

(No Model.)

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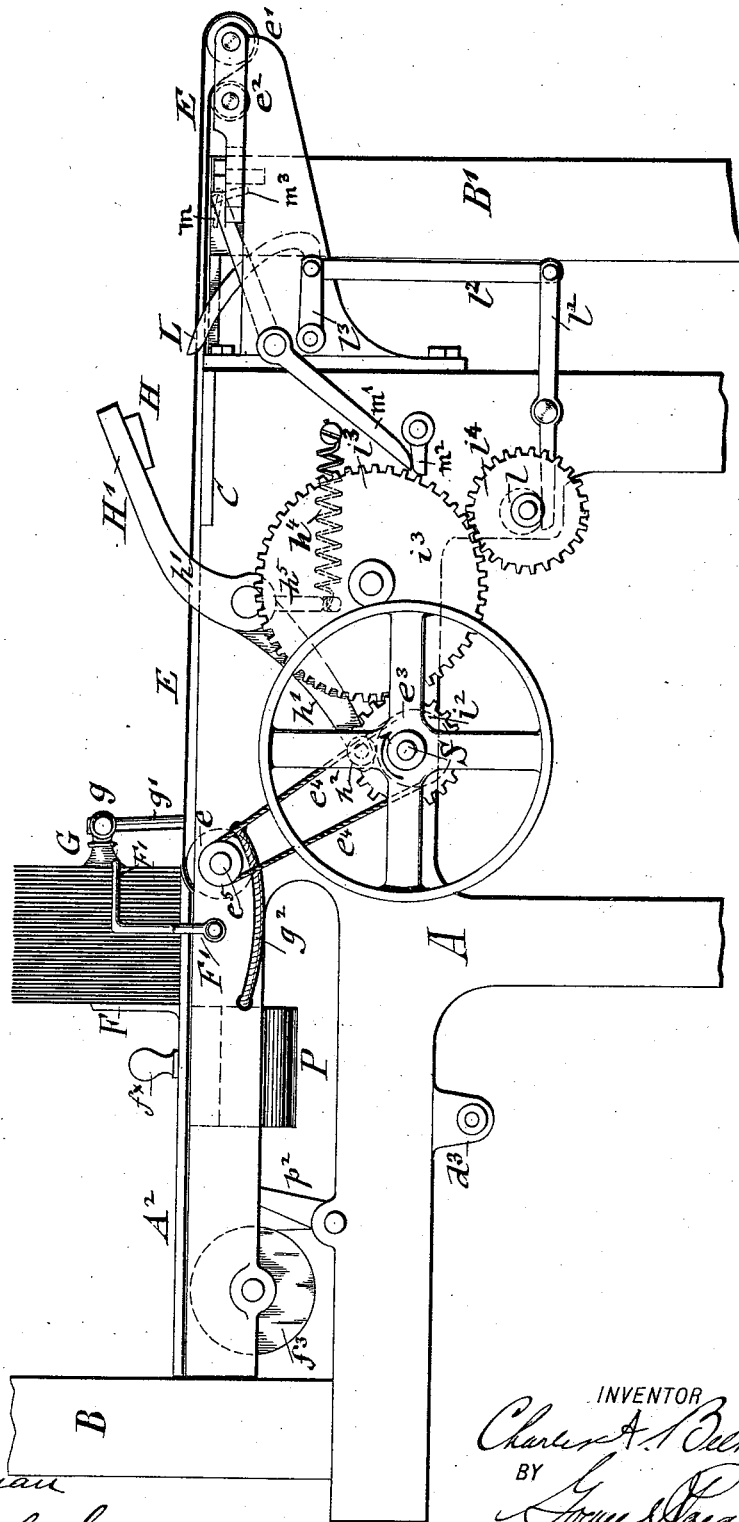
C. A. BELKNAP.

MACHINE FOR ADDRESSING ENVELOPES AND WRAPPERS.

No. 523,451.

Patented July 24, 1894.

Fig: 1.



WITNESSES:

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(No Model.)

