Dec. 25, 1928. 1,696,759

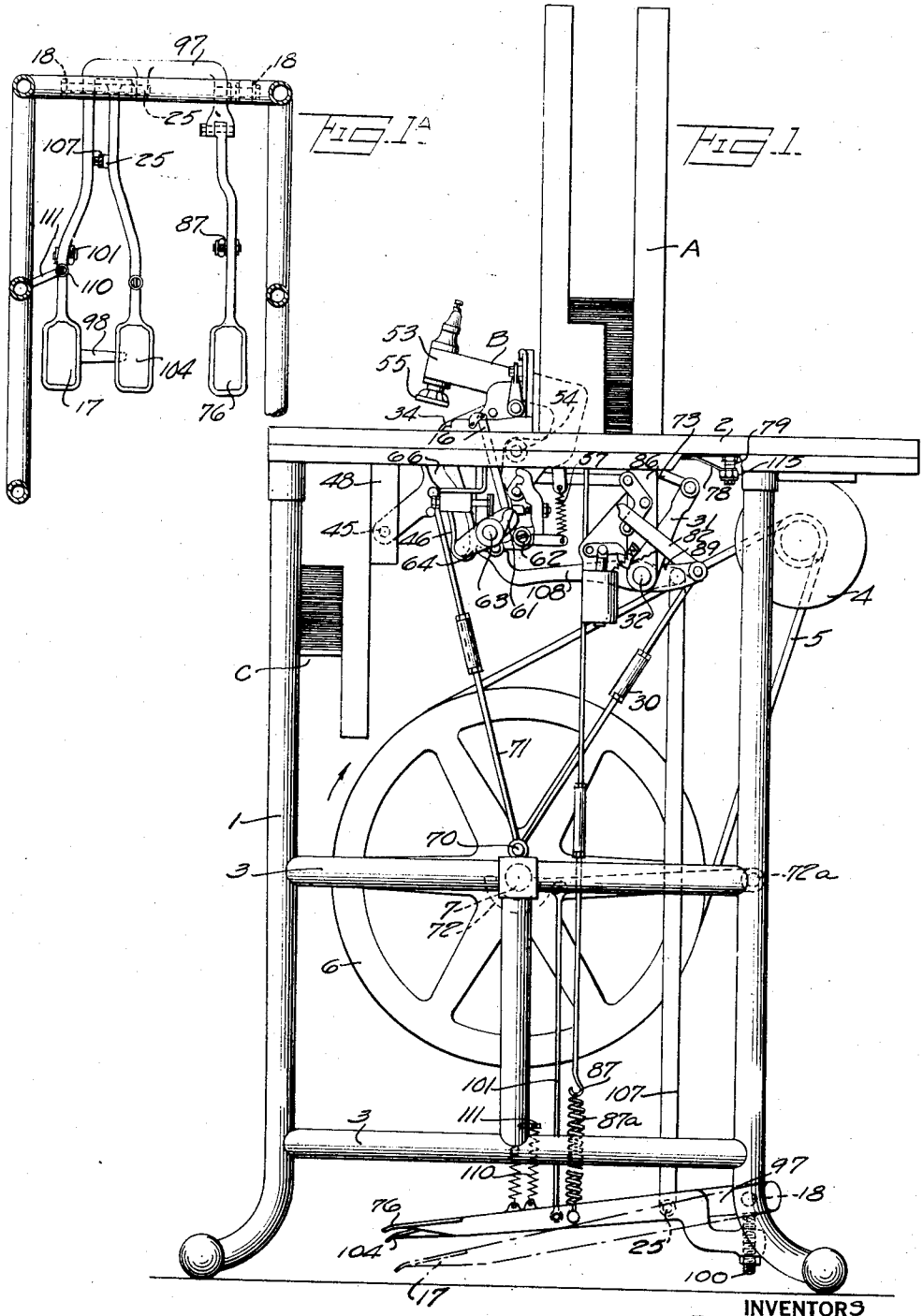
E. A. GEIGER ET AL

AUTOMATIC SELECTIVE ATTACHMENT FOR ADDRESSING MACHINES

Original Filed Aug. 14, 1926 5 Sheets-Sheet 1

FIG. 1A

FIG. 1



INVENTORS
ERWIN A. GEIGER
AUGUST F. SCHRAEGLE
BY HENEY T. JENNINGS
ATTORNEY

Dec. 25, 1928. 1,696,759

E. A. GEIGER ET AL

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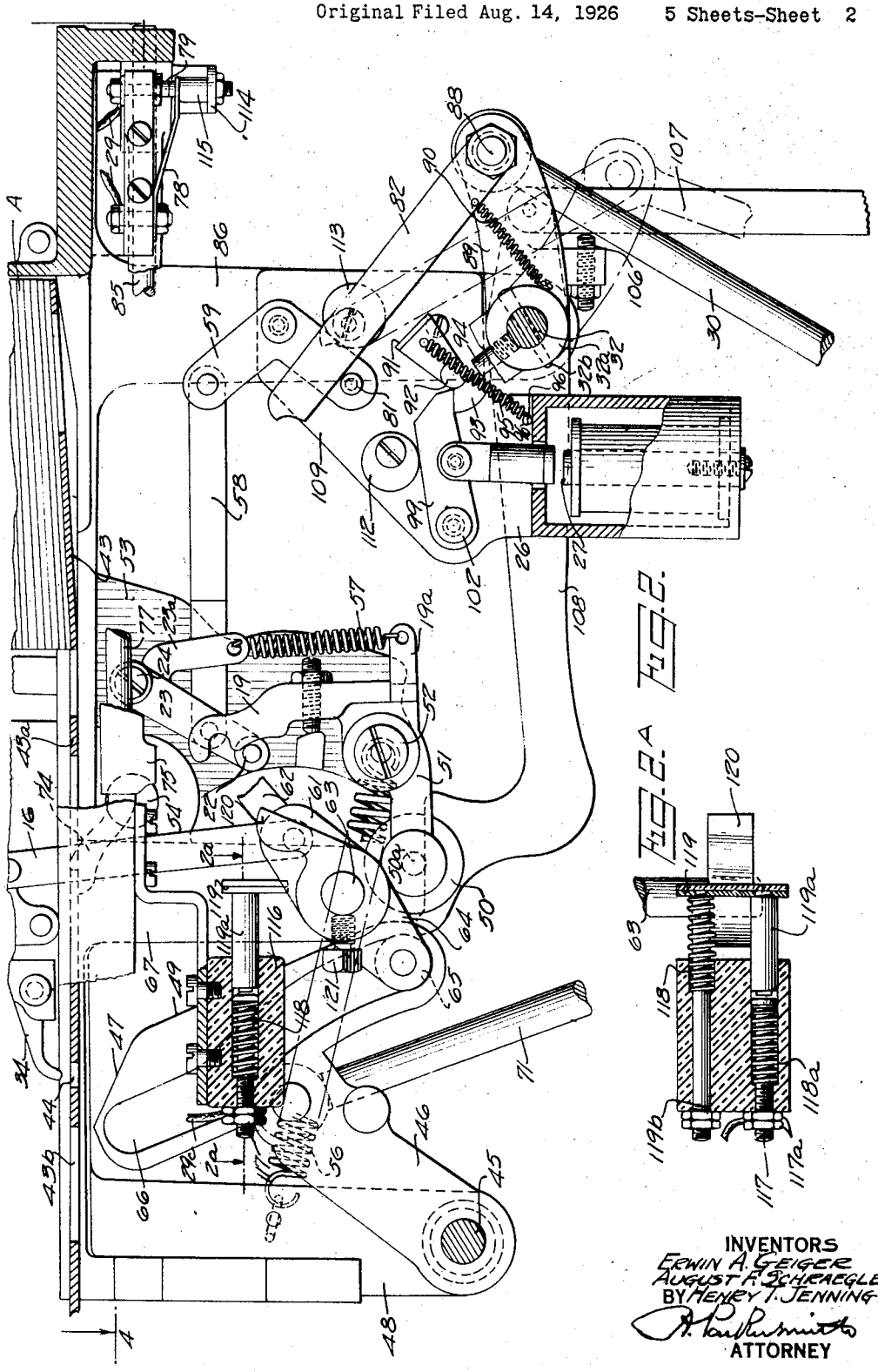


FIG. 2.

