

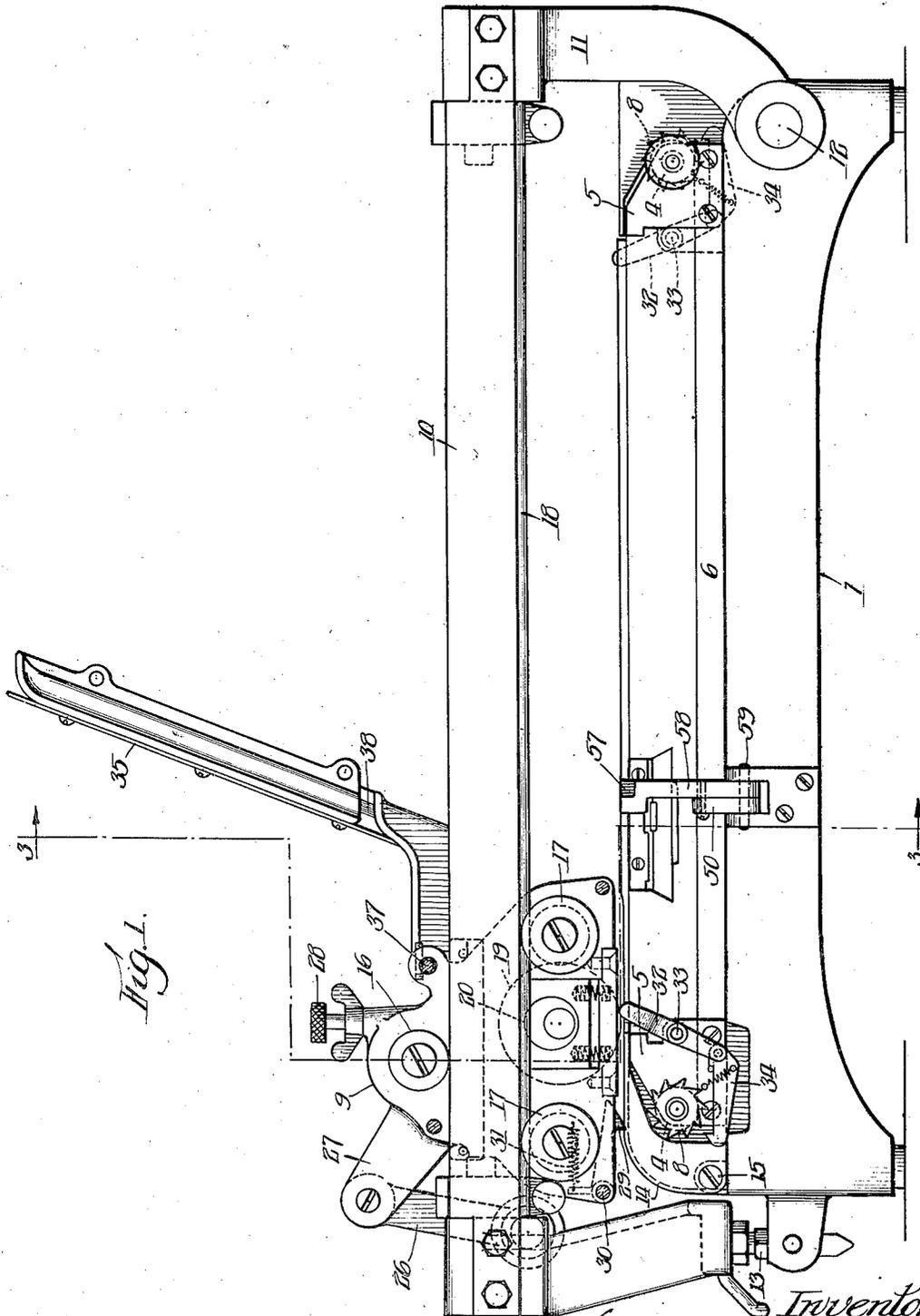
Jan. 19, 1932.

E. C. HARTLEY
PRINTING MACHINE

1,842,086

Filed April 8, 1929

5 Sheets-Sheet 1



Inventor:
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By Wm. C. Belk atty.

