No. 714,790. Patented Dec. 2, 1902.

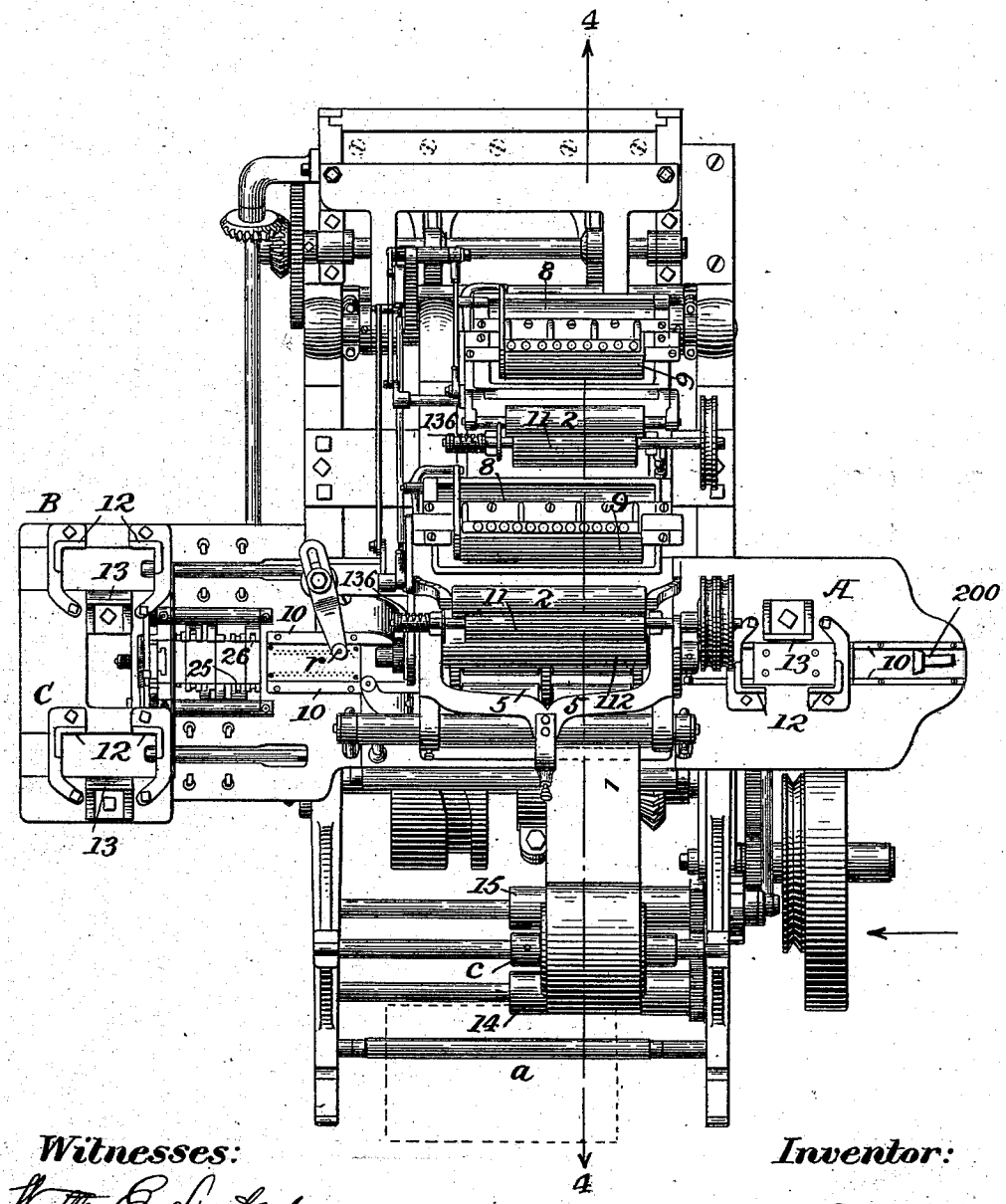
S. ELLIOTT.

ADDRESSING MACHINE.

(Application filed June 7, 1901.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1.



Witnesses:

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H. C. Sinnison

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No. 714,790. Patented Dec. 2, 1902.