FIG. 2A

INVENTORS
ERWIN A. GEIGER
AUGUST A. SCHAEGLE
BY HENRY T. JENNINGS
ATTORNEY

Dec. 25, 1928. 1,696,759

E. A. GEIGER ET AL

AUTOMATIC SELECTIVE ATTACHMENT FOR ADDRESSING MACHINES

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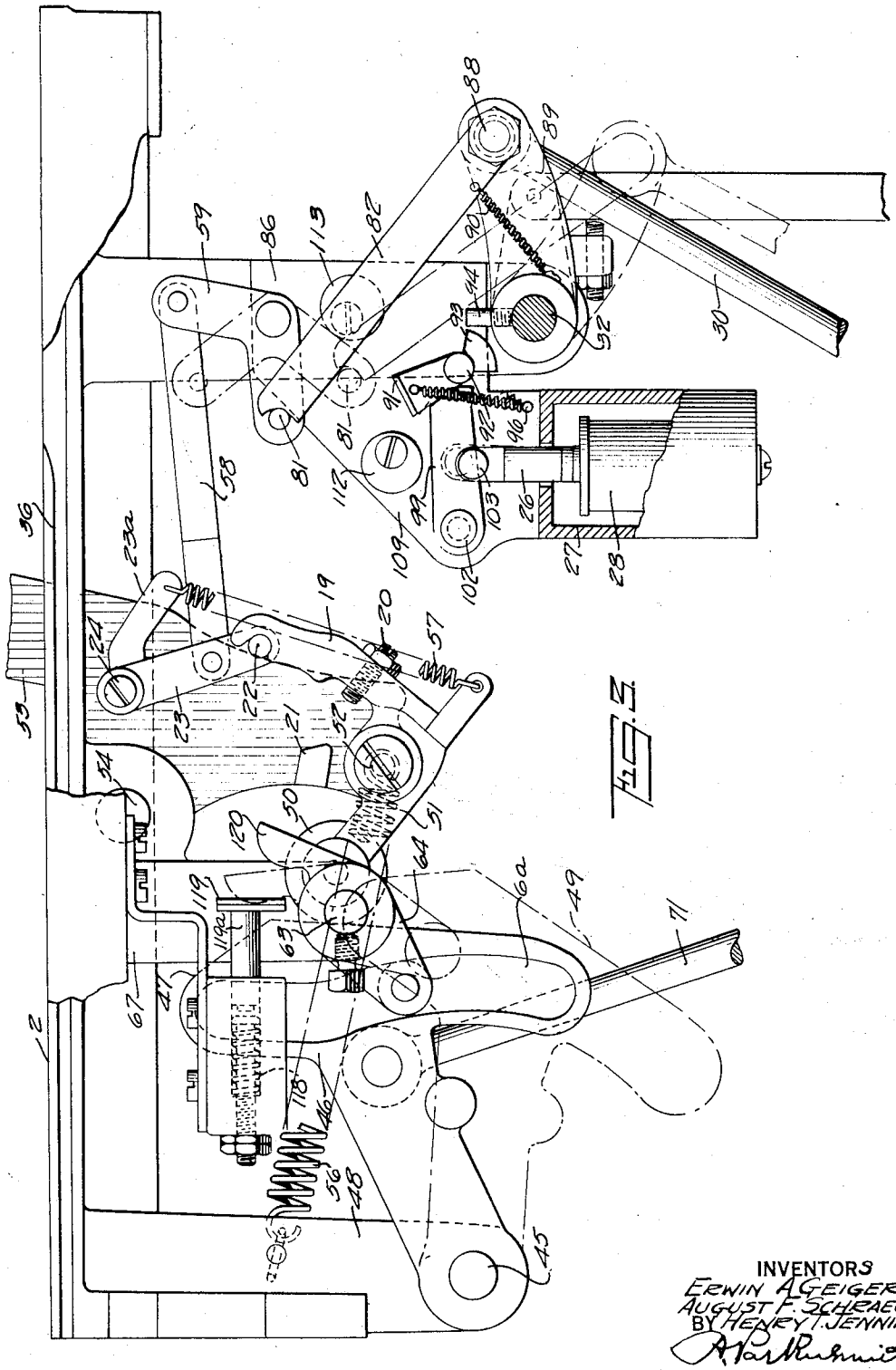


FIG. 3

INVENTORS
ERWIN A. GEIGER
AUGUST F. SCHRAEGLE
BY HENRY T. JENNINGS
ATTORNEY

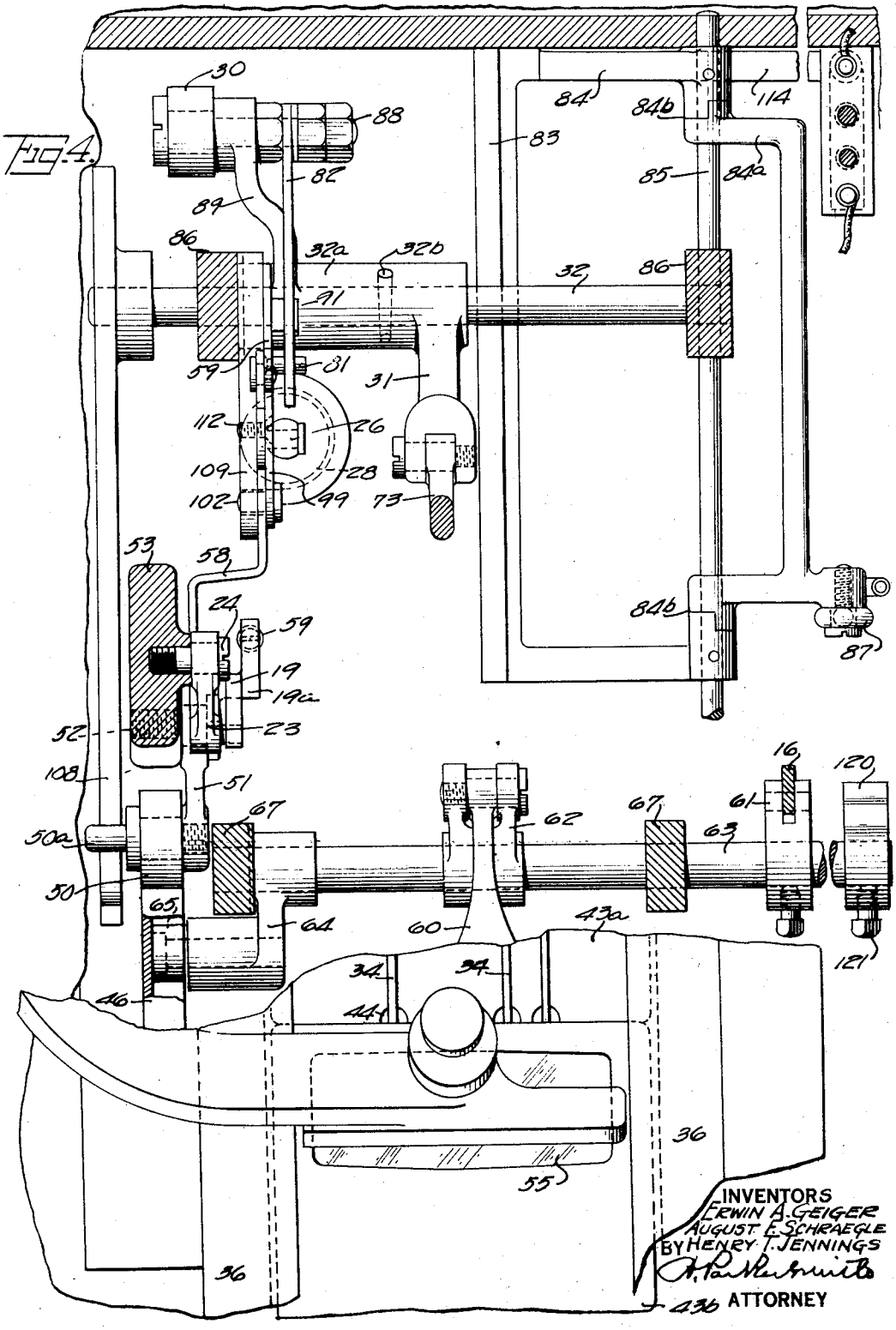
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E. A. GEIGER ET AL

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Fig. 4.



