

(No Model.)

3 Sheets—Sheet 1.

C. J. HASBROUCK

MACHINE FOR MAKING ENVELOPES AND SIMILAR RECEPTACLES.

No. 370,868.

Patented Oct. 4, 1887.

Fig. 1.

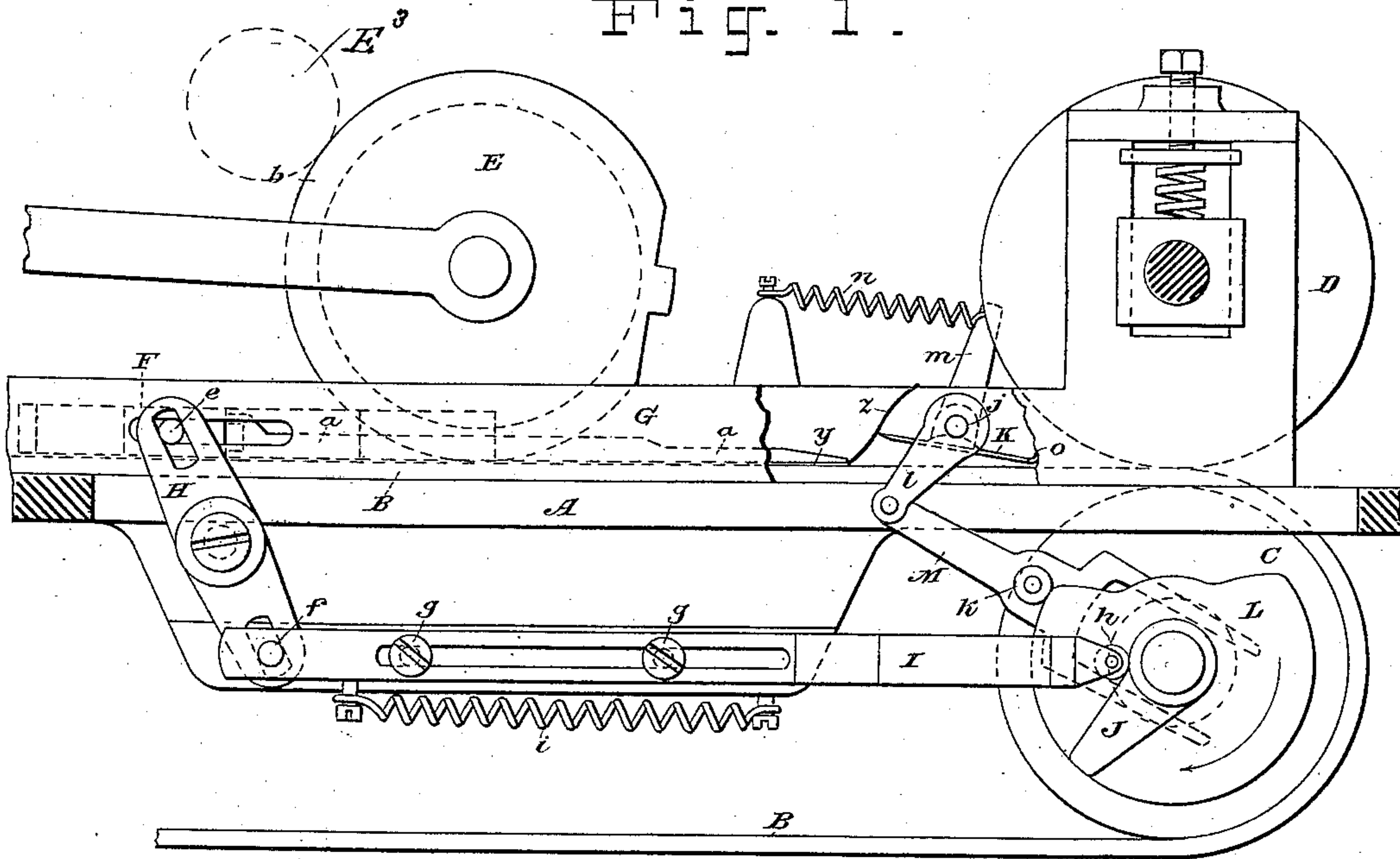
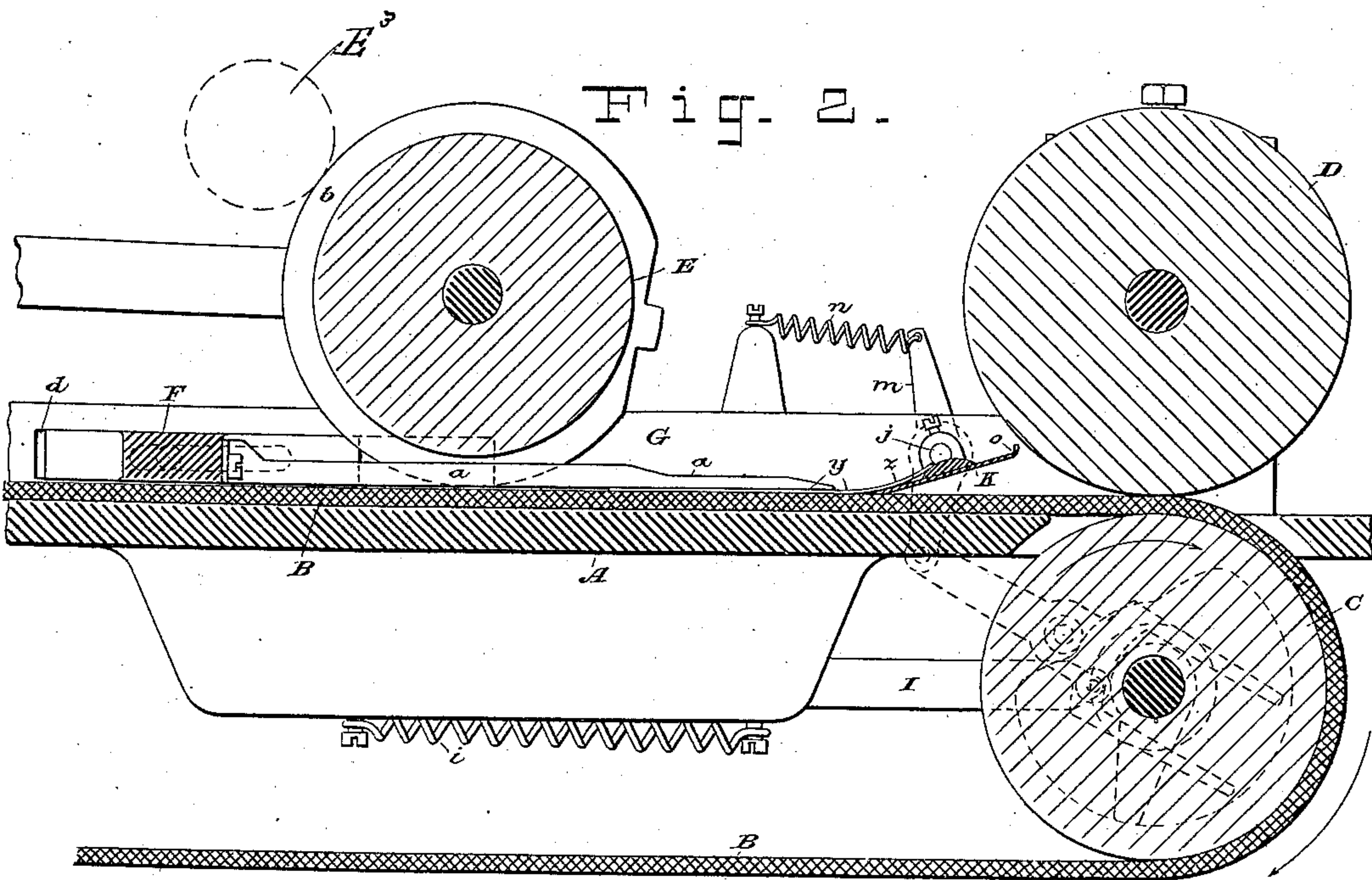


