

July 25, 1933.

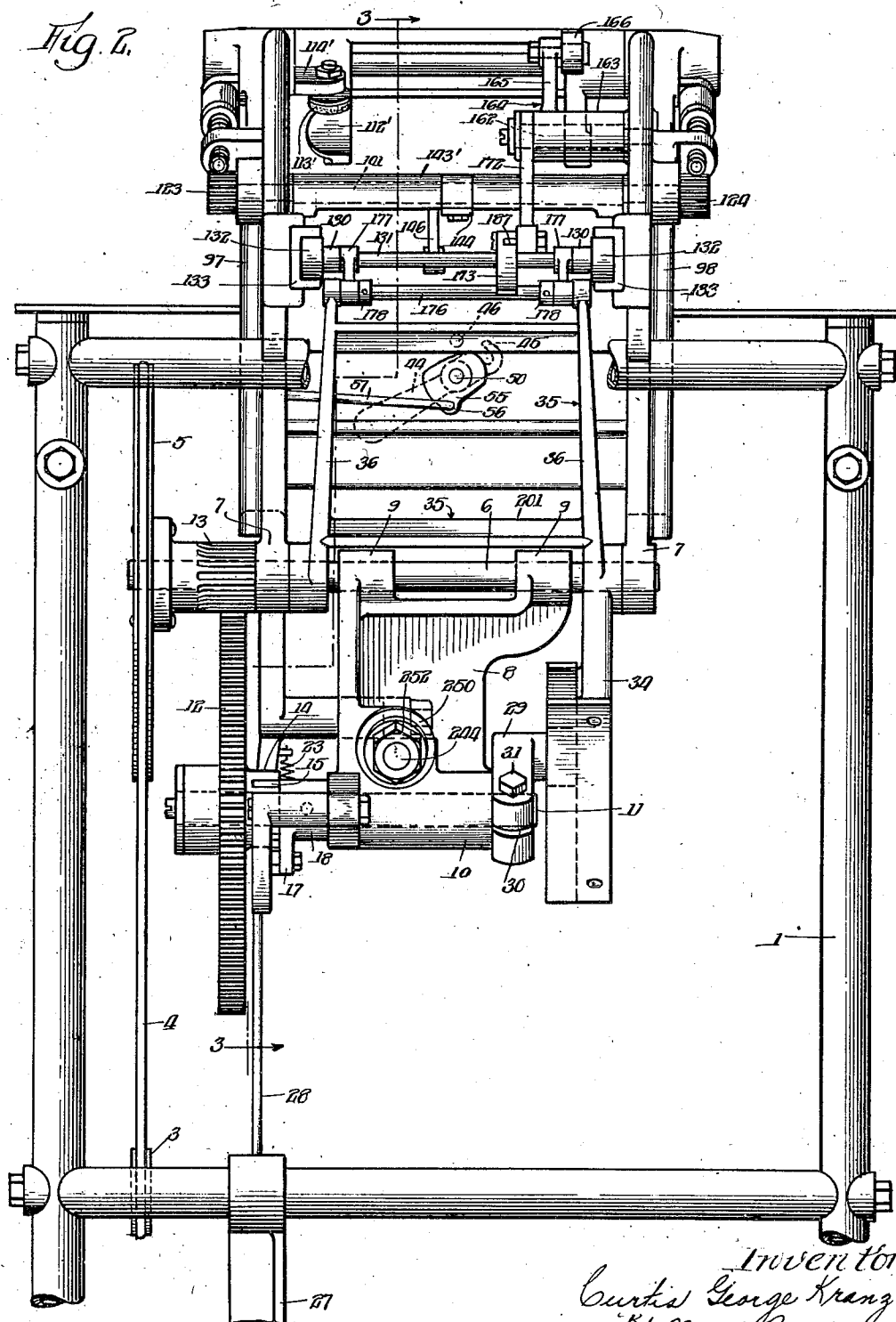
C. G. KRANZ

1,919,954

PRINTING MACHINE

Filed March 10, 1930

7 Sheets-Sheet 2



Inventor
Curtis George Kranz
By Mr. A. Bell atty.

July 25, 1933.

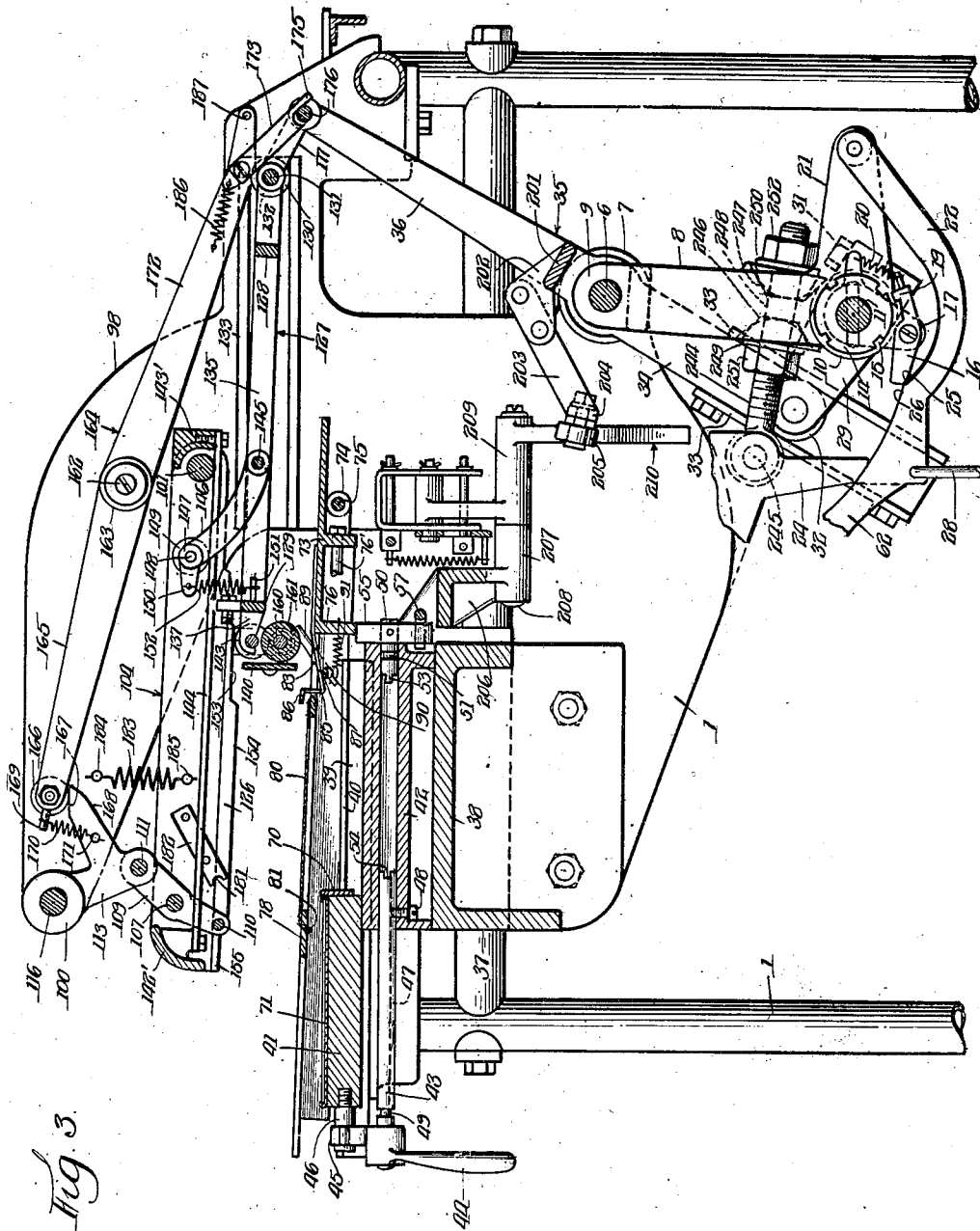
C. G. KRANZ

1,919,954

PRINTING MACHINE

Filed March 10, 1930

7 Sheets-Sheet 3



Inventor:
Curtis George Kranz
By Mr. O. Belk atty.

July 25, 1933.

