the stationary jaw 20^a. The flexible material 35 employed for the openers in the manufacture of these envelopes is drawn from a spool or spindle 34 whence it passes into a mucilage cup 36 and down through an eye 37 formed upon the free extremity of a pendent arm 38. After passing through the eye 37 the thread passes into a tension box 39 provided with a central aperture 40 in which is inserted a rubber or other elastic sleeve 41 which passes part way there through. The outer portion of the aperture is threaded to receive a tubular screw 42, the opening in which coincides with that in the rubber sleeve. The tension of the thread is regulated by adjusting this screw. If it is moved into the box against the elastic tube, the opening through the tube is contracted and the tension of the thread correspondingly increased, while if the screw is moved outward the opposite effect is produced. After leaving the tension screw the thread 35 passes through an eye formed in the free extremity of a weak pendent spring 43 attached to a suitable stationary part of the mechanism. After passing through the eye of this pendent spring the extremity of the thread is in position to be grasped by the jaws of the reciprocating rod 18 which then performs the re-

verse movement and draws the thread in front of the folder and the corresponding envelope flap. The folder then moves downward upon the flap, carrying the knives 45 which are located at the extremities of its axis 46. There is a stationary knife 47 for each knife 45, and the two sets of knives act as two pairs of scissor blades in cutting the thread close to the envelope corners. The function of the weak pendent spring 43 is to allow the thread to yield to the pressure of the knives without increasing in length, until the thread engages the envelope blank and is severed, and then to return or raise the thread extremity to its original position or where it may be grasped by the jaws of the reciprocating rod upon its return movement. This keeps the exposed extremity of the thread of a proper length and always sufficiently raised to be in the path of the reciprocating rod when it moves forward to grasp the thread.

The reciprocating rod 18 is actuated from the main shaft of the machine which is provided with a cam disk 46 recessed as shown at 46^a to receive a corresponding projection formed upon the lever 48 pivoted at 49 upon the stationary frame, its opposite extremity being movably connected with a pendent arm or pitman 49^a attached at its lower extremity to crank arm 50 rigidly secured to a rock shaft 51 journaled in the stationary frame and rigidly secured to a pair of forked arms 52 which unite at 53 where they are connected with a bar 54, the upper extremity of which is pivoted to the outer extremity of the reciprocating bar 18. It will be observed that as the main shaft rotates, the lever 48, arm 49^a and crank 50 are alternately raised and lowered by virtue of the cam disk 46 which engages the lever. This movement of these parts gives the rock shaft a partial rotation in reverse directions, imparting to arms 52 and 54 a corresponding oscillating movement, and to rod or bar 18 the desired reciprocating movement.

As the thread is severed between the jaws of rod 18 and the envelope corner, it is necessary that the part held between the jaws should be released. To accomplish this the pin 21 is engaged by an inclined cam 55 pivoted at 56 upon the stationary framework and supported by a pin 57 which normally retains it with its lower surface inclined downward from its pivotal point. Then as rod 18 passes backward the pin 21 engages cam 55 and gives rod 20 a partial rotation by virtue of the construction heretofore described. The jaws of the rod are thus turned on one side, or in such a position that as the knife carries the thread downward, it is drawn out of the jaws just as its body portion reaches its position in the envelope crease and is severed from the extremity held by the jaws. As soon as pin 21 passes over cam 55 and is released therefrom, rod 20 is returned to its normal position by the action of spring 23,

and as rod 18 again moves forward the pin passes under the cam which moves upward sufficiently to allow it to pass.

Having thus described my invention, what I claim is—

1. The combination with the folding mechanism of an envelope machine, of a reciprocating rod provided with jaws at its free extremity, means for automatically closing the jaws when the rod is at its forward limit of movement whereby it grasps the exposed extremity of the opener thread and draws the thread through in front of the envelope flap, and means for severing the thread on each side of the envelope as the folder acts upon the flap, substantially as described.

2. The combination with the folding mechanism of an envelope machine, of a reciprocating rod provided with jaws at its free extremity, means for automatically closing the jaws when the rod is at its forward limit of movement, whereby it grasps the exposed extremity of the opener thread and draws the thread through in front of the envelope flap and knives attached to the extremities of one of the folders for severing the thread on each side of the envelope as the folder acts upon the flap, substantially as described.

3. The combination with the folding mechanism of an envelope machine of the reciprocating rod provided with jaws at its free extremity, a slide attached to the rod and actuated by a stop lying in the path of a projection on the slide which carries a cam at its

free extremity adapted to engage and close the movable jaw when the rod is at its forward limit of movement, whereby it grasps the exposed extremity of the opener thread and draws the thread through in front of the envelope flap, and oscillating cutters for severing the thread on each side of the envelope, substantially as described.

4. The combination with the folding mechanism of an envelope machine, of a reciprocating rod provided with jaws adapted to grasp the exposed extremity of the opener thread, a mucilage cup through which the thread passes, and a weak pendent spring having an eye through which the thread passes after leaving the cup and before it is grasped by the jaws of the reciprocating rod, and knives attached to one of the folders for severing the thread, substantially as described.

5. The combination with the folding mechanism of an envelope machine of a threadholder, means for grasping the thread and placing it in front of the envelope flap, and means for severing the thread on each side of the envelope as the folder acts upon the flap, substantially as described.

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

ROBERT O. BRIGHAM.

Witnesses:

WM. MCCONNELL,
H. J. HOWZE.