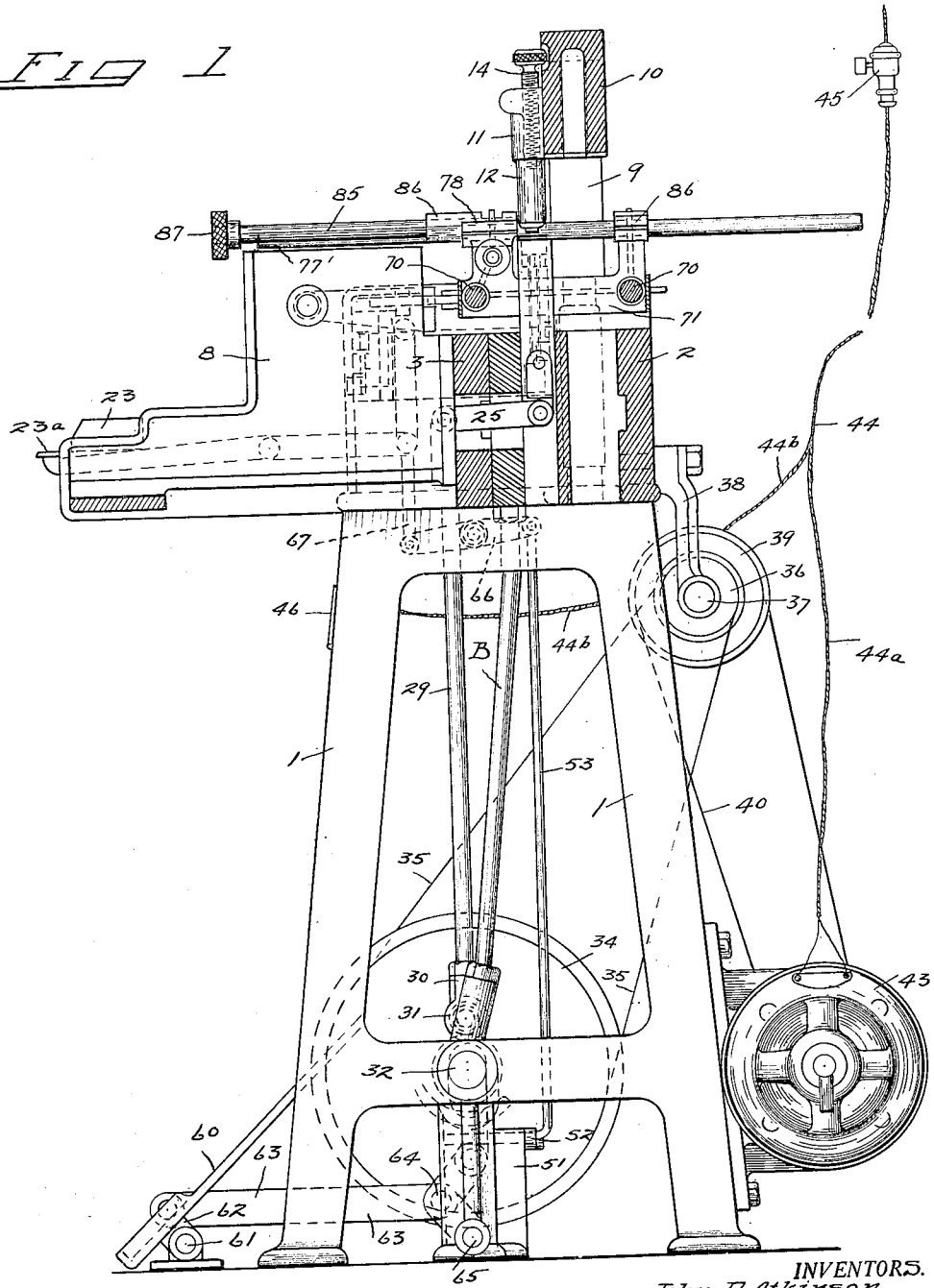
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J. R. ATKINSON ET AL