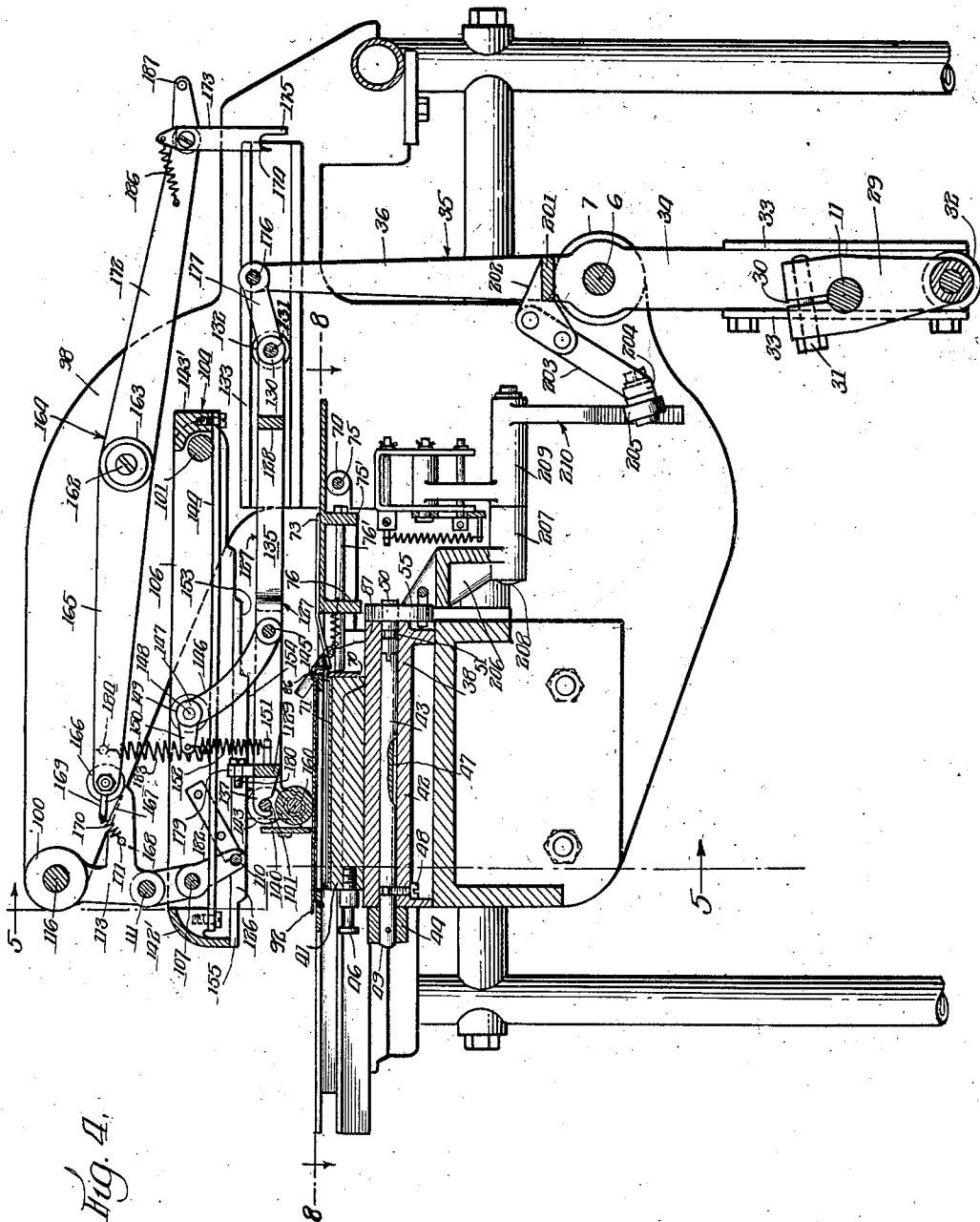
C. G. KRANZ

1,919,954

PRINTING MACHINE

Filed March 10, 1930

7 Sheets-Sheet 4



Inventor
 Curtis George Kranz
 By Wm. O. Bell atty.

July 25, 1933.

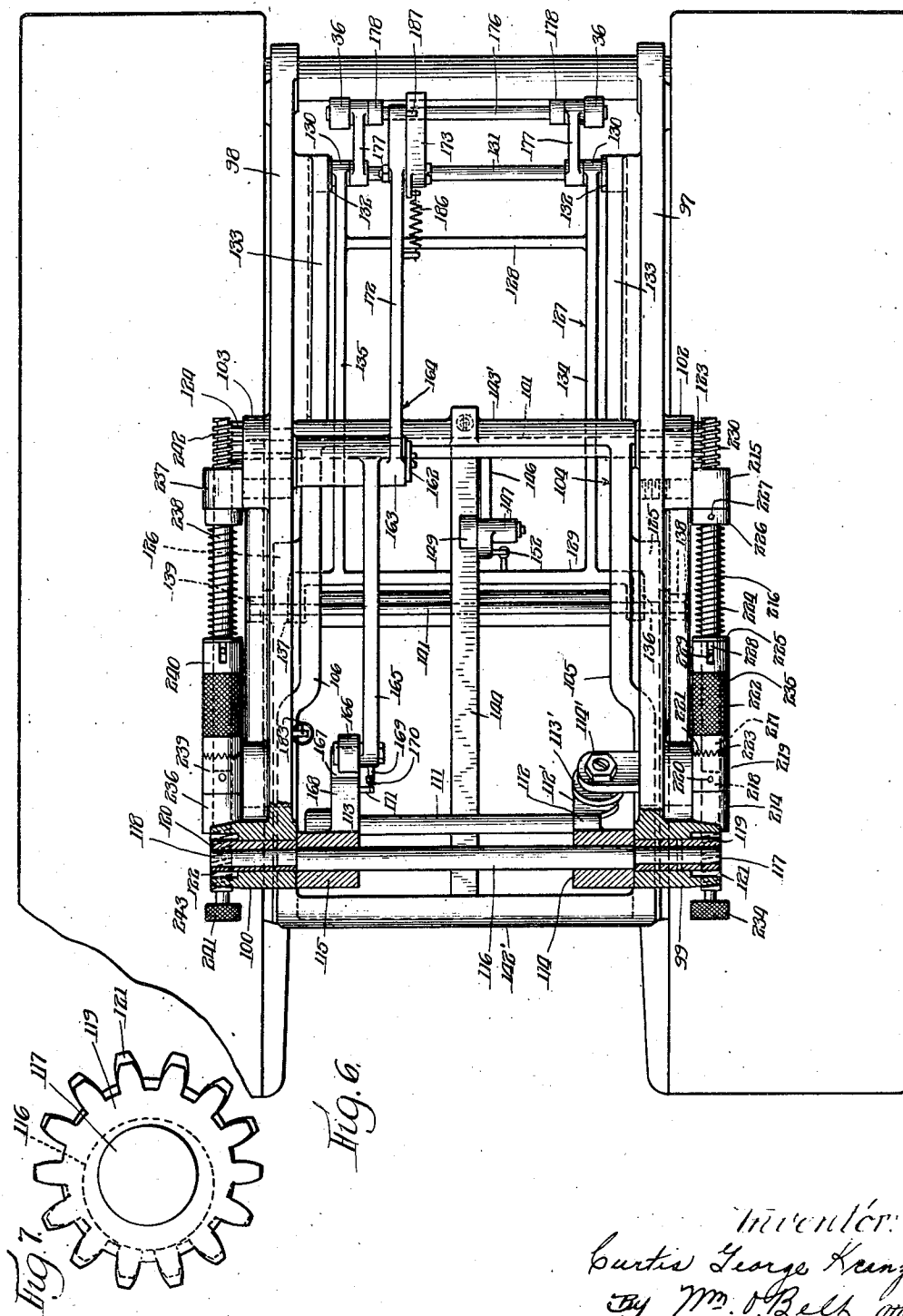
C. G. KRANZ

1,919,954

PRINTING MACHINE

Filed March 10, 1930

7 Sheets-Sheet 6



July 25, 1933.

C. G. KRANZ

1,919,954

PRINTING MACHINE

Filed March 10, 1930

7 Sheets-Sheet 7

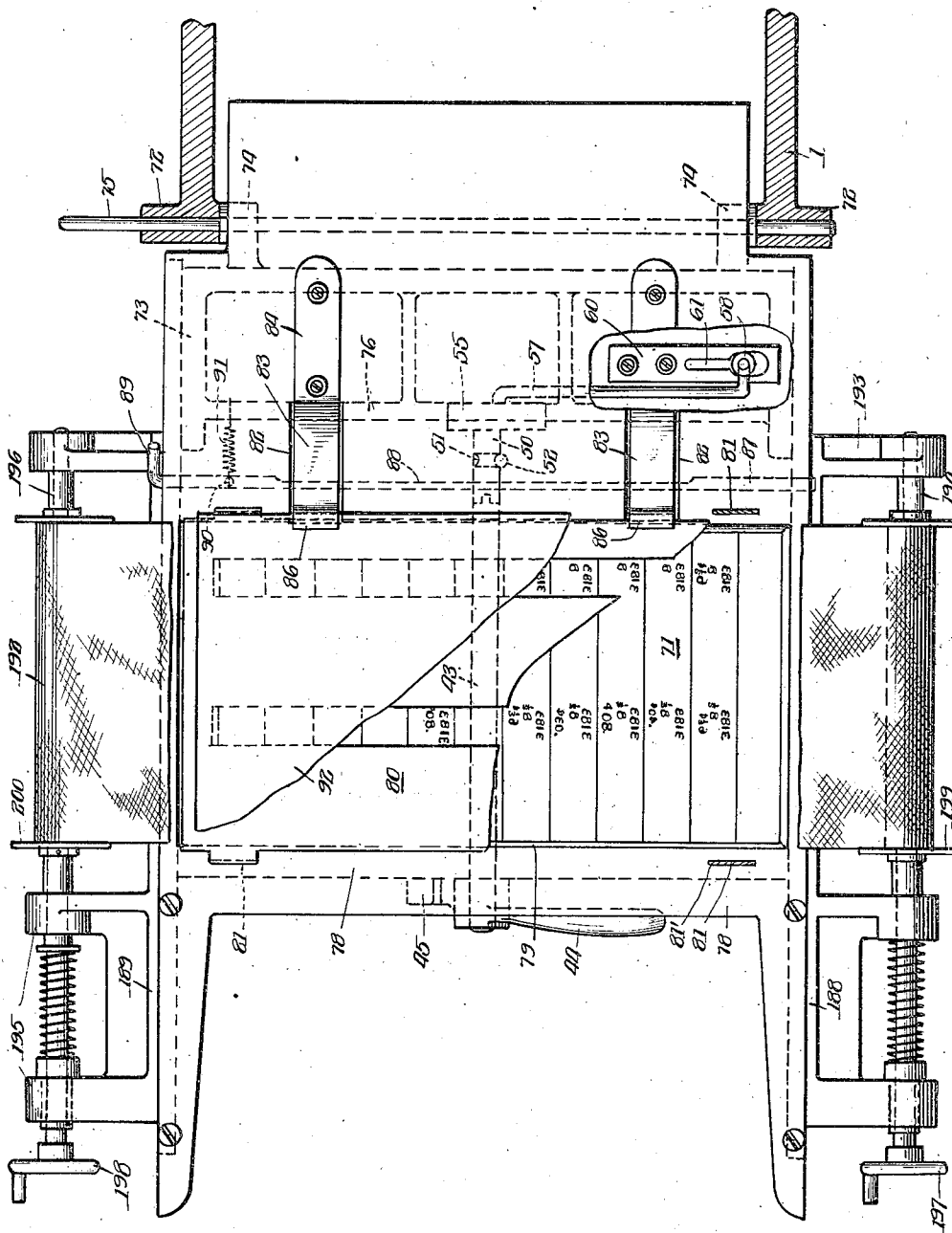


Fig. 8

Inventor
Curtis George Kranz
By Wm. V. Bell atty.