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5 Sheets-Sheet 2

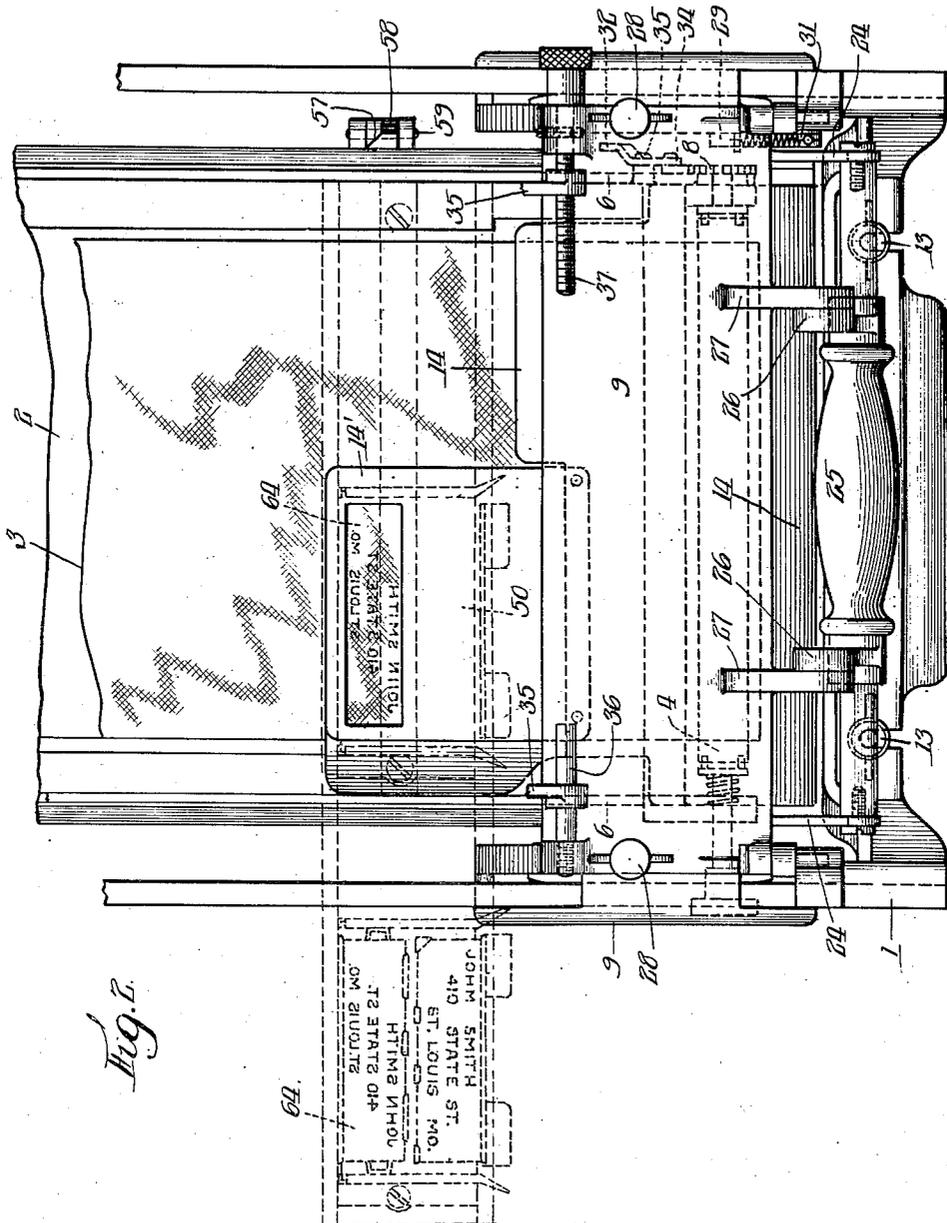


Fig. 2.