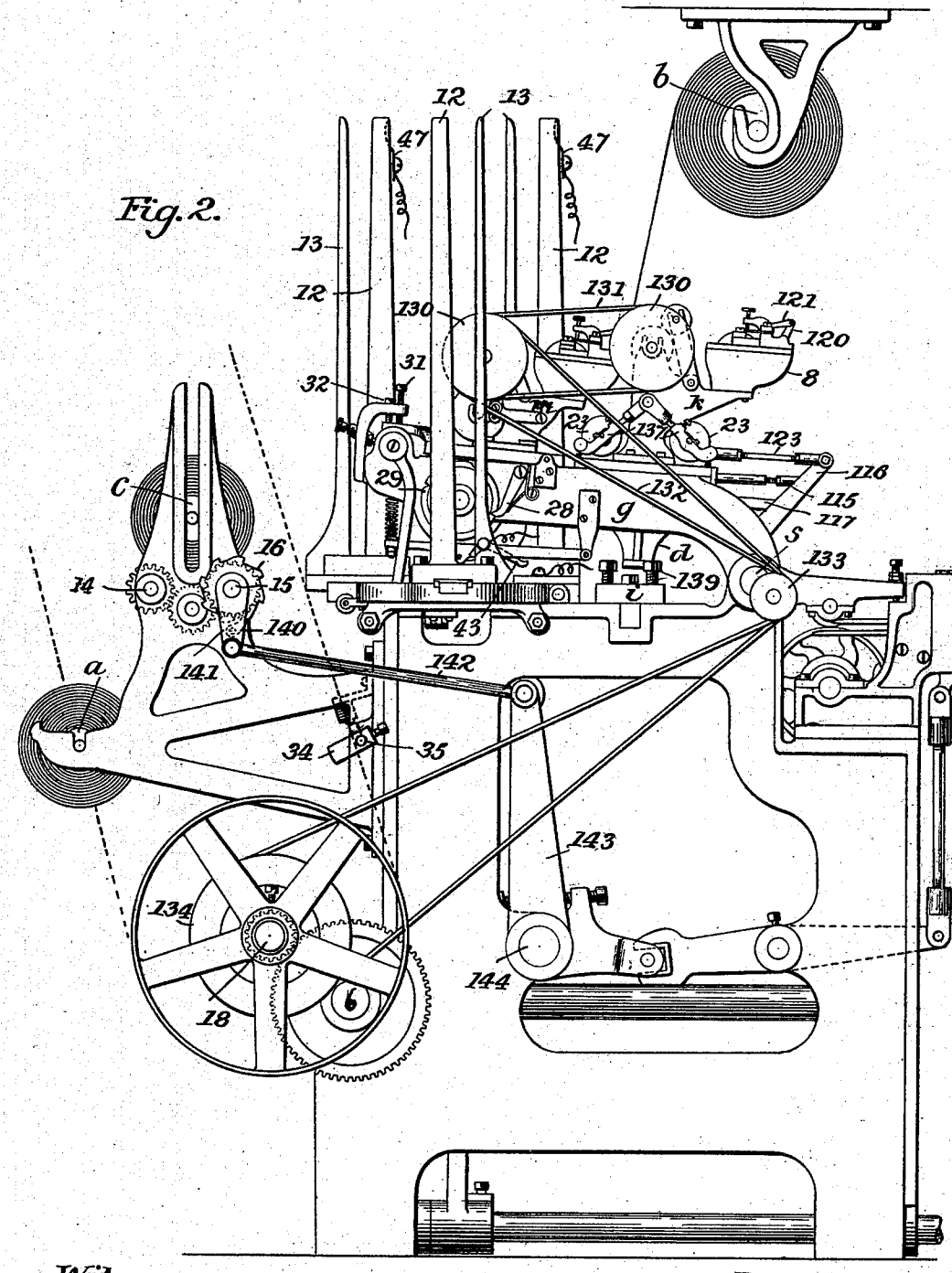
S. ELLIOTT.

ADDRESSING MACHINE.

(Application filed June 7, 1901.)

(No Model.) 4 Sheets—Sheet 2.

Fig. 2.