Fig. 2.



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Fig. 3.

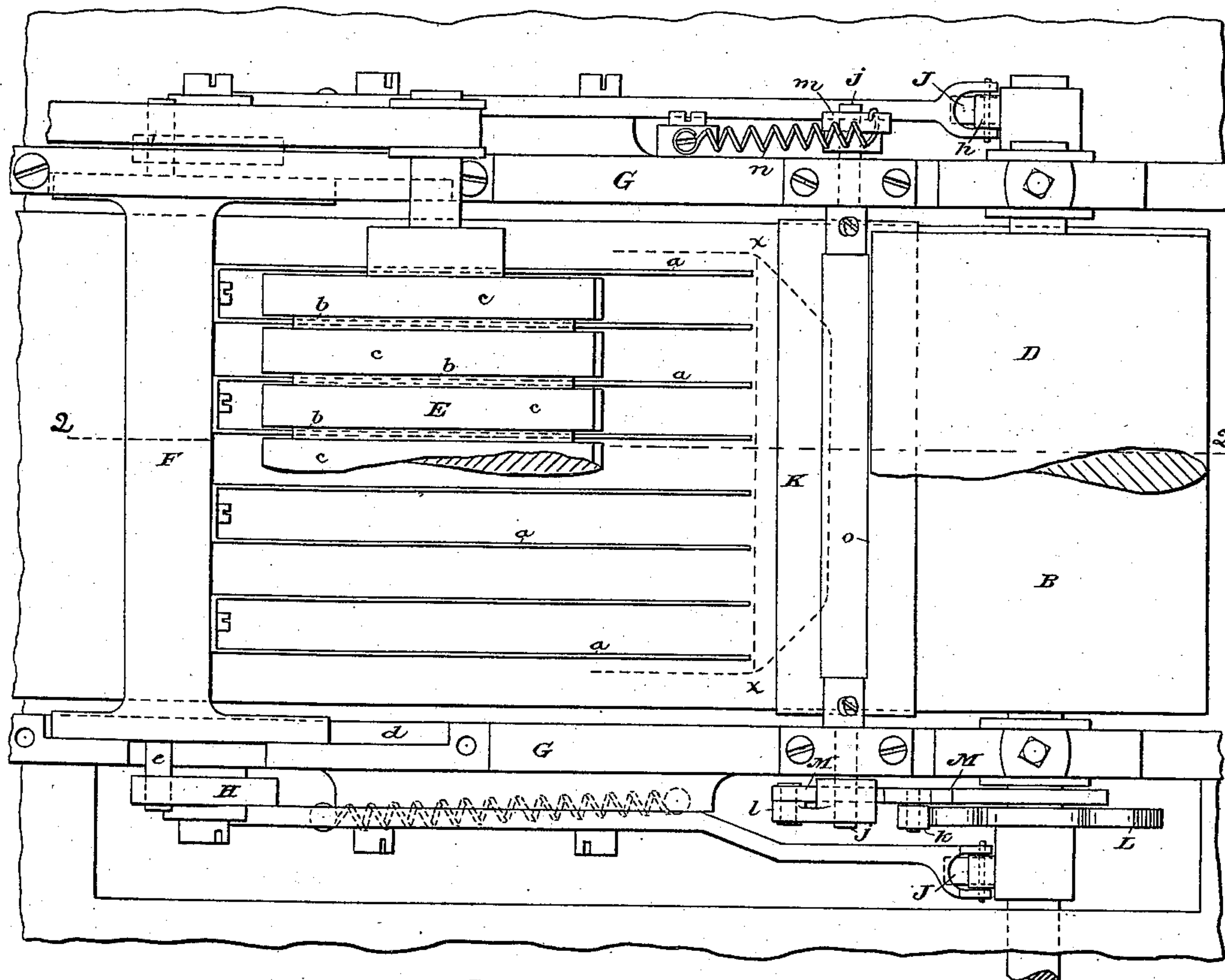
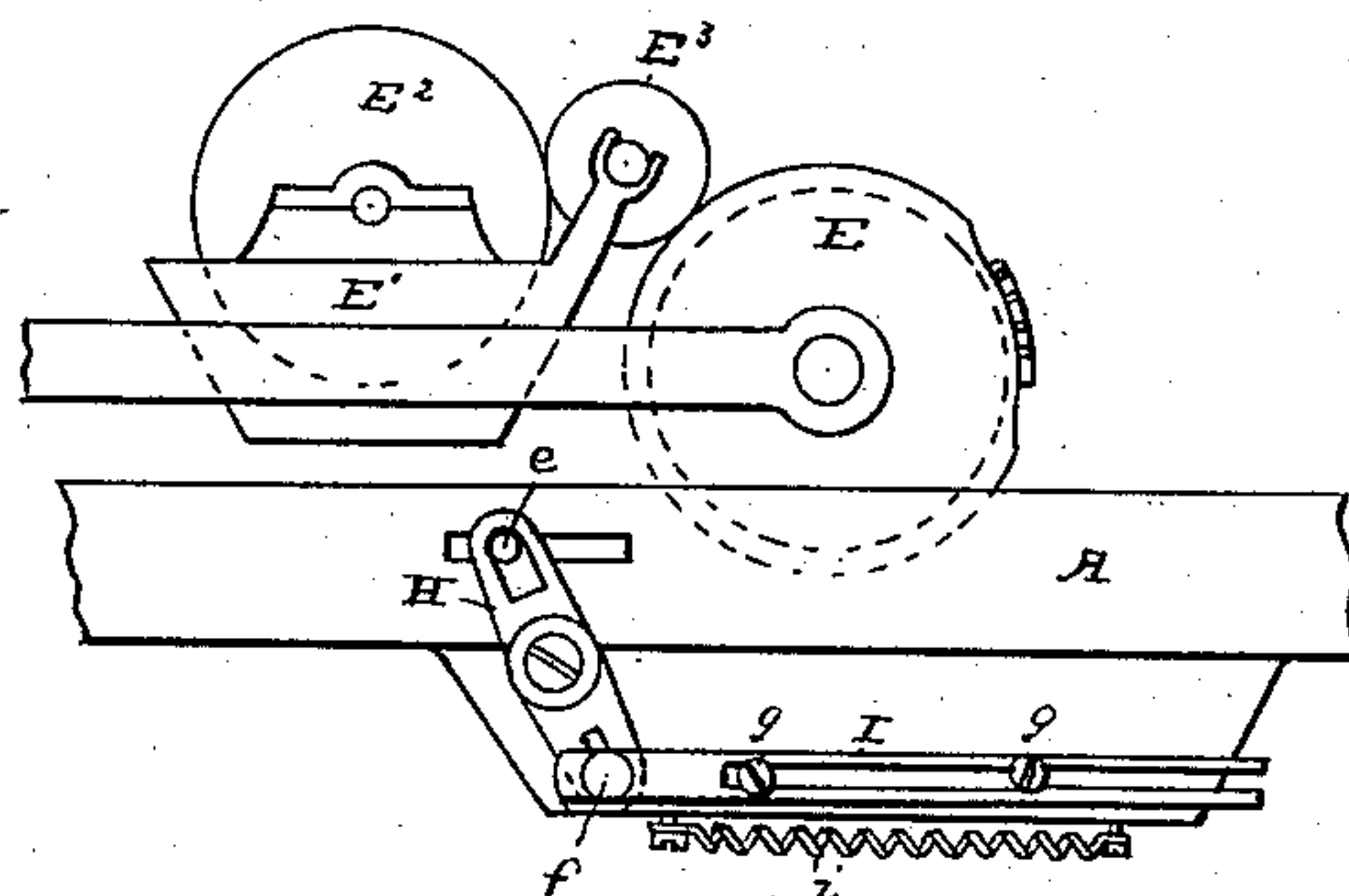