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5 Sheets-Sheet 3

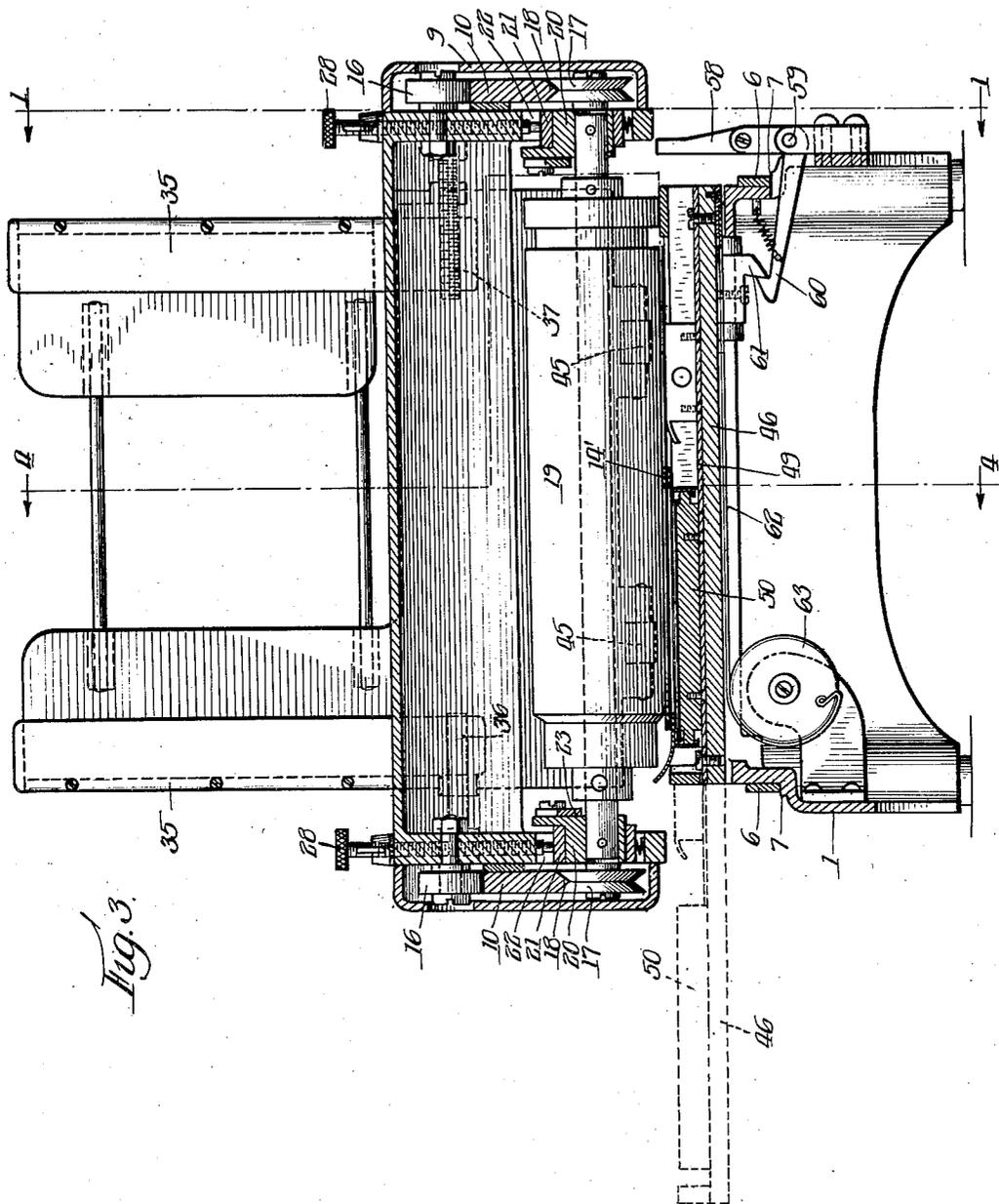


Fig. 3.

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Fig. 5.