MACHINE FOR MAKING STEREOTYPE PLATES FOR PRINTING FOR THE BLIND

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FIG 1



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MACHINE FOR MAKING STEREOTYPE PLATES FOR PRINTING FOR THE BLIND

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FIG. 2

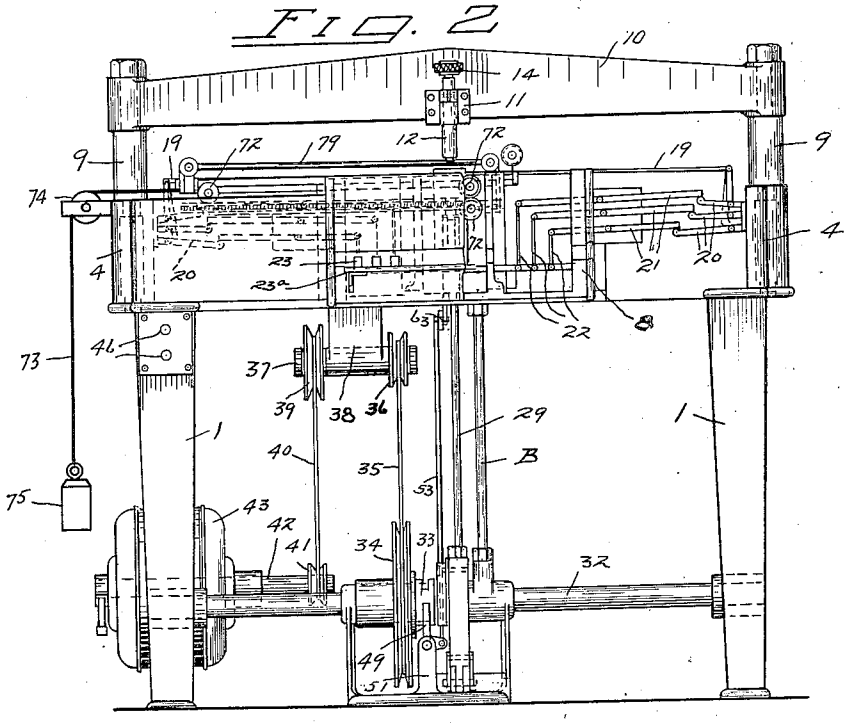
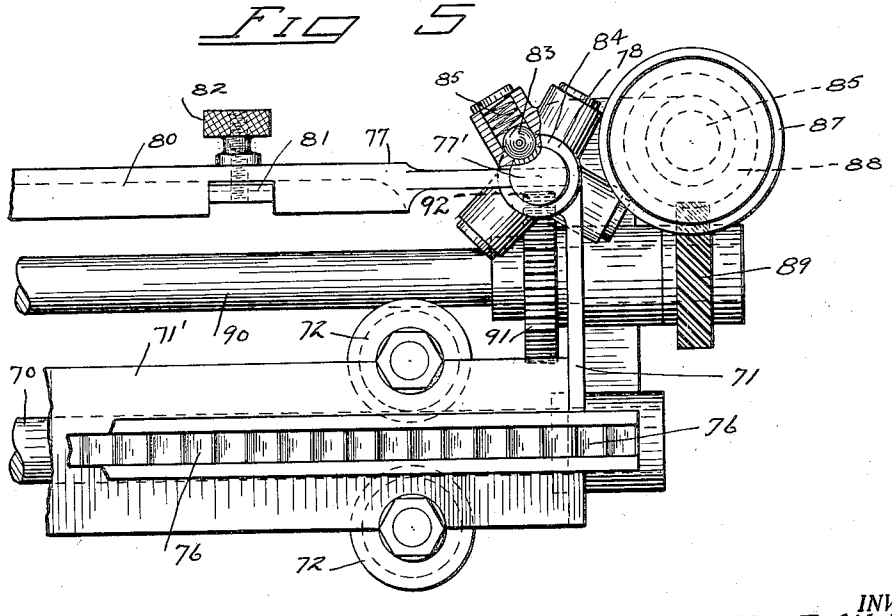


