C. L. CHINNOCK.

SHORTHAND MACHINE FOR THE BLIND.

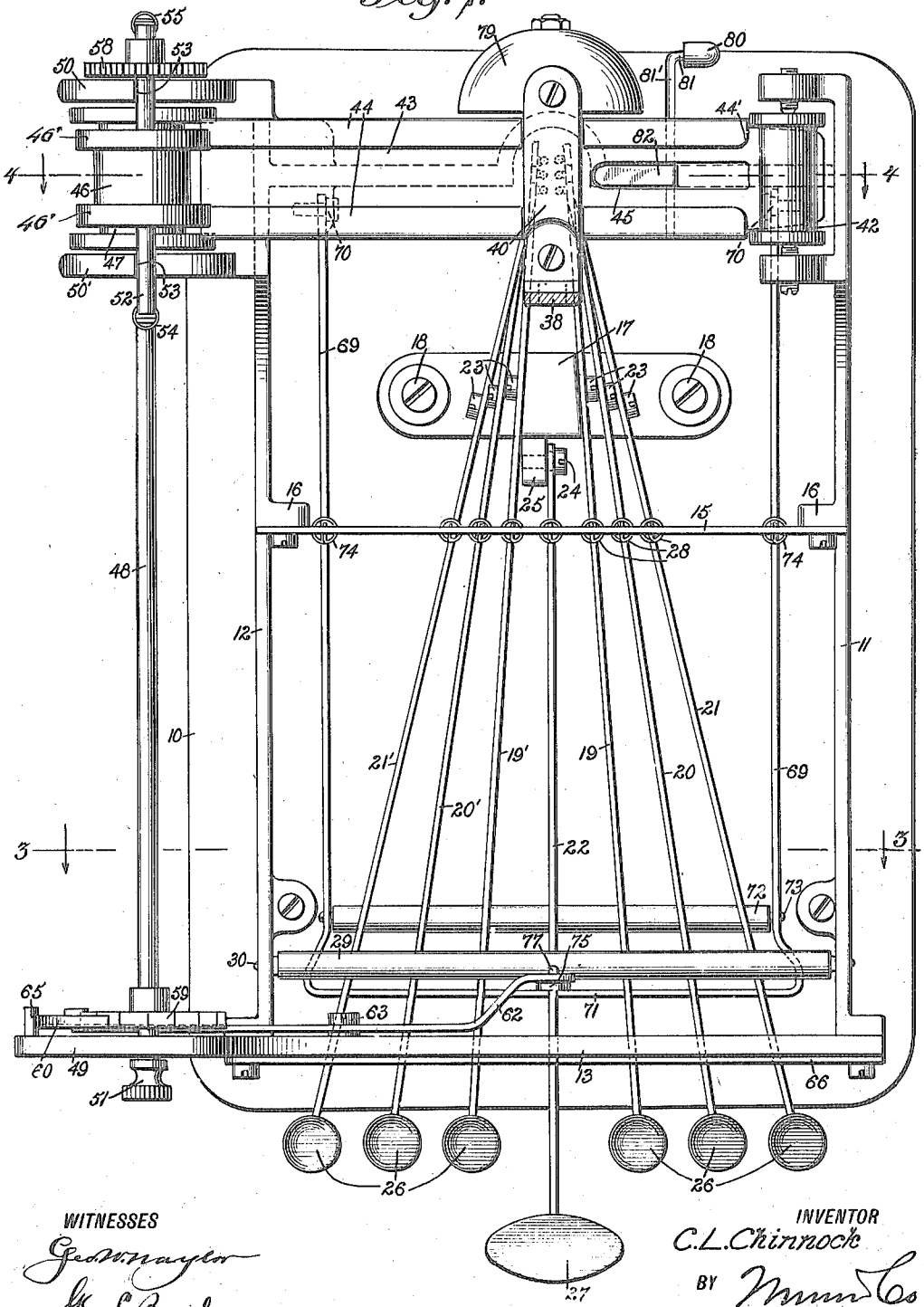
APPLICATION FILED MAY 4, 1917.

