May 5, 1936. J. LOCKE 2,039,600

CARD PRINTING MACHINE

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Fig. 1.

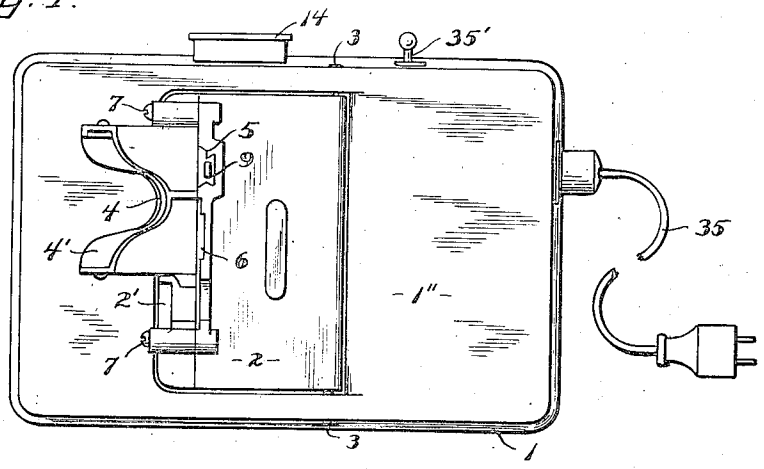
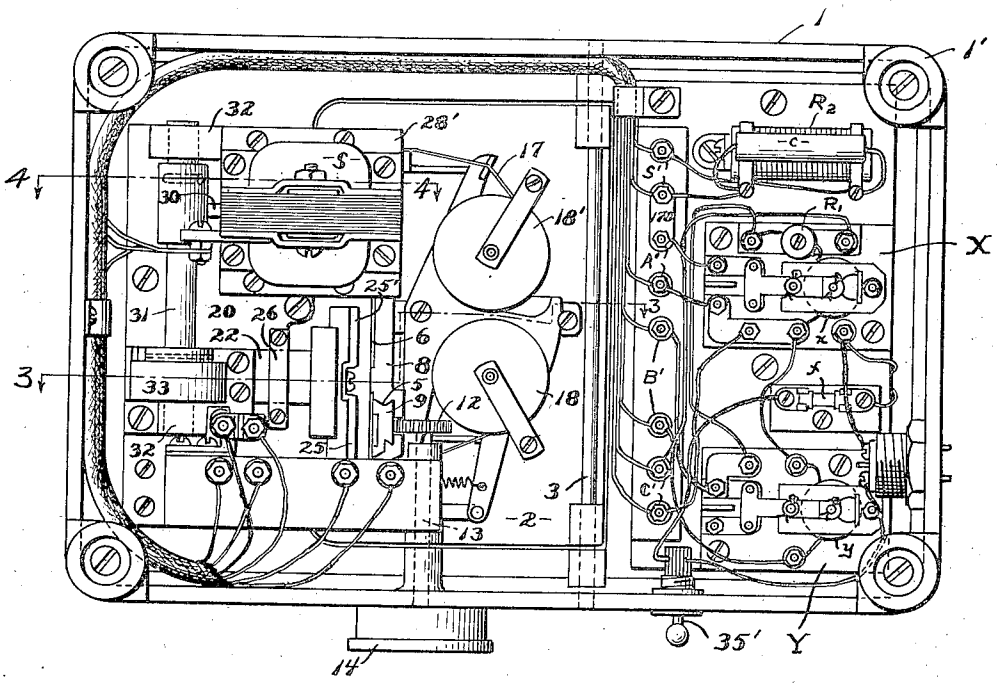


Fig. 2.



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Fig. 3

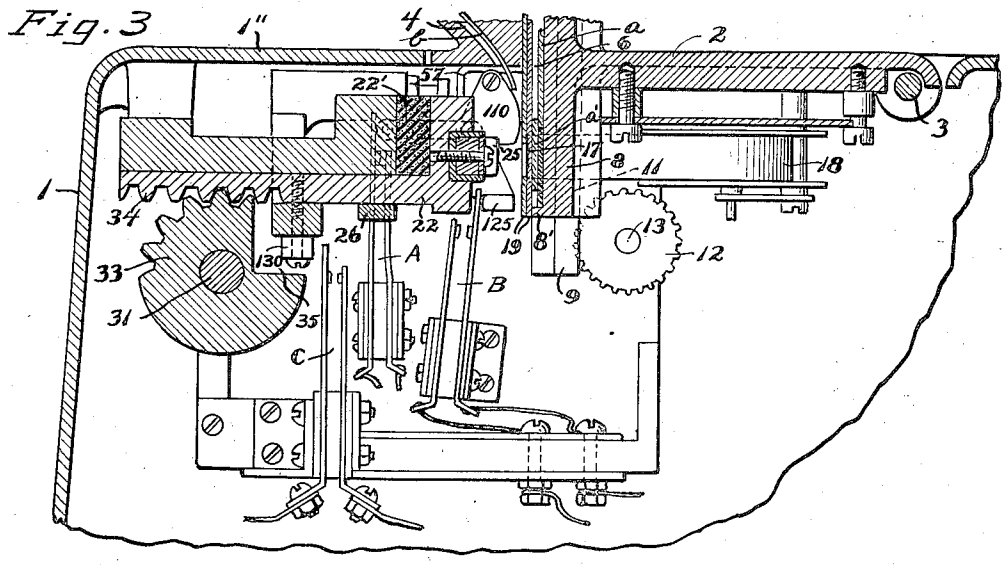


Fig. 4

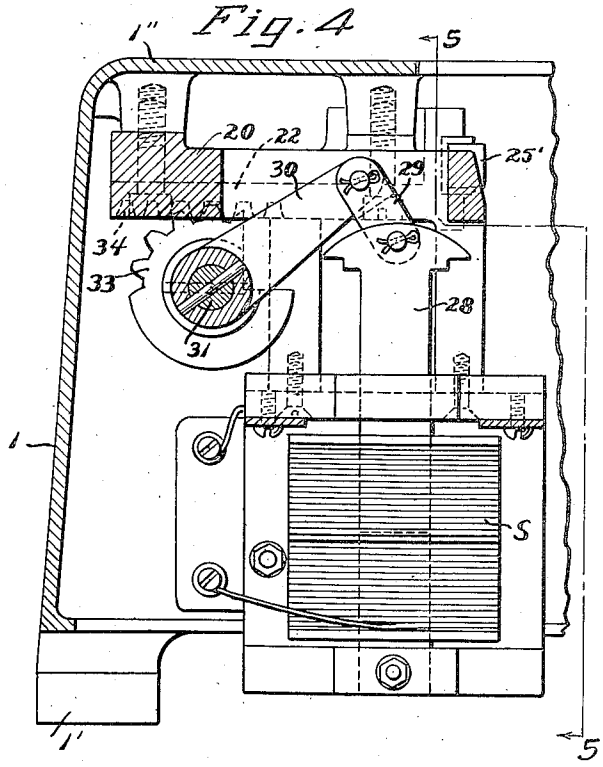
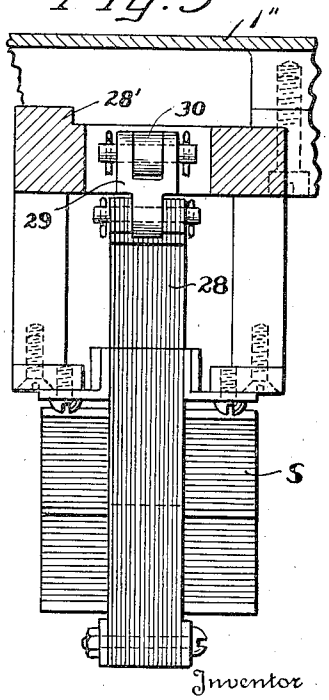