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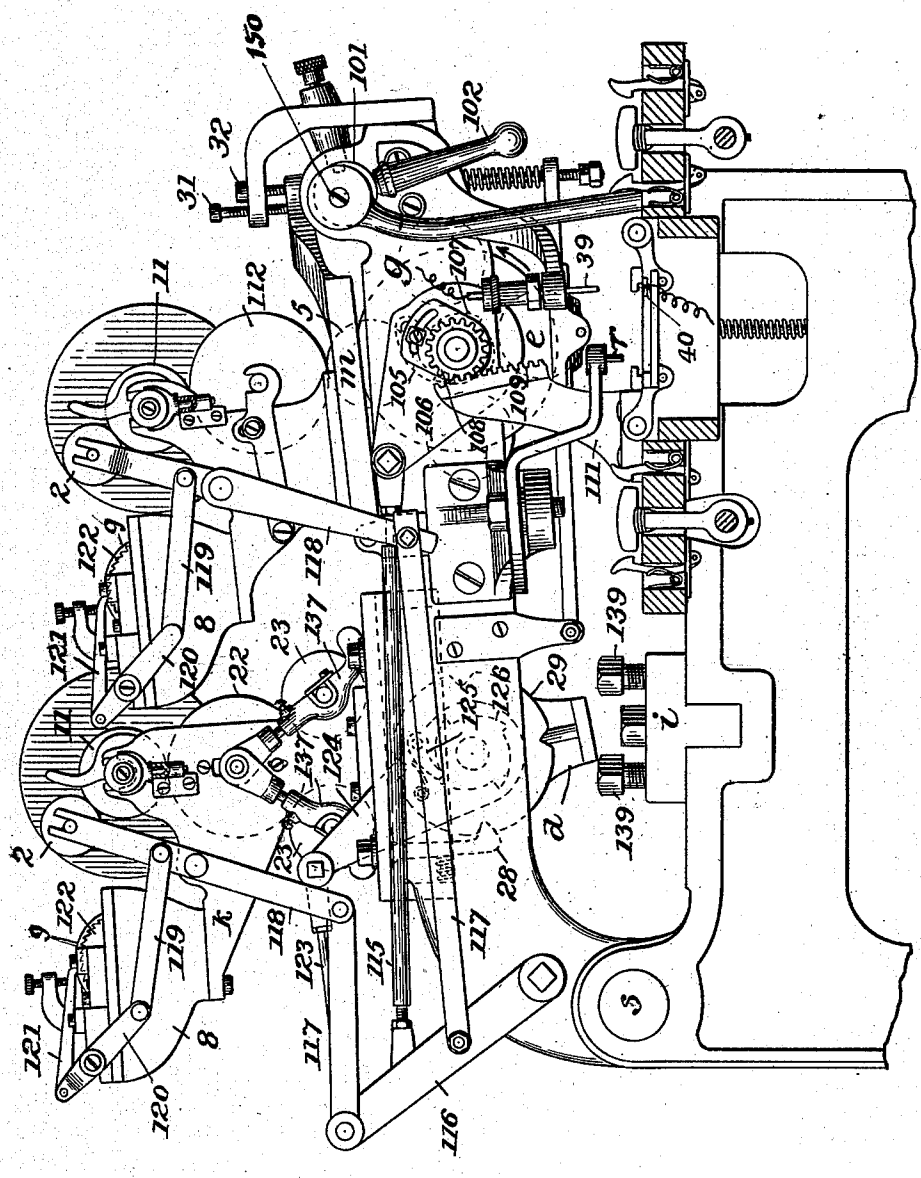
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(Application filed June 7, 1901.)

(No Model.) 4 Sheets—Sheet 3.

Fig. 3.



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S. ELLIOTT.

ADDRESSING MACHINE.

(Application filed June 7, 1901.)

(No Model.) 4 Sheets—Sheet 4.

Fig. 6.

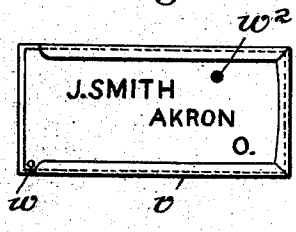
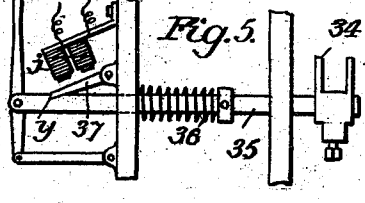


Fig. 4.

Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

STERLING ELLIOTT, OF BOSTON, MASSACHUSETTS.

ADDRESSING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 714,790, dated December 2, 1902.

Application filed June 7, 1901. Serial No. 63,651. (No model.)