Fig. 3<sup>a</sup>.



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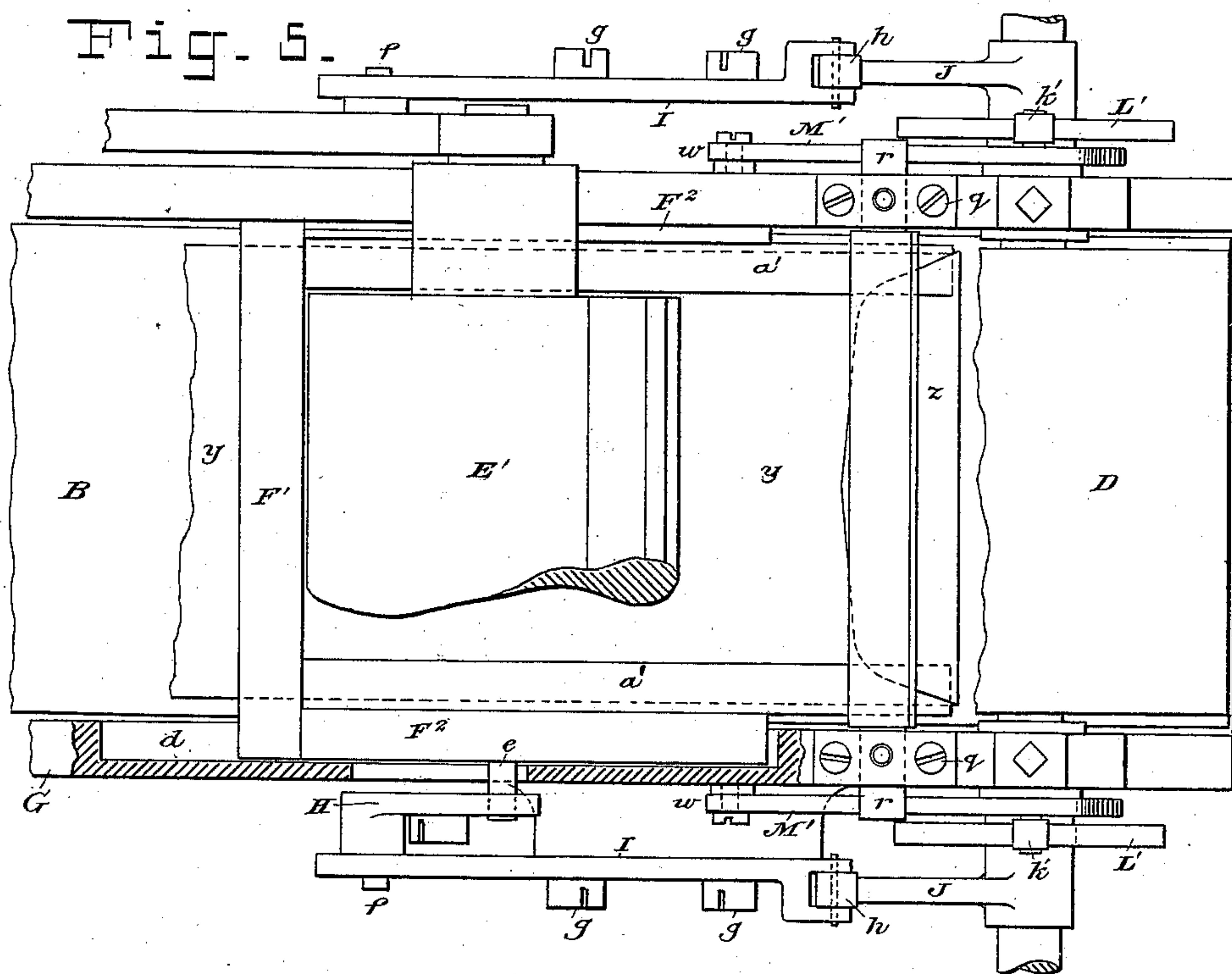
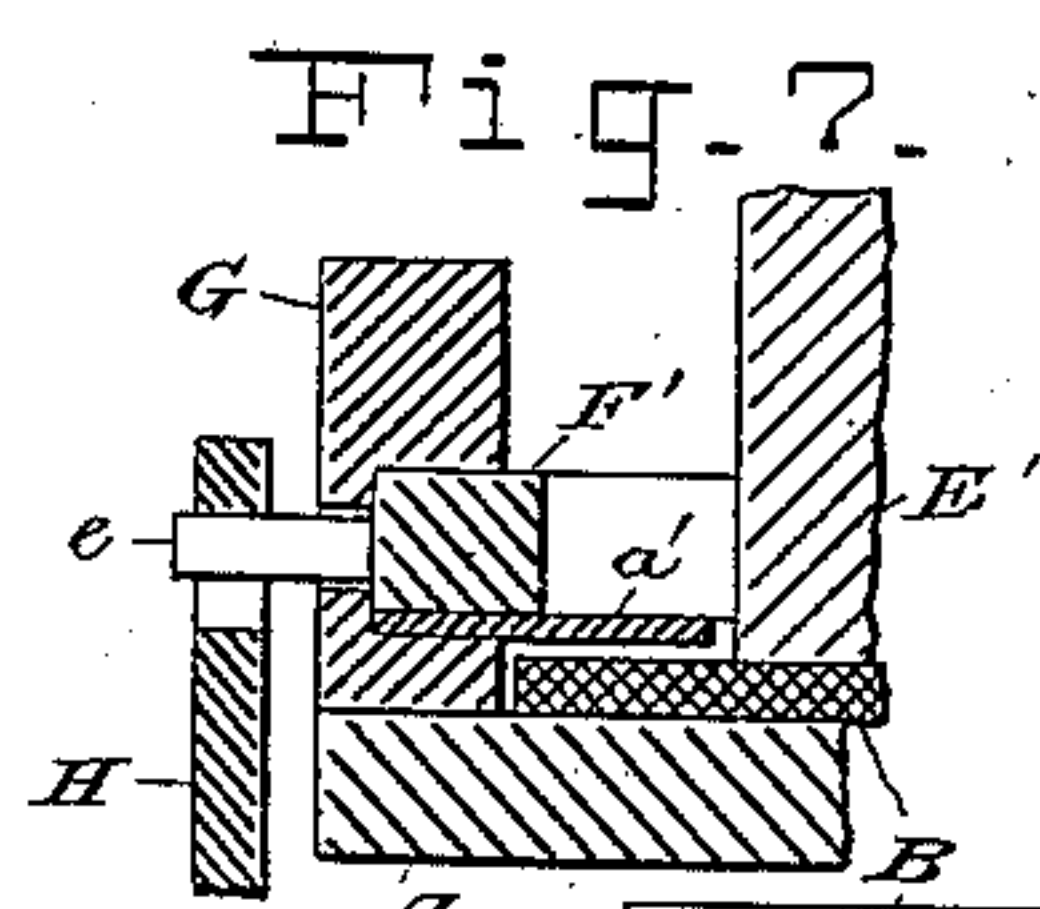
*Henry Conner*