UNITED STATES PATENT OFFICE

CURTIS GEORGE KRANZ, OF CHICAGO, ILLINOIS, ASSIGNOR TO ADDRESSOGRAPH COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE

PRINTING MACHINE

Application filed March 10, 1930. Serial No. 434,694.

This invention relates to printing machines and one of the important objects is to provide a machine which may be advantageously employed in the printing of factory production forms, value tables on insurance policies, and the like. For example, the value tables on insurance policies vary on different policies, usually in accordance with the attained age of the insured. The custom has been to print these policies in many different forms in order to accommodate the above condition, but it is manifest that this entailed many disadvantages. Since the policies are standard other than the value tables, it is possible to print but one form if these tables are omitted and then by later adding these tables this form will be adaptable for all policies. In order that these tables may later be printed in accordance with the specific requirements of each policy the tables for the different policies may be arranged on suitable printing devices, which may be filed in the usual manner, and then selected and employed to print the tables. Similar conditions are encountered in the printing of factory production forms and other analogous printed matter where a limited number of impressions are taken from a printing device at a given time but wherein the operation is repeated at irregular intervals. This requires frequent changing of the printing devices and it is among the objects of the invention to provide a printing machine in which this changing of the printing device may be expeditiously accomplished.

Further objects of the invention are to provide a printing machine wherein the impression will be uniform throughout the printing area; the effective stroke of the printing mechanisms may be varied; the impression receiving sheet will be securely clamped during the printing operation; and to provide a machine that will be prevented from operation until the printing device is properly and securely positioned.

A selected embodiment of the invention is shown in the accompanying drawings, and therein:

Fig. 1 is a side elevational view of the machine;

Fig. 2 is a rear elevational view of the machine;

Fig. 3 is a sectional view taken substantially on the line 3—3 of Fig. 2 showing the parts in inoperative position;

Fig. 4 is a view similar to Fig. 3 showing the parts in operative position;

Fig. 5 is a sectional view taken substantially on the line 5—5 of Fig. 4;

Fig. 5a is a sectional view taken substantially on the line 5a—5a on Fig. 5 and wherein the supporting shaft is shown in phantom;

Fig. 5b is an end view taken substantially on the line 5b—5b on Fig. 5;

Fig. 6 is a plan view;

Fig. 7 is a detail view of an eccentric arrangement employed in the device; and

Fig. 8 is a sectional detail view taken substantially on the line 8—8 of Fig. 4.

Referring to the drawings, 1 indicates the frame of the machine and mounted thereon is a motor 2 having a pulley 3 on the shaft thereof. A belt 4 is directed around the pulley 3 and around a pulley 5 mounted on the shaft 6 journaled in bearings 7, 7 in the frame 1. A bearing bracket 8, Figs. 2 and 3, has bearings 9, 9, mounted on the shaft 6 intermediate the bearings 7, 7, and a bearing 10 in which the clutch shaft 11 is journaled. A gear 12 is rotatably mounted on the shaft 11 and meshes with a pinion 13 mounted on the shaft 6 and fixed to the pulley 5. A collar 14, which may be a hub on the gear 12 has notches 15 in the periphery thereof. A pawl 16, Fig. 3, is pivotally mounted on a lug 17 extending from the collar 18, Fig. 2, fixed on the shaft 11. A projection 19 on the pawl 16 is adapted to fit in the notches 15 and is urged toward said notches by a spring 20. A projection 21 extends from the bearing bracket 8 and an arm 22 is pivotally connected to the free end thereof. The arm 22 has a spring 23 connected thereto which urges said arm upwardly into engagement with the stop 24 on the frame 1. The heel 25 of the pawl 16 engages a shoulder 26 on the arm 22 when

the arm is in engagement with the stop 24 and holds the projection 19 out of the notches 15. A foot treadle 27, Fig. 1, is pivotally mounted on the frame. A rod 28 interconnects the foot treadle 27 and the arm 22. When the treadle 27 is depressed the shoulder 26 is retracted from engagement with the heel 25 and the spring 20 urges the projection 19 toward the collar 14 and into one of the notches 15 thereby connecting the shaft 11 with the rotating collar 14. An arm 29 has a split end portion 30, Fig. 4, and a bolt 31 extends across this split end portion and securely clamps the arm 29 on the shaft 11. A roller 32 is mounted on the free end of the arm 29 and is disposed between the guides 33, 33 on the depending arm 34 of the main operating member 35, which includes the arms 36, 36, Fig. 2, pivotally mounted on the shaft 6. When the shaft 11 is rotated upon connection with the collar 14 the arm 29 makes a complete revolution and oscillates the main operating member 35 about the shaft 6. If the foot treadle 27 is released after the projection 19 is engaged in a notch 15 the heel 25 will strike the shoulder 26, and thus disengage the projection 19 from the notch 15, after a complete revolution, but if the foot treadle is held depressed the machine will continue to operate.

A supporting structure 37, Fig. 5, extends transversely across the frame 1, and substantially midway between the sides of the frame a table 38 is mounted on this supporting structure. Guides 39, 39 project from the upper edge of the table 38 and include flanges 40, 40 which fit in recesses in the printing bed 41 slidably mounted on and between the guides 39 and on the table 38. A bearing sleeve 42 depends from the mid-section of the table 38 and a rod 43 is journaled therein. A handle 44 is fixed on the outer end of the rod 43 and includes a hook-shaped end 45, Fig. 2. A stud 46, Fig. 4, is mounted in the front edge of the printing bed 41. The handle 44 and the rod 43 may be turned into vertical position to engage the hooked end 45 about the stud 46 and, when so engaged, the handle may be employed to move the printing bed 41 from the position of Fig. 4 into the position of Fig. 3. Axially extending along the rod 43 is a keyway 47 and a screw 48 extends through the bearing sleeve 42 into this keyway. In the rod 43 adjacent the end connected to the handle 44 is a groove 49. When the printing bed 41 has been slid inwardly into printing position shown in Fig. 4 the groove 49 will be alined with the screw 48 and, therefore, the handle 44 and the rod 43 may be turned to disengage the hook end 45 from the stud 46. As soon as the handle 44 is so turned the keyway 47 will be moved

from alinement with the screw 48 and, therefore, the handle and the rod cannot be moved forwardly by reason of the engagement of the screw 48 in the groove 49. This insures the proper positioning of the printing bed in printing position. At the inner end of the bearing sleeve 42 a stud shaft 50 is secured which has a groove 51, Fig. 8, in the periphery thereof into which an approved retaining device 52 is extended which prevents displacement of the stud shaft from the sleeve 42. A projection 53, Fig. 3, is formed on the inner end of the stud shaft 50 which seats in a notch 54 at the inner end of the rod 43 when said rod is moved to its inner position, Fig. 4, to aline the groove 49 with the screw 48. It is manifest that the rod 43 cannot be rotated unless the groove 49 is alined with the screw 48 as the screw 48 will extend into the keyway 47 at all other times, and since connection will not be established between the stud shaft 50 and the rod 43 until the groove and screw are alined it is manifest that the stud shaft 50 cannot be rotated until projection 53 seats in notch 54 the printing bed 41 is properly positioned in printing position. On the stud shaft 50 is a peripheral cam 55, Figs. 2, 5 and 8, having a lug 56 extending from the periphery thereof to which one end of a link 57 is pivotally connected. The other end of the link 57 is connected to the enlarged end portion 58 of the rod 59. A plate 60, Fig. 8, has a keyhole slot 61 therein. When the groove 49, keyway 47, and the screw 48 are alined, at which time the hook end 45 may engage the stud 46, the enlarged end portion 58 of the rod 59 will be disposed over the reduced section of the keyhole slot 61. However, when the rod 43 is rotated in a clockwise direction to move the keyway out of alinement with the screw, the enlarged portion 58 will be moved into alinement with the enlarged section of the slot 61 through which this enlarged portion is free to pass, said portion being larger than the restricted section of the opening 61. The rod 59 is pivotally connected to the extension 62, Fig. 1, of the arm 22 and when said arm 22 is engaging the stop 24 the lower end of the enlarged portion 58 will be disposed above the upper surface of the plate 60. When the portion 58 is alined with the enlarged section of the opening 61 the foot treadle 27 may be depressed, as the portion 58 may freely pass through the enlarged section of the opening. However, when the enlarged portion 58 is disposed above the restricted section of the opening 61, in which position it will be when the screw 48 is in or alined with the keyway 47, the foot treadle 27 will be held against depression by the engagement of the lower end of enlarged portion 58 with the upper surface of the plate 60. It is, therefore, apparent that the

machine cannot be set in operation until the printing bed 41 is properly located in printing position.