INVENTORS
ERWIN A. GEIGER
AUGUST E. SCHRAEGLE
BY HENRY T. JENNINGS
ATTORNEY

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E. A. GEIGER ET AL

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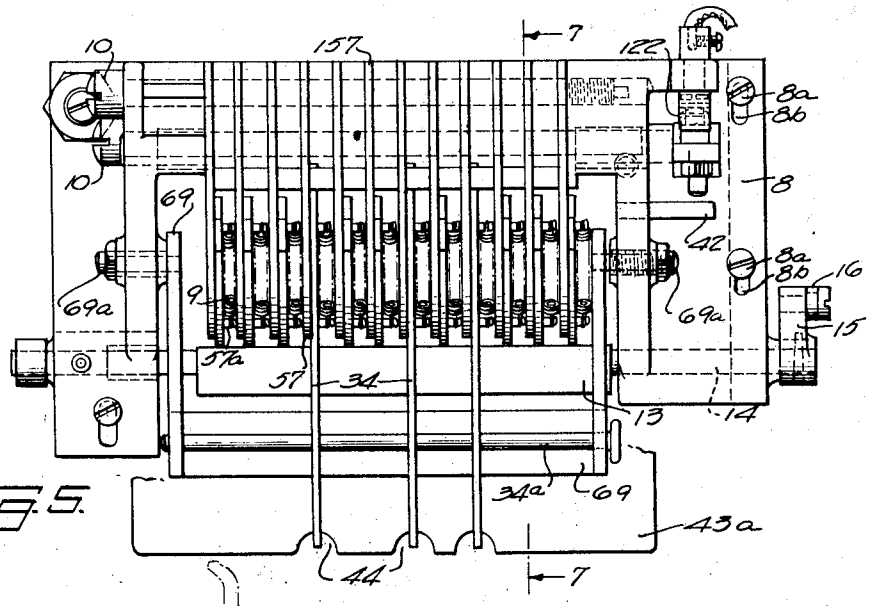


FIG. 5.

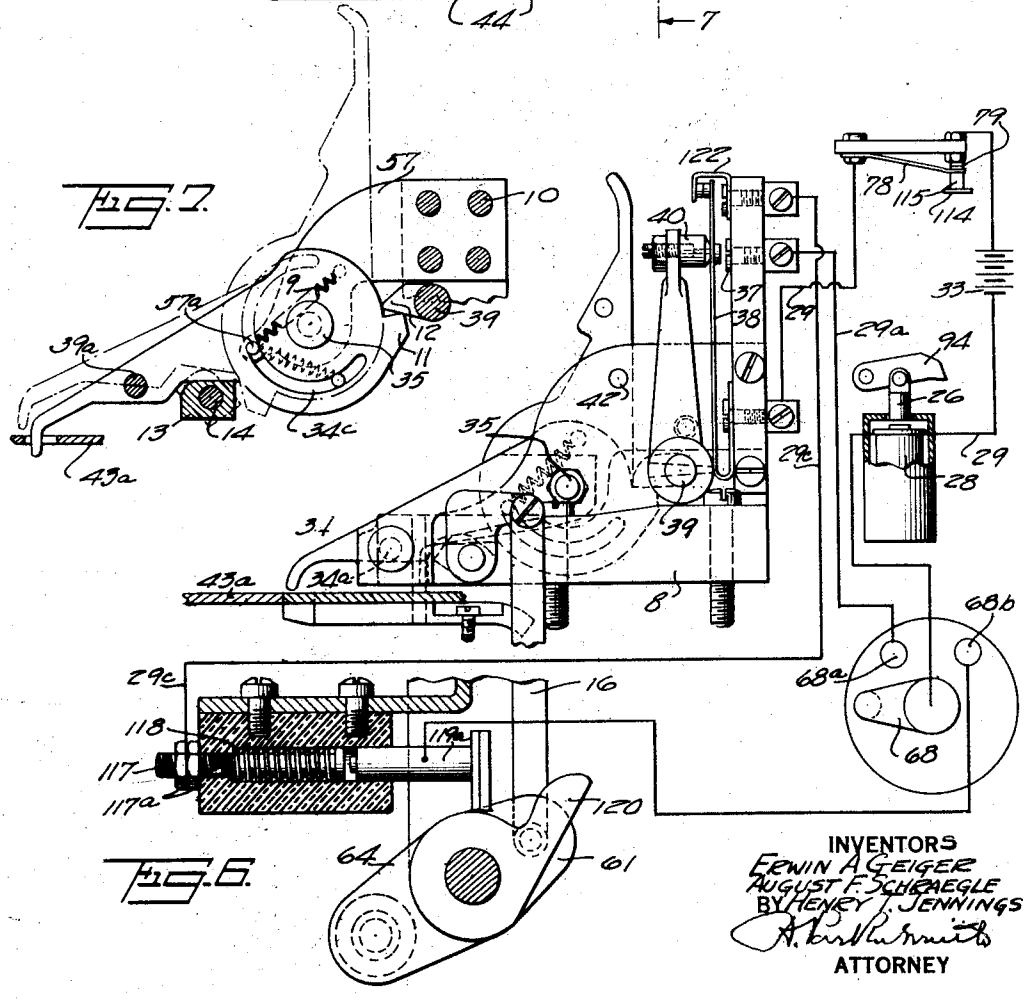


FIG. 7.

FIG. 6.

INVENTORS
ERWIN A. GEIGER
AUGUST F. SCHRAEGLE
BY HENRY J. JENNINGS
ATTORNEY

Patented Dec. 25, 1928. 1,696,759

UNITED STATES PATENT OFFICE.

ERWIN A. GEIGER, OF WESTFIELD, AND AUGUST F. SCHRAEGLE, OF ROSELLE, NEW JERSEY, AND HENRY T. JENNINGS, OF GLENDALE, NEW YORK, ASSIGNORS, BY MESNE ASSIGNMENTS, TO ELLIOTT ADDRESSING MACHINE COMPANY, A CORPORATION OF MASSACHUSETTS.

AUTOMATIC SELECTIVE ATTACHMENT FOR ADDRESSING MACHINES.

Application filed August 14, 1926, Serial No. 129,134. Renewed October 19, 1928.

The invention relates to addressing machines in general, and more particularly to that type in which a series of stencil cards form a part of the printing mechanism. It is here illustrated as it would be applied to an addressing machine of the general construction shown in Patent No. 1,256,509, granted to E. D. Belknap February 19, 1918, which has a printing mechanism and a card feeding mechanism both under control of the operator for printing from any one stencil card and discharging it, or for discharging it without printing from it, or for holding it in printing position while several printing operations are performed with it.

The object of the present invention is to provide an attachment for such machine which will automatically skip or print when a card having predetermined classification features arrives in printing position while the cards of all other classes are being used for printing, or are being fed through without printing from them. That is to say, an attachment embodying our present invention may be set to print from all cards fed through the machine except those provided with certain notches, which latter cards will be skipped, or it may be set to skip all cards, except those of the predetermined class or classes, which latter are automatically used for printing. All the operator has to do is to keep the power connected to the machine.