To all whom it may concern:

Be it known that I, STERLING ELLIOTT, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Addressing-Machines, of which the following is a specification.

My invention relates to that class of addressing-machines in which a wrapper-strip is printed from a series of printing-plates fed automatically into and out of position; and my invention consists of means whereby to insure the proper presentation of the printing-plates during the operation of the machine, to secure a record-strip exactly coinciding with the series of wrappers printed, to print business-cards, &c., as well as names and addresses, and to generally improve the construction of apparatus of the class specified; and to this end the apparatus is constructed as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of an apparatus embodying my improvements; Fig. 2, a side elevation looking in the direction of the arrow, Fig. 1; Fig. 3, a side elevation looking in the opposite direction, but in part section, with some parts omitted; Fig. 4, a central longitudinal sectional elevation on the line 4 4, Fig. 1; Fig. 5, a detached view showing part of the automatic stopping apparatus, and Fig. 6 a plan of one of the stencil-printing plates.

The frame of the machine is suitably constructed to support the operating parts hereinafter described and is provided with bearings for a roller *a*, Fig. 2, on which is wound the strip of paper which is to be printed and then severed into wrapper-sheets, and a roller *c*, upon which is wound another strip of paper received from a roller *b*, supported by a suitable hanger, on which strip is printed in close order a duplicate series of addresses corresponding to those printed on the wrapper-strip, and a driving-shaft 18 through suitable connections imparts movement to the various parts of the machine.

The frame of the machine supports a suitable table, upon which are erected three series of standards 12 13, constituting holders for stencils or printing-plates of any suitable character, hereinafter termed "stencils" or "printing-plates," the holder A at the right, Fig. 1, having the stencils therein fed from the bottom in succession by a reciprocating pusher 200, one following and pushing those in advance between the guides 10 10 to a position to be printed, then to a position above swinging arms 25 26, which carry the stencils into position to be pushed into the bottom of one or the other of the holders B C at the left, according as the stencil or printing-plate is to be reused or discarded. As the pusher 200 moves back the line of plates is at rest and some may be printed from and others shifted to the terminal holders. These general features are set forth and claimed in my application Serial No. 59,829.

The movement of the printing-plates between the guides 10 10 is an intermittent one, being arrested during the time that the printing takes place, which printing is effected by one printing-plate upon the wrapper-strip passing from the roller *a* and carried through the machine toward the right, Fig. 4, while the adjacent printing-plate (either beyond or in advance of the other) prints upon the record-strip conducted from the roller *b* to the roller *c* in an opposite direction. After each printing the wrapper-strip is fed the length of a wrapper, which is afterward severed from the strip by cutters 70, Fig. 4, while the record-strip after each printing is fed only sufficiently to afford room for the successive prints. Thus by a single operation of the printing devices the wrappers are printed from the successive plates, and the same plates in another position print the same names and addresses upon the record-strip, so that an absolute duplicate record of the wrapper-prints is preserved for future reference with no possibility of mistake.

In many instances it is desirable to print a business-card upon each wrapper, and I therefore provide a printing-head *d* and means for imprinting therefrom upon the wrappers in succession as they pass through the machine.

Preferably the printing-plates consist of stencils, so that the printing-head coacting therewith carries means for inking the paper through the stencils. As shown, the printing-head *e* consists of a shaft 3, to which are secured disks 4, carrying between them a series of printing-rolls 5, the head being turned step by step, so that the printing-rolls are brought in succession above the stencil car-

ried along the channel between the guides 10 10, and as one printing-roll is brought into printing action with the stencil another printing-roll is brought into coaction with the devices for applying the ink thereto, including an inking-cylinder 112, which rotates in contact with and turns each roll 5.

The head *e* is carried by the printing-frame *g*, pivoted to the main frame by a rock-shaft *s* and also carrying the head *d*, which, as shown, supports four similar printing-plates successively brought above a platen *i*, so that when one printing-plate is acting upon the strip carried across the platen the other will be in position to receive ink from inking-rollers 23 23, which are inked by contact with an inking-cylinder 22.

Each cylinder 112 and 22 receives ink from a driving-roller 11, and the latter receives ink from a transfer-roller 2, carried in a vibrating frame and alternately making contact with the roller 11 and a supply-roll 9, turning in an ink-well 8.

