

Dec. 14, 1965

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STAMPING DEVICE FOR EMBOSSED CHARACTERS ON PLATES

Filed Nov. 1, 1963

5 Sheets-Sheet 1

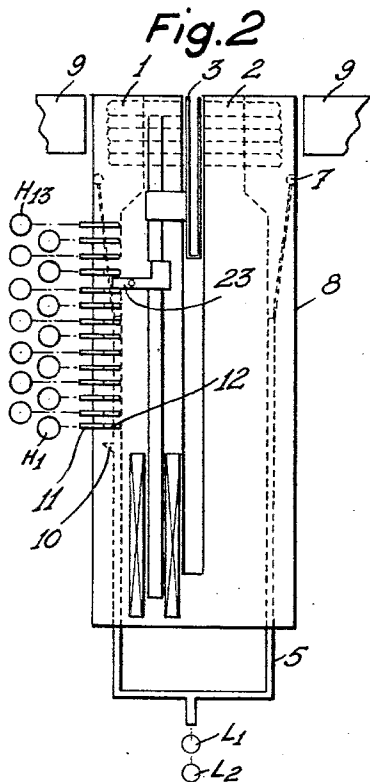
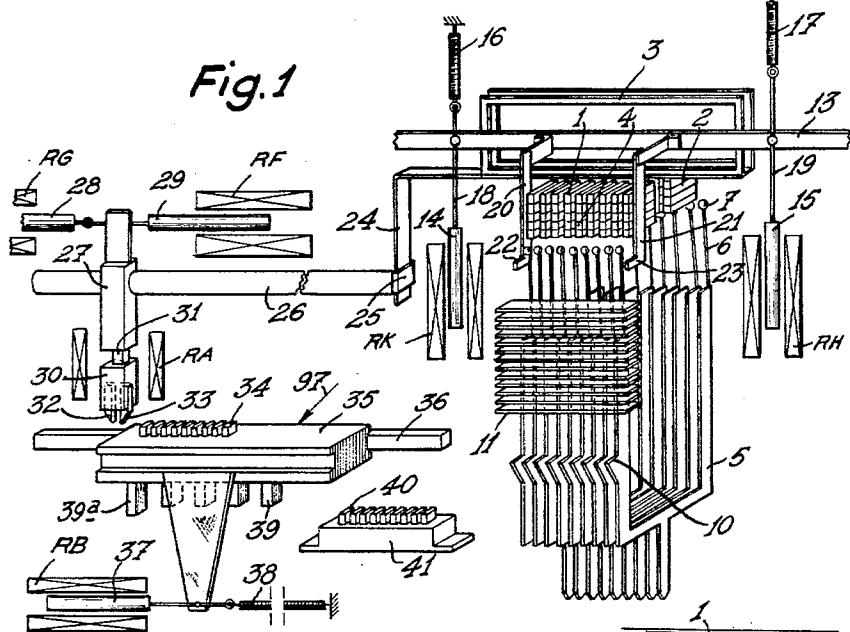
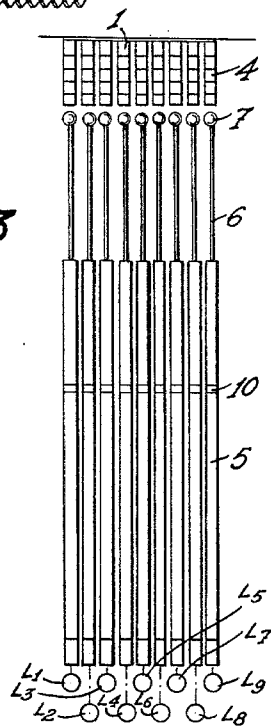


Fig. 3



Dec. 14, 1965

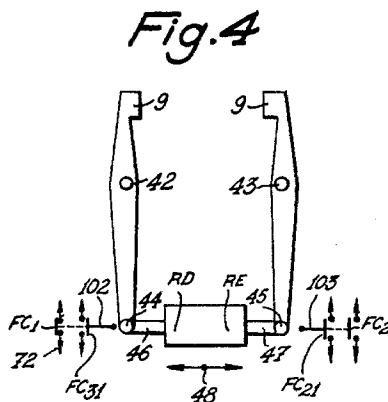
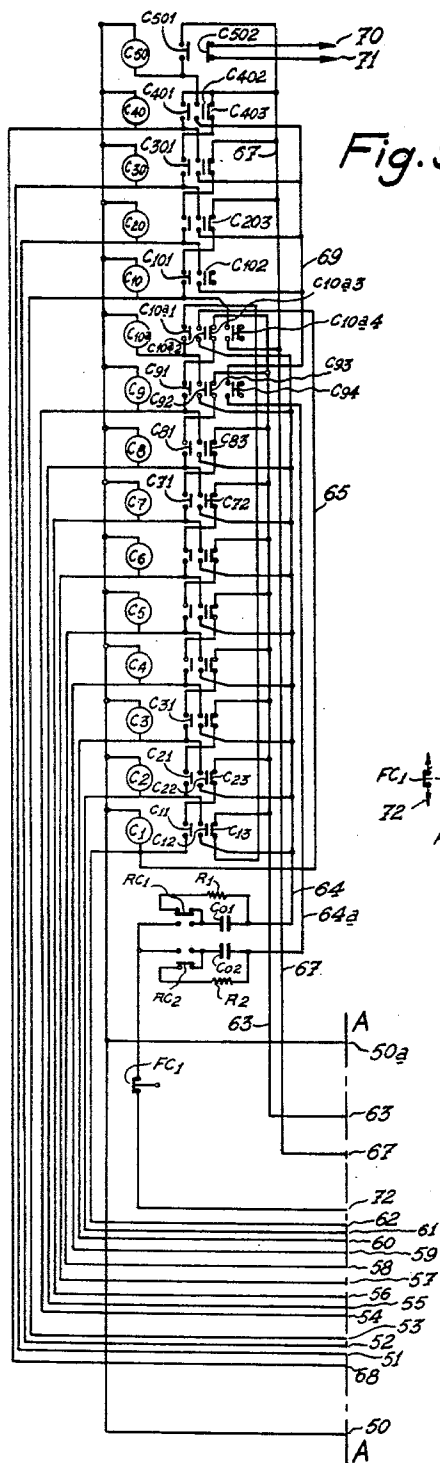
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3,223,218

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Filed Nov. 1, 1963

5 Sheets-Sheet 2



Dec. 14, 1965

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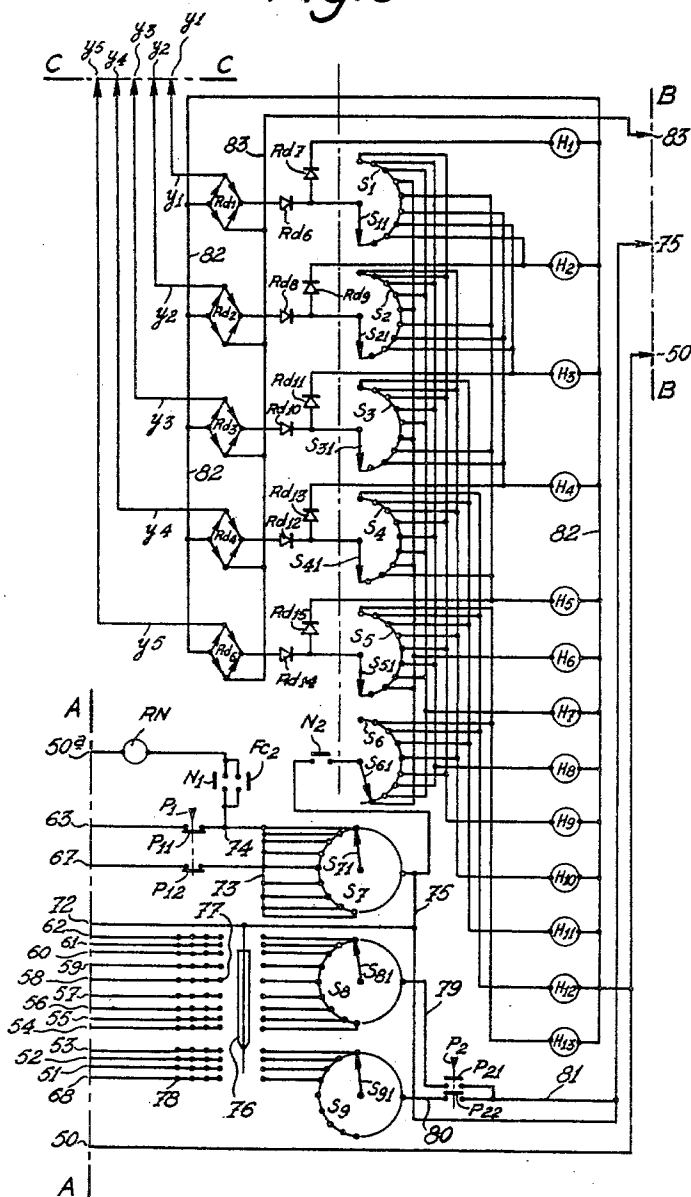
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STAMPING DEVICE FOR EMBOSSED CHARACTERS ON PLATES