As described in the above noted Patent No. 1,256,509, machines of the type to which our invention is here shown as applied normally operate through only one cycle and then automatically stop, unless the operator holds down a pedal which leaves the driving clutch in gear. There are three such pedals in machines of this type. Pressing down any one of these will start the machine, but, on its release, causes the machine to stop at the end of the current cycle. One pedal, when down, starts the machine printing from all cards fed from the magazine. A second pedal, when pressed down, causes the machine to skip all cards, and a third pedal (in the machine as marketed), while held down, causes the machine to "repeat" or print a series of impressions with one stencil card. In the preferred form of our present invention as applied to this Belknap machine all these pedal controls are left on the machine, but the "skip" pedal is not used. The "print" pedal and the "repeat" pedal are operated as usual. So long as the operator holds the "print" pedal down, the power will be connected and the machine will run on, printing from, or skipping, each card according to its classification features. So long as the operator holds the "repeat" pedal down, the machine will go on printing again and again from the particular card then in printing position. Our present invention, therefore, differs from that disclosed in our application No. 114,415, filed June 8, 1926, in that in said prior application the automatic selective device (which is substantially the same in both cases) acts to stop the machine, thus giving the operator notice of the fact that a card of the predetermined classification has arrived in printing position, and an opportunity to either print from it or skip it, while with our present invention the machine makes the decision itself and carries it into operation, without stopping.

In substance, the device for accomplishing the above described result consists in a hit-or-miss connection between the skip mechanism and some constantly moving element of the machine, which connection is controlled by the selective unit. When the card moving into printing position is one that should be used for printing, the above connection "misses" and the cam roller which operates the impression mechanism is left in operative position, and consequently the machine prints from the card, but when the selective unit is actuated by the passage of a card which is in the "skip" classification, the said connection "hits", the cam roller is moved out of operative position, and the impression mechanism is disconnected, so that no printing takes place and the card is merely ejected in due course.

The best form of apparatus at present known to us embodying our invention is illustrated in the accompanying five sheets of drawings in which,

Fig. 1 is a side elevation of one form of machine to which the invention has been applied.

Fig. 1[a] is a detail plan view of the pedal system.

Fig. 2 is a detail of the "hit-or-miss" mechanism in "missing" position, parts being

broken away and others shown in section, and in positions assumed at the end of a card feeding operation in full lines.

Fig. 2ª is a detail horizontal section of one of the circuit breakers taken on line 2ª—2ª of Fig. 2.

Fig. 3 is a similar view showing the parts in "hit" position, the broken lines showing them at the beginning of a card feeding operation, half a machine cycle later, in both Figs. 2 and 3.

Fig. 4 is a partial plan and partial horizontal section on different planes which are approximately indicated by line 4—4 of Fig. 2.

Fig. 5 is a detail plan view of the selective unit.

Fig. 6 is an end elevation of the mechanism illustrated in plan in Fig. 5, with parts shown in section, or broken away, and with the electric circuit and circuit controllers shown in diagrammatic assembly, and,

Fig. 7 is a detail section on a vertical plane indicated by line 7—7 of Fig. 5 with parts broken away.

Throughout the drawings like reference characters indicate like parts. The general structure and mode of operation of the addressing machine, which is of standard form made under the above mentioned Belknap patent, will first be described in part, and then the structure of the attachment thereto, constituting the present invention, will be explained, together with the manner in which it automatically controls the operation of the said machine.

A is a magazine of address-bearing stencil cards which are fed to an inking and impression mechanism, generally represented by B, along grooved card guides 36 extending from the bottom of magazine A, through mechanism B, to a receiving magazine C. The general structure of the machine comprises the uprights 1, 1, cross bars, such as 3, 3, and table 2. Motive power is transmitted from electric motor 4, through belt 5 or equivalent gearing to grooved pulley 6 journaled on stud shaft 7. This pulley is thereby rotated in a clockwise direction (looking at Fig. 1) and, through a one-revolution clutch (not shown in detail but identical with that illustrated and described in our above noted prior application), rotates main crank 70. This crank, through connecting rod 30, bell crank 89—32ª—31, (fastened on shaft 32 by pin 32ᵇ) and link 73, reciprocates card feeding claws 74, which, on their forward travel, to the left hand, feed out the bottom card 43 from magazine A along guides 36 toward inking and impression mechanism B. Said crank 70, through connecting rod 71, also reciprocates T-cam 46, which operates said inking and impression mechanism. This cam 46, pivoted on shaft 45 which is held in housing 48, has a cam slot 66 which engages roller 65 mounted on arm 64, fast on shaft 63, journaled in housings 67, 67. Another crank arm 62 on said shaft is pivotally connected to yoke 60, which operates an inking roller (not shown) along the under side of card 43ᵇ which is in printing position, (Figs. 2 and 4). No printing operation results, however, unless an article (such as an envelope, wrapper or catalogue) has been first placed by the operator over said card 43ᵇ, and the platen head 55 (Figs. 1 and 4) has been swung down upon it.

T-cam 46 also operates said platen head 55, unless the operating mechanism therefor has been disconnected, as will be now described. Platen 55, pivoted on the main frame at 54, is normally held up in the position shown in Fig. 1 by spring 56 shown in Fig. 2, connected to its depending arm 53. On this depending arm of said platen, however, lever 51, carrying roller 50, is pivoted at 52 and is normally held down with roller 50 in operative position by spring 57 so that said roller 50 then engages the external face 49—47 on said T-cam 46 as the said cam vibrates up and down on pivot 45. Consequently, on each downward movement of 46, platen head 55 is first swung down by cam face 49 upon the article to be printed (while the concentric portion of cam slot 66 is traveling over roller 65) and then later held in this operative position by portion 47 of said cam face, while the upper, non-concentric portion of cam slot 66 drives the ink roller up and along under the card 43ᵇ so that ink is forced through the stenciled portion of the card onto the envelope or other article then held down against the card by said platen head. During the upward travel of T-cam 46 the above described operations are reversed and card 43ᵇ is shoved out into a receiving magazine C (after platen 55 has been raised), by the forward movement of the next card 43ª, which is then shoved into printing position by the advance of card 43, which latter is being pulled out of magazine A by the card feed claws 74.

The timing of the card feed and inking impression operations, which permits the above stated sequence of operations, results from the differing angularities of the connecting rods 71 and 30 with reference to their common crank 70, and from the fact that the amplitude of motion of the card feed claws 74 is greater than that dimension of the cards 43 which is parallel to the line of feed as indicated in Fig. 2. Generally speaking the ink roller is coming back to its position of rest while the card feed claws are going forward to feed out a card, but the card feed lags behind the T-cam 46 by an amount represented generally by the angle between these two connecting rods, and, in addition to this, when the claws 74 do begin to feed out card 43 from the bottom of magazine A said card moves some distance before striking the next

card 43[a] ahead of it, and, through said card 43[a], beginning to eject card 43[b] from printing position. By that time roller 50 has run off section 47 of the cam face on 46 and is on section 49 of said face, so that platen head 55 has begun to lift and card 43 is free to move.

The main driving clutch, not shown, is normally thrown out of engagement at the end of each complete revolution by a cam-shaped throwout member 72 pivoted at 72[a] at the back of the main frame as shown in Fig. 1, and, when so thrown out, leaves the parts in the position of rest shown in Fig. 1, with cam member 46 and platen 55 raised, and with a card 43[b] in printing position ready for the next cycle. If any one of the pedals, "print" pedal 17, "skip" pedal 104, or "repeat" pedal 76, is held down, the clutch is thrown into engagement and the machine is started and continued in operation as long as any pedal is held down. This is because pedal 17 is connected to throw-out member 72, and because the depression of either the "skip" or "repeat" pedal also depresses 17, through connections hereinafter described.

The skip mechanism by which the operator can disable the printing mechanism by disconnecting platen 55 from the driving mechanism, while permitting the card feeding action to proceed, is operated by pedal 104, which oscillates skip lever 108, which is loosely pivoted on shaft 32; such motion being transmitted by link 107 pivoted to pedal 104 at 25 (see Figs. 1 and 1[a]). The free end of lever 108 is located under the pivot pin of cam roller 50 (see Fig. 4), and, when raised by depressing pedal 104, moves said cam roller upward on its swinging support 51 away from, and out of engagement with, T-cam 46, so that vibration of said cam is not transmitted to platen head 55, and the latter remains at rest in its uppermost position. Consequently the inking roller then reciprocates idly under the stencil cards as they come into printing position one after another and no ink is forced through them and no printing is done, even if an envelope or sheet of paper is held by the operator in printing position, because platen 55 does not move down to press such envelope against the stencil card beneath it. 106 is an adjustable stop carried on skip lever 108 and engaging link 107 to limit the upward movement of 107 (see Fig. 2) and consequently also the upward movement of skip pedal 104.