Fig. 5



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Fig. 6

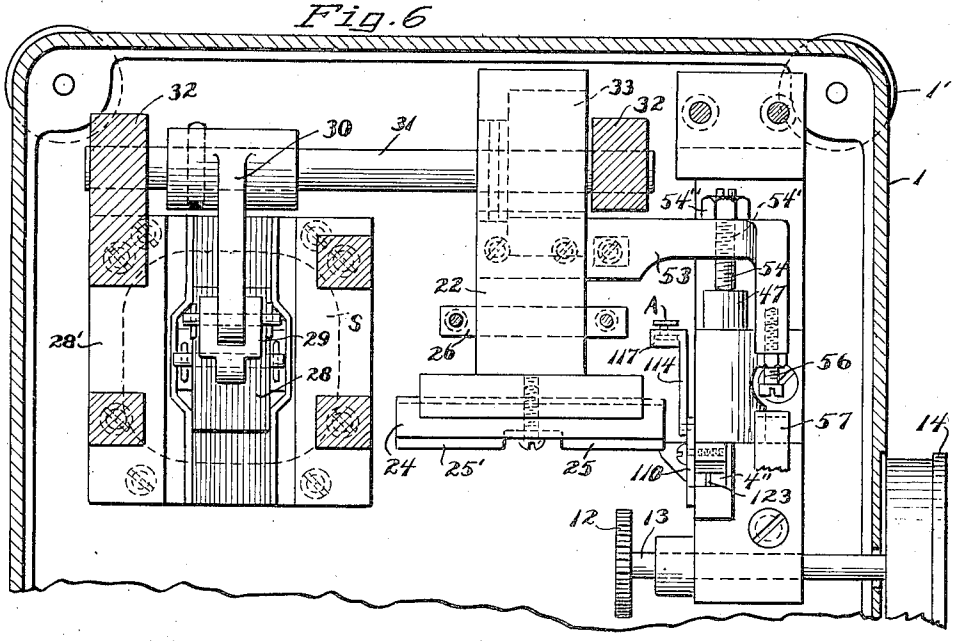


Fig. 7

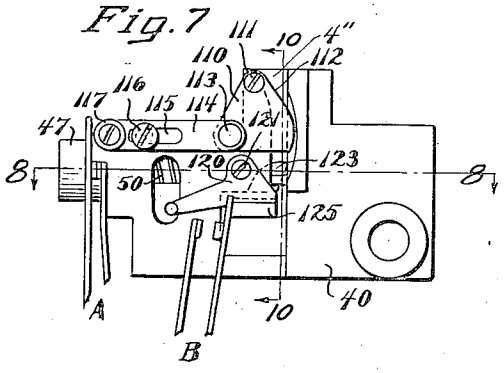


Fig. 8

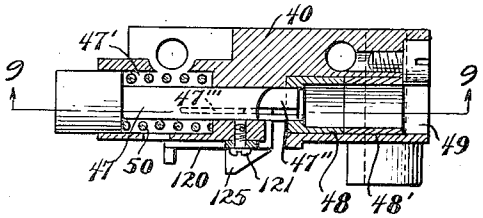


Fig. 9

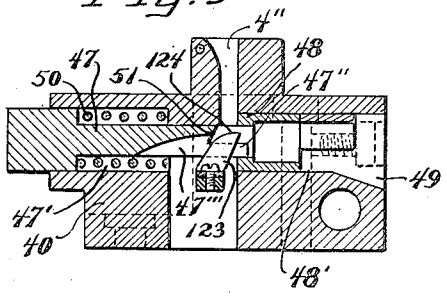
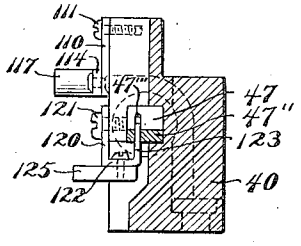


Fig. 10



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Fig. 11

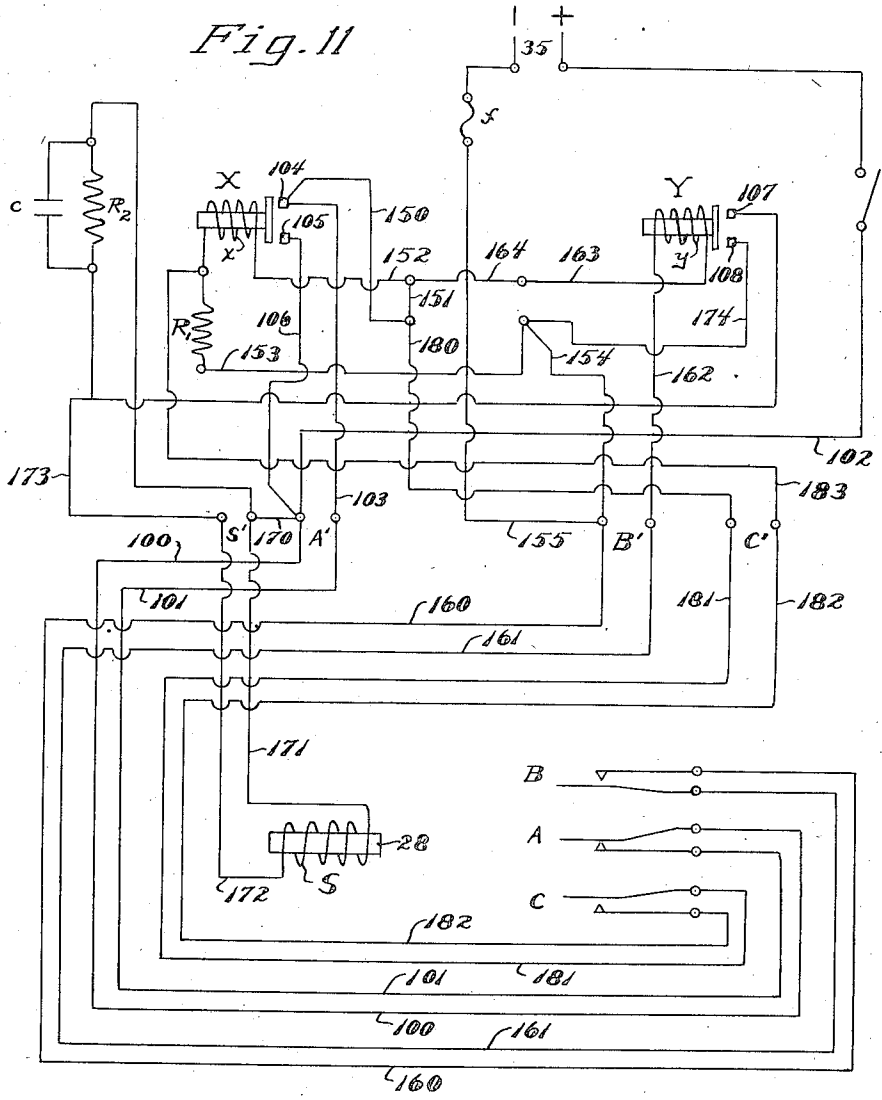


Fig. 12

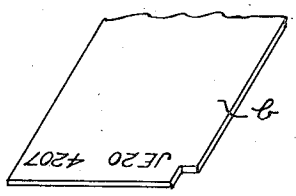
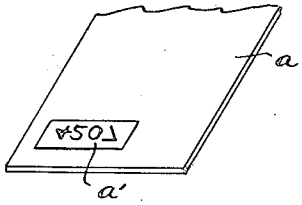