Filed Nov. 1, 1963

5 Sheets-Sheet 3

Fig. 6



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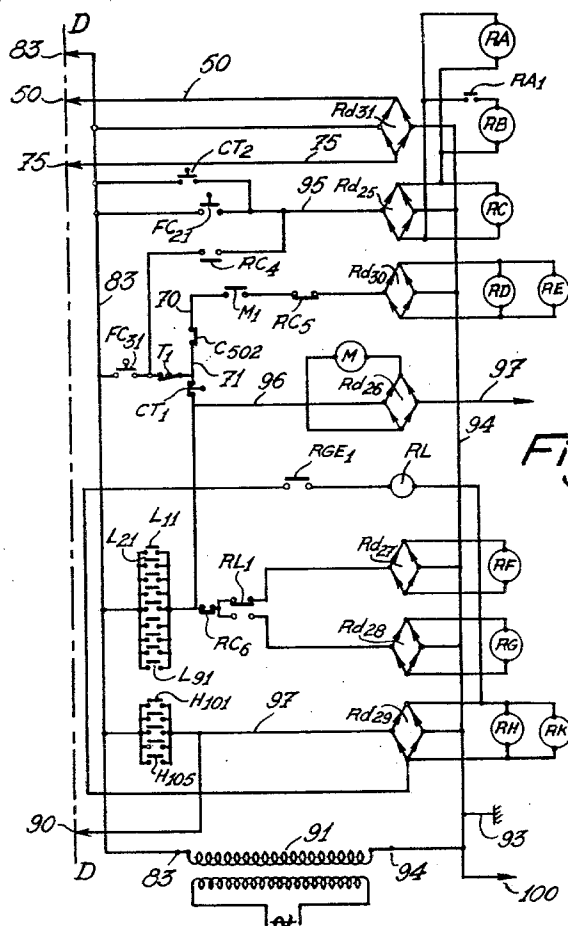
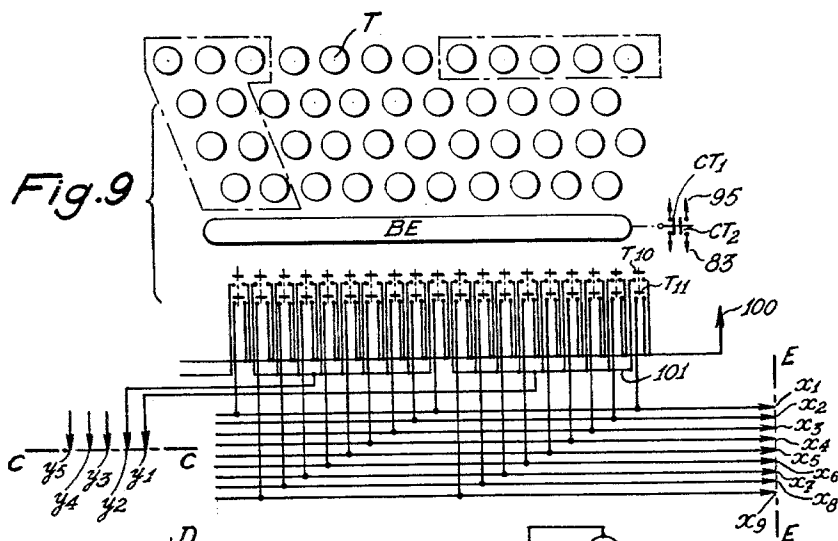
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3,223,218

STAMPING DEVICE FOR EMBOSING CHARACTERS ON PLATES

Filed Nov. 1, 1963

5 Sheets-Sheet 5



1

3,223,218

STAMPING DEVICE FOR EMBOSSING CHARACTERS ON PLATES

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In conventional machines, the inscription of characters by stamping, on address-plates or the like, is carried out by an operator at relative slow speed and with considerable physical effort. This is due to the fact that, on current machines, the characters, which are formed by stamps, are arranged on drums of considerable mass, so that the striking power required is high, while the inertia of all the moving parts required for the operations of sign selection and stamping is such that the writing speed seldom exceeds twenty to thirty signs per minute.

On the other hand, stamping operations on address-plates are particularly urgent, particularly in the case of newspaper holiday subscription services, when thousands of address-plates have to be made in a short time when subscribers leave on vacation. With existing machines, such services can be satisfactorily operated only with a large number of machines and employees, most of these machines and employees remaining unoccupied outside these peak periods.

It is a main object of the present invention to overcome these drawbacks.

The invention accordingly relates to a stamping method, in accordance with which each of the character- or sign-holders in a character-box, is operable separately by means of a common pushrod, the desired character-holder being actuated by interposing a movable restrainer means or striker of low inertia between said pushrod and said character-holder.

The method of this invention is preferably performed by providing two facing character- or sign-boxes, one of which contains raised character holders and the other companion intaglio character holders, moving two companion restraining means or strikers simultaneously behind said boxes, and operating clamping means or push-rods symmetrically in the fashion of caliper jaws, while at the same time imparting relative displacement to the address-plate to be stamped when said jaws open, coordinately as the stampings proceed.

It is preferable to provide stationary character-boxes and to endow the address-plate with the necessary mobility, whereby to permit positioning of said address-plate opposite each character to be stamped.

Since the only moving parts are the restraining means or strikers and the address-plate support, the same can be made very light in weight. Their inertia is thus made low and the stamping rate can be raised to speeds of 180 to 200 characters or signs per minute.

Such speeds are comparable to those obtained on typewriters, and the invention likewise comprises mechanisms for performing the said method, said mechanisms being notably but by no means exclusively controllable by control means such as a keyboard similar to that of a typewriter.

The description which follows with reference to the accompanying drawings, which are filed by way of non-

2

limitative example, will give a clear understanding of how the invention is carried into practice.

Referring to the drawings filed herewith:

FIG. 1 is a schematic perspective view of the component parts of the system for stamping and displacing the support to be stamped on such a machine.

FIG. 2 shows in schematic side elevation the stamping block.

FIG. 3 shows such a block in schematic front elevation, the guiding enclosure having been removed.

FIG. 4 is a diagrammatic illustration of the stamping restrainer or clamping means and its limit switches.

FIG. 5 shows the circuit diagram of the sign-adding block and joins along the line A—A with the counterpart line of FIGURE 6, which figure is the circuit diagram of the blocks for grid preparation and horizontal lock selection, for lining off, and for selection of the horizontal rows of signs.

FIG. 7 is the circuit diagram of the block for vertical selection of the locks for permitting selection of the sign columns, which FIGURE 7 joins with FIGURE 6 along counterpart lines B—B.

FIG. 8 is the circuit diagram of the block for controlling the stamping operating sequence, which figure joins with FIGURE 7 along counterpart lines D—D; and

FIG. 9 shows, firstly, a control keyboard in plan view, together with its keys and spacing bar and, secondly, fragmentally, the wiring diagram of the connections of the key contacts to distribution harnesses, the same joining on the one hand along counterpart lines C—C with FIGURE 6 for horizontal selection and, on the other hand, along counterpart lines E—E for vertical selection.

Reference is first made to FIGURE 1, which is a highly schematic perspective view of the mobile members of a stamping-block, all the necessary guiding means having been omitted for greater simplification and clarity of the drawings.

In the specific example illustrated, stamping is effected by means of two character or sign boxes 1 and 2 placed on either side of a channel along which is translatable, along its plane, a frame 3 forming a plate holder with open faces adapted to receive, with suitable restraining means, an address-plate to be stamped (not shown). Said frame is preferably vertical and, when stationary, is clear of boxes 1 and 2 in order to provide readability of the inscriptions being struck.

The character-boxes 1 and 2 contain small slides or character holders 4 supporting a character or sign which is raised in the case of the slides of box 1 and is intaglio-engraved in the case of the slides of box 2. The characters in box 1 thereby constitute male dies while the characters in box 2 constitute female dies.

The slides are guidably mounted in the boxes 1 and 2 (the walls of which are not shown), and these boxes are honeycomb-shaped, and provision is also made for spring return means (not shown) of said slides into a mutually spaced position at the bottom of the boxes whereby to maintain clear the channel along which frame 3 travels.