FIG 5



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MACHINE FOR MAKING STEREOTYPE PLATES FOR PRINTING FOR THE BLIND

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FIG 3

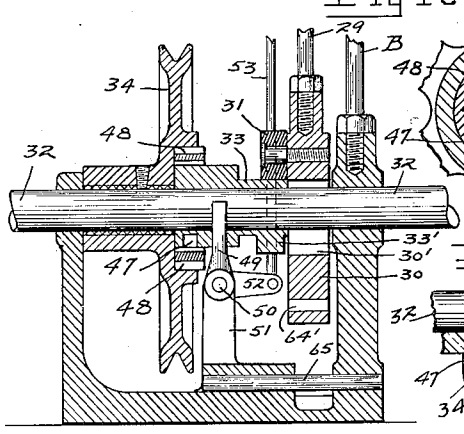


FIG 15

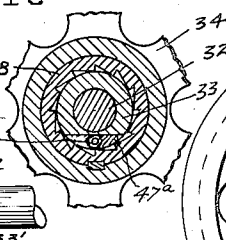


FIG 16

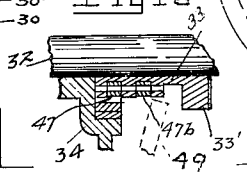


FIG 4

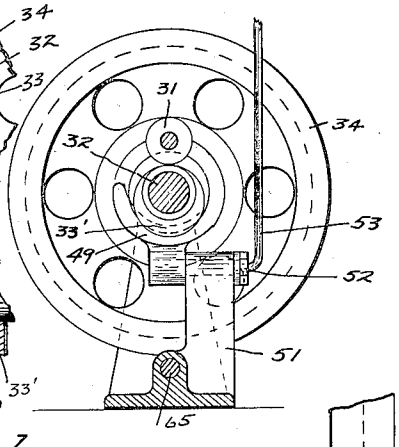


FIG 11

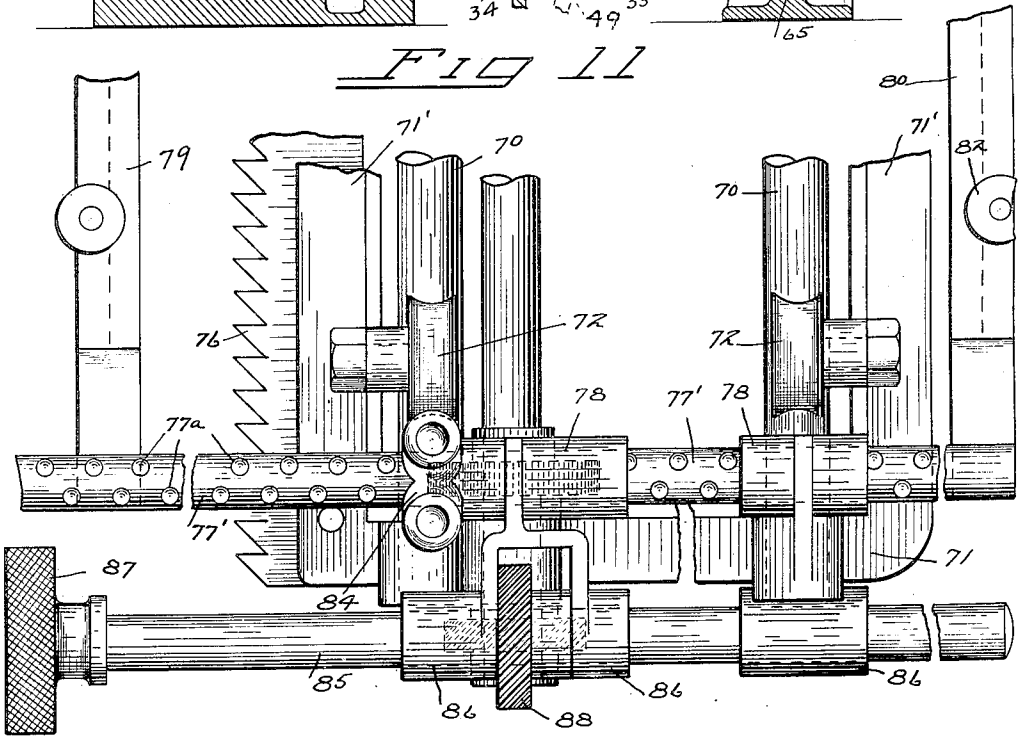
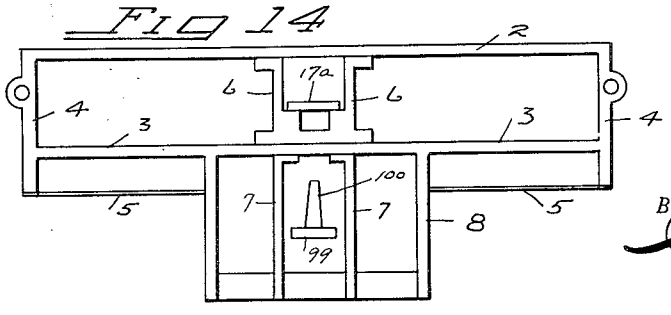


FIG 14



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FIG 6

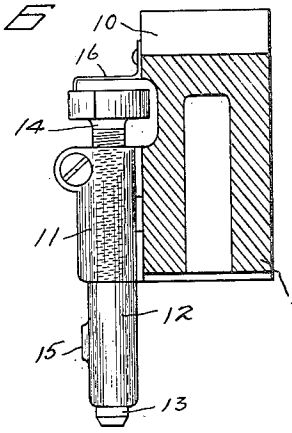
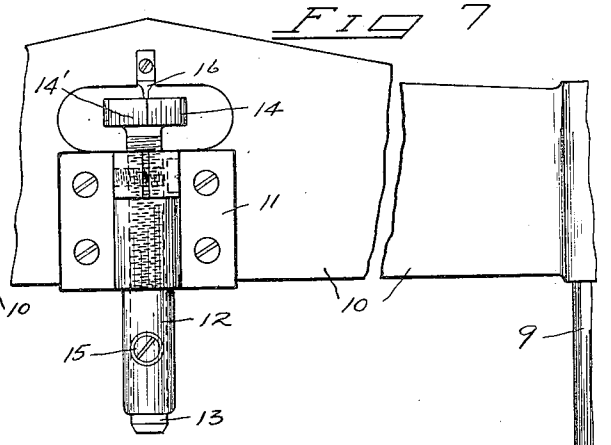
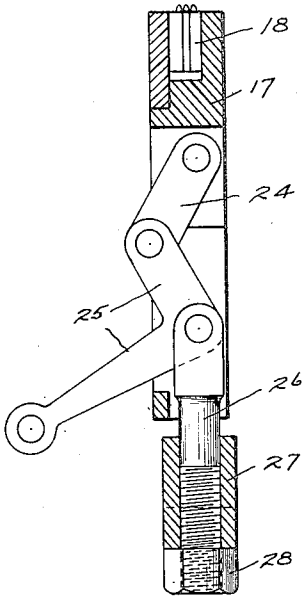