The printing-frame *g* is reciprocated from a crank-pin or eccentric 30 upon a shaft 6, driven from the driving-shaft 18, the eccentric strap or pin being connected by a divided and extensible rod 24 with an eccentric-pin 150 upon a shaft 101, Fig. 3, provided with a handle 102, by swinging which the outer end of the printing-frame may be lifted and depressed independent of the position of the eccentric 30, that normally operates the printing-frame. A right and left hand nut 151 receives the threaded ends of the shaft-sections and constitutes the means of varying the length of the shaft.

The printing-head *e* is turned in the direction of the arrow, Fig. 3, by means of pawl 105, dotted lines, Fig. 3, upon a swinging lever 106, engaging a four-toothed ratchet-wheel 107 on one of the disks of the printing-head. The lever 106 is rocked through the medium of a pinion 108 on the lever engaging a curved rack 109 upon a standard 111, supported on the frame of the machine, the pinion turning back and forth as the printing-head rises and falls, bringing the pawl into engagement with the successive teeth of the ratchet 107. The vibrating lever 106 is made the means of swinging the frames of the transfer-rollers 2 2 and of turning the supply-rollers 9. Thus the lever 106 is connected by a rod 115 to a pivoted arm 116, to which are connected two links 117 117, each jointed to the lower end of a frame 118, carrying one of the transfer-rolls 2. Each frame 118 is connected by a link 119 with a lever 120, carrying a pawl 121, which engages a ratchet-wheel 122 on the end of the adjacent supply-roller 9. The vibrating lever 106 is also the means of rotating the printing-head *d*, a connecting-rod 123 extending from the arm 116 to a lever 124, which carries a pawl 125, dotted lines, that engages a four-toothed ratchet-wheel 126 at the side of the head *d* and turns the latter. Each of the printing-heads is locked frictionally in place by means of a spring-actuated dog 28, having a beveled end adapted to enter notches in a disk 29, carried by the adjacent head, the end of the dog entering one of the notches when the head has turned a quarter-revolution. Each of the inking-cylinders 22 and 112 may have a longitudinal reciprocating movement imparted to it by means of the usual reversing-screw 136, Fig. 1.

Each of the printing-rolls 5 of the head *e* may be of such a length as to extend across both printing-plates or stencils; but as in some instances the frames of the plates or stencils would interfere with the pressure of the rolls against the stencil-sheets each roll is preferably in two sections, as shown in the plan, Fig. 1.

The inking-rolls 11 are upon shafts provided at their ends with grooved pulleys 130, Fig. 2, around which passes a belt 131, and one of the pulleys 130 has a double groove to also receive a belt 132, which passes around guide-pulleys 133 and around a driving-pulley 134 on the shaft 18, Fig. 2, the inking-rolls being thus positively driven.

The rolls which ink the printing-head *d* are suspended by links 137 137 from the shaft of the cylinder 22, Figs. 2 and 3, the said links swinging freely, so as to cause the rolls 23 to float over the plates carried by the head *d*, and in order to secure a proper adjustment each link 137 is longitudinally extensible, and the shaft of the cylinder 22 passes through slots in the frame *k*, that supports the inking devices coöperating with the printing-head *d*. The platen *i* is adjustable by means of screws 139.

The frame *m*, supporting the inking devices coöperating with the printing-head *e*, is pivoted to the printing-frame *g* at one end of the frame *m* and is adjustable by means of screws 31 32.

In order to insure an even feed of the wrapper-strip, a swinging frame *f*, hanging normally in substantially a vertical position, Fig. 4, carries a cross-bar 1, which bears on the paper between the roller *a* and the point where the wrapper-strip passes onto the table, the said frame yielding when the paper is suddenly drawn forward and then descending and by its weight turning the roll of paper on the roller *a* during the time that the feeding of the strip ceases. It will be seen that the frame *f* assumes substantially a vertical position after it has drawn off the proper amount of paper from the roll, and at this time it does not bear on the strip so as to tend to turn the roll, and that the drawing action of the frame decreases gradually as the frame assumes a vertical position. It follows from the fact that the frame *f* gradually assumes a final position almost parallel with the paper that there is no sudden and abrupt pull on the strip as the frame reaches its final position tending to cause the roll to rotate by momentum after the direct action

of the frame ceases. The strip from the roller *b* is fed by means of a feed-roll 15, upon which and on a bearing-roll 14 the roll of paper on the roller *c* rests, the roller *c* being of sufficient weight to insure sufficient frictional contact for the roll of paper on the roller *c* to be turned by the rotation of the rolls 14 and 15. A ratchet 16 on the shaft of the roll 15, Fig. 2, is engaged by a pawl 140, carried by a swinging arm 141, connected by a rod 142 to an arm 143 upon a rock-shaft 144, to which rocking movement is imparted from a cam 145 on the shaft 6, and the roller 14 is geared with the shaft of the roller 15 through the medium of suitable gears, as indicated in Fig. 2.