In the specific example illustrated, each of boxes 1 and 2 comprises forty-five slides corresponding to as many characters and signs, and these forty-five slides are arranged in nine columns of five slides each. In other words, the boxes contain five superimposed horizontal rows of nine slides each. This number is usually sufficient

for inscriptions composed solely of one kind of upper-case characters:

Beneath said stationary boxes, rigid with the supporting structure of the machine, are disposed nine yokes 5, the head of each branch of which is provided with a flexible blade 6 the free extremity of which supports a ball 7 constituting a striker. All these yokes are movable within a tubular enclosure 8, the balls 7 being guided along the walls thereof. The upper portion of said walls is flexible or is provided with flexible open-work portions facing the dorsal portions of the character holders 1 and 2.

On either side of said flexible portions are positioned clamping means constituted by the jaws 9 of a caliper, the legs of which are pivotally connected to parallel shafts and the extremities remote from the jaws of which are likewise pivoted on draw-links attached to electromagnet plungers.

The yokes 5 can be raised, and such motion is adapted to transport the corresponding strikers or balls 7 opposite the various pairs of raised and intaglio characters respectively in the corresponding column. The stationary position is so chosen that the balls 7 face the dorsal parts of the various pairs of opposed slides carrying the desired raised and intaglio character, so that said balls or strikers are operative to thrust said slides towards each other under the combined action of the jaws 9 of the clamping means, thus stamping the interposed address-plate.

The stamping operation thus requires movement only of a yoke 5 and corresponding positioning of frame 3, and since these movable parts are extremely light in weight, their inertias are low and permit great rapidity of execution.

The yokes 5 are of course each provided with spring return means (not shown) to assist gravity when said yokes slide vertically downwards and are returned to the initial rest into the resting position.

Turning now to disposition of the balls 7 acting as pushers, each yoke is provided with latching means comprising a lateral catch 10 adapted to be arrested by one of the horizontal locks 11. Each lock consists of a horizontal blade adapted to be inserted or withdrawn sideways, longitudinally of itself and by means to be described later, into and from a corresponding slot 12 in the enclosure 8 whereby to block the path of the catch 10 of the ascending yoke at the desired level.

Since the axis of each character to be stamped is fixed, the frame or plate holder 3 must be moved with two degrees of freedom in its own plane whereby to permit moving it with the address-plate placed therein into position facing each character in order to permit locating a specific character to be stamped, and this must be done in compliance with a displacement pattern which is a function both of the number of characters, signs and spaces already inscribed on one of the lines of said plate, and the number of such lines.

The plate holder 3 is accordingly mounted on a bar 13 which is slidable within guideways parallel to the channel passing between boxes 1 and 2, in response to electromagnet plungers 14 and 15 and against countering springs 16 and 17 anchored to fixed points, said plungers and springs being attached to said bar 13 by rods 18, 19. In order to permit the vertical motion of the frame to be arrested by first locking means under the action of said plungers and springs, bar 13 is provided, on either side of box 1, with crank arms 20 and 21 having on the extremities thereof lugs 22 and 23 adapted to cooperate with one of the locks 11 hereinbefore mentioned. In this manner, the stacked locks 11 are utilized for two purposes, namely for restraining the yokes 5 and for restraining the frame 3 in a manner which will become apparent later. Lugs 22 and 23 are preferably equal in size but very slightly smaller than the uniform gap between the locks 11.

In order to permit horizontal displacement of frame 3, the bottom thereof is joined to an arm 24 which is at right angles to the direction of supporting bar 13 and is

slidably mounted within a terminal fork 25 of an actuating rod 26. The latter is rigid with an attachment 27 to which are coupled opposed electromagnet cores 28 and 29, which cores are relatively long and also cooperate with long coils whereby to ensure general constancy of the attracting force irrespective of the stroke, and this likewise applies to the cores 14 and 15 and to the corresponding coils, whereby to permit traversal by the frame 3 of the entire length of the lines as well as the transverse length occupied by the specific number of lines to be inscribed on a particular address-plate.

The attachment 27 cooperates with a piece 30 slidably mounted on a guide 31 of attachment 27 and supporting a catch system comprising dual clicks 32, 33 on its extremity. The piece 30 is made of magnetic conductive material and is subjected to the influence of a catch system retracting electromagnet coil to be described later.

Said catch system 32, 33 cooperates with a series of nine locks 34 supported on a carriage 35 which constitute second locking means for said plate holder 3, the catch system 32, 33, the locks 34, and the mutual spacing thereof corresponding with the gap between the columns of slides in the character-boxes 1 and 2. The locks 34 are retractable and can be caused to project in response to a mechanism to be described hereinafter. Said catch system 32, 33 comprises two clicks which have bevelled external surfaces and are freely tiltable only towards the gap separating them, said clicks having vertical faces facing said gap. In this way, regardless of the direction of travel of clicks 32, 33 with respect to locks 34 in response to the alternating action of cores 28, 29, the head or attachment 27 will be arrested on one of the faces of a lock 34. Said catch system can be released by the retracting motion of slide 30 along guide 31.

It will be evident that, with such an arrangement, the frame 3 can by primary displacement means hereinbefore described and acting on bar 13 and arm 24 be made to assume all positions required to make any one of the locations of the plates it contains and to lock said frame 3 in such a position by first and second locking means, in registry with any desired pair of character-holders. By virtue of the stacked arrangement of the locks 11 in said first locking means, successive line changes can be made, the conjugate condition of lugs 22 and 23 and the spacing of locks 11 being such that the pitch of displacement of frame 3 be equal to the pitch of the characters in the columns in boxes 1.

Upon such primary displacements herein before described must be superimposed those arising from the need to count the characters already inscribed on a line by corresponding secondary displacement means.

To that end, a carriage or restraining block 35 is movably mounted on a slideway 36 and is moved by a counting electromagnet core 37 against a return spring 38. Opposite the selection locks 34, block 35 is provided with a series of tens-counting locks 39 which are successively retractable and cooperate with a row 40 of units-counting locks which are likewise successively retractable and are supported in a stationary support 41 fixed to the structure of the machine. The scales used to illustrate the tens-counting locks 39 and the units-counting locks 40 have been intentionally distorted for greater clarity.

The units-counting locks 40 are nine in number. The first tens-counting lock bears successively on the units-counting locks before being retracted to leave room for the second tens-counting lock, and so on, as a result of which the block 35 is displaced in successive units and tens until a line is completely filled.

Upon the motion just referred to (first part of secondary motion) must also be superimposed a second part of the secondary motion arising from the need for lining off. To that end, recourse is had to other secondary displacement means comprising certain of the horizontal locks 11 in common, and the frame restraining controls are shifted by shifting means to be described more fully

hereinafter according to the number of successive lines to be stamped on the address-plate enclosed in the frame.

The coordination of all these primary and secondary motions latching and locking operations could be accomplished with a variety of means, but having regard for the rapidity of execution permitted, it is preferable to effect such control by control means comprising a typewriter keyboard. In this way, the operator can move very quickly from a typing station to a stamping station, and vice versa.

FIGS. 5 through 9 illustrate such a control keyboard arrangement similar to that of a typewriter and ordinating means for transforming the action of the typewriter keys to stamping means hereinbefore described.

On FIGS. 5 through 9, the installation is divided into ordinating means comprising a sign-counting or adding block (FIG. 5) designed to take into account a margin setting and the number of signs already stamped on a given line, followed by a grid preparation block (FIG. 6) associated with a block for selecting the character-row locks, which block is shown on FIG. 6. FIG. 7 shows the block for selecting the character-column selection and yoke control locks. As already stated, FIG. 8 shows the block for controlling the operating sequence of the stamping operation and, lastly, FIG. 9 is a plan view of the control means and its keyboard and shows a series of contacts controlled by the keys. It should be noted that these various illustrations are fragmental only and that the various drawings must be juxtaposed.

In such an installation, retraction of the catch piece 30 (FIG. 1) is effected by means of a coil RA (FIGS. 1 and 8). Return motion of the block 35 is effected in response to a coil RB (FIGS. 1 and 8). As is clearly shown in FIG. 4, the stamping caliper jaws 9 of the clamping means are fulcrumed at 42 and 43 and the extremities remote from the jaws bear pivots 44, 45 to which are connected the cores 46, 47 of a pair of stamping electromagnets RD and RE (FIGS. 4 and 8) which act in opposite directions to spread the pivots 44, 45, as shown by the double-arrow 48 on FIG. 4. Return spring means (not shown) restore the jaws to their open position.

Cores 28 and 29 of the assembly for locating the longitudinal position of frame 3 are respectively actuated by coils RF and RG (FIGS. 1 and 8) operating in opposite directions.