Pedal 17 is pivoted on the main frame at 18, and connected by link 101 to clutch throwout cam 72. This pedal-and-lever system is held up by spring 110 anchored at 111, and attached to pedal 17, so that cam 72 is in operative position to throw out the main driving clutch at the end of the current cycle of machine operation unless the operator presses down one of the pedals 17, 104 or 76. Pedal 104 overhangs a lug 98 laterally projecting from pedal 17 so that downward motion of 104 also moves pedal 17 down. Pedal 76 is pivoted to yoke 97 which is rigid with pedal 17 and when pressed down vibrates said yoke through action of set screw 100. Any downward movement of pedal 17 produced by any cause pulls cam 72 out of engagement with the driving clutch and said clutch thereupon goes into mesh and starts the machine—all as explained in the Belknap patent and in our prior application, both hereinbefore referred to.

The above described mechanism therefore permits the operator to run the machine in the manner described in the Belknap patent; i. e. by holding down pedal 17 he can cause the machine to print from any given card or cards, or by holding down pedal 104 he can cause it to skip any card or cards, or by holding down pedal 76 he can cause it to print as often as desired from one and the same card. The present invention, as before stated, consists in an added attachment which, when put in operation, will automatically select the cards which are to be either skipped or used for printing. This attachment operates directly on the pivoted lever 51 which carries cam roller 50, the pedal 104 and lever 108 then not being used and the machine being started or stopped solely by manipulation of the "print" pedal 17. This attachment comprises the following mechanism:

Referring to Figs. 2, 3 and 4, the rear end of lever 51 is provided with an upwardly extending arm 19 which has a hook-shaped upper end adapted to be engaged by a pin 22 on bell crank 23—23[a] when the latter is given a partial counter-clockwise rotation on its pivot 24 (carried by depending platen arm 53) by link 58 connecting said bell crank 23—23[a] with another bell crank 59 pivoted on one of the housings 86, 86, in which housings shaft 32 is also journaled. Normally bell crank 23—23[a] is held in the position shown in Fig. 2 by tension spring 57 connected at its upper end to arm 23[a] of this bell crank and at its lower end to the tail piece 19[a] of lever 51—19, and lever 51 is thereby either yieldingly held in its lower position, with cam roller 50 engaging T-cam 46, or permitted to rise and lift said roller out of such engagement by operation of the skip lever 108, as before described, when our present automatic attachment is not in operation. When, however, said attachment is operating bell-crank 59 is thereby given a clockwise partial rotation in opposition to the pull of spring 57 whenever the notched end of hit-or-miss link 82 is permitted to engage pin 81 on the lower arm of bell crank 59 at the beginning of a card feeding movement of claws 74. This results from the fact that the other end of link 82 is pivoted to arm 89 of bell crank 31—89 by pin 88, which also con-

nects link 30 to said arm 89. Consequently, if link 82 engages pin 81 during the forward movement of card feeding claws 74 the pin 22 on bell crank arm 23 is swung against, and pushes to the right, arm 19 on lever 51 and the roller 50 is swung up out of engagement with T-cam 46 (as shown in Fig. 3). This disables the impression mechanism and platen 55 is left at rest in its raised position throughout that cycle of operation. When pin 22 has nested in the hook at the upper end of arm 19, as shown in Fig. 3, it holds roller 50 raised enough to prevent any pressure from cam 42 being transmitted to platen arm 53, even if cam 46 should touch said roller. It also temporarily locks bell crank 23—23ª against return; but when the cam 46 swings down far enough it does touch roller 50, pushing it up further and stretching spring 57 to a greater extent. When roller 50 rides over the apex of cam faces 49—47, arm 19 is thereby swung far enough to the right to free pin 22 and allow spring 57 to contract and swing bell-crank 23—23ª back into its normal position shown in Fig. 2 and also pull bell-crank 59 back into its original position there shown, if the notched end of link 82 has then been lifted up into position to miss pin 81, or is being pulled back into the position shown in broken lines in Fig. 3.

The mechanism here illustrated, for controlling notched link 82 so that it will either hit or miss pin 81 during the forward motion of the card feeding claws 74, may be described as follows: 91 is a swinging trip member pivoted at 92 to the supporting member 109 which is fastened on one of the housings 86. Member 91 is provided at its lower end with a sector-shaped extension 93 adapted to be engaged on one side by the pin 94 (projecting radially from the sleeve 32ª pinned on shaft 32), when the feed claws move forward, and on the other side by the trip latch 99 pivoted at 102 to the member 109 and pulled down by the core 27 of the electro-magnet 28 attracting its armature 26, to which latch 99 is connected. Spring 95, connected at one end to trip member 91 and at the other anchored at 96 to supporting member 109, snaps said swinging member 91 over into either position of adjustment as soon as said spring passes the pivot center 92, of said member. Tension spring 90, attached at one end to link 82 and at the other end to sleeve 32ª, tends to pull said link 82 down so that its notched end will engage pin 81, unless the swinging trip member 91 is in the position shown in Fig. 2.

When trip member 91 is in this last mentioned position link 82 is held out of engagement with pin 81 at the commencement of the card feeding operation and accordingly misses it, as bell crank 89 rises, sliding over it as shown in Fig. 2. Consequently it does not move bell cranks 59 and 23 during that cycle. 112 is an eccentric disc or button angularly adjustable on support member 109 and serving as a stop for the upward movement of trip latch 99, and 113 is a similar stop limiting the counterclockwise rotation of bell crank 59.

The operation of this mechanism is accordingly as follows: Assuming trip member 91 to be in position shown in Fig. 2 when the card feeding stroke of the claw 74 begins, the bell crank arm 89 begins to rise and force link 82 to the left, but this link, being held up in the broken line position shown in Fig. 2, will miss pin 81, with the result that cam roller 50 will be left undisturbed in the operative position shown in Fig. 2 and a printing operation on the card which is in position 43ᵇ will be performed. Trip member 91 will be held in this position by spring 95 indefinitely as long as trip latch 91 remains in the elevated position shown in Fig. 2 and the machine will run on, printing from every card. If, however, during the backward movement of the card feeding claws 74, magnet 28 is energized, attracting armature 26, trip latch 99 will be pulled down into the position shown in Fig. 3, striking the other side of sector-shaped extension 93 of member 91, and thereby swinging it into the position shown in Fig. 3. Consequently, on the beginning of the next card feeding stroke link 82 will be in position to engage pin 81 and will retain that engagement, rotating bell crank 59 into the position shown in full lines in Fig. 3, lifting cam roller 50, thereby disabling the impression apparatus, and permitting the machine to perform one cycle of operations without printing from the card in the position 42ᵇ, i. e. skipping that card. During the latter part of the card feeding stroke pin 94 will engage sector 93 and swing member 91 back into the position shown in Fig. 2, but by that time link 82 has been lifted by the rising crank 89 sufficiently to clear member 91, so that the continued engagement of the former with pin 81 is not disturbed.

It is obvious from the foregoing description that all that is necessary to make the machine automatically selective in its operation as to printing or skipping is the provision of some mechanism for energizing magnet 28 at the proper time. The preferred apparatus for accomplishing this, as herein illustrated, comprises any suitable selector unit such as that described in our prior application Serial No. 114,415, above referred to, and the electric circuits herein illustrated and described.