1,264,014.

Patented Apr. 23, 1918.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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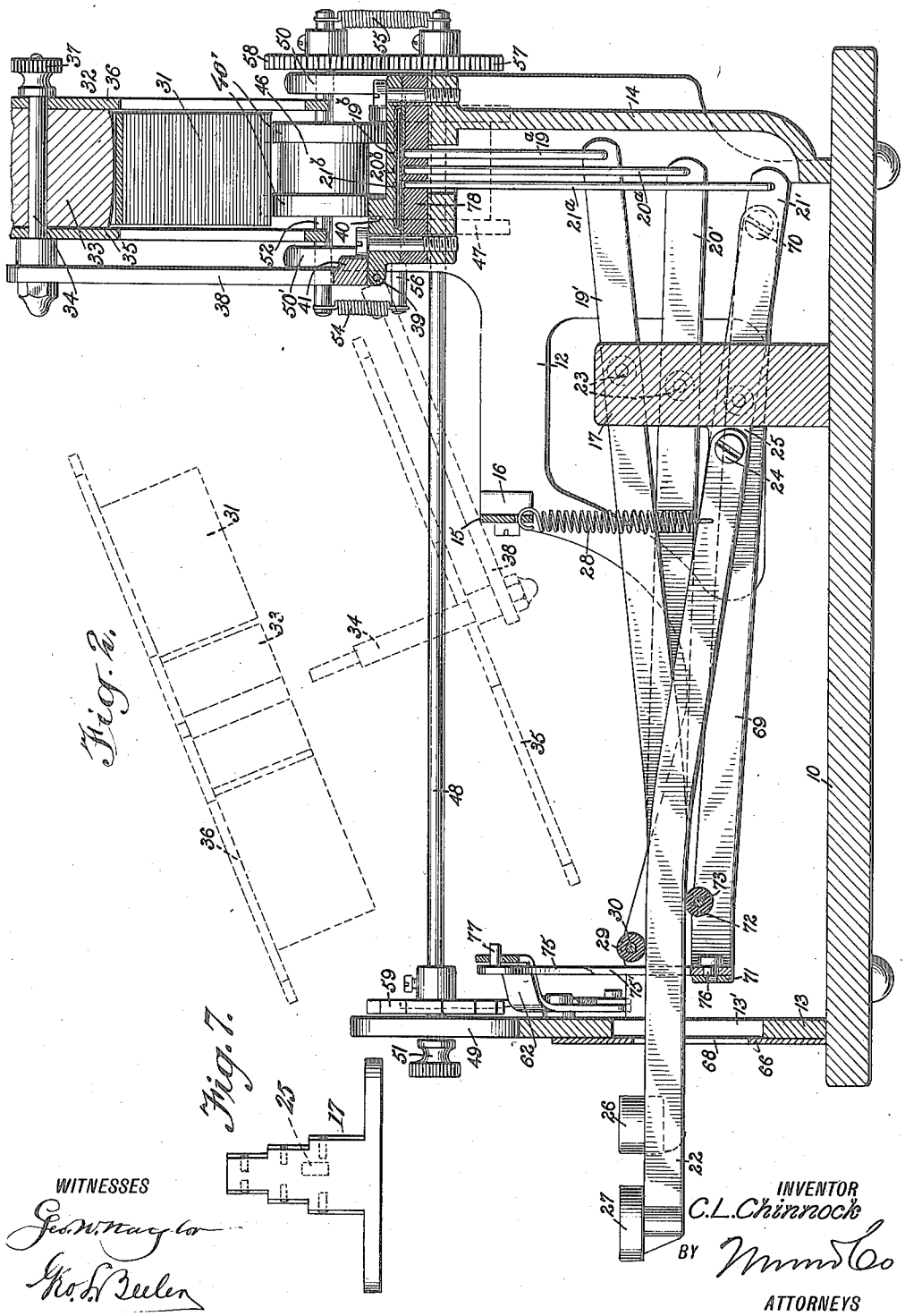

Fig. 2.