Vertical action on frame 3 by cores 14, 15 is effected by coils RH and RK (FIGS. 1 and 8). Each of the horizontal locks 11 is actuated by coils H1 through H13 (FIGS. 2 and 6).

The various yokes 5 are actuated by coils L1 through L9 respectively (FIGS. 3 and 6). In addition to these coils, which are shown on FIGS. 1 through 8, the various locks 34 are respectively actuated by one of a series of coils V1 through V9 (see FIG. 7). The various tens-locks 39 are respectively actuated by one of a series of coils C10, C20, C30 and C40 which are apparent not in FIG. 1 but in FIG. 5.

The various unit-counting locks 40 are respectively actuated by one of a series of coils C1 through C9 which are apparent not in FIG. 1 but in FIG. 5.

In the case of the sign counting or adding block, the same comprises coils C1 through C9, C10a, C10, C20, C30, C40 and C50, all of which are connected to a supply line 50. To the respective coils C1 through C40, correspond return lines 51 through 62 respectively.

Coil C1 operates three moving contact vanes, to wit the maintaining vane C11 connected to one of the fixed contacts of vane C23 of coil C2; a vane C12, one of the fixed contacts of which is connected to the output of coil C2, and lastly a vane C13. On one side, one of the fixed contacts of vane C13 is connected to a conductor 63; on the other side, the second fixed contact of vane C13 is connected to one of the fixed contacts of a moving vane C10a1 of relay C10a.

The second fixed contact of vane C12, which is opposed

to the contact connected to the output of coil C2, is connected to a line 64.

Similarly, the vanes actuated by coil C2 include a maintaining vane C21 of which one fixed contact is connected to one of the fixed contacts of a vane C33, the second of said fixed contacts of this vane C33 being connected to the line 63 in the same way as the corresponding fixed contacts of vanes C13 and C23. One of the fixed contacts of vane C22 is connected to the output of coil C3, namely to the wire 60, while the other is connected to line 64.

The connections of coils C2 through C9 are repeated in the same manner.

The output of coil C1, namely the wire 62, is connected through a conductor 65 to one of the fixed contacts of a vane C10a2 of relay C10a, the second corresponding fixed contact being connected to line 64.

Coil C9 operates five vanes, vane C91 being likewise a maintaining vane. Vane C92 permits connecting line 64 to the output of coil C10a. Contact vane C93 provides a junction between line 63 and one of the fixed contacts of maintaining vane C81. Vane C94 is interposed between a line 64a and a line 69.

Vane C10a2 enables line 64 and line 65 to be interconnected. Vane C10a4 enables a line 67 to be connected to the output of coil C10. Vane C101 is a maintaining vane enabling the output of coil C10, and hence wire 53, to be connected to one of the fixed contacts of vane C203. Vane C102 enables one of the fixed contacts of vane C94 to be connected to the output of coil C20.

Coils C20, C30 are similarly connected with adjacent relays. The output of coil C40 connects to a line 63 which in turn is connected to one of the fixed contacts of maintaining vane C401, which can itself be connected to line 67. Vane C402 can be connected through a line 69 to one of the fixed contacts of vane C94 and also to the output of coil C50. Vane C403 enables one of the fixed contacts of maintaining vane C301 to be connected to line 67.

Vane C501 enables the output of coil C50 to be connected to line 67 for the self-sustaining of that coil. Vane C502 interconnects two conductors 70 and 71, the purposes of which will be explained hereinafter.

Connected into line 64 is a capacitor Co1 to which can be parallel-connected a resistor R1 through a vane RC1 operated by a relay RC which will be described hereinbelow. Similarly connected into line 64a is a capacitor Co2 to which can be parallel-connected a resistor R2 by means of a vane RC2 controlled by the same relay RC. The resisting contacts of vanes RC1 and RC2 are connected to the respective capacitors and resistors. The corresponding travelling contacts are connected only to the capacitors and are parallel-connected to one of the resting contacts of a vane FC1 of a limit contact to be described hereinbelow, the other resting contact of the latter-mentioned vane being connected to a line 72.

Along the junction line A—A are therefore to be found the conductor 50 and a shunt 50a thereof, the conductors 51 through 62, followed by 63, 67, 68 and 72 which are to be found in the lower part of FIG. 6.

These various conductors are connected to the grid preparation block which comprises two selectors S8 and S9 which are manually operable individually to permit passing in succession through nine active positions in the case of the former selector and through four active positions only in the case of the latter.

The nine contact studs of selector S8 are respectively connected to conductors 54 through 62, which conductors are in reality continuous, as contracted with the interruption shown on the drawing which was made to permit representation of a plug 76 bearing a contact point connected through a flexible conductor to wire 72, said point being adapted to cooperate with sockets 77 provided

in each of conductors 54 through 62, or alternatively with corresponding sockets 78 provided in conductors 51 through 53 and 68, which conductors are connected to the four first useful studs of selector S9.

The interruption referred to can be filled in addition by a network of conductors having plugs for providing a variety of connections, which, by means also of a clutch drive between the shafts of selectors S1 through S7 and between the shafts of selectors S8 and S9, enable any desired systematic change of margin setting to be combined with line changes; such operations need not be described in greater detail in order to retain simplicity in the general description and, in what follows, such operations will not be referred to again.

The contact arm S81 of selector S8 is connected to a conductor 79 and the contact arm S91 of selector S9 to a conductor 80. These two conductors are joined to fixed contacts of two vanes P21 and P22 of a pushrod P2, which vanes are normally open. The other fixed contacts of these two vanes are connected to a single conductor 81 which is in turn connected to conductor 75.

To said grid preparation block is associated a block for selecting the lining-off and character-row selection locks, which block is shown at the top of FIG. 6 and comprises selectors S1 through S7 operated simultaneously by a single control.

The latter-mentioned block comprises coils H1 through H13 for operating the aforementioned superimposed locks 11. The inputs of H1 through H13 are connected to a common conductor 82 which is parallel connected with the negative output of five rectifier bridges Rd1 through Rd5. The positive output of bridge Rd1 is connected to a diode Rd6 which feeds the contact arm S11 of nine-stud selector S1. Contact arm S11 is connected via a diode Rd7 to the input of coil H1.

Coils H2 through H5 are wired in similar fashion.

Contact arm S61 of selector S6 is connected through a normally-open vane N2 associated to the armature of relay RN and to wire 75.

The first studs of selectors S1 through S5 are isolated. The second stud of selector S1 is connected to the input of coil H2. The third stud of selector S1 is connected both to the input of coil H3 and to the second stud of selector S2.

The third stud of selector S1 is connected to the input of coil H3 and to the second stud of selector S2. The fourth stud of selector S1 is connected to the input of coil H4, to the third stud of selector S2 and to the second stud of selector S3.

The fifth stud of selector S1 is connected to the input of coil H5, to the fourth stud of selector S2, to the third stud of selector S3 and to the second stud of selector S4. The sixth stud of selector S1 is connected to the fifth stud of selector S2, to the fourth stud of selector S3, to the third stud of selector S4, to the second stud of selector S5 and to the first stud of selector S6.

The seventh stud of selector S1 is connected to the sixth stud of selector S2, to the fifth stud of selector S3, to the fourth stud of selector S4, to the third stud of selector S5, to the input of coil H7 and to the seventh stud of selector S6.

The eighth stud of selector S1 is connected to the seventh stud of selector S2, to the sixth stud of selector S3, to the fifth stud of selector S4, to the fourth stud of selector S5, to the input of coil H8 and to the third stud of selector S6.

The ninth stud of selector S1 is connected to the eighth stud of selector S2, to the seventh stud of selector S3, to the sixth stud of selector S4, to the fifth stud of selector S5, to the fourth stud of selector S6 and to the input of coil H9.

The ninth stud of selector S2 is connected to the eighth stud of selector S3, to the seventh stud of selector S4, to the sixth stud of selector S5, to the fifth stud of selector S6 and to the input of coil H10.

The ninth stud of selector S3 is connected to the eighth stud of selector S4, to the seventh stud of selector S5, to the sixth stud of selector S6 and to the coil H11.

The ninth stud of selector S4 is connected to the eighth stud of selector S5, to the seventh stud of selector S6 and to the input of coil H12.

The ninth stud of selector S5 is connected to the eighth stud of selector S6 and to the input of coil H13.

The ninth stud of selector S6 is isolated.

A selector S7 belonging to the series of lining-off selectors S1 through S7 has all its studs parallel-connected to a conductor 73. By means of a conductor 74, said conductor 73 feeds one of the resting contacts of the vanes P11 of a pushrod P1, the other resting contact being connected to conductor 63. The second vane P12 of the same pushrod is provided with a resting contact connected to conductor 73 and with a further resting contact connected to conductor 67.