The printing bed 41 has a rabbeted groove 63, Fig. 5, along one upper edge thereof in which a block 64 is fitted. A plate 65 is secured on the upper surface of the block 64, by screws 66, and projects inwardly over the upper surface of the printing bed in spaced relation therewith. Along the opposite lateral edge of the printing bed 41 a plate 67 is secured by screws 68 and a plate 69 at the upper edge of the plate 67 projects over the upper surface of the printing bed in spaced relation therewith. At the inner or rear end of the printing bed 41 a plate 70, Fig. 3, is secured, a portion of which projects above the upper surface of the printing bed. A printing device 71, which may be a metallic plate having type characters embossed thereon as, for example, one of the type disclosed in Patent No. 1,543,066, June 23, 1925, is positioned on the upper surface of the printing bed 41 with opposite transverse edges of the device disposed below the portions of the plates 65 and 69 that project over the printing bed 41, these plates being spaced from the printing bed sufficiently to permit the snug fitting of the printing device 71 therebelow. The rear edge of the printing device 71 abuts the plate 70. It is, therefore, apparent that the printing device 71 is securely retained on the printing bed 41. In order to install the printing device 71 the printing bed 41 is moved into a forward position substantially similar to that indicated in Fig. 3, this being carried out in the manner set forth above. After the printing device has been installed on the printing bed 41, the printing bed is then moved into printing position depicted in Fig. 4 in the manner previously described.

In the frame 1 bearings 72, 72, Fig. 8, are provided. The shield supporting frame 73 has bearings 74, 74, Fig. 8. A rod 75 is extended through the bearings 72, 72 and 74, 74 and, in this manner, the shield supporting frame is pivotally supported in position. A rib 76 depends from the shield supporting frame above the peripheral cam 55 and is engaged by a rise 77, Fig. 5, on said cam at the time the stud shaft 50 is arranged in the position shown in Fig. 3, at which time the screw 48 will either be alined with or disposed in the keyway 47. When the printing bed is disposed in printing position and the rod 43 is turned to move the keyway 47 out of alinement with the screw 48, the shaft 50 will be turned as well as the cam 55 and the rise 77 will disengage the rib 76 which will permit the shield supporting frame to pivot downwardly into the position illustrated in Fig. 4. Mounted on the forwardly extending arms of the shield supporting frame 73 is a shield supporting plate 78 hav-

ing an opening 79 therein above printing position, that is, above the printing device 71 when said printing device is arranged in printing position. The shield 80 has depending lips 81 which extend through openings 81' in the plate 78 and in this manner the shield 80 is removably supported in position. The shield 80 has openings therein alined with the printing characters on the printing device 71 and this shield will be changed in accordance with printing character location variations in the printing devices, said shield being readily removable as it is retained in position only by the extension of the lips 81 through the openings 81'.

As shown best in Figs. 3 and 4, a bar 76' extends through the rib 76 and through the rib 75', extended parallel to and spaced from the rib 76, the forward end of which bar 76' serves as a stop for the rear end of the printing bed 41 to properly locate this bed in printing position.

Rearwardly of the opening 79 in the plate 78 are slots 82, 82. Resilient fingers 83, 83 have tail portions 84 secured to the plate 78 and also include portions which extend into the slots 82 with a downward inclination and which terminate in vertically extending portions 85, Figs. 3 and 4, that have at the upper ends thereof clamping lips 86. The clamping lips 86 serve to secure the sheet to be printed in engagement with adjacent portions of the plate 78 and thus this sheet is clamped in position. The clamping action occurs after the plate 78 has been lowered with the supporting frame 73 and this is accomplished in the following manner:

Journalled in depending flanges of the supporting frame 73 and extending thereacross is a bar 87, Figs. 3 and 8, which has the intermediate portion thereof disposed below the fingers 83, 83 cut away to provide a diametrically extending flat portion 88. At one end of the bar 87 is an upwardly projecting finger 89. A pin 90 extends radially from the bar 87 and one end of a spring 91 is connected thereto. The other end of the spring 91 is connected to the rib 76. When the platen is in rearward position, depicted in Fig. 3, it engages the finger 89 and holds it in the position shown in Fig. 3 wherein the spring 91 is tensioned. When the platen moves forward to perform a printing operation, as set forth hereinafter, it disengages the finger 89 and, therefore, the spring 91 acts to rotate the bar 87. When the finger 89 is in the rearward position shown in Fig. 3 the downwardly extending resilient portions of the fingers 83, 83 are engaging the periphery of the rounded section of the bar 87, but when the bar is moved in the manner set forth these portions of the fingers engage the flattened portion 88 which lowers these fingers and, therefore, the portions 86 thereof will effectively

clamp the sheet 92 that is to be printed. This sheet will be held in position over the shield 80. The mechanisms for operating the platen to cause the printing operations will now be described.

On each side of the printing bed 41 on the frame 1 are horizontal plates 96, 96, Fig. 5, providing work supporting tables. Projecting upwardly and forwardly from the rear end of the frame 1, inwardly of the plates 96, 96, are the platen arms 97 and 98 the forwardly projecting portions of which are spaced from the plates 96, 96 and have bearings 99 and 100 at their ends. A shaft 101 is journaled in bearings 102 and 103, Fig. 6, in the platen arms 97 and 98, in the portions of said arms above the ends connected to the frame. The platen support, generally indicated by 104, is mounted on the shaft 101 for pivotal movement in a direction toward and away from the printing device 71. The platen support 104 includes bars 105 and 106 which extend forwardly from the shaft 101 parallel to the platen arms 97 and 98. Mounted in the bars 105 and 106 adjacent the forward end thereof is a shaft 107, Figs. 3 and 4. The toggle members 108 and 109 are secured to the shaft 107 adjacent the bars 105 and 106, Figs. 3 and 5. The lower ends of the toggle members 108 and 109 are interconnected by a rod 110. The upper ends of the toggle members 108 and 109 are interconnected by a rod 111. Toggle members 112 and 113 have the lower ends thereof pivotally mounted on the rod 111, inwardly of, and juxtaposed to, the upper ends of the toggle members 108 and 109. The bearing portions 114 and 115 of the toggle members 112 and 113 have the shaft 116 journaled therein. At the ends of the shaft 116 are eccentric studs 117 and 118, respectively journaled in bearing sleeves 119 and 120 which, in turn, are journaled in the bearings 99 and 100. On the outer ends of the bearing sleeves 119 and 120 are gears 121 and 122. At the ends of the shaft 101 studs similar to the studs 117 and 118 are provided which are journaled in sleeves similar to the sleeves 119 and 120 and these sleeves have gears 123 and 124 thereon similar to the gears 121 and 122. At the lower ends of the bars 105 and 106 are cam plates 125 and 126 which include portions extended beyond the outer faces of the bars 105 and 106 to provide ledges. A frame generally indicated by 127, Figs. 3 and 4, includes cross braces 128 and 129 and at the rear end has bearings 130, 130 in which a shaft 131 is journaled. Rollers 132, 132 are mounted on the ends of the shaft 131 outwardly of the bearings 130, 130 and are disposed in guides 133, 133 mounted on the inner surfaces of the platen arms 97 and 98, Figs. 2 and 6. Extending forwardly from the cross brace

129 and disposed outwardly of the side members 134 and 135 of the frame member 127 are bifurcated lugs 136 and 137, Fig. 6. Supported by projections extending from the cross brace 129 are bearing blocks 138 and 139, Fig. 5, which are disposed outwardly of the cam plates 125 and 126, Fig. 6. A guard plate 140, Fig. 3, is connected to and extends between the front faces of the bearing blocks 138 and 139. Rearwardly of the guard plate 140 and carried by the bearing blocks 138 and 139 is a shaft 141, Fig. 5, on which rollers 142 and 143 are mounted, which rollers are disposed below the cam plates 125 and 126. The bifurcated lugs 136 and 137 embrace the shaft 141, Figs. 4, 5 and 6. Transverse members 142' and 143' extend between the bars 105 and 106 at the forward and rear ends of the platen support 104. A plate 144 extends between these members 142' and 143' substantially midway between the bars 105 and 106. A shaft 145, Figs. 3 and 4 extends between the side members 134 and 135, of the frame 127, rearwardly of the cross brace 129 and a segmental arm 146 is pivotally mounted thereon. At the upper end of the segmental arm 146 is a bearing 147 in which a shaft 148 is journaled supporting a roller 149 that travels on the plate 144. A projection 150 extends from the bearing 147 and a pin 151 extends rearwardly from the cross brace 129. A spring 152 extends between the pin 151 and the projection 150 and this spring serves to urge the rollers 142 and 143 into engagement with the lower or cam faces of the cam plates 125 and 126. This arrangement supports the frame 127 at the forward end thereof and the rear end of this frame is supported by the rollers 132. This frame is arranged for rectilinear movement which is imparted thereto in a manner set forth presently. The inner or rear ends of the cam plates 125 and 126 are inset to provide dwells 153, Fig. 4, and the intermediate portions of these cam plates are provided with rises 154 and, at the forward ends, dwells 155 are provided. When the frame is in rearward or at rest position the rollers 142 and 143 are disposed on the dwell portions 153 as illustrated in Fig. 3. However, when movement is imparted to the frame 127 these rollers engage the rises 154 and, therefore, the forward end of the frame is pivoted downwardly toward the printing bed in which position it remains until the dwell 155 is reached on the forward movement of the frame 127. Bearing blocks 156 and 157, Fig. 5, include plate portions 158 and 159 which plate portions extend over and are connected to the bearing blocks 138 and 139 to dispose the bearings 156 and 157 below the lower ends of these bearing blocks. In the bearings 156 and 157 a shaft 160 is journaled on which the platen roller 161 is

mounted to extend substantially across the area defined between the plates 105 and 106. When the forward end of the frame 127 is moved downwardly by engagement of the rollers 142 and 143 with the rises 154 the platen moves across the sheet 92 to perform a printing operation.