Fig. 7.

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Fig. 3.

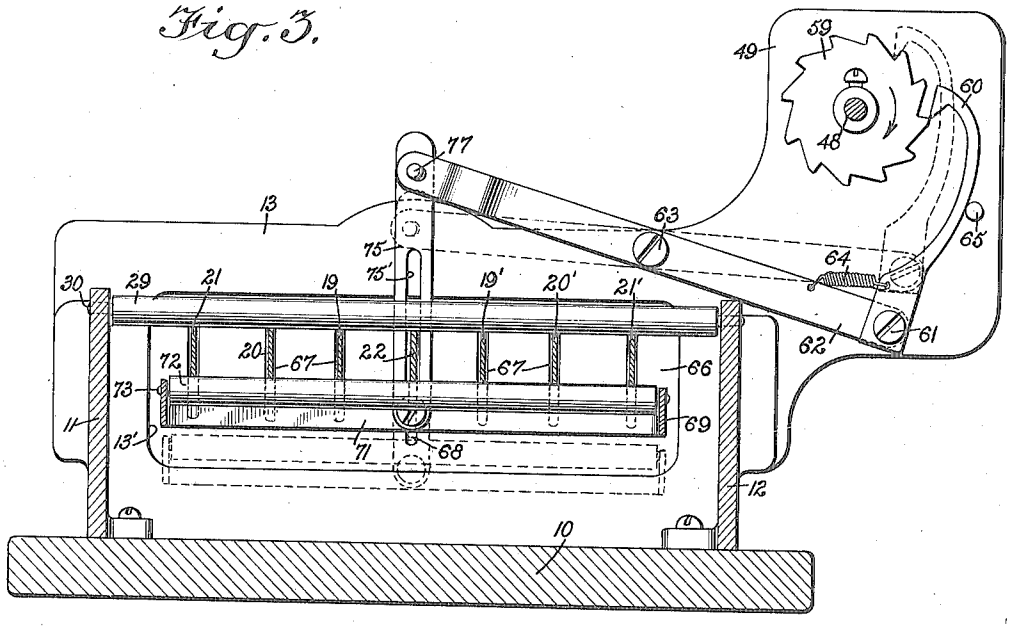
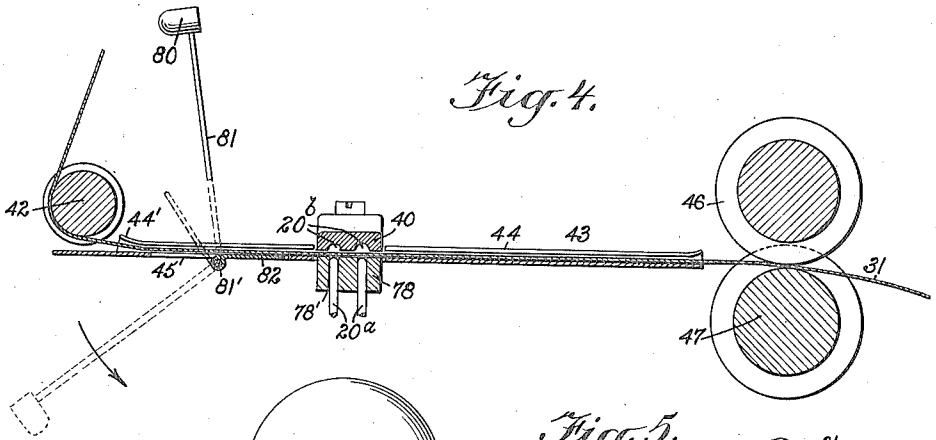


Fig. 4.



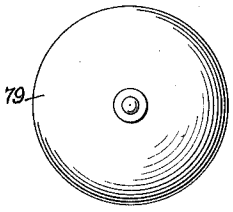


Fig. 5.