Shunt-connected to conductor 74 is a contact N1 in parallel with a further contact Fc2, the control means of which will be described hereinafter, and these two contacts are normally open, contact N1 being a maintaining contact of a relay R-N connected to conductor 50a.

The moving vane S71 of selector S7 travels over the nine fixed contacts of this selector, causing a break in current as it passes from one to the next. Said vane S71 is connected to a conductor 75 to which conductor 72 is connected.

The alternating inputs of rectifiers Rd1 through Rd5 are parallel-connected to a conductor 83 which, as can be clearly seen on the junction lines B—B, D—D of FIGS. 6 and 7, is connected, like conductors 50 and 75, to another portion of the apparatus which will be described hereinbelow.

The other alternating inputs of the latter-mentioned rectifiers are connected individually to conductors y1 through y5 which, as can be seen from the junction lines C—C of FIGS. 6 and 9, are connected to another portion of the apparatus and more particularly to the composing keyboard.

Reference is now had to FIG. 7, from which it can be seen that the aforementioned coils V1 through V9 are located in that part of the apparatus which constitutes the block for selecting the character-column selection locks, it being remembered that the associated coils operate directly or through relay means upon the spacing locks 34.

This block has—or is shown as having on the diagram—conductors 50, 75 and 83 extending therethrough directly.

Coils V1 through V9 have their inputs respectively connected to the positive outputs of bridge-connected rectifiers Rd16 through Rd24 and their outputs parallel-connected to a common line 84. Said line terminates at one of the resting contacts of a normally-closed vane RC3 which is actuated by the aforementioned relay RC and which will be described hereinafter, and the second resting contact of vane RC3 is connected to a common line 85 to which are parallel-connected the outputs of relay coils L1 through L9.

The inputs of coils L1 through L9 for raising the yokes 5 are connected to the respective positive outputs of rectifiers Rd16 through Rd24 with corresponding interposed resistors r1 through r9, respectively, the ratings of which are uniformly stepped. The input studs of coils L1 through L9 are parallel-connected to a common line 86 with respective interposed diodes d1 through d9, said line 86 being connected to line 85 through a capacitor Co3 provided with a parallel-connected resistor R3. Line 86 is additionally connected to a locating galvanometric relay RGE, the function of which will be described hereinbelow and the needle of which is energized from a conductor 87 and can swing between an insulated stop 88 and a fixed contact 89 the wiring of which will be de-

scribed in detail hereinafter. The output of galvanometric relay RGE is connected to contacts of parallel-connected normally-open moving vanes V11, V21, V31, V41, V51, V61, V71, V81 and V91 which are individually operated by the corresponding relays of the series V1 through V9, the second fixed contacts of these various vanes being connected to line 85, with an interposed comparison capacitor Co4.

One of the alternating inputs of rectifiers Rd16 through Rd24 are connected to a line 90, the manner of connection of which will become apparent hereinafter with reference to the junction lines D—D of FIGS. 7 and 8. The other alternating inputs to bridged-rectifiers Rd16 through Rd24 are respectively effected through conductors x1 through x9, the manner of connection of which will be explained in detail with reference to the junction lines E—E of FIGS. 7 and 9.

As can be seen from FIG. 8, the apparatus additionally includes a stamping sequence block which comprises coil RA for retracting catches 32, 33 by means of core 30, coil RB for inscribing the signs, coil RC for ending the stamping and coils RD and RE for operating the jaws 9 of the stamping caliper.

The apparatus is energized by the secondary winding 91 of a transformer connected to a source of electric current, which winding provides a safety current. One of the outputs of this secondary is formed by the aforementioned conductor 83. The other output of said secondary is earthed at a point 93 on the machine and supplies a common conductor 94 to which are connected the alternating inputs of bridged rectifiers.

A first bridge Rd31 of rectifiers is interposed between conductors 83 and 94. The positive output of this bridge takes place via conductor 50 and the negative output via conductor 75, said conductors 50 and 75 being connected to the other parts of the apparatus as explained hereinabove.

A second rectifier bridge Rd25 connects through its alternating input to conductor 94. Its other alternating input is connected to a conductor 95 which is in turn connected to line 83 with an interposed normally-open limit-stop moving vane FC21 which, like the aforementioned vane FC2, belongs to the armature 103 of a limit contact to be described hereinafter. Parallel-connected to vane FC21 is a normally-open vane CT2 belonging to an armature which is controlled by a spacing bar BE to be described hereinbelow.

Also in parallel with vane FC21 are series-connected a normally-open moving vane RC4 belonging to the armature of "end-of-stamping" coil RC and a normally-open vane FC31 belonging to the armature 102 of a limit-contact for the stamping caliper, which will be described subsequently.

The positive and negative outputs of bridge Rd25 energize coils RA, RB and RC in parallel, there being a normally-open mobile vane type contact Ra1 controlled by coil RA inserted before the input of coil RB.

A third rectifier bridge Rd30 has its positive and negative outputs connected to the paralleled stamping coils RD and RE. One of the alternating inputs of bridge Rd30 is connected to line 94 and the other alternating input to line 83 with, interposed in series, a normally-closed contact vane RC5, a normally-open contact vane M1 belonging to the armature of a relay M to be described hereinbelow, a contact vane C502 belonging to the armature of the relay C50 described precedingly, a vane CT1 belonging to the aforementioned mechanical armature of the keyboard spacing bar BE to be described later, and a group of moving vanes L11, L21, . . . L91, parallel-connected and respectively operated by the relays of the series L1 through L9, the latter-mentioned vanes being normally open whereas the vanes CT1 and C502 are normally closed.

From a point between C502 and vane CT1 runs a branch terminating at a normally-closed manual pushrod

T1 the function of which will be explained hereinbelow and which, when closed, is connected to a point lying between vanes FC21 and FC31, said pushrod being the repetition pushrod.

From a point between CT1 and the group of vanes L11, L21, . . . L91, runs a branch 96 connected to an alternating output of a rectifier bridge Rd26 the other alternating output of which is connected through a conductor 97 to the counting carriage 35, which carriage is made of current-conducting material and insulated from ground, a ground path therefor being restored when the conductive catches 32 and 33 bear against the sides of one of the likewise conductive blocks 34. The positive and negative outputs of rectifier bridge Rd26 are connected to the input and output ends of the winding on a relay M.

As can be seen from the bottom righthand part of FIG. 8, a rectifier bridge Rd27 has one of its alternating inputs connected to conductor 94 and the alternating output to one of the fixed contacts of a moving vane RL1 operated by a relay RL to be described hereinbelow.

Similarly, a second rectifier bridge Rd28 has an alternating input connected to conductor 94, the output connected to another fixed contact of the same vane RL1 acting as a selector. The other fixed contacts of said vane RL1 are all connected to the fixed contact of a vane RC6 belonging to the armature of relay RC, which vane is normally-closed and has its other fixed contact connected to the conductor running to contact CT1 and to the series of contacts L11, L21, . . . L91.

The positive and negative outputs of bridge Rd27 are respectively connected to the terminals of a coil RF which is shown in FIG. 1 also and is utilized for locating the movable catch system 32, 33 on one of locks 34, in the direction of travel running from left to right in FIG. 1.

In the same way, the positive and negative outputs of bridge Rd28 are respectively connected to the terminals of companion coil RG operating in the opposite direction.

A last rectifier bridge Rd29 has one alternating input connected to conductor 94. The corresponding alternating output is connected to the aforementioned conductor 90 which branches off a conductor 97, and the latter can be connected also to conductor 83 through one of a series of normally-open vanes H101 through H105 controlled respectively by coils H1 through H5.

The positive and negative outputs of rectifier bridge Rd29 energize, in parallel, coils RH, RK for vertical displacement of address-plate supporting frame 3 (see FIG. 1) and the winding of relay RL, there being a moving vane type contact RGE1 controlled by galvanometric relay RGE interposed in the supply conductor to relay RL. If contact RGE1 is closed by the needle of the galvanometric relay, the conductors 87 and 89 will themselves constitute the loop for connecting coil RL with the positive and negative terminals of bridge Rd29. In view of the fragility of said needle, it is preferable to use a source of low current to feed conductors 87 and 89, whereby to excite a supplementary relay coil which is not represented and serves solely to operate vane RGE1.

At the top of FIG. 9 can be seen a keyboard T similar to that of a typewriter, which keyboard has a spacing bar BE running across its lower part.

This spacing bar operates moving vanes CT1 and CT2, one of which is normally closed and the other of which is normally open. Each key T in turn operates a pair of normally-open contacts T10, T11. Contact T10 is susceptible of joining a line 100 connected to output 93 of transformer secondary 91 with a conducting bar 101 to which are in turn connected nine fixed contacts respectively associated to nine keys. All the contacts such as T11 will provide a connection between conductor 100 and conductor x1, for instance. Bar 101 is connected to conductor y1.