It is of course important that the operator should have notice if a printing-plate should be carried into printing position inverted or wrong end foremost, or if the plate should fail to be presented, or the hopper or holder should be exhausted, and also if either of the hoppers or holders should be full of plates, or if the wrapping-paper should be torn. In order that printing operations may not be carried on in either of these events, means are provided whereby in any such case the movement of the machine is arrested. To this end the usual shipper-bar 35, Figs. 2 and 5, with its shipper-fork 34 for engaging the belt passing to the driving or idler wheel, is acted on by a spring 36, which tends to throw the fork opposite the idler-wheel, while a pawl 37, pivoted to the frame, engages a shoulder *y* on the shipper-bar when the latter is in position with the fork opposite the driving-wheel. Combined with the detent or pawl 37 are any suitable appliances whereby the pawl is lifted and the motion of the machine arrested in any of the events referred to. Preferably electrical appliances are made use of, and, as shown, an electromagnet or motor *j* is in circuit with a battery, with a pin 39, Fig. 3, insulated from its support on the printing-frame *g*, and with a metallic terminal 40, arranged to make contact with the pin when the printing-frame descends to thus complete the circuit. The terminal 40 may be the metallic table or the metallic frame of one of the stencils if the latter is out of place or wrongly presented. Normally the pin 39 on the descent of the printing-frame will make contact with the paper portion of the stencil; but if there is no stencil in place or if the stencil is inverted or not in proper position the circuit will be completed, the magnet *j* will draw out the detent, which acts as an armature, and the machine will be stopped. In Fig. 6 is illustrated one form of stencil and metallic frame, and the pin 39 is arranged to make contact at the point *w*, where a slight change of position of the stencil would insure the contact of the pin and the metallic frame.

Preferably the holders are provided at the top with circuit-makers, as insulated spring-terminals 47, Fig. 4, which make contact with the metallic frame of one of the stencils if a holder should be filled to the top by the addition of stencils at the bottom, while the holder at the right has a lever 43, Fig. 2, which acts as a circuit-maker to complete a circuit when the last of the stencils passes from that holder.

A series of fingers 41, Fig. 4, on and insulated from the frame *f* complete a circuit when they make contact with the bar 1, and the said circuit is broken so long as the paper strip passes unbroken between the fingers and the bar. If, however, the paper is torn, contact is made and the circuit completed and the movement of the machine arrested.

In Fig. 6 I have illustrated the character of plate used, the same consisting of a metallic frame *v*, receiving a sheet provided with raised letters or stenciled letters and with an opening w^2, which coöperates with the pin *r* to put separating devices into action to produce the effects set forth in my Letters Patent No. 676,034, dated June 11, 1901.

Without limiting myself to the precise details of construction shown and described, what I claim is—

1. In an addressing-machine, the combination with printing-plates, and means of taking prints therefrom, of means for feeding a wrapper-strip into position to be printed, a continuous record-strip, and means for feeding it into position to be printed from the said plates, substantially as described.

2. In an addressing-machine, the combination with printing-plates, and means of taking prints therefrom, of means for feeding a wrapper-strip into position to be printed, a continuous record-strip, and means for feeding it into position to be printed from one of the plates as the wrapper-strip is printed from an adjacent plate, substantially as described.

3. The combination with the means for printing from the addressing-plates, of a rotating head carrying a plurality of plates, and inking means arranged to ink one plate as another is brought to printing position, substantially as described.

4. The combination with means for feeding stencils to a sheet to be printed, of a reciprocating frame, a head carried thereby, printing-rolls carried by the head in position to print successively through the stencils, and means for rotating the head intermittently and for inking the printing-rolls, substantially as described.