FIG 7





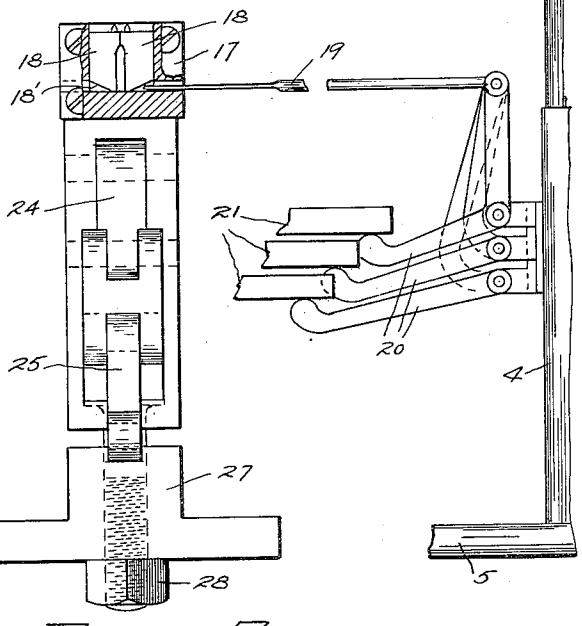


FIG 8

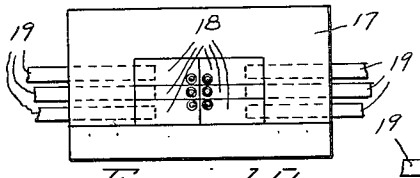


FIG 9

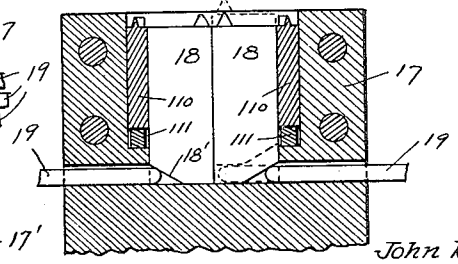
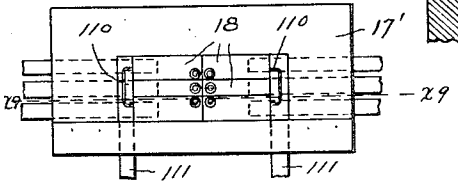


