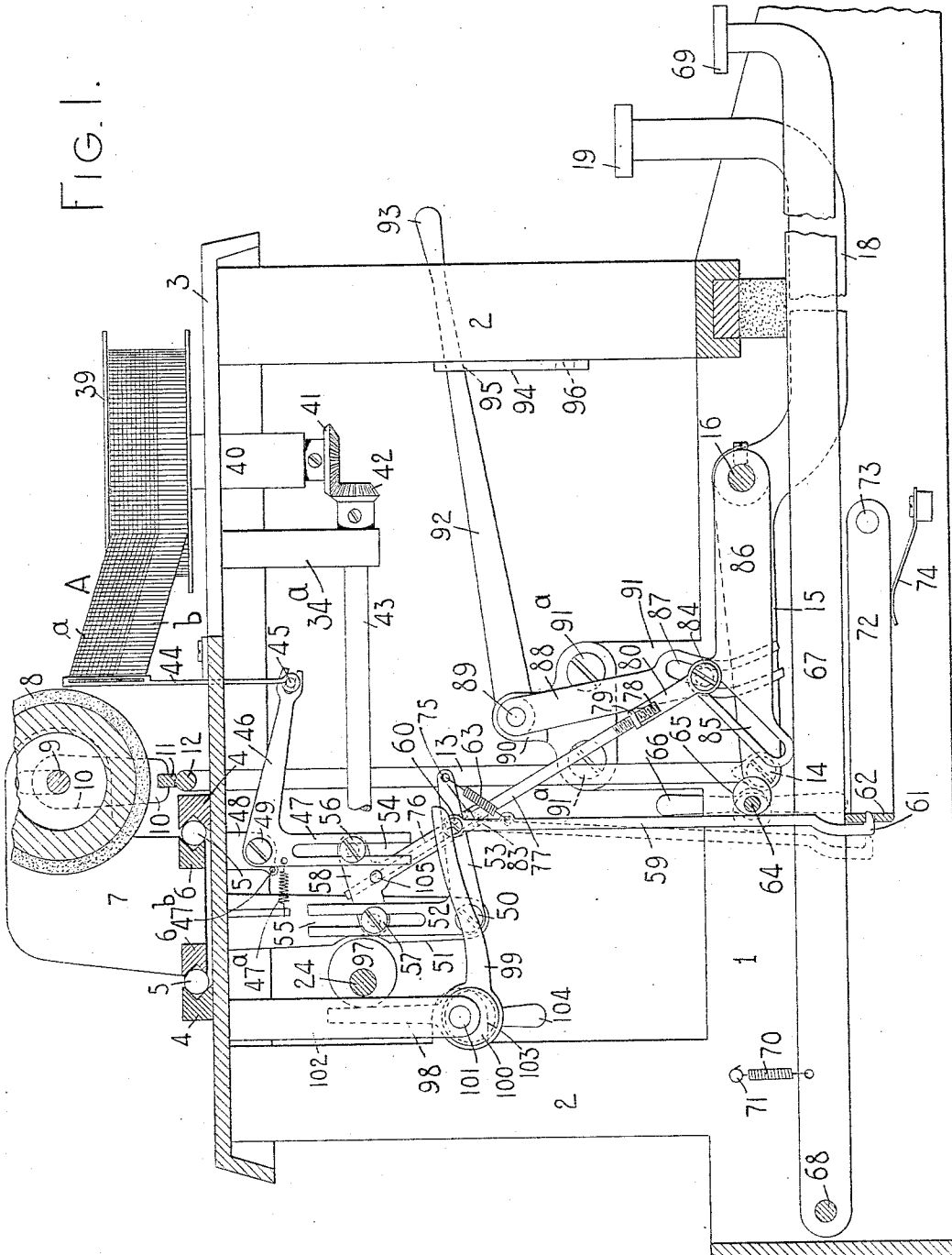


J. T. SCHAAFF.
TYPE WRITING MACHINE.
APPLICATION FILED FEB. 15, 1908.

Patented Oct. 5, 1909.