On the platen arm 98 is a stud 162 on which the bearing 163 of the lever 164 is pivotally mounted. At the forward end of the forwardly projecting arm 165 of the lever 164 is a roller 166 which rests on the face 167 of the stud 168 that projects from and is unitary with the toggle member 113. A pin 169 extends from the forward end of the arm 165 and one end of a spring 170 is connected thereto, the other end of the spring being connected to the pin 171 on the stud 168. Adjacent the end of the arm 172 of the lever 164 a dog 173 is pivotally mounted. The lower or free end of the dog 173 has a circular notch 174 therein and includes a projecting finger 175, Figs. 3 and 4. In bearings at the upper ends of the arms 36, 36 of the main operating member 35 a shaft 176, Fig. 2, is journaled. Connecting links 177, 177 have bearing portions rotatably mounted on the shaft 176. These bearing portions of these connecting links are retained against lateral movement by being positioned between the bearings on the ends of the arms 36, 36 and the collars 178, 178 fixed to the shaft 176. Bearing portions at the other ends of the connecting links 177, 177 are pivotally mounted on the shaft 131. In this manner the frame 127 is connected to the main operating member 35 and, therefore, when this main operating member is rocked, the rectilinear movement above set forth will be imparted to the frame 127. When the main operating member 35 is disposed in at rest position, shown in Fig. 3, the finger 175 on the dog 173 rests on the shaft 176 (see Fig. 3) with a portion of the shaft 176 disposed in the notch 174. When the main operating member 35 is rocked to impart the forward portion of the rectilinear movement to the frame 127 the engagement of the shaft 176 in the notch 174 will pivot the lever 164 about the stud 162 which will cause the forward end of the arm 165 of the lever to move downwardly and the roller 166 on the arm 165 will move across the face 167. When the parts are in at rest position the toggle sections 108 and 112, and 109 and 113, are disposed at an angle to each other, as illustrated in Fig. 3, and these parts are in this position at the time the roller 166 starts to move over the face 167, as above described. However, the action of the roller 166 on the face 167 will be transmitted through the stud 168 and, by reason of the interconnection of the toggle members, these toggle members will be moved into alignment, as illustrated in Fig. 4. When the

toggle members are thus moved the platen support 104 is pivoted about the shaft 101 from the inclined position of Fig. 3 into the horizontal position of Fig. 4. When in the horizontal position of Fig. 4, the cam surfaces on the cam plates 125 and 126 are parallel with the upper surface of the printing device 71 on the printing bed 41. It has been pointed out that the platen roller 161 is mounted on the frame 127 and also that the spring 152 urges the rollers 142 and 143 into engagement with the cam surfaces of the cam plates 125 and 126. As illustrated in Fig. 3, at the start of the movement imparted to the frame 127 by the main operating member 35, the rollers 142 and 143 are disposed on the dwells 153 and these dwells are of a length to permit a lapse of time sufficient for the alining of the toggle members, to move the platen support into horizontal position. As soon as the platen support is disposed in horizontal position the rollers 142 and 143 move onto the rise 154. The start of this rise is just rearward of the rear end of the printing device 71 and, therefore, the platen roller 161 will be moved downwardly into engagement with the sheet 92 that will have been previously disposed over the printing device 71 and, as the rollers continue to move along the rises 154, the platen roller will move across the sheet 92 and perform the printing operation. It is to be understood that a suitable ink ribbon is directed below the shield 80 over the faces of the printing characters on the printing device 71 and the movement of the platen roller, as aforesaid, merely forces the sheet into engagement with this ribbon which in turn engages the faces of the printing characters and thus impressions are made on the sheet 92. Extending upwardly from the cross brace 129 is a boss 179, Fig. 4, in which a screw 180 is mounted. The screw 180 extends forwardly from the bars 179 in alignment with the rod 110 and after the platen roller 161 has passed over the sheet 92 and performed a printing operation the screw 180 engages the rod 110, and thus the toggle members 109 are pivoted about the shaft 107 back into the position illustrated in Fig. 3.

When the toggle members 108 and 112, and 109 and 113, are alined, in the manner previously set forth, a portion of the rod 110 projecting beyond the toggle member 109 seats in the notch 181 in the end of the stop 182 secured on the inner surface of the bar 106 to limit movement of the rod 110 and when the screw 180 engages the rod 110 in the manner set forth this portion of the rod is moved from this notch. A spring 183 is connected to a pin 184 on the platen arm 98 and to a pin 185 on the platen support 104. When the platen support 104 is pivoted downwardly this spring is tensioned and

when it is released in the manner just set forth this spring 183 serves to urge the platen support into the inclined position of Fig. 3 and also to arrange the toggle members 108 and 112, and 109 and 113, in angular relation with each other. When the toggles are moved from alinement, the surface 167 engages roller 166 and moves lever 164 back into the position shown in Fig. 3. At the time the toggle structure is moved back into the angular position and the platen support is elevated by the spring 183, the main operating member 35 will have attained the forward end of its movement and will start to move rearwardly and, consequently, the frame 127 will be moved similarly. After the shaft 176 has disengaged the notch 174, which will happen immediately after the lever 164 has been pivoted into the position shown in Fig. 4, the spring 186 extended between the upper end of the dog 173 and the arm 172 will act to arrange this dog in vertical position. Therefore, as the frame 127 moves rearwardly the shaft 176 will engage this dog and will pivot the same in an upward manner as the rearward movement is continued. A pin 187 projects from the end of the arm 172 to prevent the dog 173 from being pivoted over center. The finger 175 prevents displacement of the dog 173 from the shaft 176 and also permits the dog to be properly positioned to locate the notch 174 in front of the shaft 176. During the reciprocation of the frame 127 the roller 149 travels on the plate 144 and the spring 152 expands and contracts in order to maintain the engagement between the rollers 142 and 143 and the faces of the cam plates 125 and 126. When the platen devices just described are in the inoperative position shown in Fig. 3 the various mechanisms are arranged to perform their functions in proper sequence. The depressing of the foot treadle 27 causes movement of the arm 29 in the manner set forth which causes the reciprocation of the main operating member 35. The movement imparted to the lever 164 through the dog 173 will always move the toggle structure by reason of the fact that the spring 170 constantly serves to hold the roller 166 on the face 167. As best illustrated in Fig. 5, the bearing blocks 138 and 139 engage the lateral side edges of the cam plates 125 and 126 and in this manner the forward end of the frame 127 is prevented from transverse movement. The upper position of the forward end of the platen support 104 is determined by engagement of the pad 112', Fig. 6, on the toggle member 112 with the cushion stop 113' carried by the lug 114' mounted on the platen arm 97.

Along each lateral side of the table 38 are frame members 188 and 189, and disposed on the upper edges of these frame members

at the lateral edges of the printing bed 41 are ribbon guides 190 and 191, Fig. 5. The ribbon 192 is extended between these ribbon guides 190 and 191 and over the printing device 71 below the shield 80, as previously stated. Extending outwardly from the frame member 188 are a plurality of bearing brackets 193 in which a shaft 194 is journaled. Extending outwardly from the frame member 189 are a plurality of bearing brackets 195 in which a shaft 196 is journaled. At the forward ends of the shafts 194 and 196 are hand wheels 197 and 198 which facilitate rotation of the shafts 194 and 196. Ribbon spools 199 and 200 are mounted on the shafts 194 and 196 and the ribbon 192 is windable onto and unwindable from each of these spools. A suitable arrangement is provided for causing the ribbon to wind upon one spool while being unwound from the other and, preferably, this mechanism is arranged to operate to reverse the winding direction at the time all of the ribbon is wound on one spool. Such a mechanism is described and claimed in my copending application Serial No. 435,524, filed March 13, 1930. This ribbon feeding mechanism is preferably operated with a step by step movement and means for imparting such movement are disclosed in Figs. 3, 4, and 5. A cross brace 201, Fig. 2, extends between the arms 36, 36 of the main operating member 35. A bracket 202, Fig. 3, is connected to the cross brace 201 and extends therefrom, and an arm 203 is connected to the bracket and extends outwardly at an angle to the main operating member 35. A bearing structure 204 at the outer end of the arm 203 supports a shaft on which a roller 205 is mounted. A bracket 206 on the frame 1 includes a bearing 207. A shaft 208 is journaled in the bearing 207 and mounted on this shaft is a bearing 209. An arm 210, Fig. 5, depends from the bearing 209. A portion of the arm 210 is segmental, as indicated at 211, and this terminates in a substantially straight portion 212. The roller 205 rests on the segmental portion 211 when the main operating member is in at rest position. However, when the main operating member is rocked forwardly, as above described, the roller 205 moves over the segmental portion 211 and rotates the bearing 209. The devices for imparting the step by step movement to the ribbon 192 are operatively associated with the bearing 209 and receive movement therefrom. It is manifest that appreciable movement is imparted to the main operating member 35 and this movement is more than required to impart the desired step by step movement to the ribbon 192. Therefore, in order that a relatively small amount of movement will be imparted to the ribbon 192, upon reciprocation of the main operating member 35, the portion 212 is arranged at the end of

the segment 211. The roller 205 will impart movement to the arm 210 as long as it moves over the segment 211, but as soon as roller 205 moves onto the portion 212 further movement will not occur, the angularity of the portion 212 being proper for this purpose. It is apparent that by varying the length of the segment 211 the amount of movement imparted to the arm 210 may be varied and, manifestly, this variation may be made to meet different requirements.