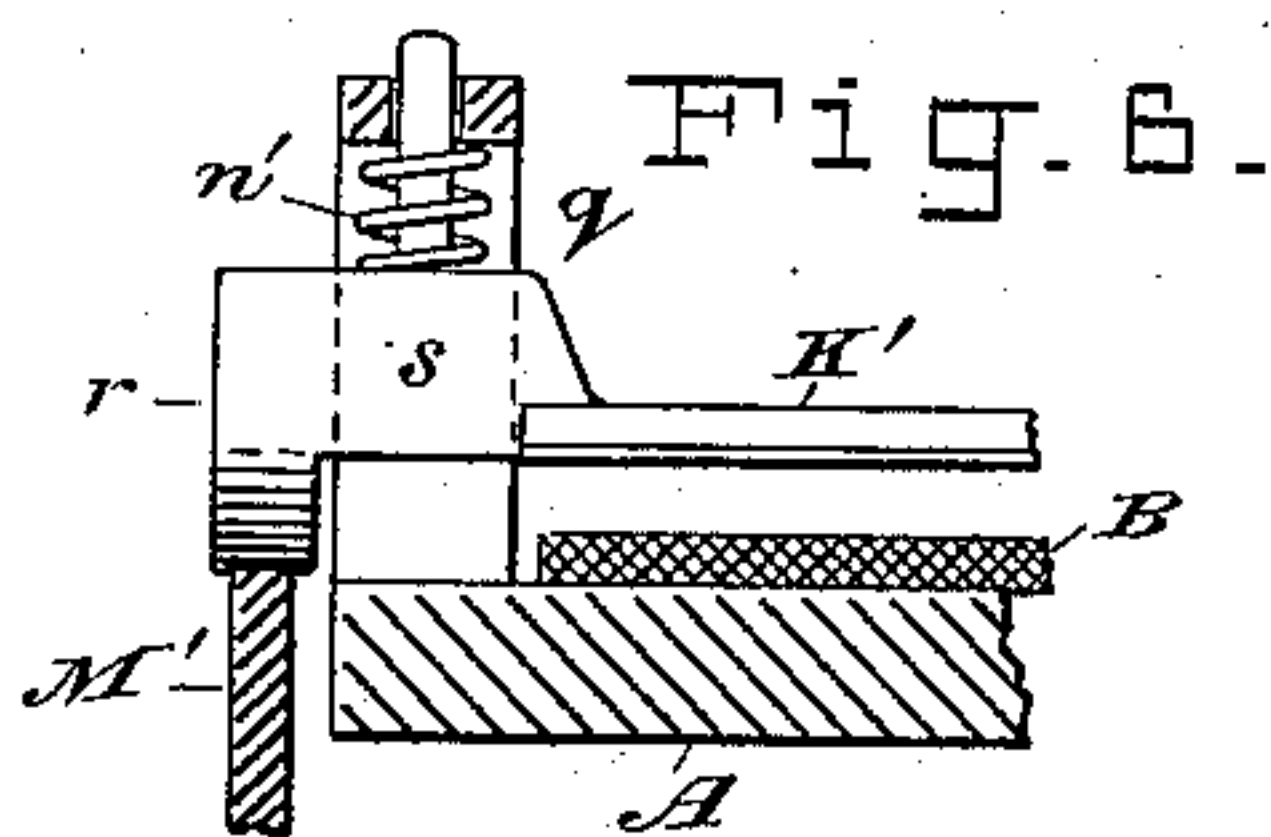
3 Sheets—Sheet 3.