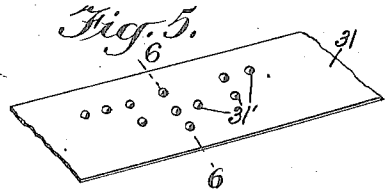
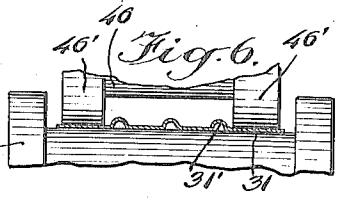


Fig. 6.



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SHORTHAND-MACHINE FOR THE BLIND.

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Application filed May 4, 1917. Serial No. 166,299.

To all whom it may concern:

Be it known that I, CHARLES L. CHINNOCK, a citizen of the United States, and resident of the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented a new and Improved Shorthand-Machine for the Blind, of which the following is a full, clear, and exact description.

This invention relates to finger operated machines such as typewriters or the like, and has particular reference to stenographic or shorthand machines.

Among the principal objects of the invention is to provide a stenographic or shorthand machine of unusually simple construction adapting it peculiarly for convenient manipulation by blind operators.

With the foregoing and other objects in view the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed or suggested herein, still for the purpose of illustrating a practical embodiment thereof reference is had to the accompanying drawings, in which like reference characters designate the same parts in the several views, and in which

Figure 1 is a plan view of the main parts of the machine with the paper reel removed.

Fig. 2 is a vertical central longitudinal section.

Fig. 3 is a vertical transverse section on the line 3—3 of Fig. 1.

Fig. 4 is a vertical sectional detail substantially on the line 4—4 of Fig. 1 showing particularly the action of the signal devices.

Fig. 5 is a perspective detail of a fragment of the paper ribbon.

Fig. 6 is a transverse sectional detail on the line 6—6 of Fig. 5.

Fig. 7 is a rear elevation of the lever supporting pedestal indicating the rearwardly converging pairs of side faces against which the levers are pivoted.

Referring now more particularly to the drawings I show a machine comprising a base 10 to which are connected vertical side frame members 11 and 12 and front and rear end members 13 and 14 suitably connected to one another. A bar 15 extends across the open space between the side members 11 and 12 and is secured to lugs 16 extending inwardly from said side members.

Within the space outlined by the open frame and just back of the transverse center thereof is located an upright pedestal 17 fixed rigidly to the base by means of fasteners 18, said pedestal constituting a fulcrum member for the levers 19, 19′, 20, 20′, 21, 21′ and 22. The pairs of levers having similar reference characters are pivoted upon opposite sides of the pedestal on pivots 23, the axes of the pivots of each pair being directly opposite each other but at a slight angle to each other due to the rearward convergence of the opposite sides of the pedestal corresponding to or occasioning the forward flaring of the levers. The lever 22 arranged substantially in the longitudinal center of the machine and midway between the levers of each of the other pairs, is pivoted at 24 upon a lug 25 projecting forwardly from the front of the pedestal. The levers 19 to 21, being fulcrumed between their ends, are all of the first class, the keys 26 pertaining thereto being arranged in normal alinement with one another in front of and parallel to the front plate or panel 13 of the frame. The lever 22, however, which carries the spacing key 27, is essentially a lever of the second class with respect to the downward thrust thereon. These levers are all held normally in elevated position by means of a series of light coil springs 28 connected to the bar 15 at their upper ends while the lower ends of the springs are connected to the levers just in front of their pivots. The upper edges of all of these levers are adapted to strike against a rubber roller 29 or its equivalent journaled across the front end of the frame on a bar 30.