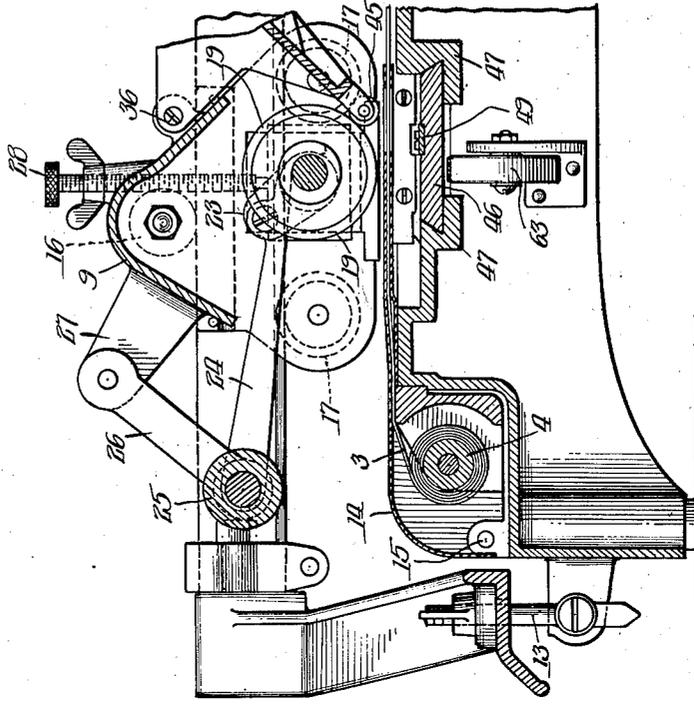
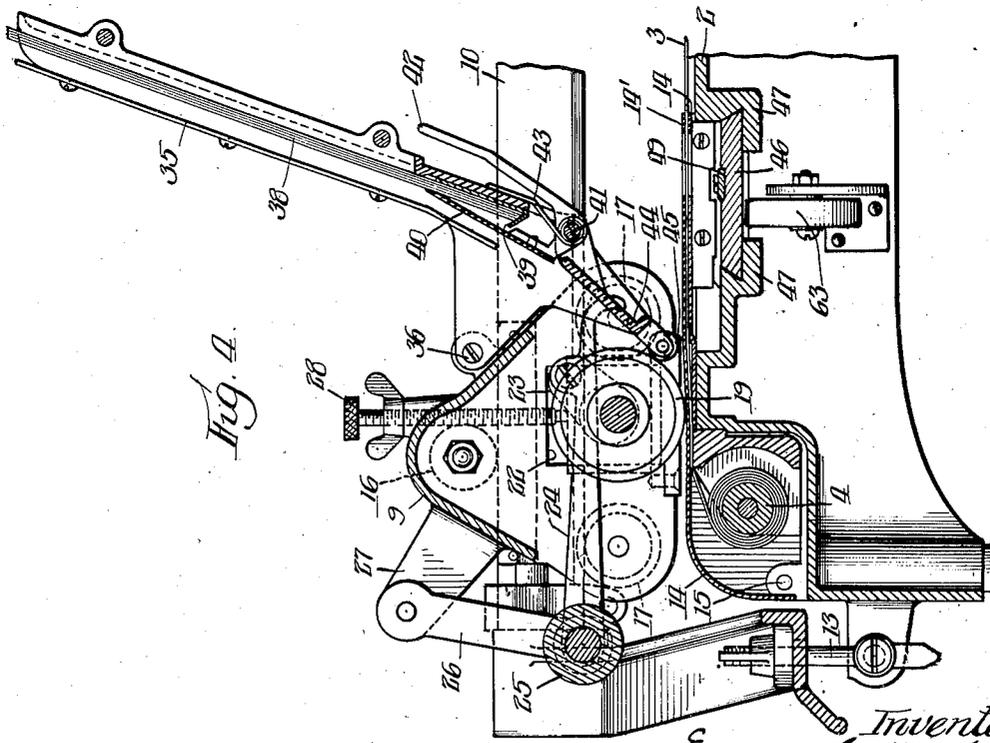


Fig. 4.