MACHINE FOR MAKING ENVELOPES AND SIMILAR RECEPTACLES.

Patented Oct. 4, 1887.



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Cornelius J. Hasbrouck

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# UNITED STATES PATENT OFFICE.

CORNELIUS J. HASBROUCK, OF NEW YORK, N. Y.

## MACHINE FOR MAKING ENVELOPES AND SIMILAR RECEPTACLES.

SPECIFICATION forming part of Letters Patent No. 370,868, dated October 4, 1887.

Application filed October 11, 1886. Serial No. 215,914. (No model.)

*To all whom it may concern:*

Be it known that I, CORNELIUS J. HASBROUCK, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Machines for Making Envelopes and Similar Receptacles, of which the following is a specification.

My invention relates to that class of envelope-machines illustrated in the patent of Gerard Sickels, Jr., No. 307,079, and dated October 21, 1884. In the machine described in said Letters Patent the envelope-blank with the side flaps folded is carried forward by a belt under a gumming-roller, which applies gum to it for sealing down the bottom flap. While passing under this gumming-roller the bottom flap of the blank passes into a device called a "tumbler," which folds over said flap onto the body of the envelope, which then passes under a pressure-roller. This roller seals the flap down on the envelope-body.

My invention relates to improvements in this part only of the machine. I find that in making envelopes of thin and inferior paper the envelope is liable to stick to the gumming-roller and be carried around by the same. In some cases, also, the end of the blank which is to form the flap will fail to enter between the blades of the tumbler. This is because the blank is not held down flat at its advancing edge.

To remedy these defects is the object of my invention, which consists, first, in providing a stripper for stripping the blank from the gumming-roller and for holding the blank down flat on the carrying-belt, so that it may be presented properly to the folder; and, second, in providing a means for folding the bottom flap while the blank is in motion, whereby the use of the tumbler is obviated, and the stripper is utilized to form one element of the folder.

My invention will be hereinafter fully described, and its novel features carefully defined in the claims.

In the drawings which serve to illustrate my invention, Figure 1 is a side elevation of that portion of an envelope-machine to which my invention relates, provided with my improvements. Fig. 2 is a vertical longitudinal section of the same, taken in the plane indicated

by line 2 2 in Fig. 3. Fig. 3 is a plan of the same. Fig. 3<sup>a</sup> is a side view on a smaller scale than Fig. 1, showing a gum-fountain and fountain-roller for applying gum to the gumming-roller of the machine. Figs. 4, 5, 6, and 7 illustrate a modification, which will be hereinafter described.

As such envelope-machines as this to which my improvements are applied are now well known, and one of this class is fully illustrated in the said patent of Sickels', I have not deemed it necessary herein to show the whole machine.

A represents the bed of the machine. B is the endless carrying-belt. C is the roller or drum at the rear end of the machine, over which said belt passes. D is the pressure-roller mounted over drum C, which serves to press and seal down the bottom flap of the envelope or receptacle; and E is the gumming-roller, which applies gum to the body of the envelope for sealing the bottom flap to the body after said flap is folded. This roller receives gum from a gum-fountain, E', provided with a fountain-roller, E<sup>2</sup>, through an intermediate roller, E<sup>3</sup>. All of these parts are or may be constructed and arranged substantially as represented in the said patent of Sickels, except in respect of certain modifications in the gumming-roller, which will be hereinafter described.