The principle of operation of the machine depends upon the making upon a paper or other analogous ribbon or tape 31 certain impressions adaptable for reading by the sense of touch in a manner well understood in this art. The paper ribbon is provided on a roll carried upon a reel shown as a whole at 32 and comprising a hub 33 journaled upon a spindle 34. The reel comprises also two opposite side plates 35 and 36 held in place by means of a thumb nut 37 screwed upon the spindle 34. The spin-

dle and the parts carried thereby are mounted upon the upper end of a shank 38 connected through a transverse pivot 39 at the front end of what I may term an anvil member 40. The lower end of the shank is provided with a lug or projection 41 on its rear side which strikes against the top of the anvil member and thereby limits the upward swinging movement of the reel into operative position to the vertical. The weight of the reel, however, in this position all lies on the opposite side of the lug 41 from the pivot 39 making thereby a stable position for the reel and yet providing for the easy lowering thereof to folded or nested position as indicated in dotted lines in Fig. 2 where the shank is adapted to rest upon the upper edge of the crossbar 15, this being the position assumed by the reel when the machine is folded or out of operation. The construction of the reel as to size and relative proportions therefore well adapts it to folding within the space between the front and rear portions of the machine. The paper ribbon is drawn from the reel and threaded beneath a guide roller 42 at the rear end of the right side of the machine and thence is drawn through a horizontal guideway comprising a substantially imperforate flat bottom 43 and a pair of upper inwardly projecting spaced flanges 44. The ends of these flanges are deflected upwardly at 44′ just below the roller 42 to provide an easy entrance for the ribbon. The bottom plate 43, however, is provided with a central slot 45 adjacent to the right hand end thereof. From the guideway just described the paper ribbon is delivered through between a pair of feed rollers 46 and 47, the former having end flanges 46′ and the latter being positively connected in any suitable manner to a rock shaft 48 leading along in a horizontal direction on the outside of the frame and parallel to the side frame 12 thereof. Said shaft 48 is journaled at its front and rear ends in upward extensions 49 and 50 of the front and rear end panels respectively. The front end of the shaft 48 is provided with a knurled head 51 through which the operator may rotate the shaft to initiate the threading of the strip of paper between the rollers 46 and 47. The roller 47 is fixed upon the shaft 48 for rotation therewith. The upper roller, however, is secured to a counter-shaft 52 arranged above and paralell to the shaft 48 and mounted in slots 53 in the upward extensions 50 and 50′. A pair of springs 54 and 55 are connected at their upper ends to the ends of the counter-shaft and at their lower ends to a lug 56 and the end of the shaft 48 respectively. These springs serve to hold the upper roller 46 down with its flanges aforesaid in proper contact with the paper so that when the lower roller is rotated, causing the rotation of the upper roller, the paper will be projected through between the rollers with certainty. The counter-shaft and upper roller are rotated positively from the lower shaft by means of a pair of gears 57 and 58 connected to the lower and upper shafts respectively.

The paper feeding rollers just referred to are operated automatically during the normal operation of the machine by means of a ratchet wheel 59 secured upon the shaft 48 just in the rear of the upward projection 49 at the front of the machine. Said wheel is provided with teeth equally spaced according to the extent of movement desired for the paper. A dog 60 pivotally connected at 61 to the outer end of a lever 62 coöperates with said ratchet wheel teeth to cause rotation of the same step by step in the desired direction. The lever is pivoted at 63 on the front panel 13 and its inner end is located practically directly above the spacing bar or lever 22. A light spring 64 extending between the lower portion of the dog and adjacent portion of the lever 62 tends to hold the hook portion of the dog in position to engage the ratchet wheel teeth. A stop lug 65 connected to the extension 49 on the outside of the dog limits the outward movement thereof.