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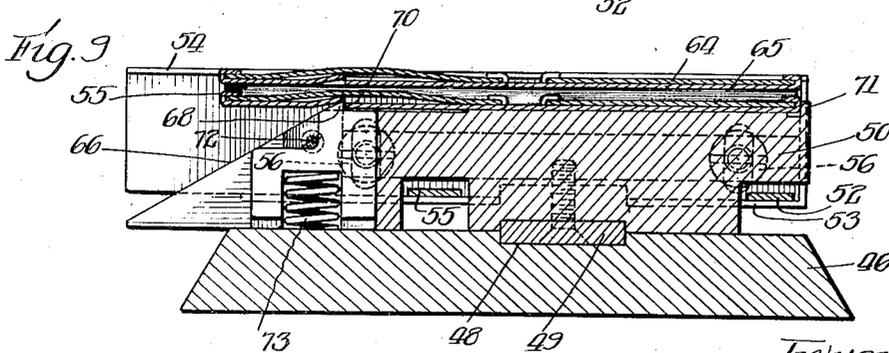
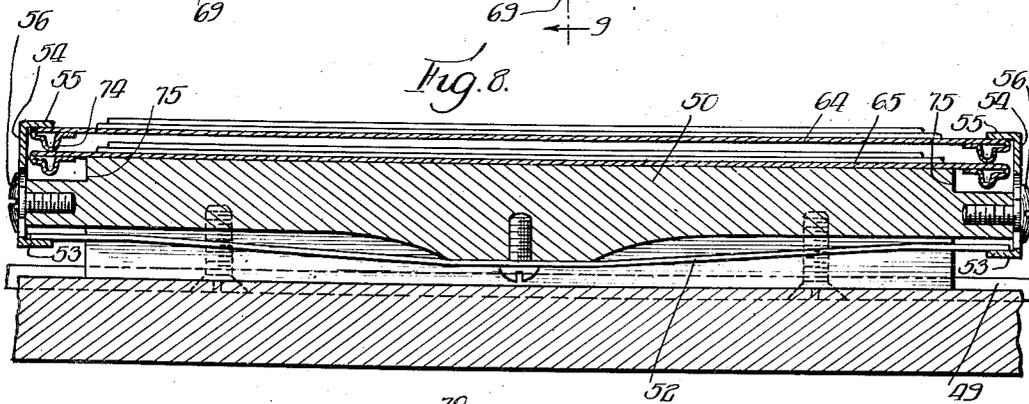
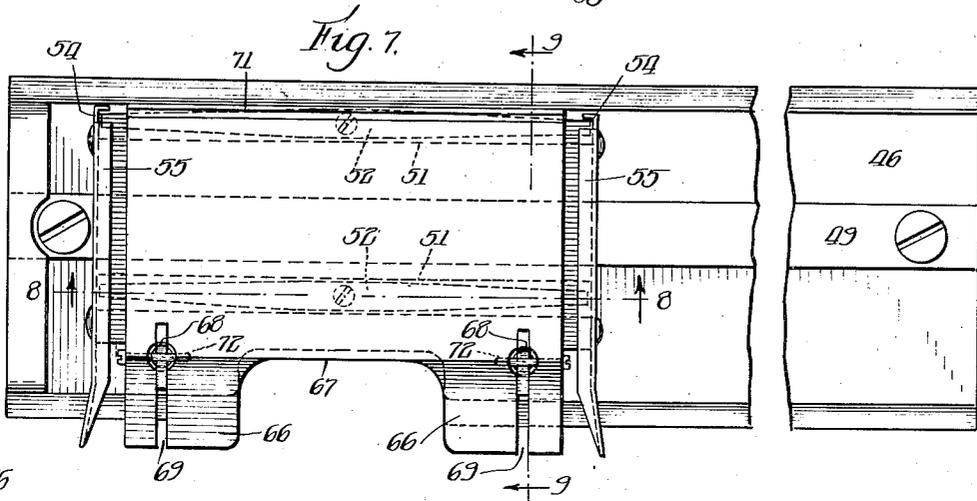
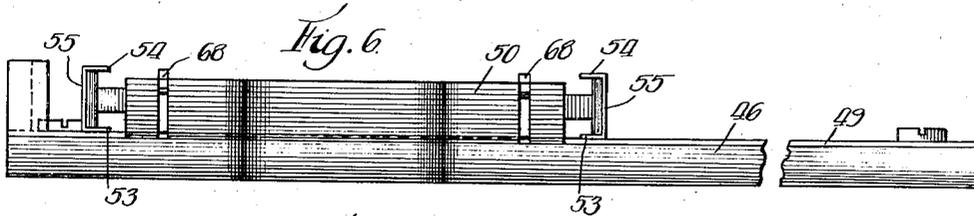
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Filed April 8, 1929

5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

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PRINTING MACHINE

Application filed April 8, 1929. Serial No. 353,408.

This invention relates to printing machines for printing in successive operations from a single body form and from address forms which are manually changed and positioned for printing.

The primary object of the invention is to provide a printing machine of simple, novel and compact design and construction for doing work of this class and which can be easily operated without exceptional skill and with a minimum amount of labor.

Another object is to provide a printing machine of this general type with manually operable means for receiving and positioning a printing device in printing position in relation to a stationary printing form and automatic means for removing the printing device from printing position after the printing operation.

Another object of the invention is to provide a movable anvil for receiving and supporting the printing device in printing position with means whereby a fresh printing device may be inserted in position on the anvil and the previously printed device may be removed by one simple continuous manual operation.

The invention also has other objects in view which will appear hereafter in the detail description of the embodiment selected for illustration in the accompanying drawings wherein

Fig. 1 is a sectional elevation of the machine on the line 1—1 of Fig. 3 with the carriage in initial position.

Fig. 2 is a top plan view of the front portion of the machine with the sheet holder removed.

Fig. 3 is a sectional view on the line 3—3 of Fig. 1.

Fig. 4 is a sectional view on the line 4—4 of Fig. 3.

Fig. 5 is a sectional view similar to Fig. 4, without the sheet holder, and showing the carriage in a partly advanced position.

Fig. 6 is a detail side elevation of the printing device, anvil and slide.

Fig. 7 is a top plan view of the printing device, anvil and slide.

Fig. 8 is a sectional view on the line 8—8 of Fig. 7.

Fig. 9 is a transverse sectional view on the line 9—9 of Fig. 7.