Since the movement of the rollers 142 and 143 over the faces of the cam plates 125 and 126 determines the effective movement of the platen roller 161 it is possible to adjust this platen roller relative to the printing bed by varying the position of the cam plates 125 and 126. In this manner the impression pressure of the platen roller may be regulated or, in the event the platen roller is not properly alined with the printing bed, adjustment may be made to bring about proper alinement. This is accomplished in the following manner. The studs 117 and 118 at the ends of the shaft 116 are eccentric with respect to said shaft. The sleeve 119 is concentric with the stud 117 and this stud and sleeve are interconnected in a suitable manner as by the pin 213, Fig. 5. Since the sleeve 119 and the stud 117 are concentric with respect to each other it is manifest that the gear 121 will be concentric with the stud 117. The sleeve 120 is eccentric to the stud 118 and the stud is rotatable in this sleeve. Since the sleeve is eccentric to the stud it is apparent that the gear 122 will be eccentric to the stud. The shaft 101 and the parts associated therewith are similarly arranged. As best illustrated in Fig. 6, bearings 214 and 215 are provided on the outer face of the platen arm 97. A shaft 216 comprising axially alined sections 217 and 218, Fig. 6, is journaled in the bearings 214 and 215. Adjacent the bearing 214 a sleeve 219 is secured to the shaft section 218 by the pin 220. The end of the sleeve 219, remote from the bearing 214, has serrations 221 formed thereon. A sleeve 222 is mounted for axial movement on the shaft section 217 and at one end thereof has serrations 223 normally urged into engagement with the serration 221 by the spring 224 disposed around the shaft section 217 between the washer 225 and the collar 226, said collar being secured to the shaft section 217 by the pin 227. In the end of the sleeve 222, opposite the serrations 223, is an axial slot 228 into which, a pin 229, on the shaft section 217, extends. The washer 225 abuts the end of the sleeve 222 having the slot 228 therein. As best illustrated in Fig. 1, a worm gear 230 is provided at one end of the shaft section 217 and this worm gear meshes with the gear 123. On the shaft section 218 a worm gear 231 is provided which meshes

with the gear 121. A knob 234 is provided at the forward end of the shaft section 218. When the knob 234 is gripped to rotate the shaft section 218 the sleeve 219 will be rotated as said sleeve is connected to said shaft section by the pin 220. Since the serrations 221 on the sleeve 219 are engaged by the serrations 223 on the sleeve 222, and as the sleeve 222 is connected to the shaft section 217 through the pin 229, it is manifest that the shaft section 217 will rotate with the shaft section 218. Therefore, both the worm gears 230 and 231 will be rotated and the rotation of these gears will be imparted to the gears 121 and 123. As the gears 121 and 123 are both connected to the eccentric studs at the ends of the shafts 116 and 101, by the interconnection between the sleeves carrying these gears and the studs, it is manifest that shafts 116 and 101 will also be rotated. As the studs at the ends of these shafts are eccentric to the shafts rotation of these shafts will vary the eccentricity thereof relative to the horizontal as best shown in Fig. 7. In this view the most eccentric portion of the shaft 116 is horizontally disposed and it is apparent that rotation of the shaft will elevate or lower this most eccentric portion. By reason of the mounting of the bearing portions 114 and 115 of the toggle members 112 and 113 on the shaft 116, it is apparent that the above variation in the shaft 116 will be transmitted to the toggle members. This variation will be transmitted through the toggle members to the forward end of the platen support 104. Since the rear end of this platen support is directly mounted on the shaft 101, it is apparent that variation of this shaft will act in the same manner as variations in the shaft 116 and, therefore, the rear end of the platen support may be elevated or lowered.

Simultaneous variation of both shafts 116 and 101 will result when the knob 234 is rotated with the serrations 221 and 223 in engagement. However, if the sleeve 222 is slid along the shaft section 217 to disengage the serrations, only the shaft section 218 will be rotated by rotation of the knob 234. Also, when the serrations are so disengaged the knurled portion 235 on the sleeve 222 may be gripped and this sleeve may be rotated which will result in rotation of but the shaft section 217. From the foregoing it is manifest that the shafts may be rotated simultaneously or independently as desired, and this arrangement is utilized to regulate the impression pressure of the platen roller 161. However, since the studs at the other ends of the shafts 116 and 101 are rotatable within the bearings, no movement will be imparted to the gears connected to these bearings when the shafts are rotated in making the above described

adjustments. In order to equalize the pressure exerted by the platen roller or to vary the horizontal alinement of the platen roller relative to the printing device, an arrangement similar to that just described is provided on the platen arm 98. This arrangement includes bearings 236 and 237 in which a sectional shaft 238 similar to the shaft 216 is journaled. Sleeves 239 and 240 respectively similar to the sleeves 220 and 222 are mounted on the shaft 238 and are arranged in the same manner as the sleeves 220 and 222. A knob 241 at the forward end of the shaft 238 may be gripped to rotate this shaft and when the serrations on the sleeves 239 and 240 are engaged the shaft will be rotated as a unit. Worm gears 242 and 243 on the shaft 238 respectively mesh with the gears 124 and 122 and when the shaft is rotated as a unit both the gears 124 and 122 are rotated. When the serrations on the sleeves 239 and 240 are separated either the gear 124 or 122 may be rotated. By reason of the eccentricity of these gears and the sleeves therefor with respect to the studs at these ends of the shafts 101 and 116, it is apparent that these studs will be caused to move in substantially vertical planes upon rotation of the gears. However, in this instance, the shafts will fulcrum on the studs at the opposite ends and the major part of the movement will occur adjacent the platen arm 98, whereas when the gears 121 and 123 are rotated movement will be substantially uniform throughout the shaft lengths. In view of the fact that an independently operable adjustment is provided at each end of each of the shafts, it is apparent that an adjustment of any portion of the platen support may be made by operating the proper one of these adjustments.

It has been pointed out that the platen roller 161 is moved downwardly toward the printing device 71 just rearward of the rear edge of said printing device. It is also manifest that different widths of printing devices will probably be employed. Further, the width of the printing devices for each particular type of operation will be substantially consistent. It is, therefore, advantageous to provide an arrangement whereby the time at which the platen roller is moved downwardly may be varied. Further, it is apparent that if such a variation is carried out the effective or printing stroke of the platen roller will be shorter in connection with narrower printing devices. I, therefore, construct the machine in a manner which will permit a variation of the effective stroke of the platen roller. By reason of the fact that the relationship heretofore described between the dog 173 and the shaft 176 must always be maintained, it is apparent that the at rest position of the main op-

erating member 35 must be similar to that depicted in Fig. 3. This positioning of the main operating member is also required by the ribbon feed operating mechanisms. I, therefore, have provided a construction which will permit the varying of the effective stroke of the platen without requiring an alteration in the positioning of the main operating member 35. It has been set forth that the platen roller 161 is carried by the frame 127. If, therefore, the frame 127 is made of greater length and the connecting links 177 are of the same length and are connected in a similar manner, it is apparent that the platen roller 161 will be disposed farther forwardly. This also entails lengthening of the dwells 153 and shortening of the rises 154. However, if other adjustment were not made, it is apparent that the forward end of the frame 127 would pass beyond the forward end of the platen support 104 upon operation of the main operating member 35 when a frame 127 of greater length than the frame for which the machine is set up is employed, it being understood that frames of different lengths may be mounted in the machine. Consequently, when a frame 127 of different length than that for which the machine is adjusted is installed, it is necessary to vary the center distance between the shaft 11 and the roller 32, and this is done by removing the arm 29 and substituting an arm of different length therefor. If this distance is shortened it is manifest that a shorter reciprocation will be imparted to the main operating member 35. However, such adjustment will vary the position of the main operating member 35 which, as stated, must be maintained constant. To accomplish this, a pivot bolt 244, Fig. 3, is pivotally connected on the frame 1 at 245. Opposed sockets 246 and 247 are formed in the bearing bracket 8 which are interconnected by an opening 248 and the bolt 244 is extended there-through. Hemispherical washers 249 and 250 are seated in the sockets 246 and 247 and the pivot bolt is extended through these washers. On the pivot bolt 244, outwardly of the washers 249 and 250, nuts 251 and 252 are mounted. By varying the position of the nuts 251 and 252 on the pivot bolt 244, it is apparent that the angularity of the bearing bracket 8 may be varied. This angularity will be varied in accordance with the shortening of the center distance between the shaft 11 and the roller 32 and, in this manner, the proper positioning of the main operating member 35 may be maintained. If the effective stroke of the platen roller is varied, in the above described manner, the operation of the machine may be speeded up and this may be done by varying the ratio between the gear 12 and the pinion 13, or by varying the ratio between the

pulley 5 and the pulley 3, or, if desired, both these ratios may be varied.

By moving the handle 44 into vertical position and engaging the hook end 45 with the stud 46 the printing bed may be slid forwardly and a printing device 71 may be installed thereon. The printing bed will then be slid inwardly and the handle 44 turned to move the keyway 47 from alignment with the screw 48 to position the enlarged portion 58 above the enlarged section of the keyhole slot 61, which also lowers the shield 80. A sheet of paper 92 will then be disposed over the shield 80 in engagement with the vertically extending portions 85 of the fingers 83 below the clamping portions 86. The foot treadle 27 will then be depressed and the shaft 11 will be rotated in the manner set forth imparting movement to the arm 29 which in turn, in the manner described, will impart movement to the main operating member 35. The first portion of the movement imparted to the main operating member 35 will align the toggle members 108 and 112, and 109 and 113, to bring the platen support into horizontal relation with the printing bed. The frame 127 will be moved forwardly and, at the time the platen support 104 is arranged in the horizontal position the rollers 142 and 143 will pass from the dwells 153 onto the rises 154. Prior to the time the rollers move onto the rises 154 the platen roller 161 will have disengaged the fingers 89 and, therefore, the clamping portions 86 will be securely clamping the sheet 92. As the rollers move across the rises the platen roller will move across the sheet and perform the printing operation and, after the platen roller has passed the forward edge of the printing device 71, the screw 180 will have engaged the rod 110 and the toggle members will, therefore, be pivoted out of alinement thus elevating the platen support 104 to clear the platen roller from the sheet 92 during rearward movement thereof caused by the rearward movement of the main operating member 35 which starts immediately after elevation of the support 104, and when said member reaches the position shown in Fig. 3, the various mechanisms operated therefrom will again be in at rest position and after a new sheet has been positioned the operation may be repeated.