Fig. 13



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Fig. 14

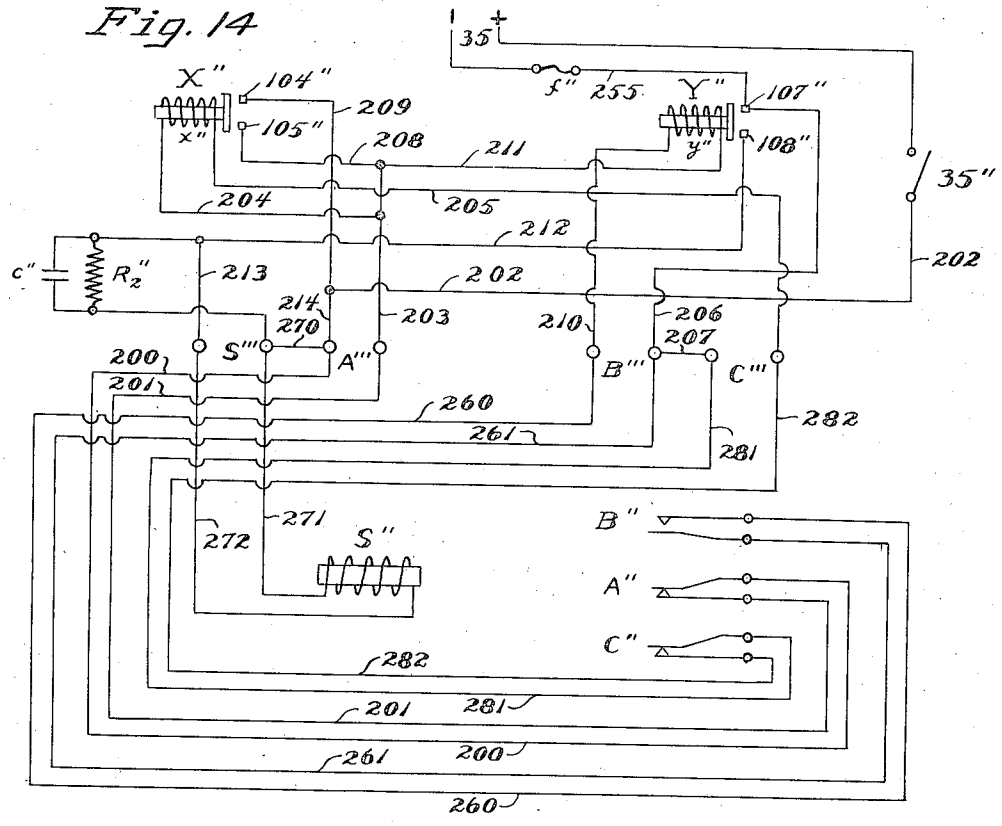


Fig. 15

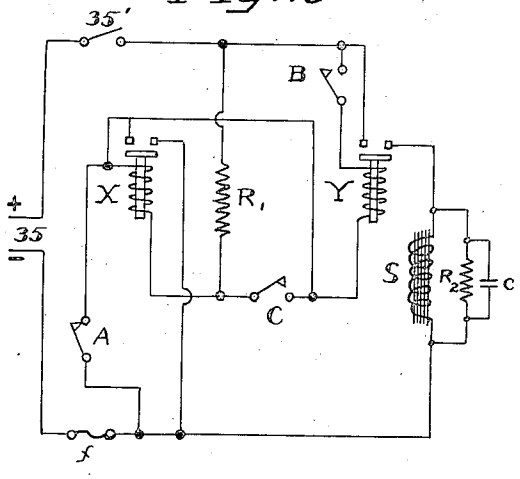
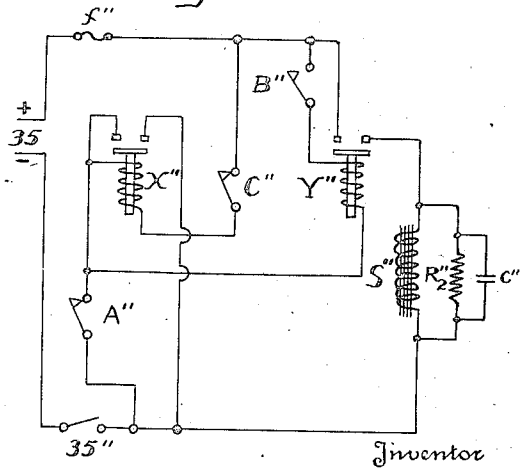


Fig. 16



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Patented May 5, 1936 2,039,600

UNITED STATES PATENT OFFICE

2,039,600

CARD PRINTING MACHINE

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Application September 30, 1935, Serial No. 42,904

23 Claims. (Cl. 101—287)

This invention relates to certain improvements in printing machines of the class set forth in the patents to L. W. Moulton, No. 1,881,090, granted October 4, 1932, and No. 1,986,352, granted January 1, 1935, and more particularly, to an improvement in the control mechanism for such machines of the type disclosed in the patent to G. Van Dusen, No. 1,963,812, granted June 19, 1934.

These machines are adapted to be used more particularly in public libraries and other places where books or other articles are temporarily loaned to borrowers with restrictions as to the time of returning. As applied to such uses, the primary object of the machine is to afford an expeditious means for recording upon a card, suitable characters or indicia, such as numbers for identifying the borrower, and for recording the dates of loan and return of the borrowed articles. It is to be understood, of course, that the machines are not limited to use in libraries, as they are readily adaptable to other uses, as will become apparent as the description herein proceeds.

One of the primary objects of the present invention is to provide a machine of the type above referred to, wherein the operation thereof is fully automatic, to which end, I preferably employ a suitable electro-magnetic control mechanism having a very small current consumption.

A further object of the invention is to provide a simple and effective means for preventing more than a single printing upon the card each time the card is inserted into the machine. In other words, the control for the machine is of such a nature as to require a substantial withdrawal movement of the card each time a printing impression is made thereon before the machine is conditioned for subsequent printing operations, such control being preferably automatic and effective responsive to movement of the card into and out of the machine. This is extremely important by reason of the fact that it has been found that in certain of the machines disclosed in the above mentioned patents, it sometimes occurs that several printing impressions on the card will be made by the machine where only one is desired and before the card can be withdrawn from the machine. This is, of course, very objectionable, and although it depends somewhat upon the skill of the operator in handling the cards, it has been my aim to eliminate the human element entirely and insure that only a single impression is made each time the card reaches a position for receiving the printing impression, thus making the machine practically fool-proof.

A further object of the invention has been to simplify the printing control mechanism without sacrificing the positive nature of the control which is so essential in these machines, thereby keeping the cost of the machines so that they may be sold at a relatively low price to permit their extended use in the smaller public libraries or business houses where records are kept of various operations or transactions.

A still further object of the invention is to provide an improved electro-magnetic and mechanical control for card printing machines wherein the control mechanism includes electrically interlocked circuits for preventing the machine from repeating, the circuits being preferably under the control of the card.

Other and further objects and advantages of the invention will be hereinafter described and the novel features thereof defined by the appended claims.

In the drawings:—

Figure 1 is a top plan view of a card printing machine, embodying the various improvement features of my invention;

Figure 2 is a bottom plan view of the machine, showing the general assembly of the various mechanical and electrical elements;

Figure 3 is a fragmentary sectional view, taken approximately on the line 3—3 of Figure 2;

Figure 4 is a fragmentary sectional view, taken approximately on the line 4—4 of Figure 2, the solenoid coil being shown in elevation;

Figure 5 is a fragmentary sectional view, taken approximately on the line 5—5 of Figure 4;

Figure 6 is a horizontal sectional view, taken just below the top of the casing or housing of the machine at the end thereof in which the printing mechanism is mounted, certain of the parts and supports being omitted for the sake of clearness;

Figure 7 is an enlarged detail view in side elevation of the punch unit, and showing certain of the actuating means adapted to be operated by the card for controlling certain of the switches of the electrical control circuit;

Figure 8 is a sectional view, taken approximately on the line 8—8 of Figure 7, the punch being shown in plan;

Figure 9 is a sectional view, taken approximately on the line 9—9 of Figure 8;

Figure 10 is a sectional view, taken approximately on the line 10—10 of Figure 7;

Figure 11 is a circuit diagram of the electro-magnetic control circuit;

Figure 12 is a fragmentary perspective view of a card upon which certain indicia is adapted to be printed by the machine, and showing by way of example, the identification number of the borrower and the date of loaning of a book or other article to the borrower, said card also showing a portion of one corner cut away by the punching device which cuts the card at each printing operation;

Figure 13 is a perspective view of a card carrying a type plate which is adapted to be inserted in the machine for impressing certain indicia, as for example, the identification number of the borrower on the card shown in Figure 12.

Figure 14 is a circuit diagram of a modified form of electro-magnetic control circuit;

Figure 15 is a simplified circuit diagram of the control circuit illustrated in Figure 11; and

Figure 16 is a simplified circuit diagram of the control circuit illustrated in Figure 14.

Like reference characters designate corresponding parts in the several figures of the drawings.

As illustrated, the machine comprises a main supporting frame or housing 1 of any suitable construction adapted to receive and support the various mechanisms hereinafter described, and is preferably substantially rectangular in top plan and provided with a top wall 1'', having a movable lid section 2 hinged at 3, to swing vertically to and from its closed position. The lid section forms a closure for a corresponding opening in the top 1'', and is preferably arranged substantially midway between the front and rear ends of the frame, with its rear end hinged thereto, so that the front end may be swung upwardly and rearwardly to its open position to permit access to the various mechanisms on the under side thereof and also to the mechanisms within the housing or casing, which latter is open at the bottom to permit access to such parts as are not accessible through the opening in the top.

The lower corners of the housing or casing are provided with cushioned feet 1', of rubber or equivalent material, adapted to rest upon a desk or other support to deaden the noise incidental to the operation of the machine and also to avoid mutilation of the surface of the support, it being understood that the entire machine is sufficiently small and light to render it easily portable from place to place as may be required for use in different locations.

The lid 2 and mechanisms carried thereby are the same or quite similar to that set forth in Patents Nos. 1,986,352 and 1,963,812, previously referred to, and includes an upwardly and forwardly projecting card guide 4, a type bar guide 5, and a type-carrying plate or card guide 6, as more clearly shown herein in Figures 1 and 3.