Referring now especially to Fig. 3 I show at 66 a guide plate secured upon the front face of the front panel 13 and covering a large opening 13′ formed in said panel. Said guide plate is provided with a series of seven vertical parallel slots 67 and 68. The slot 68 is for the accommodation of the spacing lever 22 and is longer or extends farther downwardly than the other slots 67 in which the key levers operate. The lower ends of the six slots 67 are on the same level. 69 indicates a yoke of substantially U-form the legs of which extend rearwardly and are pivoted at 70 to the frame. The closed end of the yoke constitutes a transverse bar 71 which lies beneath all of said levers 19 to 22 but out of contact therewith. A rubber roller 72 journaled on a spindle 73 extends between the side portions of the yoke and bears against the lower edges of all of said levers. The yoke is drawn upwardly normally to the position just indicated by a pair of springs 74 having their upper ends connected to the crossbar 15. A link 75 is connected at 76 to the center of the crossbar 71 at its lower end and has pin and slot connection at 77 at its upper end with the inner end of the lever 62. The link 75 being central of the machine is provided with a vertical slot 75′ through which the spacing lever 22 extends. From the construction just described it will be appreciated that by depressing any one of the key or spacing levers until it strikes the lower end of its slot the lever 62 will be rocked around its

pivot 63 by virtue of the link connection 75 which will elevate the dog 60 to the extent of one or two teeth depending upon the particular lever actuated. That is to say, any lever operating in the slot 67 will cause the dog to engage the next tooth, but the lever 22 operating in the longer slot 68 will move the dog to engage the second tooth. The construction of the yoke 69 insures that all tendency of the yoke to twist even though actuated by one of the side levers will be practically eliminated thereby insuring that the lever 62 will be operated with precision. The roller 72 bearing the direct contact of the actuating lever at any time provides for a rolling action or contact thus eliminating sliding friction as well as providing an easy touch for the operator. Since the pivots 70 for the yoke are eccentric to the pivots for the levers there would be a material amount of sliding friction between the levers and the yoke but for this rolling contact. When the actuated lever is released it returns promptly to its normal position, striking against the buffer 29, being elevated by the spring 28.

I will now describe the impression devices with respect to the strip of paper 31. For each of the key levers I provide a needle or plunger pivotally connected at its lower end to the rear end of the lever and having its upper end or point guided in or through a guide block 78 just below the anvil 40, said block being provided with six holes 78′ arranged in three pairs corresponding to the several keys. The plungers are indicated at 19^a, 20^a and 21^a, the plungers of each pair being similarly indicated. The anvil member is provided on its lower surface with depressions 19^b, 20^b and 21^b, also in pairs just above the respective plungers and in alinement with the guide holes 78′. (See Fig. 4.) The strip of paper 31 is guided between the anvil 40 and guide block 78, the direction or manner of guiding the paper being central with respect to the series or group of impression devices just described. If any one of the keys 26, or any combination of said keys, be depressed by the operator's fingers the corresponding plungers will be actuated upwardly forming hemispherical nodules 31′ or imperforate projections which are so constituted as to remain as permanent features of the strip of paper forming thereby a record adapted to be readily read through the sense of the touch of the operator's fingers. When the keys are depressed and the impressions are being made in the record the dog 60 is operated in its idle direction and when the operated lever or levers return to their normal position the spacing actuation takes place automatically by virtue of the springs 74. As will be appreciated from Fig. 2 especially the impressed zone of the paper strip lies between the edge portions thereof that are gripped between the flanges 46′ of the feed roller 46 and the main portion of the roller 47, so that the operation of the rollers will not interfere with or damage the record made on the strip.

It will thus be seen that the construction and operation of the machine are of the most simple nature and designed to be practised with the least amount of care or fatigue. The operation of the machine is practically automatic beyond the simple manipulation of the keys 26 and 27. Should the paper part or be entirely withdrawn from the roller it is essential that the operator be apprised of this fact by some audible means, bearing in mind that the machine is designed especially for blind operators. To meet this requirement therefore I provide a novel type of signal including a bell 79 fixed upon the rear panel 14 of the machine just back of and below the paper guide 43 and to the left of the slot 45 formed in the bottom of the guide. At this slot is pivoted a hammer 80 having a shank 81, the shank having a horizontal portion 81′ constituting the axis of the hammer journaled just below the guide and transversely thereof. A tongue 82 is secured to this transverse axle portion 81′ at slightly more than a right angle to the direction of the main portion 81 of the shank. The arrangement is such that the tongue projects in a horizontal position to the left of the axle 81′ lying in the slot 45 and the tongue is normally held in place by the strip of paper. By this means the hammer is held elevated but not quite in a vertical position above said axis. (See Fig. 4.) The center of gravity of the hammer is thus at one side of the axis 81′ but not so far as to cause any material drag upon the paper. When, however, the end of the paper is reached the tongue is released thereby allowing the hammer to fall by gravity and swing around until it strikes the bell. In adjusting the paper for operation the hammer is first swung up to its upright position as shown in full lines in Fig. 4 where it will be held normally by the paper.