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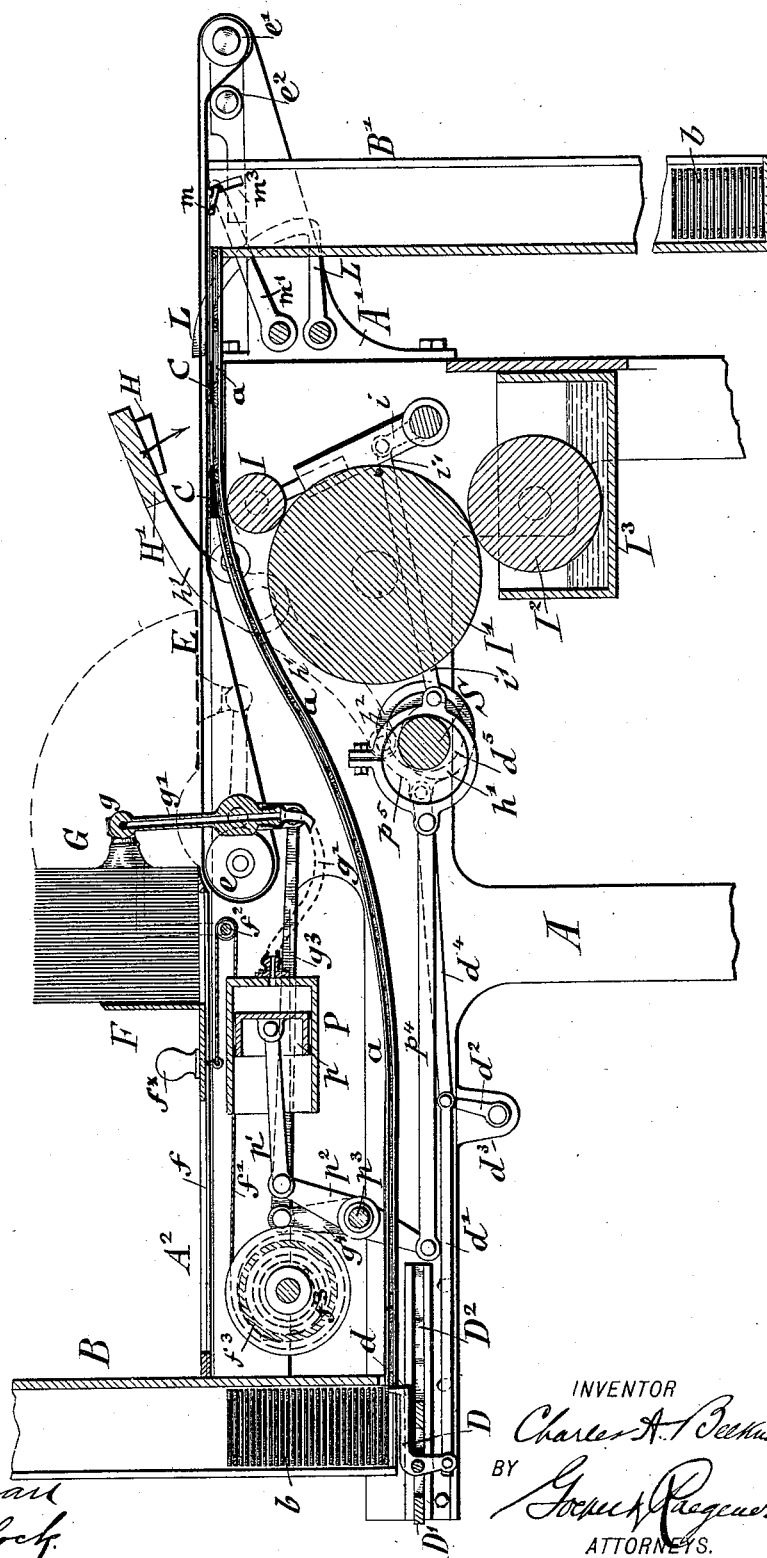
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Fig. 2.



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3 Sheets—Sheet 3.