The guides 5 and 6 are disposed in substantially the same vertical plane transversely of the machine, while the card guide 4 is disposed in a plane slightly in front of but parallel with the guides 5 and 6, and is preferably curved upwardly and forwardly from the upper face of the lid 2, so that its open upper end may face the operator to enable the cards to be conveniently placed therein and removed therefrom.

The front end of the lid 2 is provided with a removable section 2', including the front wall 4' of the guide 4, to permit convenient milling of the guides 5 and 6, said section 2' being held in place by clamping screws 7, as clearly shown herein in Figure 1.

The lid 2 is also preferably provided with a platen 8 projecting downwardly from the under side thereof and extending transversely across the greater portion of the width of the lid with its front face in relatively close proximity to the rear faces of the adjacent portions of the card guides 4 and 6, as shown more clearly herein in Fig. 2, the lower end of said platen being provided with a forwardly projecting shoulder 8', forming a portion of the bottom of the card guide 6 for limiting the downward movement of the type plate or card *a*.

This type plate or card *a* is identical to that set forth in the two patents last mentioned above, and includes a metal type plate section *a'* detachably secured to the card near one end and one side so that when the card is placed in the guide 6, its lower end will rest upon the abutment or shoulder 8' with the type plate section *a'* in opposed or registered relation with the movable platen hereinafter described.

The card guide 4 is adapted to receive a borrower's card *b*, or the like, and is arranged in such manner that when the card is inserted therein, it will be directed downwardly across the front face of the platen 8.

The inner portions of the card guides 4 and 6 are arranged in overlapping relation transversely of the machine to cause similar overlapping relation of the inner edges of the cards *a* and *b* when they are inserted from the top downwardly through their respective guides, in which case the inner edge of the card *b* will extend across the front face of the type plate section *a'* to receive the impression therefrom when the movable platen is brought to its printing position, it being understood that the type plate section *a'* is provided with suitably raised printing characters or indicia, such as the number used to identify the borrower.

The vertical guide 5 is arranged at one side of the guide 6 of the type plate *a* and near the corresponding side edge of the card guide 4 for receiving a vertically adjustable type carrier or bar 9, which may be identical or similar to that disclosed in the patents last above referred to, on which carrier is disposed a multiplicity of type plates (not shown herein), arranged in sequence lengthwise of the bar to extend across the obverse face thereof, and which are displaceable from the lower end of the carrier, but normally held against such displacement by a suitable detent (not shown herein).

As disclosed in the above mentioned patents, these type plates are provided with raised or embossed type representing different dates of borrowing or returning of the borrower's card *b*, as the case may be, which as previously stated, is of sufficient width to overlap upon the type plate *a'* of the card *a* to receive the impression of said type plate opposite each date impression. When the type bar 9 is in operative position, its type plates will be in substantially the same transverse vertical plane as the type plate *a'* on the card *a*. The reverse side of the type bar 9 is provided with a toothed rack 11 adapted to be engaged by a pinion 12 on the inner end of a rotary shaft 13, which is journaled in one side of the frame or housing 1 and suitable guide blocks, the shaft extending to the outside of the frame or housing where it is provided with a hand wheel 14 or other member for rotatably manipulating the shaft to adjust the type bar 9 vertically to various date-

selective positions. A suitable detent (not shown herein), serves to hold the bar 9 in its adjusted position.

As disclosed in the aforementioned patents, particularly Patents Nos. 1,986,352 and 1,963,812, suitable means is provided for transferring the impressions of the type plates onto the card, such means including generally an ink ribbon 17 and reels 18 and 18', from one of which the ribbon is unwound and wound upon the other, the ribbon extending across the front face of the platen 8 in horizontal alignment with the type plates when the bar 9 and card *a* are adjusted for use in their respective guides 5 and 6. The portion of the ink ribbon extending across the front face of the platen 8 is preferably passed between a pair of thin sheet metal stripper plates 19, having suitable openings therethrough registering respectively with the type plates carried by the bar 9 and type plate *a'*, through which openings the printing impressions upon the card are made when the movable platen is operated in the manner hereinafter described.

The ribbon 17 is adapted to be moved endwise intermittently at each printing operation, and to this end, the same or similar mechanism disclosed in the patents last above mentioned may be availed of, and for this reason, it will be unnecessary to further describe the same.

Likewise, if desired, means similar to that disclosed in the aforementioned patents may be provided for locking and releasing the lid 2 in and from its closed position, but since such means forms no part of the present invention, further description thereof is unnecessary.

Movable platen

A guide block 20 is rigidly secured to the under side of the top 1' of the frame and in front of the platen 8 when the lid 2 is closed, and is provided with a longitudinally extending guide opening, in which is slidably mounted a platen supporting bar 22, having its rear end provided with a transverse recess for receiving a U-shaped metal clip 24, carrying a pair of platens 25 and 25' (see Figs. 2, 3 and 6).

The platens 25 and 25' are arranged in opposed relation respectively to the active type plate of the bar 9 and the type plate *a'* of the card *a* when the latter is inserted in its guide 6, and for the sake of convenience of description, they, together with the supporting slide bar 22, may be regarded as the movable platen or one of the printing elements adapted to cooperate with the opposed printing element comprising the type plates and/or platen 8, for impressing the type of the type plates upon the card *b*.

One or more bars 26, secured to the under side of the guide block 20, serves to maintain the platen bar 22 in its guideway, it being understood that the platent is capable of movement rectilinearly, that is, forwardly and rearwardly in its guideway. Interposed between the platen-carrying head of the bar 22 and the guide 20 is a cushioning member 22', composed of rubber or other suitable yieldable material, for cushioning the platen as it reaches the limit of its forward motion. Normally, the platen 22 is disposed forwardly of and in spaced relation to the type plates and platen 8, and out of printing coaction with these latter elements, so as to permit the introduction or insertion of the card *b* between the printing elements. Movement of the platen 22 rearwardly and into printing coaction with the type plates and platen 8 is effected through instrumentalities which will now be described.

Platen operating means

As in the Van Dusen patent, No. 1,963,812, I preferably employ electro-magnetically operated means for moving the platen 22 to its printing position, together with suitable control means actuatable by the card, such as card *b*, for controlling the energizing and deenergizing of the electro-magnet. The electro-magnet control circuit is preferably such that the electro-magnet is normally deenergized, thereby normally consuming no power, excepting during the extremely short interval of time energizing of the electro-magnet is required for operating the platen. Energizing and deenergizing of the electro-magnet is preferably controlled by the card *b*, as for example, responsive to the insertion of the card into and removal of the same from the machine.

The electro-magnetic platen actuating means preferably consists of a solenoid S, suitably mounted in a supporting frame 28', secured within the housing 1, the solenoid having a movable plunger 28, to one end of which is pivotally connected a link 29. The opposite end of the link 29 is pivotally connected to an arm 30 fixedly secured to a shaft 31 rotatably mounted in suitable bearings 32 and disposed transversely of the machine and within the housing or casing 1. The shaft 31 also has fixed thereto a toothed pinion sector 33, the teeth of which mesh with a toothed rack 34 on the under side of the platen 22. The pinion sector 33 is preferably cut away as at 35 so as to afford room for movement of the platen bar 22 and associated parts without interference with the gear 33.

It will be understood from reference to Figures 4, 5 and 6 of the drawings, that when the solenoid S is energized, plunger 28 will be retracted or drawn into the solenoid, thereby rocking arm 30 downwardly, and consequently, causing rotation of shaft 31 and pinion sector 33 to shift the platen 22 rearwardly and into printing cooperation with the other elements of the printing mechanism.

Solenoid control circuit

Current may be supplied to the solenoid S from any available source through the medium of wires or cables 35, which may be provided with an electric plug adapted to be inserted in any available outlet socket, not shown (see Figure 1).

Referring now to the circuit diagram shown in Figure 11, I provide a switch 35' for enabling the operator of a machine to open or close the circuit without disturbing the plug above referred to, when desired.

Operatively connected in the circuit is a normally closed, self-closing switch A, the contact terminals of which are connected to the terminal posts A', through means of conductors 100 and 101. One of the terminals A' is connected to switch 35' through conductor 102, and the other terminal A' is connected through conductor 103 to one of a pair of contacts 104 of a normally open relay X. The other relay contact 105 is connected to the other terminal post A', as by conductor 106. A second relay Y, similar to relay X, and normally open, is provided, this latter relay also having a pair of contacts 107 and 108. Operatively connected in the circuit are the additional switches B and C, both normally open, and the contacts of which are re-

spectively connected to the terminals B' and C'. Switch B is controlled by the card, through an actuating device hereinafter described, and switch C is preferably controlled by one of the printing elements through an actuating device, also hereinafter described. Solenoid S is connected to the terminal posts S' and is thus energized under the control of the various switches and relays above referred to. R_1 is a current limiting resistance, and R_2 and condenser *c* serve to reduce sparking across the relay contacts **107** and **108** incident to operation of relay Y.