I will first describe the stripper, which is designed to strip or remove the blank from the gumming-roller and prevent it from being carried up and around the latter. This stripper comprises fingers *a a*, as many as may be found necessary, secured at their one ends to a cross-head, F, and arranged over and a little above the carrying-belt B. These fingers stand parallel with the line of travel of the belt, and I usually construct them of thin sheet metal, each strip of the metal being bent in the middle, so as to form two fingers; but this mode of construction is not essential. This stripper is arranged under the gumming-roller, and in order that this roller may press upon the envelope-blank, which is carried along with belt B under the fingers *a*, I form in the roller E circumferential grooves *b b*, corresponding in position to the fingers *a*, and leave on the roller "lands" *c c*, which pass down between the fin-



gers of the stripper and rest on the blank. The gumming-roller, being driven positively in this class of machines, serves, in conjunction with belt B, to carry the blank along, and the fingers *a* prevent the blank from being lifted off the belt by the gumming-roller as it revolves, and also to hold it down flat upon the belt, so that it will be presented properly to the folder.

In order to utilize the stripper-fingers *a* in effecting the folding of the bottom flap of the envelope, I mount the cross-head F to slide in guides or grooves (*d* in Fig. 3) in the faces of side rails, G G, mounted on the table A, and provide a mechanism for imparting a reciprocating movement to the cross-head and fingers. This mechanism may be of any kind; but, as herein shown, it comprises a rock-lever, H, which has a slotted connection at its upper end with a wrist-pin or stud, *e*, on the end of cross-head F, and a slotted connection at its lower end with a wrist-pin or stud, *f*, on a cam-rod, I, mounted to play longitudinally on guides consisting of screws or studs *g g*, which engage a slot in the rod. In the free end of the cam-rod is mounted an anti-friction roller, *h*, which is held up to a cam, J, on the axis of roller C by a spring, *i*. The cam J is of such a form and is so set that at the moment the folding line of the end flap of the blank reaches the ends of fingers *a* in the forward movement of the blank said cam will move the cross-head F and with it the fingers *a* forward with the same speed as that at which the blank is moving, thus rendering the fingers stationary with respect to the moving blank. In Fig. 3 the blank is indicated in outline by dotted lines *x*, indicating the line of the fold coincident with the ends of fingers *a*. In Figs. 1 and 2 *y* represents the body of the partly-finished envelope, and *z* represents the bottom flap.

I will now describe the flap folder and its operative mechanism.

K is the folding-blade, usually a thin metal plate about one inch wide. This plate extends across the machine-bed over the carrying-belt, and is mounted on journals *j j* at its ends, which find bearings in the rails G G. This plate K has two positions—namely, one as shown in Fig. 1, with its front edge elevated, and the other as shown in Fig. 2, with its front edge depressed and resting on the carrying-belt B. It is oscillated or vibrated by a cam, L, on the axis of the roller C, which cam acts on a friction-roller, *k*, on a forked cam-rod, M, coupled at its upper end to an arm, *l*, on the projecting journal of the folding-blade K. On the other journal of the blade K is an arm, *m*, to which is connected a spring, *n*, which holds the roller *k* up elastically to cam L. Any other suitable mechanism may be employed to actuate the blade K properly.

The operation is as follows: As the blank advances with its bottom flap, *z*, ahead, it finds the folding-blade K standing, as seen in Fig. 2, with its edge resting on belt B. The flap *z* slides up over the blade, and when the fold-

ing-line *x* comes into coincidence with the ends of fingers *a*, or nearly so, cam L acts and raises the edge of the folding-blade to the position seen in Fig. 1. Cam J now acts and advances the fingers *a* with the same speed as that of the belt. The fingers move forward under the folding-blade far enough to cause said blade to fold the flap *z* back onto the fingers, the tips of which serve as creasers to determine the line of the fold and as a folding abutment. The extent of movement of the fingers may vary somewhat, but herein it is shown as about equal to the length of flap *z*. When cam J passes the roller *h*, the spring *i* retracts the fingers. The folded flap now passes under the rear depressed edge *o* of the folding-blade K, which I usually make rounded or convex, as shown, and this edge serves to lightly press and smooth the flap down. Thence the blank passes under roller D, which finishes the sealing down of the flap.

I prefer to construct cam L so that it will hold the front edge of the folding-blade up off the belt B until a moment before the envelope-flap *z* reaches it and then let it down to the position seen in Fig. 2. The object of this is to prevent the blade from bearing on and wearing the belt any more than is necessary. I also prefer to construct the cams J and L in one piece, or secured rigidly together in their proper relative positions, so that one adjustment will serve for both. In Fig. 3 I have shown two cams, J, with their accessories, one on each side of the machine, and this arrangement would prevent side draft; but as the work to be performed is very light I do not consider this arrangement essential.

For simplicity I have shown the cam J constructed to set the fingers *a* in motion with the same speed as the belt B at the moment the folding-line *x* on the blank comes into coincidence with their tips or ends. This is not, however, absolutely essential. The fingers might start more slowly from a point farther back and only reach the proper speed when their ends or tips come to said line. This would only require a modification in the form of the operating-cam, and is within the knowledge and skill of any good workman.

There are two drums, C, for the carrying-belt, one at each end of the machine; but only the one at the rear end is shown herein.

In lieu of the friction-rollers *h* and *k*, simple studs or projections may be employed.