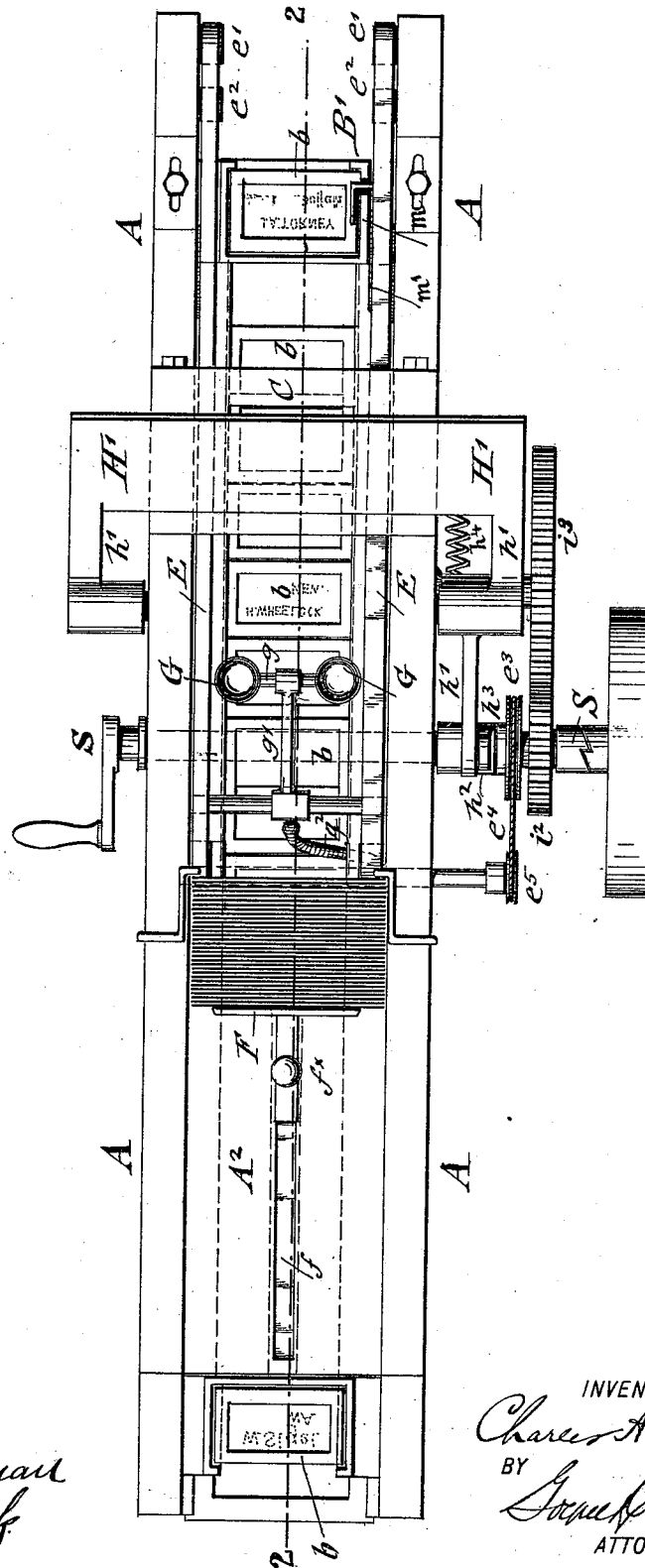
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Fig. 3.



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# UNITED STATES PATENT OFFICE.

CHARLES A. BELKNAP, OF BROOKLYN, NEW YORK.

## MACHINE FOR ADDRESSING ENVELOPES AND WRAPPERS.

SPECIFICATION forming part of Letters Patent No. 523,451, dated July 24, 1894.

Application filed April 7, 1894. Serial No. 506,705. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. BELKNAP, a citizen of the United States, residing in Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Addressing Envelopes and Wrappers, of which the following is a specification.