The function and operation of the various elements above mentioned will be described in greater detail in the description of the operation of the machine, and the circuits for the various elements traced out in the order of operation of the elements.

Actuating means for switch A

A relatively thin and substantially triangular member **110** is pivotally mounted, as at **111**, adjacent the card guide **4''**, and is provided with a cam-like face **112** normally projected into the path of movement of the card intermediate the upper and lower ends of the guide **4''**. Pivotally connected to the member **110**, as at **113**, is a lever or link **114**, having an elongated slot **115** engaged by a guide pin **116**. The forward end of the lever **114** is provided with an abutment **117**, which is preferably composed of insulating material. This abutment **117** engages one arm of switch A, which is extended into the path of movement of the abutment member. The relative positions of the parts are clearly shown in Figures 7 and 10, and it will be understood that when the card strikes the cam face **112** of member **110**, the member **110** pivots forwardly about the pivot **111**, causing a corresponding forward shifting of the link **114**, which, in turn, causes the abutment **117** to force the normally closed contacts of switch A to an open position. This operation occurs each time a card is introduced into the machine to be printed upon by the printing elements, and preliminary to the printing operation. After the printing operation, the contacts of switch A cannot close until a substantial movement of the card has occurred in withdrawing the card from the machine, the reason for which will be apparent as the description proceeds.

Actuating means for switch B

This mechanism is best shown in Figures 7 to 10, inclusive, and comprises a member **120** pivotally mounted, as at **121**, on a convenient part of the mechanism, such as the frame of the punching unit, later to be described. Member **120** is provided with a laterally extending part **122**, which, in turn, is provided with an upwardly projecting part **123** having a cam face **124** normally disposed in the path of the card *b* at the lower end of the guide **4''**. As shown, the member **123** is located so as to be engaged by the card *b* near one corner or edge of the latter, and projects upwardly through a slot **47'''** in the extension **47''** of the punch **47**, hereinafter described, when the punch is forwardly retracted to enable the card *b* to be fully inserted in the machine.

Suitably secured to member **120** is a laterally projecting abutment **125**, preferably composed of insulating material, and one face of which is adapted to engage one arm of the normally open switch B. Accordingly, it will be apparent that when the card *b* is inserted in the machine and moved downwardly in the guides **4** and **4''**, the lower corner of the card will engage the cam face **124** of the pivoted member **120** and rock the member **120** about its pivot **121**, thereby causing a corresponding rocking of the abutment **125**, which, in turn, forces the contacts of switch B closed.

Actuating means for switch C

This actuating means comprises a depending abutment **130**, preferably composed of insulating material, which is fixedly mounted on the lower side of the platen **22** so as to be shiftable with the platen during the printing operation. As the platen reaches approximately the end of its rearward shifting movement during the printing operation, the abutment **130** strikes one arm of the normally open switch C, thereby forcing the contacts of switch C into engagement with each other, as will be clear from reference to the drawings, particularly Figure 3.

Punching unit

Suitable means is provided for punching away a portion of the card *b* at each printing operation of the platen **22**, to allow said card to be advanced farther into the machine in the guides **4** and **4''** following each printing and punching operation, and thereby to enable the card to be printed on succeeding lines from the bottom upward as it is successively placed in the machine for printing and punching purposes, corresponding to the borrowing and returning of the articles recorded upon the card.

The punching unit is shown best in Figures 7 to 10, inclusive, and comprises a male punching die **47** reciprocably movable endwise in a guide opening **47'** in the block **40**, into and out of punching coaction with the female die **48**, the guide opening **47'** being extended across the lower end of the supplemental card guide **4''**, which registers with the lower end of the card guide **4**, as shown more clearly in Figure 9.

The female die **48** preferably consists of a tubular sleeve of steel or other hard metal inserted in an opening **48'** in the block **40** coaxial with the male die **47**, said sleeve serving also to receive the cut-out portions of the card and to deliver the same at the rear end **49** of the opening **48'**.

If desired, a tray may be supported adjacent the end **49** to catch the small particles of the card which are cut away by the punch.

The inner end of the guide opening **47'** and adjacent end of the punching die **47** are preferably square in cross section and of about the same cross sectional area to hold the guide against angular movement about its axis. The outer end of the guide opening **47'** is enlarged to receive a coil spring **50**, engaging the enlarged front end of the punching die **47** for returning the latter to its normal position immediately following each punching operation. Incidentally, it might be mentioned at this point, that this same spring serves to normally hold the movable platen **22** in its forwardly shifted position, permitting the card *b* to be inserted between the printing elements.

The upper front end of the die **47** is slightly under-cut to form a cutting edge **51** to regulate the line spacing of the impressions made by the type plates at each successive printing operation. In other words, as the card is cut away by the punch **47**, it allows the card to be moved farther

downwardly a distance corresponding to the cut-away portion before engaging the upper face of the extension 47'' on the rear end of the punching die 47, which extension constitutes a stop for the card. Thus, the type impressions upon the same card as *b*, when the latter is successively inserted in the guide slots 4 and 4'', will be spaced apart the distance of one line, as will be clear from the above description, and by reference to the aforementioned patents.

The extension 47'' is provided with a vertical slot 47''' for receiving the upwardly projecting member 123 of the actuating means for switch B, so that when the card is inserted from the top downwardly through the guides 4 and 4'', the lower edge thereof, near the corner or side, will first engage the cam face 124 of the member 123, and depress this member, thereby effecting a corresponding depression and rocking movement of the member 120 and abutment 125 about the pivot 121, causing switch B to close. Having in mind that switch B is self-opening, it will be understood that the cutting away of a corner portion of the card by actuation of the punch near the end of the printing operation, will serve to release the switch actuating member 123 and permit the switch B to automatically open.

This closing of the switch B and resultant energizing of the solenoid S not only causes operation of the platen 22 to its printing position, but also causes the operation of the punching die 47 to its punching position. For this latter purpose, the platen is provided with a lateral extension 53, shown best in Figure 6, carrying a screw 54 for engaging the front end of the plunger 47, the screw being adjustable in a threaded opening 54' in the extension 53, and held in its adjusted position by a lock nut 54''. Thus the closing of the switch B by its associated card operated actuating device energizes the electro-magnet S acting on plunger 28 to retract the plunger, which, in turn, causes the shaft 31 to be rotated and the platen 22 to be shifted rearwardly by means of the pinion 33 and rack 34 into printing coaction with the other printing elements, which rearward movement causes the punching die 47 to punch a notch near one edge of the card *b*, as clearly shown in Figure 12, and thereby allowing the card to be advanced one line space for the next succeeding printing and punching operations. It therefore follows that the printing and punching operations are practically simultaneous and immediately follow the closing of the switch B. These operations are practically instantaneous, and fully automatic, upon insertion of the card *b* from the top downwardly through the guides 4 and 4'' and against the extension 47'' of the punching die 47, and immediately following these operations, the card with the impressions from the type plates on the rear face thereof is withdrawn. That is, the impressions from both the type plates carried by the bar 9 and by the card *a* are made simultaneously upon the rear face of the card *b*, it being understood that the card *a* is to be subsequently withdrawn so that the machine may be used with the same or a different type card *a* to print upon the same or a different borrower's card *b*.

The rearward movement of the platen 22 to its printing position is utilized for intermittently operating the feeding mechanism for the ink ribbon 17, and for this purpose, the extension 53 is provided with an adjustable screw 56 for engaging the rear end of a sliding member 57, which, in turn, is connected to the ribbon-feeding mechanism in accordance with the disclosure in Patents Nos. 1,963,812 and 1,986,352, previously referred to. It will be readily understood from the foregoing description that by the employment of a solenoid, as S, or equivalent electro-magnet, for operating the platen 22, punch 47 and ribbon-feeding mechanism, these operations will be practically instantaneous, and avoid the use of any power except when the solenoid S is actually energized. Under these conditions, the operation of the machine is extremely economical, expeditious and highly efficient.