I claim:

1. In a shorthand machine for the blind, the combination of a base and an upwardly projecting pedestal fixed to the base, said pedestal having pairs of oppositely arranged side faces converging toward the rear and having a substantially central lug at its front, pairs of key levers pivoted to said converging side faces, a spacing lever pivoted to said lug, pairs of vertically operated plungers connected to the respective pairs of key levers at the rear ends thereof, record strip guide means above the plungers, and means to automatically feed the record strip coincidentally with the movement of the key and spacing levers, substantially as set forth.

2. In a shorthand machine, the combination of a base, an upwardly projecting pedestal fixed thereto between the center and the rear end thereof, said pedestal being provided with pairs of vertical lateral plane faces offset laterally from one another, and at different levels, pairs of key levers pivoted on horizontal pivots upon the corresponding pairs of plane faces, said faces and levers all converging toward the same point at the rear of the machine, a plurality of pairs of upwardly projecting plungers connected to the rear ends of the corresponding pairs of levers, said plungers all being adjacent to said point of convergence, means to guide a record strip transversely across the rear end of the machine just above the upper ends of said plungers, means coöperating with said guide means to cause the plungers when actuated upwardly by the key levers to form permanent record impressions on the strip, and automatic feeding means for the strip acting upon the edges thereof, substantially as set forth.

3. In a shorthand machine for the blind, the combination of key operated impression means including a group of upwardly operated plungers, a reel for the roll of record strip, means to guide the strip longitudinally through the machine over said impression means, and feeding means acting to draw the strip step by step from the roll coincidentally with the movement of the impression means, said feeding means comprising a shaft journaled longitudinally of the machine, a roller fixed to the shaft, means coöperating with said roller to grip the edges of the strip, and means secured to the front end of the shaft to enable the operator to rotate the shaft and feeding means to initiate the action of the strip auxiliary to the automatic operation of the feeding device.

4. In a machine of the character set forth, the combination of a frame having an open end panel, a guide plate secured over said opening and having a series of vertical parallel slots formed therein, a series of levers extending through said slots, the lower ends of the slots serving to limit the downward movement of the levers and one of the slots being longer than the others, means to guide the impression strip through the machine, impression means actuated by certain of said levers, means for feeding the impression strip with relation to the impression means, and connections between said feeding means and levers serving to cause automatic actuation of the feeding means according to the actuation of the levers in the longer or shorter slots.

5. In a machine of the character set forth, the combination of a frame including a central transverse crossbar, a guide for an impression strip, impression devices acting upon the strip while it is guided through the machine, a support for a roll of said strip, said support comprising a reel and a shank, the shank being pivoted to a portion of the frame and having a lug limiting the swinging movement of the shank around its pivot so that the reel is held normally by gravity in stable position above the impression means but is adapted to fold forwardly and rest in idle position upon said crossbar, and means to feed the strip endwise through the machine from the roll.

6. In a shorthand machine for the blind, the combination of a guide for an impression strip, said guide having a base having a slot therein and also including edge flanges, impression means coöperating with the guide adjacent to the end of the slot, a bell below the guide, a hammer having a shank journaled across the slot and below the guide, and a tongue connected to the hammer shank and held normally in said slot by the impression strip in such position as to fall automatically and strike the bell when the impression strip parts or passes beyond the tongue.

CHARLES LEROY CHINNOCK.