This invention has reference to an improved machine for addressing envelopes, wrappers, &c., in an automatic manner by means of perforated address-cards, the machine being specially designed for feeding the address-cards and printing the name on the envelope or wrapper, so that the sending out of letters, circulars, newspapers, &c., is greatly facilitated and cheapened, especially when the addressing and sending out take place at regular intervals of time; and the invention consists of a machine for addressing envelopes, wrappers, &c., which comprises means for intermittently feeding the perforated address-cards to a suitable platen, a pneumatic feed-mechanism for delivering the envelopes or wrappers to two endless aprons and by the same to the platen, means for pressing the envelope or wrapper on said platen, an ink-fountain, means for transferring the ink to the perforated address-card on the plate and to the envelope or wrapper, and motion-transmitting mechanisms by which the operation of the different parts is accomplished from a common driving-shaft.

The invention consists further of certain details of construction and combination of parts, which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings,—Figure 1 represents a side-elevation of my improved machine for addressing envelopes, wrappers, &c. Fig. 2 is a vertical longitudinal section of the same on line 2, 2, Fig. 3, and Fig. 3 is a plan view of the same.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A A represent the upright side-standards of the supporting-frame of my improved machine for addressing envelopes, wrappers, &c. The side-standards A A are connected transversely in a suitable manner, and are provided with jour-

nal-bearings for the shafts of the different rotary parts of the machine.

At the ingoing end of the supporting-frame A A is arranged a vertical receiver B which is open at the rear-end and in which are placed the perforated address-cards *b b*, which are preferably composed of a stiff oblong frame of pasteboard or other suitable material and a web of parchment-paper, to which is transferred by suitable perforating type of a type-writing machine, the address that is desired to be printed. At the opposite end of the frame A is likewise arranged a vertical receiver B', which is open at the front-end, and to which the address-cards are delivered one after the other, after the same have passed through the machine and have been used for printing the addresses on the envelopes, wrappers, &c.

The lower end of the receiver B is connected with the upper end of the receiver B' by upwardly-curved or slanting ways, into which ways one address-card after the other is delivered from the lower end of the receiver B by a suitable mechanism to be presently described, and fed below a stationary platen C, which is supported at the upper edge adjacent to and horizontally in line with the upper end of the collecting receiver B'. The platen C is provided with an opening of a somewhat larger size than the perforated web of the address-cards as the same are fed along the inclined or slanting guide-ways to the lower part of the platen C.

The means for intermittently feeding the perforated address-cards to the platen C are shown in Fig. 2, and consist of an oscillating pusher D of elbow shape, that is provided at its upper free end with an upwardly-projecting nose or heel *d*, said pusher being connected at its lower end by a pivot-rod *d'* with an oscillating link *d''* that is pivoted to a downwardly-projecting lug *d'''* of one of the side-standards A, said oscillating link *d''* being again connected by a strap-rod *d''''* with an eccentric *d'''''* on the driving-shaft S, which turns in suitable bearings of the supporting-standards A A. The driving-shaft S receives rotary motion either by means of a hand-crank attached to one end of the same, or by means of a belt and pulley transmission that

is applied to the opposite end of the same, so that the machine can either be operated by hand or steam-power, as desired, according to the number of addresses that have to be turned out.

The elbow-shaped pusher D is centrally fulcrumed to an oblong slide-frame D' that is guided in stationary ways D<sup>2</sup> at the inside of the rear-parts of the standards A A, the ways guiding the frame D' so that it follows the motion of the eccentric d<sup>5</sup> on the shaft S, while an oscillating motion is imparted to the crank-lever D so that the nose or heel d at its upper end is either raised or lowered at the proper time for engaging the lowermost address-card and pushing the same forward into the guide-ways a or passing below the cards back into the rear-most position.

By the forward and backward throw of the eccentric d<sup>5</sup> and the intermediate connecting-rods d<sup>4</sup>, d', and the oscillating link d<sup>3</sup>, the motion of the elbow-shaped pusher D and its guide-frame D' is controlled. With the forward throw of the eccentric, the elbow-shaped pusher D and its guide-frame D' are moved forward, so as to push the lowermost address-card into the rear-ends of the guide-ways a, whereby all the address-cards that were intermittently fed into the guide-ways in front of the last card, are pushed forward, so as to move one after the other below the platen C until they are delivered successively into the collecting-receiver B' at the opposite end of the machine.