In view of the fact that the machine hereinbefore described by way of example comprises forty-five characters and signs, provision is made for five bars such as

101 for joining, nine by nine, the forty-five necessary conductors, while to each of conductors such as *x1* are connected five different keys, each belonging to one of the five aforementioned groups.

The manner of operation of the apparatus hereinbefore described is as follows:

All of the contacts shown on the drawings are in their resting positions.

In an initial operation in said ordinating means as hereinbefore defined, the grid preparation block is placed in position; the sliders of selectors *S8* and *S9* are respectively positioned on one of the nine corresponding "units" and "tens" studs, for the specific case where margin selection is deliberately effected for each line or each group of lines.

Thus, the counting block of FIG. 5 is subjected to a preliminary margin setting operation.

After an address-plate has been slipped into frame 3, coils *C1* through *C9*, *C10a*, and *C10* through *C50* are energized by the conductor 50 leading from the positive output of rectifier bridge *Rd31*, and the circuit of the first coil in this series to be excited is determined by the pre-selected positions of the two selectors *S8* and *S9*. By way of example, if slider *S91* is out of contact and slider *S81* in contact with the third stud corresponding to conductor 56, excitation of coil *C7* will close a circuit running through said conductor 56, slider *S81*, conductor 79, the active blade *P21* of tabulating pushrod *P2*, conductor 81, conductor 75, and up to the negative terminal of bridge *Rd31*. The "new-line" pushrod *P1* has its contacts *P11* and *P12* normally closed, so that conductors 63 and 67 are also connected through selector *S7* and conductor 75 to the same negative terminal of bridge *Rd31*.

When it is excited by the transient closure of pushrod *P2*, coil *C7* maintains itself through its contact *C71*, the normally-closed contact *C83*, and the conductor 63.

Excitation of coil *C7* causes the seventh lock of the series of counting locks 40 to project, the remainder being retracted, and said seventh lock is ready to receive the first lock of the series of tens-locks 39, which lock is fixed (see the tens-lock 39a on the left of FIG. 1) and has a length corresponding to that of the other mobile locks 39 when in their projecting position.

A light initial touch on the "new-line" pushrod *P1* will have enabled the two conductors 63 and 67 to separate and thus cut off all the maintaining currents possibly established in coils *C1* through *C9* and *C10a* and in coils *C10* through *C50*, so that, by simultaneously depressing the spacing bar *BE*, vane *CT1* is opened but vane *CT2* closed, thereby feeding rectifier bridge *Rd25*. Coil *RA*, coil *RC* and, through coil *RB*, vane *RA1*, are energized.

The clicks 32, 33 of the catch system are retracted by coil *RA*, and carriage 35 is returned to the left and spring 38 stretched by the action of coil *RB*.

As soon as spacing bar *BE* and pushrod *P1* are released, the first stationary tens-lock 39a returns into abutment against the seventh units-lock 40 under the urge of return spring 38.

Different positions of selectors *S8* and *S9* would enable the start of sign-counting by addition to be positioned elsewhere on the address-plate.

The system 76 is intended to solve exceptional cases in which it is desired not to alter the pre-selected margin. Without touching selectors *S8* and *S9*, the stylus and hence the conductor 75 can be provisionally connected to one of the units-conductors 54 through 62 are tens-conductors 68 and 51 through 53 in order that the start of counting occurs at a corresponding position on the address-plate differing from the customary margin for a given line of writing.

It is to be noted that the operating conditions described precedingly have not yet entailed any change in position of the address-plate, since *RH* and *RK* and coils *RF* and *RG* have not been energized. Margin setting of the

counting block as hereinbefore described thus involves a simple preliminary operation for positioning the carriage 35.

If now a key *T* is depressed, circuits could be established between, say, conductor 100 and conductors *x1* and *y1*.

To inscribe a first line on the address-plate, selectors *S1* through *S7* are positioned on their first studs. The first studs of selectors *S1* through *S25* are isolated; only the first stud of selector *S6* is connected but out of circuit.

Rectifier *Rd1* is supplied by connection across line 100 and line 83. Coil *H1* is excited by a circuit which comprises the positive terminal of bridge *Rd1*, the diode *Rd6*, the diode *Rd7*, the coil *H1* and which returns to the negative terminal of bridge *Rd1* through conductor 82.

The first lock 11 is placed in position.

Through wire *x1*, rectifier bridge *Rd16* is supplied across line 100 and line 90, the latter being connected to conductor 83 by closure of vane *H101* due to excitation of coil *H1*.

Bridge *Rd16* energizes coil *V1* through the circuit comprising the positive terminal of bridge *Rd16*, coil *V1*, conductor 84, normally-closed vane *RC3* and the conductor 85a which provides a return path to the negative terminal of rectifier bridge *Rd16*. Following excitation of coil *V1*, the first of the locks 34 is caused to project.

At the same time as coil *V1* is energized, coil *L1* is energized through resistor *r1*, the circuit closing on to line 85 and on to the return conductor to the negative terminal of bridge *Rd16*.

Coil *L1* closes contact *L11*, resulting in excitation of relay *RF*. Since coil *RA* is not energized, the plunger core 29 displaces bar 26 and frame 3 until they encounter the click 32 and the first horizontal stamping position selecting lock of the series of locks 34, and this first lock is caused to project by excitation of coil *V1*. When click 32 and said lock are encountered, the conductor 97 connected to carriage 35 is earthed once more and therefore excites the position back-up relay *M* which then closes vane *M1*.

Through normally-open vane *L11*, normally-closed vane *CT1*, normally-closed vane *C502*, vane *M1* in its operative position, and normally-closed vane *RC5*, the rectifier bridge *Rd30* is energized and thus feeds the caliper-closing coils *RD* and *RE*.

As previously, excitation of coil *L1* will have raised the first yoke 5 until its lug 10 encounters the first lock 11 positioned by excitation of coil *H1*, and said caliper jaws 9 of the clamping means closes onto the lugs 7 positioned opposite the raised and intaglio portions of the first character at the bottom left of the character-boxes 1 and 2.

Similarly, as soon as vane *H101* closes, bridge *Rd29* is energized and supplies coils *RH* and *RK* which lower the frame 3 until lugs 22 and 23 encounter the same lock 11 positioned by excitation of coil *H1*. In this way, longitudinal positioning of the frame 3 opposite the slides of the character to be stamped is effected by engagement of either of clicks 32 or 33 with the projecting lock of the series of locks 34, and vertical positioning by abutment of lugs 22 and 23 against the horizontal lock 11.

The address-plate contained in frame 3 is therefore positioned with the margin set as described precedingly by selectors *S8*, *S9* or stylus 76, and facing the chosen character on the line determined by the settings of selectors *S1* through *S7*.

As the clamping means is then actuated, one of its jaws 9 encounters the pushrod 102 of the armature of contact *FC31*, which closes into its operative position, and contact *FC1* (FIG. 5), which opens into its operative position. Closure of contact *FC31* prepares the energization of bridge *Rd25* whereby to energize coils *RA*, *RB* and *RC*, as stated precedingly. Opening of contact *FC1* opens the pulse-circuit supplied by line 72 (see FIG. 5).

Towards the end of the stroke of the clamping means (FIG. 4), the pivot 45 pushes the armature 103 of contact FC21 (which closes into the operative position) and of contact FC2, which also closes into the operative position. This being so, relays RA, RB and RC are energized directly, relay RB being energized by closure of vane RA1. Energization of relay RC closes the maintaining vane RC4, the circuit of which is established by closure of contact FC31. Vane RC5 opens, breaking the circuit-feeding bridge Rd30, so that at the end of the stamping stroke, coils RD and RE are deenergized and the caliper jaws open under the action of its spring-return means (not shown).

Due to energization of coil RC during reopening of the jaws, vanes RC1 and RC2 are in their operative positions. Immediately upon closure of contact FC1, which precedes opening of contact FC31, capacitors Co1 and Co2 are charged as a result of conductor 72 momentarily feeding the pulse circuits hooked up to conductors 64 and 64a. Coil C8 is energized through conductor 64 and the closed vane C72, thereby causing coil C8 to be maintained through vane C81 (which closes into the operative position), through normally-closed vane C93, and through the return path via conductor 63, as mentioned precedingly. In assuming its operative position vane C83 cuts off the maintaining supply to coil C7. This causes the seventh counting lock to retract into the series of locks 40 and the eighth lock thereof to project, so that carriage 35 can immediately advance by one step under the urge of spring 38, as soon as the caliper jaws have opened completely.