5. The combination with means for feeding stencils to a sheet to be printed, of a reciprocating frame, a head carried thereby, printing-rolls carried by the head in position to print successively through the stencils, means for rotating the head intermittently and for inking the printing-rolls, and means for locking the head with one roll in printing and another in inking position, substantially as described.

6. The combination with means for feeding

stencils in a line to matter to be printed, of a reciprocating printing-head constructed to print through two adjacent stencils at one time, substantially as described.

7. The combination with means for feeding stencils in a line to matter to be printed, of a reciprocating printing-head constructed to print through two adjacent stencils at one time, and means for feeding independent sheets across the positions of the two stencils thus used for printing, substantially as described.

8. The combination in an addressing-machine, of means for feeding both wrapper and record sheets through the same, means for feeding the printing-plates in line to said sheets and for arresting each plate and printing from the same first upon one and then the other of said sheets, substantially as described.

9. The combination in an addressing-machine, of means for feeding both wrapper and record sheets through the same, means for feeding the printing-plates in line to said sheets and for arresting each plate and printing therefrom first upon one and then the other of said sheets, and means for feeding the record and wrapper sheets to different extents, substantially as described.

10. The combination with the reciprocating frame, of a rotary printing-head, means for feeding a series of stencil-frames in a line beneath the head, and series of printing-rolls carried by the head, each printing-roll being in two sections, substantially as described.

11. The combination in an addressing-machine, of means for feeding and printing from a series of printing-plates stopping means for arresting the operations of the machine, an electric motor for shifting the stopping means, a circuit maker and breaker, and means as the circuit-makers 47 43 for actuating the latter when the printing-plates are improperly presented in the machine, substantially as described.

12. The combination in an addressing-machine, of means for feeding and printing from a series of printing-plates stopping means for arresting the operations of the machine, an electric motor for shifting the stopping means, an electric terminal arranged to make contact with part of the printing-plates, and means whereby the improper presentation of the plates causes the electric terminal to complete the circuit to actuate the stopping devices, substantially as described.

13. The combination with printing-plate holders, and with means for feeding said printing-plates, and with a stop device for arresting the motion of the machine, and an electric motor for actuating said stop device, of terminals in circuit with the motor arranged to make contact with the plates when in the holders to complete the circuit to the motor, substantially as described.

14. The combination of the reciprocating frame, head carried thereby and carrying a series of printing-rolls, means for carrying a series of printing-frames below the head, means for turning the head intermittently, and an inking-cylinder, and means for turning the same in contact successively with the printing-rolls, substantially as described.

15. The combination of the reciprocating frame, rotating head carried thereby, printing-rolls carried by the head, means for carrying a series of printing-frames below the head, an inking-cylinder arranged in position for the printing-rolls to make contact therewith, and means for rotating the inking-roll, substantially as described.

16. The combination with the reciprocating frame carrying a printing-head, of a lever pivoted to the head and carrying a pinion, a stationary rack on the main frame engaging the pinion, a supply and intermediate rolls for supplying ink to the printing-head, and connections between the lever and the inking-roll whereby the latter is positively turned, substantially as described.

17. The combination with the reciprocating frame carrying a plurality of printing-heads and ink-rolls and transfer-rolls, of a lever pivoted to the frame and carrying a pinion, a stationary rack engaging the pinion, vibrating frames carrying the transfer-rolls, and connections between the lever and the transfer-roll frames, substantially as described.

18. The combination with the reciprocating frame carrying a plurality of printing-heads, ink-rolls provided with feed-rolls, and transfer-rolls, of a lever pivoted to the frame and carrying a pinion, a stationary rack engaging the pinion, vibrating frames carrying the transfer-rolls, pawls and ratchets for actuating the feed-rolls, and connections between the lever and the transfer-roll frames, and between the transfer-roll frames and the said pawls, substantially as described.

19. The combination of the printing-frame, printing-heads, and inking devices, a stationary rack-bar on the frame, a pinion carried by the frame, and connections whereby the heads and rolls are operated from said pinion, substantially as described.

20. The combination with the paper-roll and devices for intermittently drawing onward the strip of paper, of an intermediate swinging frame normally hanging in substantially a vertical position and bearing at its outer portion on the strip, said frame swinging upwardly when the paper is drawn onward by said devices and returning by gravity to its normal position to draw paper off the roll when the action of the drawing devices ceases, substantially as set forth.

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

STERLING ELLIOTT.

Witnesses:
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FRED. P. HINKEL.