By the downward throw of the eccentric, the nose of the elbow-shaped pusher D is lowered below the lowermost address-card by the intermediate connecting-rods, while at the same time the backward motion of the pusher D and its guide-frame D' commences, which backward motion terminates when the full backward throw of the eccentric is accomplished. With the beginning of the upward motion of the eccentric, the nose of the pusher D is lifted and placed back of the edge of the lowermost address-card in the receiver B, so as to engage the same and move it forward again into the rear-end of the guide-ways a, so that the cards in the same are moved forward as before described. By the feed-motion of the address-cards from the receiver B into the guide-ways, the intermittent forward motion of the cards in the curved or slanting guide-ways a is accomplished, and thereby one address-card after the other fed from the receiver B to the platen C, and from the same to the collecting-receiver B'.

At each side of the platen C is arranged an endless apron E, each of which is passed around the guide-rollers e-e' and over a tension-roller e<sup>2</sup> which are supported in brackets A' at the end of the side-standards A A. The upper and lower parts of each belt E pass in close proximity to each other sidewise of the platen C and of the mouth of the collecting-receiver B', as shown in Fig. 3. A comparatively slow motion is transmitted from the

driving-shaft S by means of a pulley and belt transmission e<sup>3</sup> e<sup>4</sup> e<sup>5</sup> to the shaft of the inner guide-rollers e of the aprons E, so that they are slowly moved forward. Between the receiver B and the guide-roller e is arranged a pneumatic feeding mechanism, by which the envelopes, wrappers, &c., on which the addresses are to be printed, are fed successively to the aprons E.

The envelopes, wrappers, &c., are supported on a slotted top-plate A<sup>2</sup> of the machine and retained by arms F' against the forward pressure of a follower F, which is guided in the longitudinal slot f of the top-plate. The follower F is of rectangular shape and provided with a handle f<sup>x</sup> on its horizontal portion, by which it can be readily returned to its initial position after the whole quantity of envelopes, wrappers, &c., is delivered to the platen and printed with the addresses by the address-cards. The horizontal portion of the follower F is connected by a feed-cord f' which passes over a guide-pulley f<sup>2</sup> to a spirally-grooved winding-up-spring-drum f<sup>3</sup> which is supported in bearings of the standards A A near the receiver B, as shown in Figs. 1 and 2, the end of the cord being attached to said drum f<sup>3</sup>.

The pile of envelopes, wrappers, &c., is supported in front of the follower by the rectangular retaining-arms F', which are pivoted at their lower ends to the shaft of the pulley f<sup>2</sup> on the outside of the side-standards A, and which are held in upright position so that the pile of envelopes is always held by the follower against the same. The upper ends of the angular arms F' are bent inwardly at right angles, so as to form catches which extend over the edges of the pile of envelopes or wrappers in the follower, as shown clearly in Fig. 3, and retain the envelopes or wrappers in position.

In front of the pile of envelopes or wrappers is arranged a double suction-head G which acts on the first envelope of the pile, pulls it out from below the inwardly-bent catches of the retaining-arms F' and transfers it by the oscillating motion imparted to the suction-heads onto the conveying-aprons E.

The drum f<sup>3</sup> is actuated by a coil-spring or by a weight which is suspended from the drum f<sup>3</sup> by a cord, said spring or weight exerting the required tension on the drum and causing thereby the slow forward motion of the follower and of the pile against the retaining-arms and suction-heads G. The spring or weight of the drum f<sup>3</sup> is set to tension by the return of the follower, whenever a new set of envelopes or wrappers is supplied to the same.

The suction-heads G are preferably made in the shape of cups of soft rubber and are arranged on the ends of a transverse perforated piece g, which is connected by an oscillating tubular arm g', the lower end of which is connected by a rubber or other hose g<sup>2</sup> with the cylinder of an air-pump P, that is located below the top-plate A<sup>2</sup>.