It is apparent from the foregoing description that I have provided a printing machine in which printing devices may be quickly installed or removed and positively positioned in printing position. Further, the machine is so arranged that operation thereof will be prevented until the printing device has been arranged in printing position. The platen arrangement in the machine is capable of variation in order that the pressure thereof may be adjusted to meet various

requirements and this platen arrangement is also supported in a manner which permits proper alining thereof with the printing device in order that the impression pressure of the platen may be equalized or made proper throughout the area of the printing device. In addition to this, the machine is capable of variation in construction which permits it to be operated at the most advantageous speed so that in the event but a short effective printing stroke is required the machine may be operated at a higher speed than that at which it is operated when a longer effective printing stroke is required. Many other advantages result from the construction above, and the machine is particularly adapted, as will be apparent, to the printing of optional value tables on insurance policies, production forms, and other printed matter wherein a limited number of impressions are taken from a printing device at more or less irregular times.

While I have illustrated and described a selected form of construction for carrying my invention into effect, it is to be understood that this is capable of variation and modification without departing from the purview of the following claims:

I claim:

1. In a printing machine, means supporting a printing device in printing position, a roller platen for making impressions from the printing device, a frame supporting said roller platen, means for moving said platen along the frame, means extending substantially parallel with the printing device for supporting said frame, and means for adjusting the position of the frame to vary the impression pressure of said platen.

2. In a printing machine, means supporting a printing device in printing position, a roller platen for making impressions from the printing device, a frame supporting said roller platen, means for moving said platen along the frame, means extending substantially parallel with the printing device for supporting said frame, and means for adjusting the angular relation of the frame relative to the printing device to equalize the impression pressure of said platen throughout the area of the printing device.

3. In a printing machine, means supporting a printing device in printing position, a roller platen for making impressions from the printing device, a frame supporting said roller plate, means for moving the platen along the frame, means extending substantially parallel with the printing device for supporting the frame, means for adjusting the position of the frame to vary the impression pressure of said platen, and means for adjusting the angular relation of the frame relative to the printing device to equalize the impression pressure of said

platen throughout the area of the printing device.

4. In a printing machine, means supporting a printing device in printing position, a roller platen for making impressions from the printing device, a frame supporting said roller platen, means for moving the platen along the frame, supporting means, adjustable means mounted in the supporting means, means connecting the frame to the adjustable means, and means for positioning said adjustable means to regulate the relation between the platen and the printing device.

5. In a printing machine, means for supporting a printing device in printing position, a roller platen for making impressions from said printing device, a frame supporting said roller platen, means for moving said platen along said frame, supporting means, adjustable means mounted in the supporting means, means connecting the frame to the adjustable means, means positioning the adjustable means to vary the impression pressure of the platen, and other means for moving said adjusting means to equalize the effectiveness of the impression pressure of the platen throughout the area of the printing device.

6. In a printing machine, means supporting a printing device in printing position, supporting means for supporting a roller platen for movement over the printing device to make impressions therefrom, and means for actuating the roller platen, said supporting means including a shaft having eccentric studs at the ends thereof, bearing structures receiving said eccentric studs, and means for rotating said shaft whereby the eccentricity of the studs thereon will cause the means supported thereby to be moved toward and away from the printing device to vary the impression pressure exerted by the roller platen during movement over the printing device.

7. In a printing machine, means supporting a printing device in printing position, a platen, a platen supporting member, supporting means for said platen supporting member including shafts at opposite ends of said member, eccentric studs at opposite ends of said shafts, and bearings for said studs, and means for rotating said shafts whereby the eccentricity of the studs will cause the platen supporting member to be moved toward or away from the printing device to vary the impression pressure of the platen.

8. In a printing machine, means supporting a printing device in printing position, a platen, a platen supporting member, supporting means for said platen supporting member including shafts at opposite ends of said member, eccentric studs at opposite ends of said shafts, and bearings for said studs, means for rotating said shafts includ-

ing a separable arrangement whereby said shafts may be independently rotated to move the platen supporting member toward or away from the printing device to vary the impression pressure of the platen.

9. In a printing machine, means supporting a printing device in printing position, a platen, a platen supporting member, supporting means for said platen supporting member including shafts at opposite ends of said member, eccentric studs at opposite ends of said shafts, bushings at corresponding ends of said shafts concentric with the studs and connected thereto, bushings at the opposite ends of said shafts eccentric with the studs, means for rotating said first named bushings to vary the eccentricity of the shafts to move the platen supporting member toward or away from the printing device, and means for rotating the second bushings to vary the horizontal alinement of the platen with the printing device.

10. In a printing machine, means supporting a printing device in printing position, a platen, a platen supporting member, supporting means for said platen supporting member including shafts at opposite ends of said member, eccentric studs at opposite ends of said shafts, bushings for studs eccentric to said shafts and rotatable relative thereto, and means for rotating said bushings to vary the horizontal alinement of the platen supporting member and the platen with the printing device.

11. In a printing machine, means supporting a printing device in printing position, a platen, a platen supporting member, supporting means for said platen supporting member including shafts at opposite ends of said member, eccentric studs at opposite ends of said shafts, bushings for studs eccentric to said shafts and rotatable relative thereto, and separable means for simultaneously or independently rotating said bushings to vary the horizontal alinement of the platen supporting member and the platen with the printing device.

12. In a printing machine, means supporting a printing device in printing position, a platen, a platen supporting member, supporting means for said platen supporting member and including shafts at opposite ends thereof, mounting means for corresponding ends of said shafts, eccentric studs at the opposite ends of said shafts, and bushings for said studs eccentric therewith and rotatable relative thereto and adapted to be moved to vary the position of said shafts to determine the horizontal alinement of the platen with the printing device.

13. In a printing machine, means supporting a printing device in printing position, a platen, a platen supporting member, supporting means for said platen supporting member and including shafts at opposite

ends thereof, mounting means for corresponding ends of said shafts, eccentric studs at the opposite ends of said shafts, bushings for said studs eccentric therewith and rotatable relative thereto, and means for rotating said bushings to vary the position of said shafts to determine the horizontal alinement of the platen with the printing device.

14. In a printing machine, means supporting a printing device in printing position, a platen, a platen supporting member, supporting means for said platen supporting member and including shafts at opposite ends thereof, mounting means for corresponding ends of said shafts, eccentric studs at the opposite ends of said shafts, bushings for said studs eccentric therewith and rotatable relative thereto, means for rotating said bushings to vary the position of said shafts to determine the horizontal alinement of the platen with the printing device, and separable means for simultaneously or independently operating the means for rotating said bushings.

15. In a printing machine, means supporting a printing device in printing position, a platen, a platen supporting member, supporting means for said platen supporting member including shafts at opposite ends of said member, eccentric studs at opposite ends of said shafts, bushings at corresponding ends of said shafts concentric with the studs and connected thereto, bushings at the opposite ends of said shafts eccentric with the studs, separable means for simultaneously or independently rotating said first named bushings to vary the eccentricity of the shafts to move the platen supporting member toward or away from the printing device, and separable means for simultaneously or independently rotating the second bushings to vary the horizontal alinement of the platen with the printing device.

16. In a printing machine, a support for holding a printing device in printing position, a roller platen, supporting means for said platen, means for reciprocating said platen on said supporting means and over said printing device, carrying means for said supporting means and including movable parts, means operable on the movable parts of said carrying means and positioning the same to arrange the platen in operative relation with the printing device during movement of the platen in one direction, and means associated with the platen for actuating the movable parts of the carrying means to move the supporting means and position the platen out of operative relation with the printing device as said platen reaches the end of its movement in said one direction.

17. In a printing machine, a support for holding a printing device in printing position, a roller platen, supporting means for

said platen, means for reciprocating said platen on said supporting means and over said printing device, carrying means for said supporting means and including movable parts, means operable on the movable parts of said carrying means and positioning the same to arrange the platen in operative relation with the printing device during movement of the platen in one direction, means associated with the platen for actuating the movable parts of the carrying means, and yieldable means acting on the supporting means to move the same and withdraw the platen from operative relation with the printing device when said means associated with the platen actuates the movable parts of the carrying means.

18. In a printing machine, a support for holding a printing device in printing position, a roller platen, supporting means for said platen, means for reciprocating said platen on said supporting means and over said printing device, carrying means for said supporting means and including movable parts, a rocker operable on the movable parts of said carrying means and positioning the same to arrange the platen in operative relation with the printing device during movement of the platen in one direction, means for operating the rocker from the platen reciprocating means at the start of movement of the platen in said one direction, and means associated with the platen for actuating the movable parts of the carrying means to move the supporting means and position the platen out of operative relation with the printing device as said platen reaches the end of its movement in said one direction.

19. In a printing machine, a support for holding a printing device in printing position, a roller platen, supporting means for said platen, means for reciprocating said platen on said supporting means and over said printing device, carrying means for said supporting means and including movable parts, a rocker operable on the movable parts of said carrying means and positioning the same to arrange the platen in operative relation with the printing device during movement of the platen in one direction, means for operating the rocker from the platen reciprocating means at the start of movement of the platen in said one direction, means associated with the platen for actuating the movable parts of the carrying means, and yieldable means acting on the supporting means to move the same and withdraw the platen from operative relation with the printing device when said means associated with the platen actuates the movable parts of the carrying means, said yieldable means also acting to reposition said rocker as it withdraws the platen

from operative relation with the printing device.