FIG 10



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Fig. 12

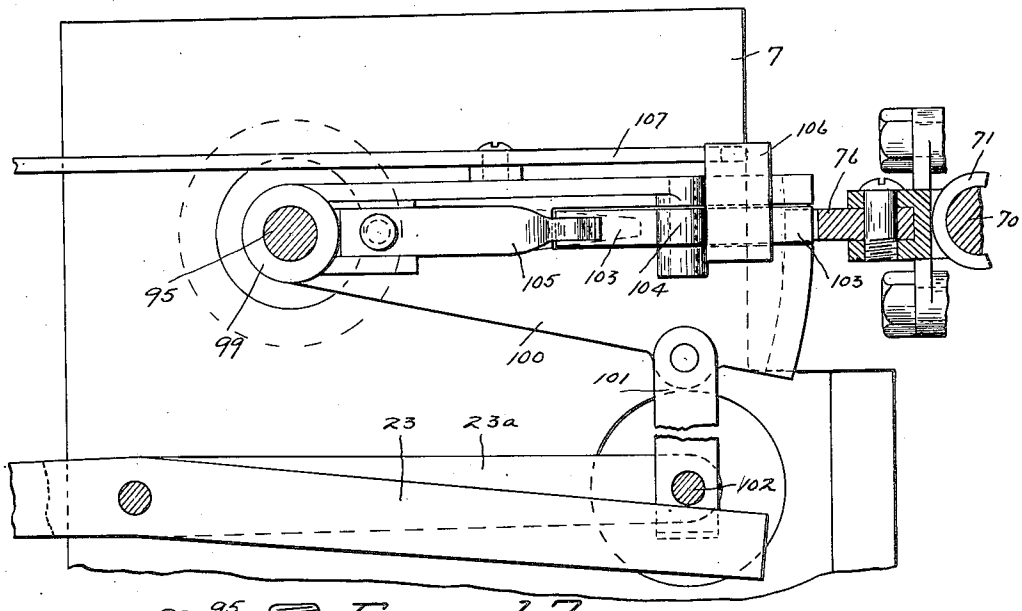
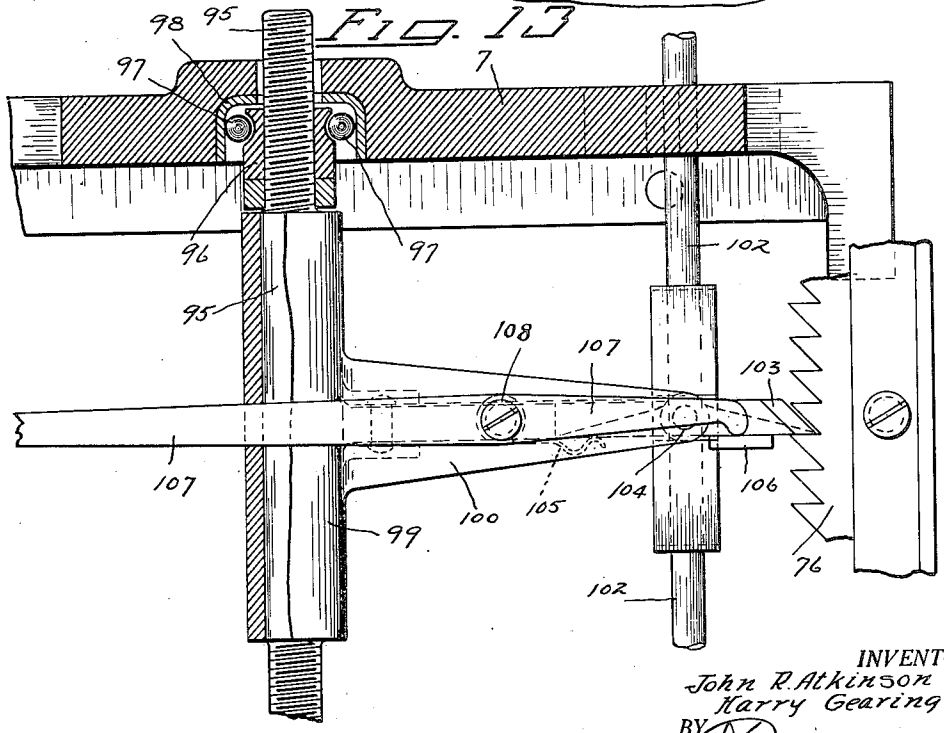


Fig. 13



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Patented Dec. 30, 1924. 1,521,415

UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING STEREOTYPE PLATES FOR PRINTING FOR THE BLIND.

Application filed March 15, 1921. Serial No. 452,527.

To all whom it may concern:

Be it known that we, JOHN R. ATKINSON and HARRY GEARING, citizens of the United States, residing in the city of Los Angeles, county of Los Angeles, and State of California, have invented certain new and useful Improvements in Machines for Making Stereotype Plates for Printing for the Blind, of which the following is a specification.

The principal object of our invention is to produce an improved machine of the character referred to and which can be operated as is a typewriter, and which will produce a stereotyped or embossed plate or sheet from which other sheets can be readily reproduced in any quantity.

Another object of our invention is to provide in such a machine a positive, mechanical action, whereby the stroke of the dies or points will be uniform, whether one point or six points are made during the stroke, thus producing uniformity.

Another object of our invention is to provide power means with mechanical connections for controlling and making each stroke, with means whereby each stroke is controlled by the depressing of a key and the carriage is held against movement from the position of the last character until the key is released, and no matter how long the key is held down, only the one character point or group of points is made.

Another object of our invention is to produce a machine which will feed the plate or sheet in a horizontal plane to receive the embossment and which will carry the sheet or plate across the position of the matrix, character at a time, as a key is depressed and released, just as is done by the carriage of a typewriter.

Another object of our invention is to provide a machine with means for changing the letter spacing and also the line spacing, and with different sizes of dies and matrices for interchangeable use, as may be desired.

Other objects and advantages will appear from the following detailed description on one embodiment of our invention shown on the accompanying sheets of drawings for illustrative purposes.