When contact FC31 opens fully, relays RA, RB and RC do not return to their inoperative positions. The general configuration described precedingly can be reverted to only if the spacing bar BE or a fresh key T is struck. This is due to the fact that, even if the operator's finger should continue to depress the operated key T, the vane of pushrod T1 keeps relay RC energized, thus keeping the vane RC5 open.

The jaws of the caliper consequently remain open. This situation is modified only if said key T is released and therefore causes vane L11 to open, whereupon relay RC releases.

Striking the spacing bar BE results in contact CT1 being opened and contact CT2 being closed, thereby preventing energization of the clamping means actuating coils RD and RE by an immediate energization of relays RA, RC and RB. Energization of relay RC operates vanes RC1 and RC2 and places capacitors Co1 and Co2 in circuit whereby to furnish a fresh pulse to conductors 64 and 64a. The counting relays therefore advance by another step in response to said spacing bar BE.

The striking of a fresh key causes a repetition of the operation hereinbefore described, through the energization of conductors different from x1 and y1.

When the end of a stamped line is reached, the operator can depress pushrod P1 in order to restore the counting assembly into the original position determined by the positions of the unaltered selectors S8 and S9.

Line changes are effected by means of selectors S1 through S7. In the event of a switch to the second stud, for instance, in the case of the latter-mentioned selectors, it is clear that a current feeding conductor y1, for example, would result in simultaneous energization of coils H1 and H2, as a result of which the yokes 5, by reason of their lugs 10, would continue to be arrested by the first of the locks 11 (coil H1), but that, during the descending motion, the catches 22 and 23 of the address-plate frame 3 would be arrested by the second of the locks pulled out by coil H2, the latter being likewise energized. Such means constitutes shifting means of the amplitude of possible movements of frame 3.

It is also manifest that if line y4 were to be energized, for instance, the coils energized would be coils H4 and H5.

Considering now in greater detail the counting operations, when coil C9 is energized (being maintained through operative vane C91 and inoperative vane C10a3), if a pulse is delivered by capacitors Co1 and Co2 due to vanes RC1 and RC2 being rendered momentarily operative on conductors 64 and 64a, the pulse in conductor 64 will energize transition coil C10a through operative vane C92, so that the armature of said transition coil will cut off the maintaining current of coil C9 through opening of vane C10a3, at the same time as the pulse is applied to coil C1 through vane C10a2 and conductor 65. In addition, the coil C10 energized by line 50 has its circuit closed onto conductor 67 via closed and operative vane C10a4. Concurrently, as soon as vane C13 of relay C1 opens, the maintaining current to coil C10a is cut off, so that this transition relay only undergoes a beat that transmits the pulse to coil C10, suppresses the energization of coil C9 and applies the units-count to coil C1 due to energization thereof.

Coil C10 maintains itself through its vane C101 closed in the operative position and vane C103 closed in the inoperative position. The first movable tens-lock of the series of locks 39 then projects and is susceptible of bearing against the first projecting units-lock (coil C1 energized), in contradistinction to what occurs in the case of margin setting, in which, for example, only lock C7 projects whereas selectors S8 and S9 remain in the same position.

The successive releasing actions of relays C1 through C9 can continue independently, whereas C10 remains energized.

If coil C9 is energized anew and a fresh counting-pulse reaches conductors 64 and 64a through closure of vanes RC1 and RC2, the pulse simultaneously reaches coil C10a through operatively closed vane C92, thus causing the counting to return to the first relay C1, and also coil C20 through line 64a, operatively closed vane C94 and conductor 69, followed by operatively closed vane C102, thus energizing said coil C20, which maintains itself in turn and de-energizes coil C10.

The counts are thus effected by successive sweeps resulting in successive projections of locks 40, in the case of units, and of movable locks 39 in the case of tens, until forty-nine signs or spaces have been produced on a same line, in which situation coils C9 and C40 are energized at the same time.

Should a supplementary pulse be then delivered by capacitors Co1 and Co2 through relay C10a, the count is returned to coil C1 both by vane C94 (off line 64a) and vane 402. Coil C50 is energized, maintains itself through vane C501 and, through vane C502 (FIG. 8), cuts off the supply to rectifier bridge Rd50 and thereby prevents fresh operation of the clamping means. The operator is thus warned that the end of the line has been reached.

Operation of pushrod P1 opens circuits 63 and 67 and de-energizes relays C40 and C50, thus providing a return to the conditions of tabulation determined by selectors S8 and S9. For since the margin setters S8 and S9 have remained in the position indicated precedingly, conductor 62 is not connected to conductor 79 and, when the operator wishes to set his margin correctly, he depresses pushrod P2. This causes the circuit of coil C7 to be closed again, as before.

It is to be noted that relay RB is excited after each stamping, which results in core 37 being attracted and carriage 35 being released, thus suppressing abutment of the tens-locks 39, 39a on the units-locks 40. This gives freedom to reassume contact, regardless of the changes in the order of projection of said locks, and also absolute freedom in the operations of extending and retracting the locks without the various frictional abutments impairing this in any way.

Clearly, the vane C502 connected to conductors 70

and 71 for preventing operation of the clamping means when the end of a line is reached could be replaced by vanes operated by any one (or several in parallel) of the counting coils, to which coil or coils the lines 70 and 71 would be connected whereby to interdict the possibility of further stamping at a given position along a line and thus provide a variable margin-setter for the end of the line.

With regard to operation of the horizontal selection system, it is to be noted that halting of the yokes 5 and the address-plate support 3 on a single set of locks 11 is made possible by the fact that the spacing of said locks 11 is equal to the height of a character and also to the spacing between two successive lines.

In addition, the function of selector S6 is to extend a supplementary lock ahead of the first useful lock after an initial strike has been made.

For a clearer understanding, let it be assumed that the second line is being inscribed on the address-plate; then, as explained precedingly, when a pulse arrives from conductor y1, coils H1 and H2 are energized due to the fact that the slider S11 is on the second stud of selector S1. When the stamping has been accomplished, on closure of contact FC2 (FIGS. 4 and 6), relay RN is energized and is maintained by its contact N1. It also closes its contact N2 onto the supply conductor to slider S61 of selector S6, which slider is also positioned on the second stud, so that coil H7 is energized. The lock 11 corresponding to said coil H7 is thus placed in position, thereby preventing the address-plate holder from covering a distance greater than the spacing between the locks actuated by coils H2 and H7 (abutment against the upper faces of catches 22 and 23, beneath the lock 11 corresponding to coil H7).

It should also be noted that relay RN is held in until a change of position of the slider of selector S7 occurs, i.e., until a change of line takes place through interruption of the supply to said relay RN by the transition from one stud to another on selector S7.

This limitation means of the displacement of the address-plate holder advantageously results in increased speed of execution of the various operations, since said plate holder 3 assumes one strictly useful position for each inscription line out of only the five possible positions corresponding to the character-row selections. The possible movements of the plate holder are so limited in amplitude and such according to the rank of the embossed selected line.

Turning now to operation of the plate-holder in regard to selection of the locks from series 34 (character-column selection), consideration should be given to operation of resistors r1 through r9, capacitor Co3, capacitor Co4 and galvanometric relay RGE which operate with associated components as orienting means. In this connection, coils V1 through V9 operate the horizontal spacing or character-column selection locks 34, each lock corresponding to a column of characters in boxes 1 and 2.

Assuming that the feed takes place first through line x1, then current will flow from rectifier bridge Rd16, via coil V1, conductor 84, vane RC3 closed in the inoperative position, and thence to the negative terminal of said bridge. Current will flow at the same time through resistor r1, coil L1 and conductor 85, to the same negative terminal of said bridge.

In addition, a current flows through resistor r1, diode d1 and conductor 86, to which such diodes are parallel-connected, to the input of the unit consisting of capacitor Co3 and discharge resistor R3, thus providing said capacitor with a charge with respect to the output of said unit, which unit is connected to conductor 85, said charge depending on the voltage drop through resistor r1. The current resulting from this first charge also passes through galvanometric relay RGE and vane V11 closed in the operative position, and in turn charges the comparison capacitor Co4. The galvanometric re-

lay closes circuit 87-89 and vane RGE1 (FIG. 8) which energizes relay RL through closure of one the vanes H101 through H105, thus resulting in energization of relay RG through vane RL1 being moved into its operative position, vane RC6 being closed in the inoperative position and vane L11 being closed in the operative position. Rod 26, branch 24 and its slide 25, and hence also frame 3, are attracted to the left by coil RG.

Resistors r1 through r9 have stepped ratings and are therefore susceptible of providing unequal voltage drops.