It is not absolutely essential, especially when making narrow envelopes or receptacles, to form grooves *b* in the gumming-roller E to receive the fingers of the stripper, as a finger at each side of the machine and beyond the ends of the gumming-roller will serve. The gum is not usually applied all the way across the envelope, and the entire roller-face may be considered as a single land, *c*, arranged between two side fingers.

The folding-blade K need not vibrate necessarily, as hereinbefore described, but may move up and down as a whole or bodily.



In Figs. 4 to 7, inclusive, I have illustrated a modification wherein the stripper and folder are constructed as last stated, and these constructions will now be described.

Fig. 4 is an elevation similar to Fig. 1, and Fig. 5 is a plan similar to Fig. 3. Figs. 6 and 7 are fragmentary illustrative sectional views taken, respectively, on lines 6 6 and 7 7 in Fig. 4.

B' is the gumming-roller, which is unprovided with grooves *b*.

F' is the cross-head of the stripper, provided with slides F<sup>2</sup>, which play in grooves or guides in the side rails, G. To these slides are secured two stripper-fingers, *a'*, one to each slide, which fingers are arranged under the axis of roller E, but a little beyond the ends of said roller. The mechanism for actuating the stripper is the same as that before described.

The folding-blade K' is mounted to play vertically in guides *q* in rails G, and is provided with springs *n'* to depress it, and a cam, L', to elevate it and hold it up. Cam L' acts on a stud or roller, *k'*, on a lever, M', fulcrumed at *w*, and this lever takes under a pendent lug, *r*, (seen best in Fig. 6,) on the sliding block, *s*, to which blade K' is secured, or of which it forms a part.

Figs. 4 and 5 show the blade K elevated and the fingers *a'* advanced under it in folding the flaps *z* of the envelope, the body *y* of which is seen in Fig. 5. It will be noted that the two broad fingers *a'* which overlap the edges or sides of the envelope serve to determine the line of the fold and as a sufficient abutment for the fold, especially in narrow envelopes. The gumming-roller is long enough to apply gum across the entire width of the narrow end of the flap *z* and that will suffice.

The mechanism for actuating the stripper and folder will be in duplicate, one set on each side of the machine; but I have deemed it necessary to describe only one set.

I do not claim, broadly, means in the nature of stripping-fingers for preventing a sheet from being carried around a paster or gum-roller, as such devices have before been employed in machines for somewhat analogous uses.

Having thus described my invention, I claim—

1. The combination, with a carrying-belt for carrying the envelope-blank, a folding-blade arranged transversely across the belt to fold the flap of the envelope while the latter is in motion, a gumming-roller arranged over and transversely across said belt, its gum-supplying mechanism, and the stripping-fingers arranged over said belt and under the gumming-roller, said fingers serving to hold the blank down flat upon the belt and to deliver it properly to the folding-blade, as set forth.

2. The combination, with the carrying-belt, of the stripping-fingers mounted in guides over the same, mechanism, substantially as de-

scribed, for imparting a reciprocating motion to said fingers, the folding-blade for folding the bottom flap of the envelope or receptacle, and mechanism, substantially as described, for elevating and depressing the said folding-blade.

3. The combination, with the carrying-belt, of the cross-head F, mounted in guides over the same, the fingers *a*, attached to said cross-head and extending over the carrying-belt in a plane parallel with the line of travel of the belt, mechanism, substantially as described, for imparting to said cross-head a movement forward at the same speed as the belt, and mechanism, substantially as described, for turning up the flap of the envelope or receptacle carried forward by the belt, substantially as set forth.

4. The combination, with the stripper-fingers and their operative mechanism, of the carrying-belt and its rollers, the folding-blade mounted on journals over and extending across the said belt, the arms *l* and *m* on the journals of the folding-blade, the retracting-spring *n*, connected to arm *m*, the cam-rod M, connected to arm *l* and provided with a roller or stud to bear on the cam, and the said cam L, mounted on the axis of the drum of the carrying-belt, substantially as set forth.

5. The combination, with the carrying-belt, of the folding-blade K, pivotally mounted at about the center of its width and provided with a rounded rear edge, *o*, and vibrating mechanism, substantially as described, for actuating said blade, whereby when the front edge of said blade rises the said rear edge is caused to descend and press down the flap of the envelope, as set forth.

6. The combination, with the reciprocating cross-head of the stripper and the stripper-fingers attached thereto, of the mechanism, substantially as described, for reciprocating same, comprising lever H, coupled at its one end to the said cross-head, the guided cam-rod I, coupled to the other end of said lever and provided with a stud or roller, *h*, to bear on cam J, the said cam, and the retracting-spring *i*, substantially as set forth.

7. As a mechanism for folding the flap of an envelope-blank while said blank is in motion, the combination of a carrying-belt for the blank, a folding abutment arranged over said belt, mechanism, substantially as described, for moving said abutment forward with the same speed as the said carrying-belt, a folder resting on said belt, over which the advancing flap of the blank passes, and mechanism, substantially as described, for elevating said folder, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

CORNELIUS J. HASBROUCK.

Witnesses:

HENRY CONNETT,  
J. D. CAPLINGER.