Referring to Fig. 6, a battery 33 is shown as connected by wire 29 with the coils of the electromagnet 28. This wire at one end connects with the swinging switch member 68 and at the other end with the spring contact 38 of a double acting circuit breaker. The switch 68 is a double throw switch, having two contact buttons one of which, 68ª, is connected

by circuit wire 29[a] to the stationary contact 37 of said circuit breaker. Obviously, when switch 68 is on button 68[a] and spring contact 38 is forced down on 37 a circuit will be completed through the battery and the magnet, trip latch 99 will be pulled down into the position shown in Fig. 3, and the machine will skip, i. e. eject the card from printing position 43[b] without having taken an impression therefrom. If, on the other hand, spring contact 38 is left in its normal position, shown in Fig. 6 so that its upper end bears against hook-shaped stationary contact 122, and switch 68 is swung over onto contact button 68[b], a circuit will be established from 68[b], through the battery and magnet, contact spring 38, and branch circuit 29[c] to contact 117 in a second circuit controller composed of said pin 117 mounted in insulating housing 116 and cooperating with the reciprocating double plunger 119 which is connected by wire 29[b] to button 68[b]. This circuit will be closed momentarily during each cycle of the machine's operation by the forcing of plunger 119 to the left so that its leg 119[a] comes into contact with pin 117 by the action of toe 120 adjustably clamped to shaft 63 by set screw 121. Plunger 119 is normally held out of contact with pin 117 by compression spring 118 surrounding its leg 119[b] and seated in housing 116. Pin 117 is also yieldingly held by spring 118[a] to ensure proper contact with 119. So long, therefore, as spring contact 38 is in normal position and touches hooked stationary contact 122, and switch 68 is on button 68[b], the magnet 28 will be energized once during each cycle of the machine's operation and thus pull down latch 99, swinging trip member 91 in a counterclockwise direction into the position shown in Fig. 3. The movements of the parts are so timed that member 91 is thus swung over by latch 99 before the card feeding operation begins, thereby leaving link 82 in engagement with pin 81, and the subsequent swinging of member 91 to the right by pin 94 does not interfere with the continued engagement of link 82 with pin 81 as before explained. The result is that, while trip member 91 then makes a complete oscillation back and forth during each cycle of the machine operation, the hit-or-miss mechanism remains in engagement and cam roller 50 is swung out of engagement with T-cam 46 during the necessary portion of each cycle, and no printing will be done. That is to say, the machine will skip. Obviously, to cause the machine when thus adjusted to print with certain of the cards it is necessary to hold the circuit open at some other point during the period while plunger leg 119[a] is in contact with pin 117, and this is accomplished by the operation of the selector unit, actuated by some feature of the passing card, which selector unit causes the spring contact 38 to move away from the fixed hook contact 122. When this is done slightly before plunger leg 119[a] makes contact with pin 117 and this circuit opening is maintained during the period of contact between pin 117 and plunger leg 119[a] permitted by the particular then existing adjustment of pin 117, magnet 28 will not be energized, trip member 91 will be left in the position shown in Fig. 2, link 82 will miss pin 81, and the machine will print from, instead of skipping, the card which has operated the selector unit. The position of contact pin 117 can be adjusted by nuts 117[a] to regulate the period of contact with plunger leg 119[a], (see Fig. 2[a]).

The preferred form of selector apparatus for controlling spring contact 38 comprises a series of feeling fingers 34 cooperating with stencil cards having a corresponding series of notches such as are shown at 44, 44, in Figs. 4 and 5. When any one or more of the fingers 34 fall into one or more of the notches of the cards as the latter are fed along the card guides 36 and reach the position 43[a] as shown in Fig. 2, the dropping of any one finger into such a notch moves spring contact 38 from stationary contact 122 to stationary contact 37, producing the operation above described.

There are as many notches 44 as can be conveniently cut in a card and the same number of fingers 34. Each notch may represent a class of cards, and combinations of two or more may represent additional classes Each finger 34 is independently pivoted at 35 on an individual housing 157, all of the housings 157 being rigidly supported upon the main selector housing 8 which is supported over the card guides between the magazine A and the printing mechanism B. The set of individual housings 157 are pinned together and clamped in main housing 8 by long screw bolts 10, 10. Housing 8 is fastened to the guides by screws 8[a] engaging slots 8[b] therein. This permits the housing to be adjusted in position so that fingers 34 will have their lower ends exactly over any notches 44 in the card which is in position 43[a]. Each finger is connected to its housing 157 by a tension spring 9, which is fastened to the finger at one end and to pin 57[a] in the housing at the other. Said pin 57[a] also engages the arc-shaped slot 34[c] in a finger and so serves as a stop to limit the finger movement. When the finger is down in one of the operative positions, as shown in full lines in Figs. 6 and 7, spring 9 tends to pull it into the lowermost of said positions as shown in full lines in Fig. 7. When any particular finger is not in use it is swung up into the vertical position shown in broken lines in Fig. 7 and also in full lines in Fig. 6, and is also held in this vertical position by the same spring 9, as indicated in dotted lines in Fig. 7. Each finger 34 has a rearwardly extending lug 11 which cooperates with a dog 12 on shaft 39, (see Fig. 7) on the outer end of which is mounted the hammer 40 for forcing spring contact strip 38 intermittently against sta-

tionary contact screw 37 and away from hooked contact 122, thereby closing the electrical circuit 29—29ª unless the switch 68 therein is off button 68ª, or opening circuit 29—29ᵇ—29ᶜ—if switch 68 is on button 68ᵇ. 42 is a back stop for hammer 40 preventing it from swinging so far to the left that dogs 12 will turn beyond the zones of motion of lugs 11.

When the machine is at rest, all of the fingers 34 in use are supported in the upper operative position shown in full lines in Fig. 6 and in broken lines in Fig. 7, by means of the oscillating cam bar 13, pivoted at 14 in housing 8 and oscillated by crank 15 connected by link 16 to short crank 65ª on the shaft 63. When, however, the T-cam 46 has been pulled down far enough to begin operating the inking roller by reason of the fact that cam roller 65 has entered the upper portion of cam slot 66, and the platen 55 has been lowered and the printing operation is in progress, the upward motion of the short crank 65ª (coincident with the movement of inking lever 62) oscillates cam bar 13 into the full line position shown in Fig. 7. This permits the finger or fingers in operative position to drop into any notch 44 thereunder as shown in Fig. 7, and to so close electrical circuit 29, 29ª, or to open the branch circuit 29—29ᵇ—29ᶜ as before described, thus energizing magnet 28 and causing it to swing trip member 91 into the position shown in Fig. 3 which disables the impression mechanism and causes the machine to skip the card then in printing position 43ᵇ, or leaving 91 in position shown in Fig. 2 and causing a printing from such card, according as switch 68 is on button 68ª or 68ᵇ. If, however, when any finger in operative position has been allowed to drop by this oscillation of cam bar 13 there is no notch 44 under said finger, it will then rest on the card frame before it has moved far enough to cause its lug 11 to oscillate hammer 40 and move spring contact 38, and the reverse result will follow.

To insure conjoint action of a series of the fingers 34 so that none of them will drop unless all of them register with card notches, the fingers in operation may be tied together by the pin 34ª extending through them and through the swinging yoke 69 which is pivoted at 69ª in housing 8 in line with the pivots 35 of all the fingers. Oscillating cam bar 13 also operates on this yoke and even if only one finger 34 is in working position it may be pinned to the yoke by 34ª.

The apparatus which permits the machine to repeat, i e. print successively a series of copies from one stencil card held in the printing zone, consists essentially of a pedal-controlled mechanism for totally disabling the card feed claws 74 during any desired number of cycles and positively breaking the electric circuit 29 during such period so that, whatever the condition of the selector apparatus, magnet 28 cannot be energized while the repeat pedal 76 is held down. This apparatus is partly shown in Figs. 1, 1ª, 2 and 4, and is essentially the same as described in our prior application hereinbefore mentioned. A "repeat" pedal 76 (shown in Figs. 1 and 1ª), is connected by link 87 and spring 87ª to a claw disabling apparatus such as is illustrated in our prior application, having means under its control for elevating the rear ends of the claws 74 and consequently depressing the claws proper so that they will not engage the bottom card 43 in magazine A, but will reciprocate idly back and forth thereunder, thus leaving the card 43ᵇ in the printing zone undisturbed. Claws 74 are pivoted on carriage 75 sliding on guide rods 77. In Fig. 4 is shown the claw disabling track 83, supported on swinging yoke 84 which is pivoted on shaft 85 mounted in housing 86. Yoke 84 interlocks with a second yoke 84ª at joints 84ᵇ, the outer end of yoke 84ª being pivoted to link 87 (see Fig. 1) which extends down to the repeat pedal 76.