Referring to the drawings 1 designates generally the main frame of the machine which is provided with a bed 2 adapted to receive a stationary printing form and is made in any suitable shape. A stationary printing form of any suitable kind may be used but I prefer one comprising sheet metal sections having printing characters embossed thereon as shown and referred to, for example, in Patent No. 1,543,066, June 23, 1925. An ink ribbon 3 is carried by spools or spindles 4 mounted in bearing plates 5 at each end of a skeleton frame formed by bars 6 connected at their ends with the bearing plates and supported on the shoulders 7 on the main frame. The construction is such that the ribbon frame may be lifted from the main frame and reversed end to end whenever it is desired to reverse the ribbon or for any other purpose. The ribbon spools carry ratchet wheels 8 on opposite ends for intermittently feeding the ribbon as will be described hereafter. A carriage 9 is mounted for reciprocation on the side bars 10 forming part of the carriage frame 11 which is pivoted at 12 to the main frame, Fig. 1. The front end of the carriage frame is detachably secured to the front end of the main frame by adjustable fastening devices 13 so that the carriage frame may be released to permit it to be swung on the pivot 12 and give access to the ribbon and forms and bed. A shield 14 is arranged on the frame to cover the front ribbon spool and the front portion of the shield is cut out as indicated at 14'. This shield is pivoted at 15 to the frame so that it can be swung to open position when the carriage frame is swung to open position to give access to the front ribbon spool. Carrying rollers 16 at each end of the carriage travel on the side bars 10, Fig. 3, to support the carriage on the carriage frame and grooved guide rollers 17 engage the tapered lower edges 18 of the side bars to guide the carriage and maintain it in proper transverse position above the bed. A platen roller 19 is mounted

in eccentric bearings 20 which are mounted in boxes 21 slidably arranged in openings 22 in the carriage, Fig. 4. Arms 23 rigid with the bearings 20 are connected by links 24 with the handle 25 and this handle is swung by links 26 from projections 27 on the carriage, Figs. 4, 5. The construction is such that when the carriage is pushed forward from initial position shown in Fig. 1 the platen roller will be moved down into impression position upon a sheet to be printed laid upon the ink ribbon and when the carriage is pulled on its return stroke to initial position the platen roller will be lifted out of impression position so that the printing operation takes place on the forward pushing movement of the carriage from initial position, Fig. 1. Adjusting screws 28 are provided in the carriage for adjusting the bearing boxes for obtaining the desired adjustment of the platen roller for the work. A dog 29 pivoted on the carriage at 30 and held in operating position by spring 31 is arranged to engage one of the levers 32 pivotally mounted at 33 on bearing plates 5 at opposite ends of the ribbon spools and operatively engaged with feed pawls 34, Fig. 1. The lever 32 is arranged in the path of movement of the dog 29 on the carriage so that on the return movement of the carriage and just before it reaches initial position the dog will swing the feed lever 32 to operate the feed dog 34 to engage the ratchet 8 and turn the ribbon spool a tooth, thus feeding the ribbon the distance of a ratchet tooth on each return stroke of the carriage. Since each spool is provided with ribbon feed devices 8, 32 and 34 the feed of the ribbon will be provided for whenever the ribbon frame is changed end for end. A sheet holder 35 is slidably mounted on a supporting pin 36, Figs. 2, 3 and upon an adjusting screw 37 whereby the holder may be moved transversely of the machine to deliver sheets to be printed in proper printing position. The sheets 38, Fig. 4, are supported in the holder on a bottom shelf 39 and they are held by a baffle 40 which is pivoted at 41 on the holder and is provided with a lever 42 whereby the spring 43 normally holds the baffle against the sheets as shown in Fig. 4 but the baffle may be swung forwardly against the tension of spring 43 by operating lever 42 to permit the holder to be reloaded with sheets. To feed a sheet for printing the front sheet in the holder is lifted manually until it clears the baffle and is then released to slide down over the baffle and the guide bar 44 into position between the pressure roller 45 and the platen roller 19. As the carriage is pushed rearward on the printing stroke the sheet is engaged between the platen roller and the feed roller and is laid down in printing position on the ribbon.