Should a different selection be effected during the next cycle, resulting for instance in energization of conductor x6 of bridge Rd21, then coil V6 as well as coil L6 will be energized through resistor r6. Diode d6 conveys to conductor 86 a voltage representing the energizing voltage of this particular set of coils V6, L6, and this voltage is compared through galvanometric relay RGE with that which had previously accumulated across the terminals of capacitor Co4. This comparison results either in a charging current for capacitor Co4 if the new voltage is higher, or in a discharge current if the opposite is true, so that, in the former case, the galvanometric relay energizes relay RL with resulting energization of coil RG, whereas in the latter case it does not energize relay RL, as a result of which relay RF is energized. Thus, as it leaves a lock 34 with which it was previously engaged, the head of the catch system 30 is drawn towards the left or the right, according to whether the current through the galvanometric relay is either a current that charges capacitor Co4 or a discharge current, or else is a zero current, which occurs in the case of a repetition.

Operating conditions of said orienting means as above described likewise limit the motion of frame 3 to what is strictly necessary, the direction of displacement being always that which will ensure the quickest location of the frame in its final position, thereby enabling the operating speed of the machine to be also increased.

It should also be noted that the stamping operations cannot begin unless relay M has been energized and has closed its contact M1, such energization taking place only when one of the clicks 32 or 33 encounters one of the locks 34 and abuts thereon with good electrical contact, so that stamping begins only when the frame 3 is in a very stable position. This is due to the fact that, as stated precedingly, these clicks are secure with the machine, from which machine the locks 34 connected to conductor 97 are insulated.

Similarly, locating of the vertical position of plate-holder 3 can begin, by energization of coils RH and RK, only after energization of coils H1 through H5 has been backed up by closure of contacts H101 through H105, while excitation of electro-magnets L1 through L9 can begin only after said contacts have been positioned (by conductor 90), so that positioning of a horizontal lock always precedes lifting of a yoke. This likewise applies in the case of the supply to coils V1 through V9 controlling the locks 34. Energization of coils RH and RK likewise occurs subsequent to positioning of the horizontal locks. Stamping can only take place afterwards.

The end of the stamping operation produces a pulse in the counting circuit (via relay RN) and de-excitation of the control electromagnets (through contact RC5), followed by de-energization of coils V1 through V9 through opening of contact RC3, and de-energization of the locating coils RF and RG through opening of contact RC6. Energization of relay RB releases the tens-counting locks 39 and the units-counting locks and leaves them free to move, so that, when the cycle is completed, motion of the locks and clicks is entirely unrestricted, as will be apparent from the description given precedingly.

Lastly, it should be noted that opening by the operator of changeover switch T1 (FIG. 8) enables the stamping mode to be switched to repetitive, whereas retention of switch T1 in the closed position provides single-shot

stamping. When said switch is open, should the operator's finger be kept depressed on a key T, this will cause stamping cycles to be performed for as long as the finger is held on the key; if, on the contrary, switch T1 is closed, a single stamping cycle will be carried out and the machine will stop even if the operator keeps his finger depressed on a key T.

For when switch T1 is open, in the repeat mode, operation of a key T causes one of relays H1 through H5 and one of relays L1 through L9 to be energized, so that, through one of the operatively-closed vanes L11 through L91, through inoperatively-closed spacing-bar contact CT1, through inoperatively-closed contact C502 (which occurs upon closure of the contact M1 for backing up energization of the relay M for grounding the locking means) and through inoperatively-closed contact RC5, the stamping electromagnets RD and RE are energized, thereby closing the caliper jaws 9 of the clamping means, followed by successive closure of contact FC31 and contact FC21. This causes the end-of-stamping relay RC to be energized and then maintained by vane RC4 until contact FC31 opens anew. When said contact FC31 opens following reopening of the caliper jaws 9, relay RC releases and vane RC5 returns to the closed position, so that if the operator has not released the key T, the stamping will be repeated. This will occur if switch T1 is open.

If, however, the latter is closed, as shown in FIG. 8, then if opening of contact FC31 does not, as previously indicated, de-energize relay RC—the latter continuing to be held in by the closed switch T1 and by its maintaining vane RC4—the cycle will stop in this manner after the first stamping action, even if the operator continues to keep a key T depressed, and cannot be resumed until the same key T or another one has been operated again, i.e., subsequent to a beat from one of vanes L11 through L91, re-energizing of relay M resulting in fresh operation of the caliper.

It goes without saying that modifications can be made to the specific embodiments and to the various phases of the method hereinbefore described without departing from the scope and spirit of the invention. By way of example, the number of characters and signs could be smaller or larger as could also the number of signs to be inscribed on a line, or the number of lines themselves. Similarly, control means other than a keyboard could be envisaged, in conjunction, for instance, with a remotely-located tape-reader or the like.

What I claim is:

1. In a stamping device for embossing characters on plates, in combination, a pair of spaced stationary boxes, a plurality of character holders slidably supported in rows and columns in said boxes, and arranged to slide in pairs constituting respective complementary male and female dies separated by a channel, a plurality of pairs of strikers equal in number to the number of said columns, each pair of strikers being externally disposed with respect to said boxes for association with the character holders in a single column, means for displacing each of a selected pair of said strikers in front of each of a selected pair of dies in a particular row of a corresponding column, latching means for said pairs of strikers for arresting selected of said pairs of strikers in front of a selected pair of dies pertaining to one of said rows, a plate-holder adapted for containing a removably disposed plate therein, said plate-holder having opened sides facing each box, said plate-holder being mounted for movement in its plane in said channel, primary displacement means for said plate-holder to move the same in said channel parallel to said rows and columns of character holders, in correspondence to the selections and motions of said strikers, secondary displacement means for said plate-holder for adding to the aforesaid motions two amplitudes corresponding one to a predetermined line of embossings on said plate and the second to a computing of the embossings and spacing

actions previously effected on said predetermined line, locking means for locking said plate-holder in a position of embossing by a selected pair of dies, clamping means temporarily acting on said strikers in the direction of said channel, control means corresponding to each of said character holders, spaces and selection of lines, and ordinating means controlling, from the actuating of one of said control means, the sequential execution of said selections and motions of said pairs of strikers, of corresponding latching actions, of said plate-holder and corresponding computing and locking actions, and thereafter, of said clamping action.

2. In a stamping device according to claim 1, in combination, limitation means limiting the amplitudes of the corresponding movements of the primary and secondary displacement means to that corresponding to the number of rows, and shifting means for limiting said amplitudes as a function of the rank of the embossed selected lines on said plate.

3. In a stamping device according to claim 1, in combination, orienting means for the selection of a column of character holders and corresponding a pair of strikers directly from the precedingly selected column to the next column to be selected.

4. In a stamping device according to claim 1, wherein said latching means for said pairs of strikers and the locking means for said plate-holder include common associated latches for each of said pairs of selected strikers and for said plate-holder in the execution of the amplitudes of its movement corresponding to the selection of a predetermined line of embossings on said plate.

5. In a stamping device according to claim 1, wherein said primary and secondary displacement means comprise a slide integral with said plate-holder and disposed parallel to the columns of dies, a slideway connected to said slide, a movable arm integral with said slideway, said arm being displaceable parallel to the rows of said dies, a pair of retractable opposed catches operatively connected to said arm, retractable locks corresponding to each selected longitudinal position of said arm and consequently of said plate-holder, in parallel relationship to said rows, each of said locks corresponding to each of said columns, said locks operatively cooperating in succession with the one or the other of said catches.

6. In a stamping device according to claim 5, wherein the primary and secondary displacement means includes a carriage displaceable parallel to said rows, said locks being arranged on said carriage, reciprocable displacement means for said carriage, counting locks of the embossings and spaces operated on a predetermined line of said plate, said counting locks being sequentially retractable and arranged on said carriage and on a stationary support for operatively cooperating in succession.

7. In a stamping device as claimed in claim 6, wherein said counting locks include tens-counting locks sequentially retractable and spaced relatively by distances corresponding each to ten spaces of embossings, and units-counting locks arranged on said stationary support, sequentially retractable in said support and separated mutually by distances corresponding to one space of embossing.

8. In a stamping device as claimed in claim 7, wherein said control means comprises a keyboard including control keys for embossing each stamping character, a spacing bar, a tabulating key, a "new line" key, a margin setting selector, a line selector, a repetition key, and a cancelling key.

9. In a stamping device as claimed in claim 8, wherein said ordinating means comprises an electromechanical control device comprising a counting block operatively connected to the units- and tens-counting locks, a grid preparation block, a selection block operatively connected to the latching means corresponding to the rows of character holders, to thereby form a selector of the lines to be stamped on said address-plate, a selection block of the

column locking means, a sequence block for performing the stamping operations, and electrical contacts operable by said keys distributing electric control currents to various pairs of conductors to said blocks.

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