20. In a printing machine, a support for holding a printing device in printing position, a roller platen, supporting means for said platen, means for reciprocating said platen on said supporting means and over said printing device, carrying means for said supporting means and including movable parts, a rocker operable on the movable parts of said carrying means and positioning the same to arrange the platen in operative relation with the printing device during movement of the platen in one direction, a stop for limiting movement of the supporting means to insure positioning of said platen in operative relation with the printing device, means for operating the rocker from the platen reciprocating means at the start of movement of the platen in said one direction, means associated with the platen for actuating the movable parts of the carrying means, and yieldable means acting on the supporting means to move the same and withdraw the platen from operative relation with the printing device when said means associated with the platen actuates the movable parts of the carrying means, said yieldable means also acting to reposition said rocker as it withdraws the platen from operative relation with the printing device, and means for limiting movement of the supporting means as caused by said yieldable means.

21. In a printing machine, means supporting a printing device in printing position, a roller platen, supporting means for said platen, a shaft for supporting one end of said supporting means, a toggle structure for supporting the other end of said supporting means, means for reciprocating said platen on said supporting means and over said printing device, means for alining the portions of said toggle structure to pivot said supporting means about said shaft into operative relation with said printing device as said platen moves in one direction thereon to cause said platen to make an impression from said printing device, and means for moving said portions of said toggle structure from alinement to permit said supporting structure to pivot about said shaft from operative relation with said printing device to hold said platen away from said printing device upon movement of the platen in the direction opposite to the first named movement.

22. In a printing machine, means supporting a printing device in printing position, a roller platen, supporting means for said platen, a shaft for supporting one end of said supporting means, a toggle structure for supporting the other end of said supporting means, means for reciprocating said platen on said supporting means and over

said printing device, means for alining the portions of said toggle structure to pivot said supporting means about said shaft into operative relation with said printing device as said platen moves in one direction thereon to cause said platen to make an impression from said printing device, means for moving said portions of said toggle structure from alinement to permit said supporting structure to pivot about said shaft from operative relation with said printing device to hold said platen away from said printing device upon movement of the platen in the direction opposite to the first named movement, resilient means for urging said supporting means into said last named position, and means for limiting the action of said resilient means.

23. In a printing machine, means supporting a printing device in printing position, a roller platen, movable supporting means for said platen, means for reciprocating said platen on said supporting means and over said printing device, means for moving said supporting means into operative relation with said printing device when said platen moves in one direction over said printing device and for moving said supporting means away from said printing device upon movement of said platen in the other direction, and means including eccentric devices for adjusting said supporting means and said platen toward and away from said printing device whereby uniform impressions will be made by said platen.

24. In a printing machine, means supporting a printing device in printing position, a roller platen, movable supporting means for said platen, means for reciprocating said platen on said supporting means and over said printing device, means for moving said supporting means toward said printing device when said platen moves in one direction over said printing device and for moving said supporting means away from said printing device upon movement of said platen in the other direction, and means including eccentric devices for adjusting the supporting means and the platen relative to the printing device to aline the platen with the printing device so that uniform impressions are made from the printing device by the platen.

25. In a printing machine, a printing bed, means for retaining a printing device on said printing bed, means for moving said printing bed to and from printing position, a platen for making impressions on said printing device when in printing position, means for operating said platen, and means for preventing operation of said platen, operating means when said printing bed is moved from printing position.

26. In a printing machine, a printing bed, means for retaining a printing device on

said printing bed, means for moving said printing bed to and from printing position including a rotatable handle, a platen for making impressions from said printing device when in printing position, means for operating said platen, and means operable by said handle for preventing operation of said platen operating means when said printing bed is moved from printing position.

27. In a printing machine, a printing bed, means for retaining a printing device on said printing bed, means for moving said printing bed to and from said printing position, a platen for making impressions from said printing device when in printing position, operating means for said machine, control means for rendering said operating means operative, and means for preventing movement of said control means when said printing bed is moved from printing position.

28. In a printing machine, a platen structure, a printing bed, means for retaining on said printing bed a printing device adapted for cooperation with the platen when the printing bed is disposed in printing position, means for supporting said printing bed for movement to and from printing position, a shaft journaled in said last named means, a handle on said shaft adapted to be connected to said printing bed to move said printing bed to and from printing position, and means operable from said shaft for preventing operation of the platen when said printing bed is out of printing position.

29. In a printing machine, a platen structure, a printing bed, means for retaining on said printing bed a printing device adapted for cooperation with the platen when the printing bed is disposed in printing position, means for supporting said printing bed for movement to and from printing position, a shaft slidable and rotatable in said last named means and having a handle thereon adapted to be connected to said printing bed to permit movement of said printing bed to and from printing position, and means for preventing disconnection of said handle from said printing bed until said printing bed is in printing position.

30. In a printing machine, a platen structure, a printing bed, means for retaining on said printing bed a printing device adapted for cooperation with the platen when the printing bed is disposed in printing position, means for supporting said printing bed for movement to and from printing position, a shaft slidable and rotatable in said last named means and having a handle thereon adapted to be connected to said printing bed to permit movement of said printing bed to and from printing position, means for preventing disconnection of said handle and said printing bed until said

printing bed is in printing position, and means connected to said shaft for preventing operation of the platen until said printing bed is in printing position.

31. In a printing machine, an ink ribbon, a platen structure, a printing bed, means for retaining on said printing bed a printing device adapted for cooperation with the platen when the printing bed is disposed in printing position below said ink ribbon, means for moving said printing bed to and from printing position, a shield adapted to be disposed over said ink ribbon when said printing device is in printing position, and means for moving said shield away from said ink ribbon when said printing device is moved from printing position.

32. In a printing machine, a platen structure, a printing bed, means for retaining on said printing bed a printing device adapted for cooperation with the platen when said printing bed is disposed in printing position, means for moving said printing bed to and from said printing position including a handle, a shield adapted to be disposed over said printing device when in printing position, and means operable with said handle for moving said shield away from said printing device when said printing device is moved from printing position.

33. In a printing machine, a platen structure, a printing bed, means for retaining on said printing bed a printing device adapted for cooperation with the platen when the printing bed is disposed in printing position, means for supporting said printing bed for movement to and from printing position, means for moving said printing bed to and from printing position including a handle mounted on a slidable and rotatable shaft journaled in the supporting means for said printing bed, a shield disposed over and juxtaposed to said printing device when in printing position, and means operable by rotation of said shaft for moving said shield from juxtaposition with said printing device when said printing bed is moved from printing position.

34. A printing machine including printing device supporting means, a platen, a main operating member, operating means for said main operating member, interchangeable means connecting said main operating member to said operating means for varying the effective movement of said main operating member, and adjusting means for positioning the main operating member in a similar at rest position upon variation of the effective movement thereof.

35. In a printing machine, means supporting a printing device in printing position, means including a roller platen for making impressions from the printing device, interchangeable means supporting the platen for movement across the printing de-

vice, a main operating member for actuating said interchangeable means, operating means for said main operating member, and other interchangeable means connecting said main operating member to said operating means for varying the effective movement of said main operating member, said interchangeable means being related to each other whereby the effective movement of the roller platen over the printing device may be varied by alteration of both interchangeable means.

36. In a printing machine, means supporting a printing device in printing position, means including a roller platen for making impressions from the printing device, interchangeable means supporting the platen for movement across the printing device, a main operating member for actuating said interchangeable means, operating means for said main operating member, other interchangeable means connecting said main operating member to said operating means for varying the effective movement of said main operating member, said interchangeable means being related to each other whereby the effective movement of the roller platen over the printing device may be varied by alteration of both interchangeable means, and adjusting means for positioning the main operating member in a similar at rest position upon alteration of the interchangeable means.

37. In a printing machine, means for supporting a printing device in printing position, means including a roller platen for making impressions from the printing device, means for moving the platen across said printing device, means for operating said moving means, and means adjusting the relation between said moving and operating means when the movement of said moving means is altered whereby the moving means will always return to a similar at rest position.

38. In a printing machine, means for supporting a printing device in printing position, a shield over said printing device and on which a sheet to receive impressions may be positioned, means for securing said sheet on said shield, means holding said securing means out of securing position, a platen, and means on said holding means engageable by said platen to retain said holding means in position to hold said securing means from

securing position whereby said securing means may move into securing position upon movement of said platen.

39. In a printing machine, printing device supporting means having a printing device thereon, sheet supporting means for positioning a sheet over said printing device to receive impressions therefrom, securing means for retaining said sheet on the supporting means therefor, means for holding said securing means out of securing position, urging means acting on said holding means to move said holding means whereby said securing means may move into securing position, a roller platen for making impressions from said printing device onto said sheet, and means on said holding means and engageable by said roller platen whereby disengagement of said platen from said means will permit said urging means to move said holding means to permit said securing means to move into position to secure said sheet against movement.

40. In a printing machine, a platen structure, a printing bed, and means for moving said printing bed to and from operative relation with said platen structure including a handle, connecting means on said printing bed engageable by said handle whereby said printing bed may be slid to and from said operative relation when said handle is engaged with said connecting means to interconnect said handle and said printing bed, and means for preventing sliding movement of said handle when it is disengaged from said connecting means.

41. In a printing machine, a platen structure, a printing bed, means for retaining on said printing bed a printing device adapted for cooperation with the platen structure when the printing bed is disposed in printing position, means supporting said printing bed for movement to and from printing position, a connecting device on said printing bed, a handle movable to and from connection with said connecting device, means supporting said handle for sliding movement whereby when said handle is connected with said connecting device said printing bed may be slid to and from printing position when sliding movement is imparted to said handle, and means for preventing sliding movement of said handle when said handle is disconnected from said connecting device.

CURTIS GEORGE KRANZ.