To provide for the use of changeable printing devices for addressing letters to be print-

ed or for carrying other printing forms and for other purposes I provide a slide 46 which is slidably mounted in guides 47 extending transversely of the frame. This slide has a slot 48 to receive a bar 49 which is attached to the bottom of an anvil 50 adapted to receive and support a printing device. The anvil has bottom slots 51 to receive springs 52 which project beyond the ends of the anvil and engage the lower flanges 53 of retainers 54 which are provided with upper flanges 55 to overlap the ends of the printing devices. These retainers are slotted to receive screws 56 whereby the retainers are movable under the influence of the springs 52 on the anvil. With the slide extended as shown in broken lines on the left of the machine Fig. 3 a printing device is mounted on the anvil and the slide is pushed laterally to the right into the full line position Fig. 3. Then the carriage is operated through printing position and return and as it returns the dog 29 engages the cam end 57, Fig. 1, of a release lever 58 pivoted at 59 on the main frame and operating a latch 60, Fig. 3, which engages a lug 61 on the under side of the slide and holds the slide in printing position. A tape 62 is fastened to the right end of the slide, Fig. 3, and to a spring barrel 63 supported on the main frame whereby the slide will be automatically moved to open position upon the return movement of the carriage. It is intended that there shall be only one printing device on the anvil during each printing operation and also during the in and out movement of the slide. When the slide returns to open position as shown in broken lines in Figs. 2 and 3 with one printing device 64 retained on the anvil a fresh printing device 65 will be forced by the operator onto the anvil and under the used printing device 64, the springs 52 permitting the retainers to move sufficiently for this purpose, and immediately the operator removes the used printing device 64 whereupon the springs 52 will move the retainers 54 into engagement with the ends of the fresh printing device 65 to retain said device on the anvil during the movement of the slide and the printing operation. The insertion of a fresh printing device and the removal of the used printing device are accomplished in one movement of the operator's hand and by proper manipulation of the fingers and can be accomplished easily and quickly and without the exercise of special skill. To facilitate insertion of the fresh printing device on the anvil the front of the anvil is beveled at 66, Fig. 9, and recessed at 67, Fig. 7. Spring-pressed dogs 68 are arranged in slots 69 at the front of the anvil to engage the printing device 65 at 70 for holding the printing device properly positioned on the anvil against the back stop 71. The retaining dogs 68 are angular in shape and engage cross pins 72 in

the anvil to limit the upward movement of the anvil under the influence of the springs 73. Printing devices may be employed having spacing flanges 74, Fig. 8, and the anvil is recessed at its ends 75 to accommodate the spacing flanges.

This invention provides a machine of simple construction for printing from a stationary form and changeable forms, the latter being fed manually. Machines of this kind are largely employed for printing addressed letters, the body form of the letter being fixed on the bed of the machine and the address forms being changeable for each printing operation. In practice an address form, 64, will be slid into position on the anvil beneath the flanges 55 of the retainers 54 while the anvil and slide are in open position as shown in broken lines at the left of the machine in Figs. 2 and 3. Then the slide is pushed into printing position as shown in full lines in Figs. 2 and 3. The front sheet in the holder is lifted free of the baffle 40 and dropped again to slide down into operating position between the platen roller and the pressure roller. Then the carriage is pushed forward on its printing stroke the sheet being fed down on the ribbon and printed as the platen roller passes thereover. On the return stroke of the carriage the dog 29 operates lever 58 and releases latch 60, Fig. 3, so that spring barrel 63 and tab 62 may move the slide to open position for changing the address printing form. Also the dog 29 operates the ribbon feed lever 32 and pawl 34, Fig. 1. Then a fresh address printing device 65 is inserted in position beneath the used address printing device 64, Figs. 8, 9, and used address printing device 64 is withdrawn. The dogs 68 hold the lower fresh address printing device against displacement on the anvil while the upper used address printing device is being withdrawn. The slide is then loaded for the next printing operation and is manually pushed into printing position as heretofore described. Meantime the printed sheet has been removed from printing position and the operations heretofore described are repeated in the next printing operation. The operations with respect to the address printing device may be performed by the operator with his left hand and the operations with respect to the sheet and the carriage may be performed by the operator with his right hand. These operations are balanced so that the complete operation of the machine may be easily and quickly performed at considerable speed.

When the handle 25 is gripped and the carriage is moved in the manner above described a printing operation is performed on the sheet by the platen. However after the platen has moved sufficiently to complete the printing operation the handle 25 is released and in this releasing it is moved sufficiently

to cause elevation of the platen and thus the sheet is free and it may then be removed from the machine prior to the time the platen is moved back into initial position.

I have shown the invention in a selected embodiment which operates satisfactorily in the manner and for the purpose intended but changes in the form, construction and arrangement of parts may be made to adapt the invention to different conditions and for other purposes and I reserve the right to make all such changes as fall within the scope of the following claims:

I claim:

1. A printing machine comprising a main frame having a printing bed thereon, a carriage frame, a carriage reciprocal on said main frame, adjustable bearing blocks mounted in said carriage, eccentric bearings in said bearing blocks, a platen roller journaled in said bearings, a handle for operating the carriage, means connecting said handle and said eccentric bearings whereby said bearings will be rotated to raise and lower said platen roller as said handle is manipulated to move said carriage, and means for adjusting the position of said bearing blocks to determine the relation between said platen roller and said printing bed.