The piston  $p$  of the air-pump  $P$  serves to exhaust the air in the suction-heads  $G$  so that an envelope or wrapper is taken up by the same and delivered by the oscillating motion of the tubular arm  $g'$  onto the endless belt  $E$ . The piston  $p$  is operated by a piston-rod  $p'$  that is connected by the upper arm  $b^2$  of a rock-shaft  $p^3$ , the lower arm of which is connected by a pivot-rod  $p^4$  with a strap placed around the eccentric  $p^5$  on the driving-shaft  $S$ , so that at each rotation of the eccentric the piston  $p$  is drawn back, producing a vacuum in the suction-heads, drawing thereby an envelope or wrapper onto the suction-heads, and delivering the same onto the feed-aprons  $E$  by the oscillating motion of the hollow arm  $g'$ . Oscillating motion is transmitted to the arm  $g'$  by a crank  $g^4$  on the rock-shaft  $p^3$  which crank is connected by a pivot-rod  $g^3$  with the lower end of the oscillating arm  $g'$  and actuated by the rock-shaft  $p^3$  so that the oscillations of the crank  $g^4$  produce the oscillating motion of the arm  $g'$  and of the suction-heads on the same.

As soon as the suction-heads  $G$  with the envelope or wrapper carried along by the same, arrive on a level with the apron  $E$ , as shown in dotted lines in Fig. 2, the piston  $p'$  arrives at the end of its suction-stroke and commences its forward stroke, so that the suction exerted on the envelope or wrapper is discontinued and the latter dropped on aprons  $E$  and conveyed by the same in forward direction over the platen  $C$ .

When the envelope or wrapper which is supported at both ends on the aprons  $E$  arrives above the platen  $C$ , it is pressed in downward direction by an oscillating impression-block  $H$ , which is supported on a transverse plate  $H'$  which is supported on arms  $h'$  that are fulcrumed to the side-standards  $A A$ , one of said arms being extended below the fulcrum and provided at its lower end with an anti-friction roller  $h^2$  which is held in contact with a cam  $h^3$  on the driving-shaft  $S$  by a helical spring  $h^4$ , connected to an arm  $h^5$  and to the side-standard  $A$ , as shown in Fig. 1. Simultaneously with the downward pressure of the block  $H$ , an oscillating inking-roller  $I$  is passed over the under side of the perforated address-card, so that the ink on the same is transmitted to the envelope or wrapper which is pressed by the impression-block  $H$  on the face of the same.

The inking-roller  $I$  receives oscillating motion from the eccentric  $p^5$  its shaft being connected by an arm  $i$  and pivot-rod  $i'$  with the strap on the eccentric  $p^5$ , as shown in Fig. 2. The motion of the inking-roller  $I$  and of the impression-block has to be timed so that both act on the address-card and the envelope over the same at the same time so as to print the address on the latter.

The inking-roller  $I$  receives its ink from a larger roller  $I'$ , which again receives the ink from a transmitting-roller  $I^2$  which is arranged in the ink-fountain  $I^3$ . Rotary mo-

tion is imparted to the inking-rollers  $I'$  and  $I^2$  by a gear-wheel transmission  $i^2 i^3 i^4$ , from the driving-shaft  $S$ , as shown in Fig. 1. When the envelope or wrapper is printed, it passes on with the aprons and is delivered into a suitable receptacle, while the address-card passes along the guide-ways  $a$  and is delivered into the mouth of the receiver  $B'$ .

For the purpose of properly dropping the address-cards into the receiver  $B'$ , a pin  $m$  is arranged at the upper end of a fulcrumed arm  $m'$ , which is actuated from a cam  $m^2$  on the shaft of the inking-roller  $I$ , said cam  $m^2$  acting on the lever  $m'$ , at each oscillation of the inking-roller, so that the pin  $m$  acts on the address-card fed from the guide-ways  $a$  into the upper end of the collecting-receiver  $B'$ . The pin  $m$  is of angular shape and extends through a slot  $m^3$  in the side-walls of the receiver  $B'$ , so that the cards as they are conducted one after the other into the same are fed downward and piled one on top of the other without tilting, so that the consecutive order of the cards is not changed, and ready to be fed again into the delivery-receiver when executing the next set of addresses.