To break the circuit 29, when the repeat pedal is depressed, we employ a third circuit breaker comprising the stationary contact pin 79 and contact spring 78 which tends to drop out of contact with 79 but is normally held up in contact therewith by insulating button 115 carried by spring arm 114 (extending from yoke 84) which is raised when and while the claw disabling track 83 is lowered to permit normal card feeding. When, however, "repeat" pedal 76 is depressed and track 83 is thereby raised, button 115 is lowered and contact 78 is consequently allowed to spring away from 79, thus temporarily breaking circuit 29 at that point.

In using our invention the particular finger or fingers 34 corresponding to the notch 44 or combination of notches 44 in the cards of the class or classes which are to actuate the selector unit are turned down as shown in Figs. 5, 6 and 7. Then switch 68 is placed on button 68ª or 68ᵇ according to whether the intention is to skip the cards bearing these notches, or to print from them. In the first case switch 68 is swung onto button 68ª and circuit 29—29ª is thereby brought into action. Then whenever one of these specially notched cards reaches position 43ª, magnet 28 is energized by closure of circuit 29—29ª through contacts 38—37, trip member 91 is swung away from link 82 which then hits pin 81 during the card feeding operation, cam roller 50 is raised and platen 55 does not come down when that card reaches position 43ᵇ; but when other cards reach position 43ª circuit 29—29ª remains open because fingers 34 rest on them and cannot fall further, the magnet is not energized, trip member 91 is left in position to engage link 82 which then misses pin 81, cam roller 50 stays down in operative position and platen 55 comes down on

each one of this class of cards when it reaches printing position 43^b. That is to say, the machine skips the selected cards and prints from all the others. In the second case switch 68 is swung onto button 68^b and circuit $29—29^b—29^c$ is brought into action. Then whenever one of these specially notched cards reaches position 43^a and the finger or fingers in use sink into the cooperating notches in such card, spring contact 38 breaks circuit $29—29^b—29^c$ at 122, and magnet 28 is not energized when circuit breaker $117—119^a$ closes, trip member 91 is therefore left in position to engage link 82 which then misses pin 81, cam roller 50 stays down and a printing operation with that card results; but when other cards are fed into position 43^a, fingers 34 rest on them and do not move hammer 40, circuit $29—29^b—29^c$ remains closed at 122 and, being also closed at $117—119^a$, magnet 28 is energized and trip member 91 is swung away from link 82 which is thereby allowed to hit pin 81 and cause the machine to skip those cards. That is to say, the machine then prints from the selected cards and skips all others.

The main advantage of the invention arises from the fact that the attachment is convertible by means of switch 68 as above described so as to cause either skipping or printing with a given class of cards while the finger corresponding to that class, if it is a one-notch class, is down, and that it also renders a system involving more classes than there are separate fingers 34 thus convertible for either printing or skipping.

That is to say, an entire mailing list is represented by a large number of cards (sometimes several hundred thousand) which are kept in trays, all arranged in continuous alphabetical order for convenient reference or perhaps in geographical divisions each of which is in alphabetical order. This whole mass of cards is at the same time divided into sundry classes according to business activities, amount of previous purchases, or some other principle of classification, the cards in each class having a characteristic classifying feature such as a notch 44 in a particular position, or a specific combination of such notches. It is necessary that the whole mass of cards be kept together and all run through the machine even though circulars or other mail matter are to be addressed to only one or two of the sub-classes of addressees, because the members of that class may be scattered throughout the alphabet. If we assume the simplest case, one in which the cards of each class have a single notch in a particular position on the card margin corresponding to one of the fingers 34, there can then only be a limited number of such fingers and notches, with cards of a given width and fingers of a given thickness. If this maximum number of notch locations is ten, and the classification system includes only ten classes, the user could get along with an automatic skip attachment involving only a single throw switch with button 68^a and circuit $29—29^a$, because even if he wished to address mail to customers in only one class he could put that finger up and all the other fingers down and skip all the cards in the other nine classes. This multiplicity of fingers in constant action would, however, increase the possibility of occasional error and subject the selector unit to excessive wear. Obviously it tends to accuracy and economy to use our present invention with which the switch 68 can simply be moved onto button 68^b in such a case and the finger corresponding to the one class to be addressed turned down,—all other fingers being turned up and left out of use.

If, however, there are more classes in the system than there are separate fingers 34 so that each class beyond ten has to be represented by two or more fingers fastened together by pin 34^a to form a unit, the convertibility secured by the use of our invention becomes absolutely necessary, because, if class 13 (for instance) is represented by a combination of notches 2 and 5, so that the second and fifth fingers must be fastened together and to yoke 69 by pin 34^a and move as a unit, while this class could then be skipped by putting switch 68 on button 68^a and turning up all other fingers, which would cause the machine to print from all cards except those which had notches in second and fifth positions, trouble would result if the operator tried to print from this class 13 alone by turning up the second and fifth fingers, and to skip all other classes by turning all other fingers down and taking out pin 34^a, because he would then also produce printing whenever a card in class 2, having a single notch in second position, or a card in class 5 having a single notch in fifth position, or a card in any class having a combination including notch 2 or 5, came into position 43^a. Obviously the only way to ensure such printing from cards in class 13, or in any other plural notch class, and skipping of all others, is to put switch 68 on button 68^b and leave only fingers 2 and 5 down in operative position. That is to say, some device must be employed by which either printing or skipping of such a plural notch class can be produced positively by turning down the fingers representing it, as contra-distinguished from trying to do it negatively by putting the combination of fingers corresponding to that class out of commission and allowing all other classes to go into operation.

Another advantage of our invention results from the fact that by simply opening switch 68 the operator can cause the machine to revert to non-automatic operation in

which he can make it print or skip or repeat by manipulating pedals 17, 104, and 76, in the manner described in the above mentioned Belknap patent, guiding his action by the records or other identification marks on the upper faces of the card frames, and disregarding the notches 44, or using cards which have not been notched. This renders the utility of the machine all inclusive.

While we have shown our invention as applied to an apparatus involving stencil cards as an element of the printing mechanism, it is evident that other forms of address bearing strips may be substituted for such stencil cards and that other changes in the details of the preferred form of apparatus herein described and illustrated could be made without departing from the principle of our invention so long as some or all of the essential novel features and functions are retained to produce substantially the same result in substantially the same way.

Having described our invention, we claim:

1. In an addressing apparatus comprising a series of address bearing strips, some of which are provided with classifying features, inking and impression mechanisms, means for feeding said strips successively to said inking and impression mechanisms, connecting mechanism between said card feeding means and said impression mechanism capable of being temporarily disabled so as to render the impression mechanism idle while card feeding continues and a selector mechanism adapted to be actuated by the classifying features of certain of said strips the combination, with said above described apparatus, of means for temporarily disabling said connecting mechanism, which means is adjustable by the operator to convert said selector mechanism from one which will cause the machine portion of the apparatus to print from a card having a given classifying feature to one which will cause said machine portion to skip said card and discharge it without printing therefrom.