Operation

The following description of the operation of the card printing machine has particular reference to those machines embodying the control circuit illustrated in Figure 11, and the simplified circuit diagram of Figure 15, the latter being shown merely for convenience to expedite the understanding of the circuit of Figure 11. In other words, Figure 11 is more in the nature of a complete wiring diagram where the electrical relays and associated elements are assembled on a panel as a sub-unit, and the panel provided with terminals S', A', B' and C', for connection by a multi-conductor cable to the solenoid S and switches A, B and C, respectively. Accordingly, it is to be understood that the circuits of Figures 11 and 15 are virtually the same.

When the lid 2 of the frame is closed, the type card *a* is inserted from the top downwardly through the slot 6 until its lower end engages the limiting stop or shoulder 8', thus bringing the type plate *a'* into registration with the platen member 25'. By rotatably adjusting the hand wheel 14, vertical adjustment of the type bar 9 may be effected to bring one of its type plates into registration with the other platen member 25.

The card *b*, known as the borrower's card, is then inserted from the top downwardly through the guides 4 and 4''. As the card passes through the guides, its lower edge will engage the cam face 112 of the pivotal member 110, rocking this member forwardly about its pivot 111, and causing a forward shifting of the link or lever 114, with the result that the abutment 117 forces the normally closed switch A open.

It will be understood that before inserting the card *b*, the switch 35' is closed, thereby establishing a circuit from the line through the conductor 102 to one of the terminals A', through conductor 100 to the normally closed switch A, and thence back to the line, from switch A, over conductors 101 to the other of the terminals A', conductor 103, contact 104 of relay X, conductor 150, conductor 151, conductor 152, through relay coil *x*, through R_1, over conductor 153, conductor 154, conductor 155, and through fuse *f*. This circuit energizes relay X so as to close the same and bridge the contacts 104 and 105, and consequently, it can be said that the relay X is a normally closed relay, by reason of the fact that it closes immediately upon closing the switch 35', and before the card *b* is inserted into the machine for printing.

Now when switch A is forced open by the card, as previously mentioned above, relay X remains closed, and derives its energy from the following circuit: From the line, through fuse *f*, conductors 155, 154, 153, through R_1, through relay coil *x*, over conductors 152, 151 and 150,

relay contact **104**, and across to contact **105** (these contacts now being bridged), conductor **106**, to one of terminals A', over conductor **102**, through switch **35'**, and back to the line.

Further insertion of the card *b* through the guides **4**—**4''**, and beyond the switch actuating member **110** for switch A, causes the lower edge of the card, near the side, to be brought into engagement with the upper face of the extension **47''** of the punching die **47**, and during the last part of this inward movement of the card *b*, the card engages and depresses the upwardly projecting member **123** of the switch actuating member **120** for switch B, causing a forward pivotal movement of the member **120** and its laterally projecting abutment **125** to close switch B, as will be obvious from inspection of the drawings, particularly Figures 3 and 7. The closing of switch B energizes relay Y through the following circuit: From the line, through fuse *f*, over conductor **155** to one of the terminals B', and thence over conductor **160** to switch B, and back from switch B, over conductor **161** to the other of the terminals B', over conductor **162**, through relay coil *y*, over conductors **163**, **164**, **151**, **150**, relay contact **104**, across to relay contact **105** (relay X still being closed), over conductor **106** to one of the terminals A', and thence over conductor **102**, through switch **35'**, and back to the line.

Relay Y now being closed as the result of closing switch B, solenoid S is energized through the following circuit: From the line, through switch **35'**, over conductor **102** to one of terminals A', which is connected by conductor **170** to one of the terminals S', and thence over conductor **171** to solenoid S, and back to the line, over conductor **172**, to the other of the terminals S', conductor **173** to relay contact **107**, thence across to relay contact **108** (these contacts being bridged by the closing of relay Y), over conductors **174**, **154**, **155**, and through fuse *f*.

Solenoid S, through the mechanical instrumentalities previously described, operates the platen **22** into printing coaction with the other printing elements, and as the platen **22** approaches the end of its printing stroke, the abutment **130**, carried by the platen **22**, engages the normally open switch C and forces the switch C to close. Closing of the switch C shorts or shunts out the coil *x* of relay X, allowing this relay to release. Resistor R_1 here acts as a current limiting resistor, until relay X has had time to release. When relay X opens, the bridging connection between the contacts **104** and **105** is broken, and the current is prevented from reaching the coil *y* of relay Y, thereby causing relay Y to open, and breaking the bridging connection across the contacts **107** and **108** of relay Y. The breaking of the latter connection in turn breaks the circuit to the solenoid S, rendering the solenoid S inoperative, whereupon the mechanical instrumentalities for actuating the platen **22** automatically return to normal position with the platen **22** shifted forwardly and out of printing coaction with the other printing elements.

It is to be understood that the card is still in printing position in the guides, having just received the printing impression from the type plates, and accordingly, switch A is still held open by the continuous engagement of the card with the switch actuating member **110**. Accordingly, it is impossible to reenergize the solenoid irrespective of whether the card inadvertently is moved to engagement with the actuating mechanism for switch B, until the switch A is again allowed to close, which can only be done by substantially withdrawing the card from the guides **4** and **4''**. Thus, when the card is withdrawn from engagement with the switch actuating member **110**, switch A automatically closes, and in closing, relay X again becomes energized through the circuit first described at the beginning of the description of the operation, and the machine is restored to operative condition for subsequent printing operations on the same or a different card *b*. It will therefore be understood that upon completion of each printing operation, the machine is rendered inoperative for further printing, by reason of the electrical interlocking established by the control circuit, and until the card has been moved a substantial distance during withdrawal of the card. Accidental repetition of the machine operation is thereby prevented, although it will be clearly understood that as soon as switch A is permitted to close after a printing operation, the machine is ready for another printing operation upon the same or another card *b*.

Shorting or shunting of the coil *x* of relay X is established by the closing of switch C, as above described, over the following circuit: From the coil *x*, through conductors **152**, **151** and **180**, to one of terminals C', over conductor **181**, through switch C, back over conductor **182** to the other of the terminals C', and thence over conductor **183** to the other side of coil *x*.

Due to the punching of the card at the end of the printing stroke of the platen **22**, engagement of the lower edge of the card with the switch actuating member **123** is broken, and switch B is permitted to automatically open.

The resistor R_2 and the small condensor *c*, having a capacity of approximately .01 mfd., reduce sparking across the contacts **107** and **108** of relay X, as will be obvious from inspection of the circuit diagram of Figure 11.

Modified control circuit

A modified form of control circuit has been illustrated in Figure 14, and in the corresponding simplified circuit diagram of Figure 16. According to the modified control circuit, the same number of control switches are used, these switches being designated A'', B'' and C''. However, switch C'', corresponding to switch C of the control circuit of Figure 11, is a normally closed self-closing switch, rather than a normally open switch such as switch C of Figure 11. The same or equivalent actuating means for switch C'' can be used as was described in relation to switch C, it merely being necessary to mount the modified switch C'' in position to be engaged by the abutment **130** so that this abutment will open switch C'' coincident with the printing operation or near the end of the printing stroke of the platen **22**. Switches A'' and B'' and their actuating instrumentalities, may be identical with switches A and B previously described, and function in substantially the same way and for the same purposes. It will also be understood that the other elements of the control circuit of Figures 14 and 16 are similar or identical to the corresponding elements in the previously described control circuit of Figures 11 and 15. For convenience, the same or equivalent elements are designated by similar reference characters. In the case of the modified control circuit of Figures 14 and 16, it will be observed that the current limiting resistor R_1 is no longer

necessary by reason of the modification of the circuit connections to the various elements.

The modified control circuit of Figures 14 and 16 may sometimes be preferred by reason of the fact that it has the advantage of being quicker and more positive in its action, and not quite as sensitive to voltage variation of the source of current supply as in the case of the control circuit of Figures 11 and 15. However, either circuit is quite satisfactory for practical use.

Operation of modified control circuit

Referring particularly to the circuit diagram of Figures 14 and 16, to print upon a card, as card *b*, the switch **35''** is closed, thereby establishing a circuit from the line or power source, through the conductor **202** to one of the terminals A''', through conductor **200** to the normally closed switch A'', and thence back to the line from switch A'', over conductor **201** to the other of the terminals A''', conductor **203**, conductor **204**, through relay coil *x''*, conductor **205**, to one of the terminal posts C''', over conductor **282** to the normally closed switch C'', and back from switch C'' over conductor **281** to the other of the terminal posts C''', over conductor **207** connecting this terminal post to one of the terminal posts B''', over conductor **206** to the relay contact **107''** of relay Y'', conductor **255**, and through fuse *f''*. This circuit energizes the relay X'', closing the same so that the relay contacts **104''** and **105''** of relay X'' are bridged or connected together, all before the card *b* is inserted into the machine for being printed upon.