During the forward motion of the envelope or wrapper over the platen  $C$ , it is arrested by a stop-gage  $L$ , which projects above the level of the apron  $E$  into the path of the envelope, said stop-gage being intermittently moved below the path of the envelope or wrapper after the address is printed thereon, by an eccentric cam  $l$  on the shaft of the ink-roller  $I^2$ , a fulcrumed lever  $i'$ , and a connecting-rod  $l^2$  which is pivoted to a crank  $l^3$  at the end of the pivot-shaft of the curved stop-gage  $L$ , as shown in Fig. 1. When the projecting end of the gage  $L$  is lowered, the envelope or wrapper can be fed forward by the aprons into a suitable receptacle at the outgoing end of the machine.

My improved addressing-machine is operated as follows: The address-cards from which the addresses are to be printed, are preferably arranged in regular alphabetical order and fed into the delivery-receiver  $B$ . The lowermost card of the pile is taken up by the action of the pusher, and fed into the lower ends of the curved or slanting guide-ways, being pushed forward in the same by the succeeding cards until it arrives below the opening of the platen. When the card is below the platen, the envelope or wrapper which was delivered by the suction-mechanism to the feed-aprons and conveyed in the meantime to the platen is pressed by the impression-block on to the perforated address-card so that the inking-roller which passes over the under side of the address-card transfers the ink through the perforations in the card to the envelope or wrapper so that the address is printed thereon in dotted lines. When the address-cards arrive at the end of the guide-ways and at the mouth of the collecting-receiver they are transferred one after the other into the receiver and collected in

the same, ready for being used for the next addressing operation.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, of a delivery receiver for the address-cards at one end, a collecting receiver at the other end of the machine, guide-ways connecting the lower end of the delivery-receiver with the mouth of the collecting-receiver, means for intermittently feeding one card after the other into the lower end of the guide-ways, a stationary platen having located near the upper end of the guide-ways an oscillating impression-block, endless conveyer-aprons at both sides of the platen, a pneumatic feed-mechanism for transferring the envelopes or wrappers from the pile to the aprons, an oscillating inking-roller below the platen, and means for conveying the address-cards from the guide-ways into the collecting-receiver, substantially as set forth.
2. The combination, of guide-ways for feeding the address-cards, a platen above said guide-ways, said platen being provided with an opening corresponding to the size of the address-cards, an oscillating impression-block above said platen, rotary feed-aprons arranged at both sides of said platen, and means for supplying ink to the under side of the perforated address-card below the platen when the impression block is depressed, so that the address is printed on the envelope or wrapper, substantially as set forth.
3. The combination, with a platen, a mov-

able impression block an endless conveyer-apron at each side of the platen, and arranged between the platen and impression block a follower for feeding the pile of envelopes or wrappers, retaining-arms for the pile, suction-heads in front of the pile, and means for oscillating the suction-heads and causing a suction on the foremost envelope or wrapper so as to transmit it to the conveyer-aprons, substantially as set forth.

4. The combination, with a platen, of endless conveyer-aprons at each side of the platen, guide-ways for the address-cards below the platen, means for moving the cards forward in said ways, a collecting-receiver in line with the guide-ways, and mechanism for transmitting the cards successively from the guide-ways into the collecting-receiver, substantially as set forth.

5. The combination, with a platen, of endless conveyer-aprons at each side of the platen, guide-ways for the address-cards below the platen, a pneumatic feed-mechanism for conveying the envelopes or wrappers to the aprons, an oscillating stop-gage, and means for intermittently-actuating the stop-gage so as to permit the forward feeding of the printed envelopes or wrappers, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

CHARLES A. BELKNAP.

Witnesses:

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K. R. BRENNAN.