In the drawings, Figure 1 is an end view of a machine embodying our invention, with parts shown in section;

Figure 2 is a front view of said machine;

Figure 3 is a vertical sectional view through the driving and clutch mechanism;

Figure 4 is a side view of the clutch pulley and clutch shown in section in Fig. 3;

Figure 5 is an enlarged fragmentary view of the feeding mechanism for feeding a sheet rearwardly through the machine carriage in a horizontal plane;

Figure 6 is a vertical sectional view through the die and matrix mechanism;

Figure 7 is a front view of the same, also showing other parts of the machine;

Figure 8 is an enlarged plan view of the die block;

Figure 9 is an enlarged vertical sectional view of a die block;

Figure 10 is a view similar to Fig. 8, with dies for making brackets, also shown in section in Fig. 9;

Figure 11 is a fragmentary top plan view of the mechanism shown in Fig. 5;

Figure 12 is a side view of the escapement mechanism on the carriage;

Figure 13 is a top plan view thereof, partly in section;

Figure 14 is a top plan view of the stand; and

Figures 15 and 16 are detailed views of the clutch mechanism.

Referring now in detail to the drawings, we will describe the embodiment or our invention illustrated.

A stand or table like structure is provided, comprising the end leg frames, 1, 1, connected with two beam-like members, 2, 3, Fig. 14, standing in vertical planes and spaced apart on top of said end leg members 1, 1. The ends of said members 2 and 3 are connected with two end portions 4, 4, which extend forwardly beyond the member 3, and support a front finish plate, 5, at each end of the front of the machine. Two spaced connecting and supporting brackets, 6, 6, are placed between the members, 2 and 3, in the middle thereof, and on the front of the member 3 are two other spaced supporting members, 7, 7, and on the outside of said members 7, 7, are two other supporting side members, 8, 8, which extend out to support a key board, Figs. 1 and 14.

In the end members 4, 4, are two vertical supports, 9, 9, connected by a cross beam, 10, made hollow on its under side, as indicated in Figs. 1 and 6. Mounted on the front of

said beam 10, in the middle thereof, in a bracket, 11, is a matrix member 12, holding the matrix 13, in an adjustable manner. The adjustment vertically is made by means of a thumb screw 14, and the adjusted matrix 13 is held in place by means of a set screw 15. The thumb screw head may be provided with graduations, 14′ and a finger 16 may be provided to indicate the position, as may be desired.

Mounted between the connecting members 6, 6, between the cross members 2 and 3, in a box-like support 17ª, is a stylus block, 17, directly under the matrix member 12, as indicated in Figs. 6, 7, 8 and 9. Mounted in said stylus block 17, are six stylus or die members, 18, movable vertically by means of reciprocating cam rods, 19, there being a separate rod for each stylus, and each stylus being beveled on its lower end, as at 18′, whereby the inward movement of the rods 19, elevate the stylus members, as indicated in dotted lines in Fig. 9. Three of the operating cam rods 19 are provided on each side of the stylus block, and these groups are operated from the opposite sides of the machine. The outer ends of the rods 19 are connected with bell cranks, 20, mounted on the end members 4, 4, of the frame, and the free ends of the bell cranks 20, are engaged by the ends of rocker levers, 21, the opposite ends of said rocker levers 21 being connected by means of links, 22, to the inner ends of operating keys 23, as will be understood from Fig. 2, at the left side, where three of said keys are shown, those on the right side having been broken away to show the lever connections. Thus by the depression of one or more of the keys, 23, the corresponding stylus 18, are elevated and held in the raised position so long as the key remains down.

The stylus block 17 is provided with a toggle 24, one member of which is a bell crank, 25, connected at its angle with an adjustable member 26, in a bearing member 27, and provided with a nut 28, at its lower end, as clearly shown in Figs. 6 and 7. When the toggle lever 25 is raised the whole stylus block 17 is raised to bring the elevated stylus 18, into the matrix 13, adapted on its lower end to receive the upper ends of said stylus. The outer end of the bell crank 25 is connected with a rod 29, the lower end of which is connected with a member 30, Fig. 3, provided on its side with a cam roller, 31, said member 30 being provided with an elongated opening 30′ through which a shaft 32 passes. The opening 30′ permits the rod 29, and the member 30, to be lifted by a cam member 33, mounted on said shaft 32, each time the cam portion 33′ revolves, as will be clear from Fig. 3.

Mounted on said shaft 32 is a driving pulley 34, driven by a belt 35, from a smaller pulley, 36, on a shaft 37, supported in a bearing member 38, and at the other end of which shaft 37, is another pulley 39, driven by a belt 40, from a pulley 41, on the shaft 42, of a motor 43, as will be clear from Figs. 1 and 2. Said motor is driven from a source of electric energy connected thereto by means of suitable electric cable 44, which may be connected to an ordinary light socket, 45, with one branch of said cable, 44ª running to the motor, 43, and another branch 44ᵇ thereof running to the electric buttons, 46, on the front of the machine for controlling the motor, Fig. 2. Thus when the buttons at 46 are manipulated to close a circuit to said motor, said motor is driven constantly and drives the pulley 34, secured thereto.