Assuming that the lid **2** of the frame is closed, and the type card *a* is inserted in the slot **6** with its lower end engaging the limit stop or shoulder **8'** to bring the type plate *a'* into registration with the platen member **25'**, and the hand wheel **14** has been manipulated to select the desired dating type plate for registration with the other platen member, the card *b* is then inserted from the top downwardly through the guides **4** and **4''**. As the card passes through the guides, its lower edge will engage the cam face **112** of the pivotal member **110**, rocking this member forwardly about its pivot **111**, and causing a forward shifting of the link or lever **114**, with the result that the abutment **117** forces the normally closed switch A'' open. Although switch A'' is now open, relay X'' remains closed, and derives its energy from the following circuit: From the line or source of power supply **35**, through fuse *f''*, over conductor **255** to contact **107''** of relay Y'', then over conductor **206** to one of the terminal posts B''', which is connected to one of the terminal posts C''' by conductor **207**, then over conductor **281** to the normally closed switch C'', back over conductor **282** to the other terminal post C''', then over conductor **205** to the relay coil *x''*, through the relay coil, and then over conductors **204** and **208**, to contact **105''** of relay X'', across to relay contact **104''** (these contacts now being bridged by the previous closing of relay X'', which is still closed), then over conductor **209**, and conductor **202**, through switch **35''**, and back to the line. Thus relay X'' remains closed after the opening of switch A'' preliminary to printing upon the card *b*.

Further insertion of the card *b* through the guides **4** and **4''**, and beyond the switch actuating member **110** for switch A'', causes the lower edge of the card, near the side, to be brought into engagement with the upper face of the extension **47''** of the punching die **47**, and during the last part of this inward movement of the card *b*, the card engages and depresses the upwardly projecting member **123** of the switch actuating member **120** for switch B'', thereby closing switch B'', just as in the case of the operation previously described in relation to the control circuit of Figures 11 and 15. The closing of switch B'' energizes relay Y'' through the following circuit: From the line, through fuse *f''*, over conductor **255** to relay contact **107''**, and thence over conductor **206** to one of the terminals B'', then over conductor **261** to switch B'', through switch B'', and back over conductor **260**, to the other of the terminal posts B''', then over conductor **210** to the coil *y''*, through the coil *y''*, over conductors **211** and **208** to the relay contact **105''** of relay X'', across to relay contact **104''** (relay X'' still being closed), then over conductors **209** and **202**, through switch **35''** and back to the line.

Relay Y now being closed as a result of closing switch B'', solenoid S'' is energized through the following circuit: From the line, through fuse *f''*, over conductor **255** to relay contact **107''** of relay Y'', across to relay contact **108''** (relay Y now being closed and bridging contacts **107''** and **108''**), over conductors **212** and **213** to one of the terminals S''', then over conductor **272**, to the solenoid S'', and back from the solenoid S'' over conductor **271** to the other of the terminal posts S''', through the conductor **270** connecting this terminal S''' to one of the terminals A''', over conductor **214**, conductor **202**, through switch **35''**, and back to the line.

Solenoid S'' through suitable instrumentalities, such as previously described, operates the platen **22** into printing coaction with the other printing elements, and as the platen **22** approaches the end of its printing stroke, the abutment **130**, carried by the platen **22**, engages the normally closed switch C'', and forces the switch C'' to open. Opening of the switch C'' breaks the previously described circuit through the coil *x''* of relay X'', thereby opening relay X'' and consequently breaking the circuit through the relay coil *y''* of relay Y'', which in turn breaks the circuit to the solenoid S'' and deenergizes the solenoid. Thereupon, the instrumentalities for actuating the platen **22** automatically return to normal position with the platen shifted forwardly and out of printing coaction with the other printing elements, enabling the card *b* to be withdrawn from between the printing elements after having received the printing impression thereupon.

However, should the card *b* be accidentally or inadvertently moved forwardly again so as to close switch B'', the machine will not repeat its printing operation because of the electrical interlock between the relays and associated switches and circuits. To condition the machine for further printing operation, it is necessary to withdraw the card *b* through the guides **4** and **4''** far enough to release the switch actuating device **110** for switch A'' and allow this switch A'' to close. When the card *b* has been withdrawn and allowed switch A'' to close automatically, relay X'' is again energized through the circuit first described, and the machine is restored to operative condition for subsequent printing operations on the same or a different card *b*, during which printing operation, the control cycle just described is repeated.

As in the case of the control circuit of Figures

11 and 15, it will be understood upon completion of each printing operation, the machine is rendered inoperative for further printing by reason of the electrical interlocking established by the control circuit of Figures 14 and 16, and until the card has been moved a substantial distance during withdrawal of the same from between the printing elements. Accidental repetition of the machine operation is thus prevented, although it will be clearly understood that as soon as the switch A'' is permitted to close after the printing operation, the machine is ready for another printing operation upon the same or another card *b*.

Resistor R_2'' and condenser *c*'' reduce sparking at the contacts **107**'' and **108**'' of relay Y'' during operation of this relay.

As in the case described in connection with the operation of the control instrumentalities in Figures 11 and 15, the actuation of the printing elements through the control instrumentalities of Figures 14 and 16 also actuates the punching device such as previously described, cutting away that portion of the card near one edge, which previously limited the inward movement of the card *b* and caused actuation of the switch B'', with the result that switch B'' is permitted to automatically open substantially coincident with the completion of the printing stroke of the platen **22**.

While the specific details of the mechanical structure of the machine, and the control instrumentalities and circuits therefor have been herein shown and described, the invention is not confined thereto, as changes and alterations may be made without departing from the spirit thereof as defined by the appended claims.

What I claim is new and desire to secure by Letters Patent, is—

1. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, means for actuating said printing elements to print upon the inserted card, and means for preventing further printing until the card has been moved an appreciable distance from between the printing elements.

2. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, means for actuating said printing elements to print upon the inserted card, and means controlled by the card for preventing further printing until the card has been withdrawn an appreciable distance from between the printing elements.

3. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, means for actuating said printing elements to print upon the inserted card, and means including a card controlled switch for rendering said actuating means inoperative following each printing operation until the card has been moved an appreciable distance in the direction of withdrawal.

4. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, means controlled by the card for actuating said printing elements to print upon the inserted card, means for rendering said actuating means inoperative following each printing actuation, and means also controlled by the card for restoring the operativeness of said actuating means responsive to an appreciable withdrawal movement of the card.

5. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, electromagnetic means for actuating said printing elements to print upon the inserted card, a switch controlled by the card for energizing said electromagnetic means, and another switch actuable in response to movement of the card for rendering said last mentioned means inoperative and maintaining such inoperativeness following each printing actuation, until the card has been substantially withdrawn.

6. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, electromagnetic means for actuating said printing elements to print upon the inserted card, means controlled by the card for energizing said electromagnetic means, and means including a circuit making and breaking device controlled by one of said printing elements for rendering said last mentioned means inoperative and maintaining such inoperativeness following each printing actuation, until the card has been moved an appreciable distance.

7. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, an electromagnet operatively connected with one of said printing elements for actuating the same to print upon the inserted card, a control circuit for said electro-magnet, including a normally closed switch actuated to open position incident to introduction of the card into the printing machine, a second switch, normally open, and operable by movement of the card between the printing elements to closed position, whereby to energize the electro-magnet to print upon the inserted card, and a third switch, normally open, and operable by one of said printing elements incident to its printing operation to deenergize the electro-magnet and maintain the same deenergized until the card has been withdrawn sufficiently to permit the first mentioned switch to assume its normally closed position.

8. In a card printing machine, cooperative printing elements, including a type bearing element and a platen movable into and out of printing coaction therewith and between which the card is adapted to be inserted and removed, an electro-magnet operatively connected with said platen, for actuating the same to print upon the inserted card, a control circuit for said electromagnet, including a normally closed switch actuated to open position incident to introduction of the card into the printing machine, a second switch, normally open, and operable by movement of the card between the printing elements to closed position, whereby to energize the electro-magnet to print upon the inserted card, and a third switch, normally open, and operable by said platen incident to its printing operation to deenergize the electro-magnet and maintain the same deenergized until the card has been withdrawn sufficiently to permit the first mentioned switch to assume its normally closed position.

9. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, a card guide for guiding the card during insertion and removal thereof respecting the printing elements, an electro-magnet operatively connected with one of said printing elements for actuating the same to print upon the inserted card, a control circuit for said electro-magnet, including a normally closed switch having actuating means therefor

disposed intermediate the ends of the card guide and actuatable by the card to open the switch incident to introduction of the card into the guide, a second switch normally open, and operable by the card to close position approximately at the end of its inward movement in the guide and assumption by the card of a position between the printing elements, the closing of said second switch energizing said electro-magnet to print upon the inserted card, and a third switch, normally open, and operable incident to said printing operation to deenergize the electro-magnet and maintain the same deenergized until the card has been withdrawn from the guide sufficiently far to permit the first mentioned switch to assume its normally closed position.

10. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, a card guide for guiding the card during insertion and removal thereof respecting the printing elements, a stop for engaging and limiting the inward movement of the card in the guide when the card has reached a position between the printing elements, an electro-magnet operatively connected with one of said printing elements for actuating the same to print upon the inserted card, a control circuit for said electro-magnet, including a normally closed switch having actuating means therefor disposed intermediate the ends of the card guide and actuatable by the card to open the switch incident to introduction of the card into the guide, a second switch normally open, and operable by the card to closed position just prior to engagement of the card with the stop, the closing of said second switch energizing said electro-magnet to print upon the inserted card, and a third switch, normally open, and operable incident to said printing operation to deenergize the electro-magnet and maintain the same deenergized until the card has been withdrawn from the guide sufficiently far to permit the first mentioned switch to assume its normally closed position.

11. A card printing machine as claimed in claim 10, wherein the stop comprises means actuatable by the electro-magnet for cutting away a portion of the card during the printing operation, whereby to enable the card to be successively advanced for subsequent printing operations on new lines.

12. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, a card guide for guiding the card during insertion and removal thereof respecting the printing elements, an electro-magnet operatively connected with one of said printing elements for actuating the same to print upon the inserted card, a control circuit for said electro-magnet including a normally closed switch, actuating means for said switch, said actuating means including a member normally disposed in the path of movement of the card, and shiftable by engagement with said card, said member being operatively connected with said switch, a second switch normally open and operable by the card to closed position approximately at the end of its inward movement in the guide to energize said electro-magnet, and a third switch, normally open, and operable incident to printing upon the card to deenergize the electro-magnet and maintain the same deenergized until the card has been withdrawn from engagement with the actuating means for the first mentioned switch so as to permit the first mentioned switch to assume its normally closed position.

13. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, a card guide for guiding the card during insertion and removal thereof respecting the printing elements, an electro-magnet operatively connected with one of said printing elements for actuating the same to print upon the inserted card, a control circuit for said electro-magnet including a normally closed switch, actuating means for said switch, said actuating means including a cam member pivotally mounted adjacent the guide and normally disposed in the path of movement of the card, a lever pivotally connected to said cam member and having abutment means engageable with the switch so as to open the switch incident to pivotal movement of the cam member responsive to engagement of the latter by the card, a second switch normally open and operable by the card to closed position approximately at the end of its inward movement in the guide to energize said electro-magnet, and a third switch, normally open, and operable incident to printing upon the card to deenergize the electro-magnet and maintain the same deenergized until the card has been withdrawn from engagement with the actuating means for the first mentioned switch so as to permit the first mentioned switch to assume its normally closed position.

14. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, a card guide for guiding the card during insertion and removal thereof respecting the printing elements, an electro-magnet operatively connected with one of said printing elements for actuating the same to print upon the inserted card, a control circuit for said electro-magnet including a normally closed switch, actuating means for said switch, said actuating means including a member normally disposed in the path of movement of the card, and shiftable by engagement with said card, said member being operatively connected with said switch, a second switch, normally open, actuating means therefor including a pivotally mounted member having a laterally offset portion and an upwardly projecting portion engageable by the lower end of the card approximately at the end of its inward movement in the guide to depress the upwardly projecting portion and rock the pivotal member on its pivot, said pivotal member having a laterally offset abutment engageable with said second switch to close the switch responsive to depression of the upwardly projecting portion of the pivotal member by the card as aforesaid, the closing of said second switch serving to energize the electro-magnet, and a third switch, normally open, and operable incident to printing upon the card to deenergize the electro-magnet and maintain the same deenergized until the card has been withdrawn from engagement with the actuating means for the first mentioned switch so as to permit the first mentioned switch to assume its normally closed position.

15. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, an electro-magnet operatively connected with said printing elements to actuate the same to print upon the inserted card, a circuit for said electro-magnet including a normally closed relay and a normally closed switch operable by the card to open

said switch incident to introduction of the card into the printing machine, a second relay in said circuit, said second relay being normally open, a switch for said second relay, operable by the card for closing said second relay and energizing said electro-magnet, and a third switch in said circuit, operable by one of said printing elements for opening said first relay, the opening of said first relay serving to open said second relay and deenergize said electro-magnet, said relays and switches being so interconnected in the circuit as to prevent further energizing of said electro-magnet until the first mentioned switch has been reclosed responsive to withdrawal of the card.

16. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, and means for actuating said printing elements to print upon the inserted card, including an electro-magnet having a movable plunger, a rotatably mounted shaft having a pinion fixedly mounted thereon, an arm fixed to said shaft, a connecting link interposed between and pivotally secured to said arm and electro-magnet plunger, and rack means operatively associated with one of said printing elements and engaged with said pinion whereby to actaute said printing element incident to movement of the electro-magnet plunger.

17. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, an electro-magnet operatively connected with one of said printing elements for actuating the same to print upon the inserted card, a control circuit for said electro-magnet, including a normally closed switch actuated to open position incident to introduction of the card into the printing machine, a second switch, normally open, and operable by movement of the card between the printing elements to closed position, whereby to energize the electro-magnet to print upon the inserted card, and a third switch, normally closed, and operable by one of said printing elements incident to its printing operation to deenergize the electro-magnet and maintain the same deenergized until the card has been withdrawn sufficiently to permit the first mentioned switch to assume its normally closed position.

18. In a card printing machine, cooperative printing elements, including a type bearing element and a platen movable into and out of printing coaction therewith and between which the card is adapted to be inserted and removed, an electro-magnet operatively connected with said platen, for actuating the same to print upon the inserted card, a control circuit for said electro-magnet, including a normally closed switch actuated to open position incident to introduction of the card into the printing machine, a second switch, normally open, and operable by movement of the card between the printing elements to closed position, whereby to energize the electro-magnet to print upon the inserted card, and a third switch, normally closed, and operable by said platen incident to its printing operation to deenergize the electro-magnet and maintain the same deenergized until the card has been withdrawn sufficiently to permit the first mentioned switch to assume its normally closed position.

19. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, an electro-magnet operatively connected with said printing elements to actuate the same to print upon the card, a circuit for said electro-magnet including a normally closed relay and a normally closed switch initially establishing a circuit to close said relay, said switch being actuatable responsive to insertion of the card into the printing machine to open said switch, said relay being so connected in said circuit as to remain energized and consequently closed when the aforesaid switch is opened, a second relay in said circuit and a second switch, both normally open, said second switch being actuatable responsive to further insertion of the card for closing said second relay through the first mentioned closed relay, whereby to energize the electro-magnet, and a third switch, actuatable by one of the printing elements coincident with the printing operation for opening said first mentioned relay and consequently the second mentioned relay to deenergize the electro-magnet, said relays and switches being so electrically interconnected that the second relay cannot be closed by the second mentioned switch to reenergize the electro-magnet until the card has been withdrawn from the machine sufficiently far to allow the first mentioned switch to resume its normally closed position.

20. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, intermittently operable electrical means for actuating said printing elements to print upon the inserted card, and electrical interlocking means for preventing further printing until the card has been withdrawn an appreciable predetermined distance.

21. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, intermittently operable electrical means for actuating said printing elements to print upon the inserted card, and electrical interlocking means for preventing further printing until the card has been withdrawn a substantial predetermined distance, said interlocking means including a plurality of card controlled circuit making and breaking devices having actuating means arranged in spaced relation to each other so as to be successively actuated by the card.

22. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, means for actuating said printing elements to print upon an inserted card, and means separate from the aforementioned means for temporarily preventing further printing until the card has been moved a substantial distance relatively to said printing elements.

23. In a card printing machine, cooperative printing elements between which the card is adapted to be inserted and removed, means for actuating said printing elements to print upon an inserted card, said means including a switch actuatable by movement of the card and an associated electrical circuit, and means for temporarily rendering such switch ineffective to actuate the printing elements, whereby to prevent a second printing operation of the printing elements, said last-named means requiring movement of the card to an extent greater than that required to actuate the switch aforesaid before a subsequent actuation of the switch will cause a second printing operation.

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