2. In an addressing apparatus comprising a series of address bearing strips, some of which are provided with classifying features, inking and impression mechanisms, means for feeding said strips successively to said inking and impression mechanisms and a selector mechanism adapted to be actuated by the classifying features of certain of said strips, the combination, with said above described apparatus, of means adjustable by the operator adapted to convert said selector mechanism from one which will cause the machine portion of the apparatus to print from a card having a given classifying feature to one which will cause said machine portion to skip said card and discharge it without printing therefrom; said converting means comprising two normally open branched electric circuits having a common section, a source of electric current and an electro-magnet permanently connected in series in said common section, means actuated by strips having said classifying feature for intermittently closing one of said circuits, a circuit controller at one point in the other circuit adapted to be automatically closed once during each cycle of the apparatus, means adapted to be operated by strips having said classifying feature to break said last mentioned circuit at another point during the period in which it is automatically closed at the first mentioned point, and a double throw switch having its moving member connected to said common circuit section and adapted to connect it with either one of said branch circuits while disconnecting it from the other.

3. In an addressing machine adapted to cooperate with a series of address bearing strips, some of which are provided with classifying features, said machine comprising inking and impression mechanisms, means for feeding said strips successively to said inking and impression mechanisms, connecting mechanism between said card feeding means and said impression mechanism capable of being temporarily disabled so as to render the impression mechanism idle while card feeding continues and a selector mechanism adapted to be actuated by the classifying features of certain of said strips, the combination, with said above described machine, of means for temporarily disabling said connecting mechanism adjustable by the operator to convert said selector mechanism from one which will cause the machine to print from a card having a given classifying feature to one which will cause said machine to skip said card and discharge it without printing therefrom.

4. In an addressing machine adapted to cooperate with a series of address bearing strips, some of which are provided with classifying features, said machine comprising inking and impression mechanisms, means for feeding said strips successively to said inking and impression mechanisms and a selector mechanism adapted to be actuated by the classifying features of certain of said strips, the combination, with said above described machine, of means adjustable by the operator adapted to convert said selector mechanism from one which will cause the machine to print from a card having a given classifying feature to one which will cause said machine to skip said card and discharge it without printing therefrom; said converting means comprising two normally open branched electric circuits having a common section, a source of electric current and an electro-magnet permanently connected in series in said common section, means adapted to be actuated by strips having said classifying feature for intermittently closing one of said circuits a circuit controller at one point in the other

circuit adapted to be automatically closed once during each cycle of the machine, means adapted to be operated by strips having said classifying feature to break said last mentioned circuit at another point during the period in which it is automatically closed at the first mentioned point, and a double throw switch having its moving member connected to said common circuit section and adapted to connect it with either one of said branch circuits while disconnecting it from the other.

5. A selector unit for use in an addressing apparatus comprising, in combination, a main housing, a spring contact mounted on said housing and adapted to be connected to an electric conductor, a fixed contact located on one side of said spring contact, but normally spaced away therefrom adapted to be connected to another conductor, a second fixed contact, adapted to be connected to still another conductor located on the other side of said spring contact and on which it normally rests, and a movable finger adapted to intermittently flex said spring contact away from said last mentioned contact and against said first mentioned contact.

6. In an addressing machine adapted to cooperate with a series of stencil cards and comprising inking and impression apparatus, means for feeding said cards to said apparatus, mechanism for temporarily disabling said impression mechanism during the passage of certain of said cards and a pedal for actuating said mechanism, the combination, with said above described elements, of an automatic selector device adapted to be actuated by certain of said cards and means under control of the operator for operatively connecting said selector device to said disabling device, whereby the selective action of the machine may be controlled, either automatically or by said pedal, as the operator may elect.

7. In an addressing apparatus comprising the combination of a prime mover, a series of address bearing strips provided with classifying features and mechanism connected to said prime mover and adapted to cooperate with said strips to print the series of addresses borne thereby, of a device for temporarily disabling the connection from said prime mover to said printing mechanism, and selective means adapted to be controlled by the classifying features on said cards to actuate said disabling device, said means comprising a hit-or-miss mechanism.

8. A combination such as defined in claim 7 in which said hit-or-miss mechanism comprises a reciprocating link pivoted to a constantly reciprocating element of the machine, a movable part connected to said disabling device and adapted to be either engaged or missed by said reciprocating link, and a trip member controlled by said selective means and adapted to guide said link into or out of engagement with said movable part.

9. A hit-or-miss mechanism adapted for use in selective addressing machines, which mechanism comprises in combination, a constantly oscillating shaft, a movable part, a link pivoted at one end to a crank on said shaft and adapted in its reciprocating movement to hit or miss said movable part, a swinging trip member adapted when in one position to engage said reciprocating link and cause it to miss said movable part, means operated by said shaft to swing said member into such engaging position during part of each period of shaft oscillation, and automatically controlled mechanism adapted when in action to swing said trip member out of such engaging position during another part of any oscillation period.

10. A combination such as defined in claim 9 in which said automatically controlled mechanism comprises an electro-magnet, an electric circuit connected to the coils of said magnet and a circuit breaker for controlling said circuit.

11. A combination such as defined in claim 9 in which said automatically controlled mechanism comprises an electro-magnet, a plurality of electric circuits connected to the coils of said magnet, a plurality of circuit breakers for controlling said circuits, and a manually operable switch for throwing one or another of said circuits into action.

12. A combination such as defined in claim 9 in which said automatically controlled mechanism comprises an electro-magnet, two electric circuits connected to the coils of said magnet, a plurality of circuit breakers for controlling said circuits, and a manually operable switch for throwing one or another of said circuits into action, together with means for operating said circuit breakers so that both of said circuits shall be normally open during a portion of each oscillation period of said shaft, but one or the other, according to the position of said switch, shall be temporarily closed during another period of each oscillation.

13. A combination such as defined in claim 9 in which said swinging trip member has a radially extending projection and said oscillating shaft also has a radially extending projection adapted to operatively engage the first mentioned one during the shaft oscillation in one direction.

14. A hit-or-miss mechanism adapted for use in selective addressing machines, which mechanism comprises, in combination, a constantly oscillating shaft, a movable part, a link pivoted at one end to a crank on said shaft and adapted in its reciprocating movement to hit or miss said movable part, a swinging trip member adapted when in one position to engage said reciprocating link and

cause it to miss said movable part, means operated by said shaft to swing said member into such engaging position during part of each period of the shaft's oscillation, and automatically controlled mechanism adapted when in action to swing said trip member out of such position during another part of any oscillation period, together with a spring adapted to hold said swinging member in either position of adjustment.

15. In an addressing machine comprising a swinging platen, a constantly moving cam, a lever pivoted to said platen and carrying a roller adapted to be engaged by said cam to swing said platen when said lever is in one position, the combination, with said above recited elements, of selective mechanism adapted to swing said lever so that said roller is kept out of contact with said cam.

16. A structure such as defined in claim 15 combined with means under control of the operator for similarly swinging said lever.

17. In an addressing machine comprising a swinging platen, a constantly moving cam, a lever pivoted to said platen and carrying a roller adapted to be engaged by said cam to swing said platen when said lever is in one position, the combination, with said above recited elements, of selective mechanism adapted to swing said lever so that said roller is kept out of contact with said cam comprising a link pivoted at one end to a constantly reciprocating member, mechanism normally engaged by the free end of said reciprocating link and adapted to then swing said lever, a swinging trip member adapted when in one position to so guide said link that it will miss the lever moving mechanism, and electromagnetic means for depriving said trip member of such guiding function.

18. In an addressing apparatus the combination of a series of stencil cards having frames adapted to be notched along one edge, printing and impression mechanism including a swinging platen, means for feeding said cards successively to said inking mechanism and under said platen, a constantly reciprocating cam member operatively connected to said inking mechanism, a cam roller pivoted on said platen and adapted to be swung into contact with said cam member to force said platen down, or out of such contact to leave said platen raised during operation of the apparatus, a link pivotally connected at one end to said card feeding means and adapted when reciprocated in its lowest position to cause said cam roller to be swung out of contact with its cooperating cam, a swinging trip member adapted to raise said link so that its reciprocation will not move said cam roller, a series of selector fingers adapted to cooperate with corresponding notches in said cards and electro-magnetic means for swinging said trip member adapted to be actuated by said fingers.

AUGUST F. SCHRAEGLE.
HENRY T. JENNINGS.
E. A. GEIGER.