A clutch mechanism is mounted on the shaft 32, at the pulley 34, and is adapted to be thrown into and out of driving engagement with said pulley at will. This clutch mechanism comprises a rocker dog, 47, Fig. 16, carried in the member 33, and having one end 47ª adapted to drop into gear teeth 48, around the inner part of the pulley 34, when the other end 47ᵇ, is released by the underlying finger or yoke 49, on a shaft 50, in the bearing support 51, and the other end of which shaft is provided with a rocker arm 52, to the end of which is attached an operating rod 53, so that whenever said rod 53 is depressed, said finger 49 is rocked to the position indicated in dotted lines, Fig. 16, which allows the rocker dog to turn into locked engagement with the teeth on the pulley 34, whereupon said cam member 33 is turned and with each revolution thereof the cam portion 33′ lifts the member 30, and the rod 29, thus lifting the stylus block 17, as before described. With each depression of a key 23, or of the space bar 23ª, said rod 53 is depressed and said clutch is operated, which operates the cam member 30 and the rod 29 and the stylus block 17. B is a brace rod.

As a means for operating the stylus block 17, through the rod 29, manually, a foot plate 60 is shown in Fig. 1, on a rock shaft 61, with a rocker arm, 62, connected with a link, 63, the other end of which is connected to a toggle, 64, the lower end of which is fixed on a pivot rod 65, and the upper end of which is connected to the lower end of the member 30, adapted therefor at 64′, Fig. 3, whereby said toggles can be straightened by the rocking of the foot plate 60, for the purpose of lifting the rod 29, and the stylus block 17, in a manner which will be clear.

The upper end of the rod 53, which is connected for operating the clutch, is connected to a rocker lever, 66, supported in the frame, as shown in dotted lines, Fig. 1, the other end of which rocker lever 66 is

connected by means of a link, 67, with a through rod 102, connected with which are the inner ends of the key levers 23, and of the space bar levers 23a, for operation thereby, as above referred to, so long as any key or keys are held down, the clutch is operating and the stylus block 17 is being raised with each revolution of the cam member 33.

We will now describe the carriage for the sheet material to receive the embossment. Mounted rigidly across the top of the frame are two bars, 70, 70. A carriage frame having end members 71, 71, and connecting side members, 71', 71', is mounted to travel on said rods, the side members 71', both front and back being provided with rollers, 72, 72, above and below said rods, whereby said frame will move easily. The frame is moved by means of a cable 73, Fig. 2, attached thereto and passing over a pulley, 74, and provided with a weight 75. The front side member of said carriage frame is provided with a ratchet bar, 76, for an escapement, hereinafter again referred to in detail. Movably mounted across the carriage frame, forwardly and rearwardly, is a frame 77, having the round end bars, 77', slidable through the bearings 78, with front and back connecting bars, 79 and 80, Fig. 11. The back bars 80 are provided with clamping members 81, to receive and hold the rear edge of a sheet of material, said clamping means being operated by a thumb screw 82. The round end bars 77' of the material frame 77, are provided with staggered seats, to receive spring pressed holding balls, 83, in the plural sleeve member, 84, shown in Fig. 5. Any one of the springs, 85, can be tightened in said member 84, for operation of its ball, 83, for the holding action, depending on what line spacing is desired. The seats 77a of the different rows are differently spaced and each row has its holding ball. There are four rows of these seats, in each end rod and four holding means, as will be understood from Fig. 5. The ball holds the frame frictionally in place, so that it can be moved rearwardly or forwardly by overcoming the friction of the spring pressed ball. As a means for moving said frame manually, an operating rod 85, Figs. 11, and 5, is mounted on the side of said frame, in bearings, 86, and provided with a hand nut or head 87, and with a worm gear 88. The worm gear 88 meshes with a second worm gear 89, on a shaft 90, mounted across the frame and provided with two gears 91, 91, near its opposite ends which mesh with racks 92 on the under side of the end rods 77'. Thus by turning the member 87 by hand, the frame which carries the sheet of material can be moved forwardly or rearwardly, as desired. This sheet of material extends under the matrix and over the stylus block and moves therebetween, that is, it moves with the carriage and is also movable manually, as described, line at a time, rearwardly or forwardly, as desired.