2. A printing machine comprising a main frame having a printing bed thereon, a carriage frame, a carriage reciprocal on said carriage frame, a handle pivotally supported on the carriage for operating the carriage, adjustable bearing blocks at opposite ends of said carriage, eccentric bearings rotatably mounted in said bearing blocks, a platen roller journaled in said eccentric bearings, means connecting said handle and said eccentric bearing blocks whereby when said handle is manipulated to operate said carriage said bearing blocks will be rotated to move said platen roller toward and away from said printing bed, means acting on said bearing blocks to urge said bearing blocks in one direction relative to said printing bed, and adjustable means for limiting the action of said urging means to determine the relation between said platen roller and said printing bed.

3. A printing machine comprising a main frame having a printing bed thereon, a carriage frame, a carriage reciprocal on said carriage frame, bearing blocks mounted at opposite ends of said carriage, eccentric bearings rotatably mounted in said bearing blocks, a platen roller journaled in said bearing blocks, a handle for operating said carriage and pivotally mounted on said carriage, means connecting said handle and said eccentric bearings whereby when said handle is manipulated said eccentric bearings will be rotated to raise and lower said platen roller relative to said printing bed, yieldable means acting on said bearing blocks to urge said

platen roller away from said printing bed, and adjustable means limiting the action of said urging means and adapted to determine the position of said platen roller relative to said printing bed.

4. A printing machine comprising a main frame having a printing bed thereon, a carriage frame, a carriage reciprocal on said carriage frame, a handle for operating the carriage and pivotally mounted on the carriage, bearing blocks mounted in the carriage, eccentric bearings rotatably mounted in said bearing blocks, a platen roller journaled in said eccentric bearings; means for determining the position of said bearing blocks to determine the relation between said platen roller and printing bed, arms on said eccentric bearings, and links pivotally connected to said arms and said handle whereby when said handle is manipulated to move said carriage along said carriage frame and across said printing bed said eccentric bearings will be rotated to move said platen roller toward and away from said printing bed.

5. A printing machine comprising a main frame having a printing bed thereon, a carriage frame, a carriage reciprocal on the carriage frame, side members on said carriage and having recesses therein, bearing blocks slidable in said recesses, eccentric bearings rotatably mounted in said bearing blocks, a platen roller journaled in said bearings, a handle for operating the carriage and pivotally mounted on the carriage, means connecting said eccentric bearings to said handle whereby as said handle is manipulated to move said carriage along said carriage frame and across said printing bed said eccentric bearings will be rotated to move said platen roller toward and away from said printing bed, springs acting on said bearing blocks to urge said bearing blocks along said recesses in one direction, and adjusting screws engaging said bearing blocks and limiting the action of said springs whereby said adjusting screws may be moved to determine the alignment of said platen roller with said printing bed and to determine the impression pressure exerted by said platen roller on said printing bed when said platen roller is moved into printing position relative to said bed.

6. A printing machine comprising a main frame having a printing bed thereon, a carriage frame on the main frame and comprising a pair of side bars having tapered lower edges, a carriage reciprocable on said carriage frame, and means for supporting said carriage for reciprocation on said side bars and including pairs of grooved guide rollers mounted on opposite sides of the carriage with the rollers of each pair spaced from each other and engaging the tapered lower edges of the side bars and supporting rollers mounted at each side of the carriage substan-

tially medially between and in a plane above the grooved guide rollers, said supporting rollers traveling on the upper edges of said side bars.

7. A printing machine comprising a main frame having a printing bed thereon, a carriage frame pivotally mounted on said main frame, a carriage reciprocable on the carriage frame, movable bearing blocks in said carriage frame, eccentric bearings in said bearing blocks, a platen roller journaled in said bearings, rollers on said carriage supporting it for movement along said carriage frame, arms pivotally connected to said carriage and carrying a handle at the lower ends thereof, arms on said bearings, links connecting said last named arms and said handle whereby when said handle is gripped and moved to move the carriage over the bed on a printing stroke said platen roller is moved into printing position and whereby when said handle is moved to move the carriage on the return stroke said platen roller is moved out of printing position, and means for adjusting the position of said bearing blocks to alter the initial position of the platen roller relative to the bed.

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