Referring now to Figs. 12 and 13, we will describe the escapement. Mounted between the spaced supporting members 7, 7, of the top of the frame, Figs. 13 and 14, is a supporting bolt-like member 95, having ball-bearing nuts, 96, with balls, 97, in a cup, 98, as clearly indicated in Fig. 13. On said bolt member 95, is a sleeve, 99, having an extension 100, connected at its lower edge with a link, 101, the lower end of which is connected to the through rod 102, and under which rod the inner ends of the key levers 23 engage it and to which the space bar levers 23a connect, whereby each depression of a key, or of the space bar, operates to raise said extension 100. Mounted in said extension 100, is a pivoted dog 103, pivoted at 104 to said member 100, with a spring 105, on said extension 100 for normally moving the operating end of said dog 103 forwardly when it is raised out of the ratchet bar, whereby when it again moves down to the ratchet bar it will be in the next notch, and as soon as the end of the extension member 100 moves out of the first notch, said carriage and ratchet bar are moved forwardly one notch. This dog occupies a gap in the outer end or edge of the extension member 100, as will be clear from Fig. 12, the outer end of said extension member 100 and the end of said dog 103, being movable in the ratchet bar 76, as seen in Fig. 13. A plate 106, on said dog 103, constitutes a bearing for the end of a lever, 107, pivoted at 108, with its free end extended to the front of the machine, as shown, for the purpose of manually moving the dog out of the ratchet bar when it is desired to move the carriage freely in either direction by hand.

Referring to Fig. 10, we have shown in connection with a stylus block 17' and with the stylus 18' which are the same as the stylus 18, in Fig. 8, means for making brackets, if desired, to enclose words or sentences. These bracket stylus are designated 110, 110, in Fig. 10, and they are also shown in Fig. 9, with the cam bars 111, for lifting them, shown in section, and also shown extended in Fig. 10. These will be operated in the same manner as are the cam rods 19, and will simply have two extra keys, or means for moving said cam rods 111 inwardly, which could be done by hand. No particular means is shown.

Thus we have provided a machine by means of which a person can, by the manipulation of keys, as in operating a typewriter, selectively position the embossing elements, with power means for operating said embossing elements to penetrate said

sheet, said keys operatively connecting the power means and causing it to operate the embossing elements during the depression of said keys.

We are aware that many changes in details of construction and arrangement can be made in our invention as here illustrated without departing from the spirit thereof, and we do not, therefore, limit the invention to the showing made, except as we may be limited by the hereto appended claims.

We claim:

1. In a machine of the character referred to, in combination, means for holding a sheet of material in a flat condition, means for moving the same in its plane edgewise in one direction, key-controlled means for moving said sheet in its plane edgewise in a direction at right angles to the movement aforesaid, a matrix block on one side of said sheet, a stylus block at the other side of said sheet in register with said matrix block, stylus in said stylus block movable to operative positions, key-actuated means for positioning said stylus selectively in the stylus block, and means for bodily moving the stylus block and positioned stylus against the said sheet and said matrix block, substantially as described.

2. In a machine of the character referred to, in combination, means for holding a sheet of material in a flat condition, key-controlled means for moving it step by step in one direction in its plane, means for manually moving it back and forth in a transverse direction, an adjustable matrix member at one side of sheet, a stylus member with a plurality of stylus therein, movably mounted at the opposite side of said sheet in register with said matrix, key-actuated means for selectively positioning said stylus in said stylus member, and power means for automatically moving said stylus member bodily to force the selectively positioned stylus into said sheet against said matrix.

3. In a machine of the character referred to, a stylus block with movable stylus, keys with connections for selectively moving said stylus, power actuated toggle means for bodily moving said stylus block and stylus, and operative connections from said keys for setting said power means into action to move said stylus block with each depression of a key.

4. In a machine of the character referred to, in combination with means for holding and moving a sheet of material to be embossed, a stylus block movably mounted, stylus therein, keys with operative connections for selectively moving said stylus, a matrix above said stylus block, operative connections from said keys for automatically controlling the movement of said stylus block and the stylus, and power means adapted to be put into operative connection with said stylus block with the manipulation of said keys, for operating the stylus block.

5. In a machine of the character referred to, in combination, a stand, a carriage mounted to be moved step by step across said stand, keys controlling the movement of said carriage, a second carriage movable on said first carriage and transversely thereof, means for moving the same in a horizontal plane, means thereon for holding a sheet of material, a matrix block with matrix therein, and a stylus block with stylus therein, said matrix block and said stylus block being positioned respectively above and below said sheet, key-actuated means for selectively positioning the styluses, power means for moving the stylus head bodily against the sheet and said matrix, and means for returning said styluses to their normal positions after each impression, substantially as described.

Signed at Los Angeles, Los Angeles County, California, this 4th day of March, 1921.

JOHN R. ATKINSON.
HARRY GEARING.

Witnesses:
W. R. LITZENBERG,
T. C. PLATH.