5 SHEETS—SHEET 1.

936,044.



WITNESSES:

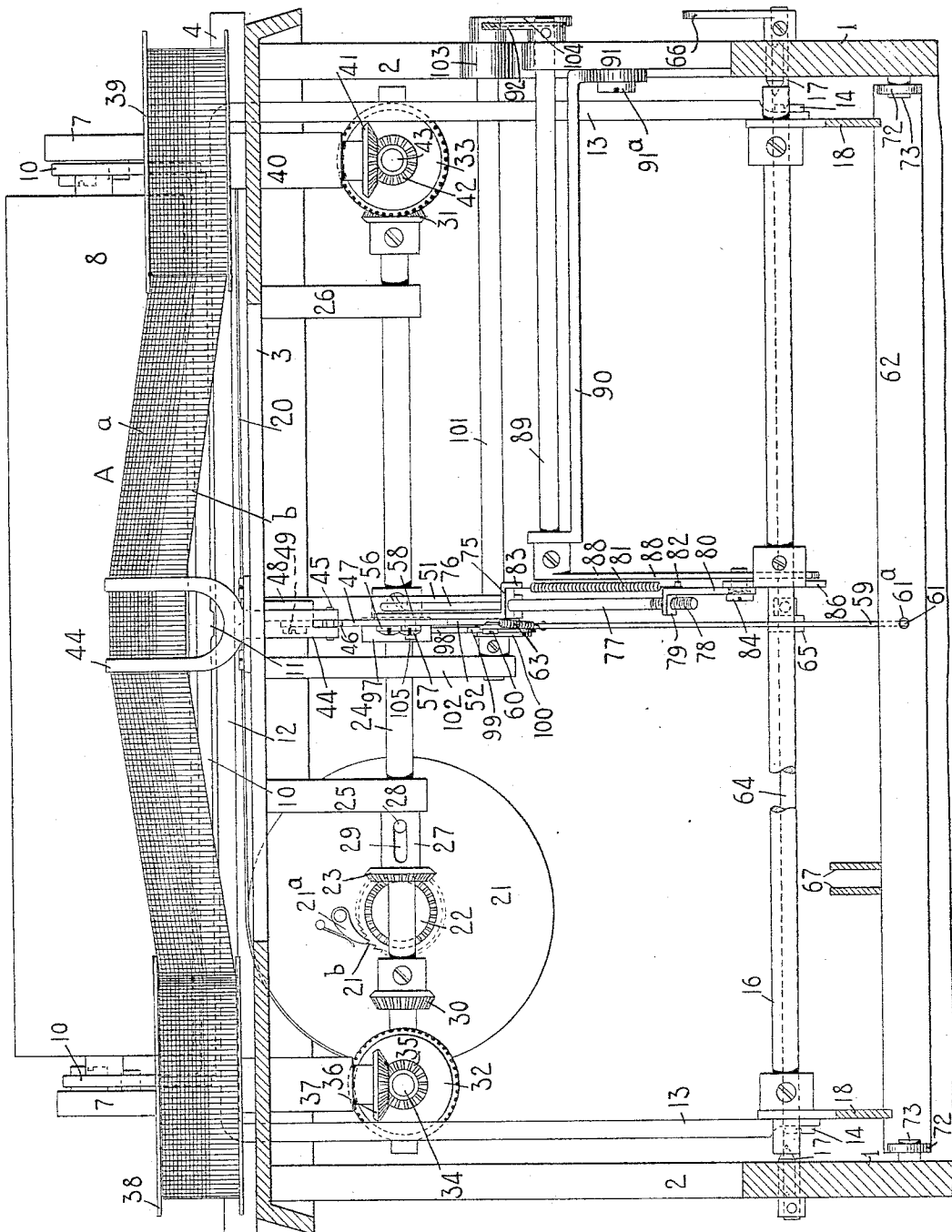
J. B. Reeves.
Charles E. Smith

INVENTOR:

John T. Schaaff
By Jacob Feller
HIS ATTORNEY

936,044.

5 SHEETS—SHEET 2.



INVENTOR:

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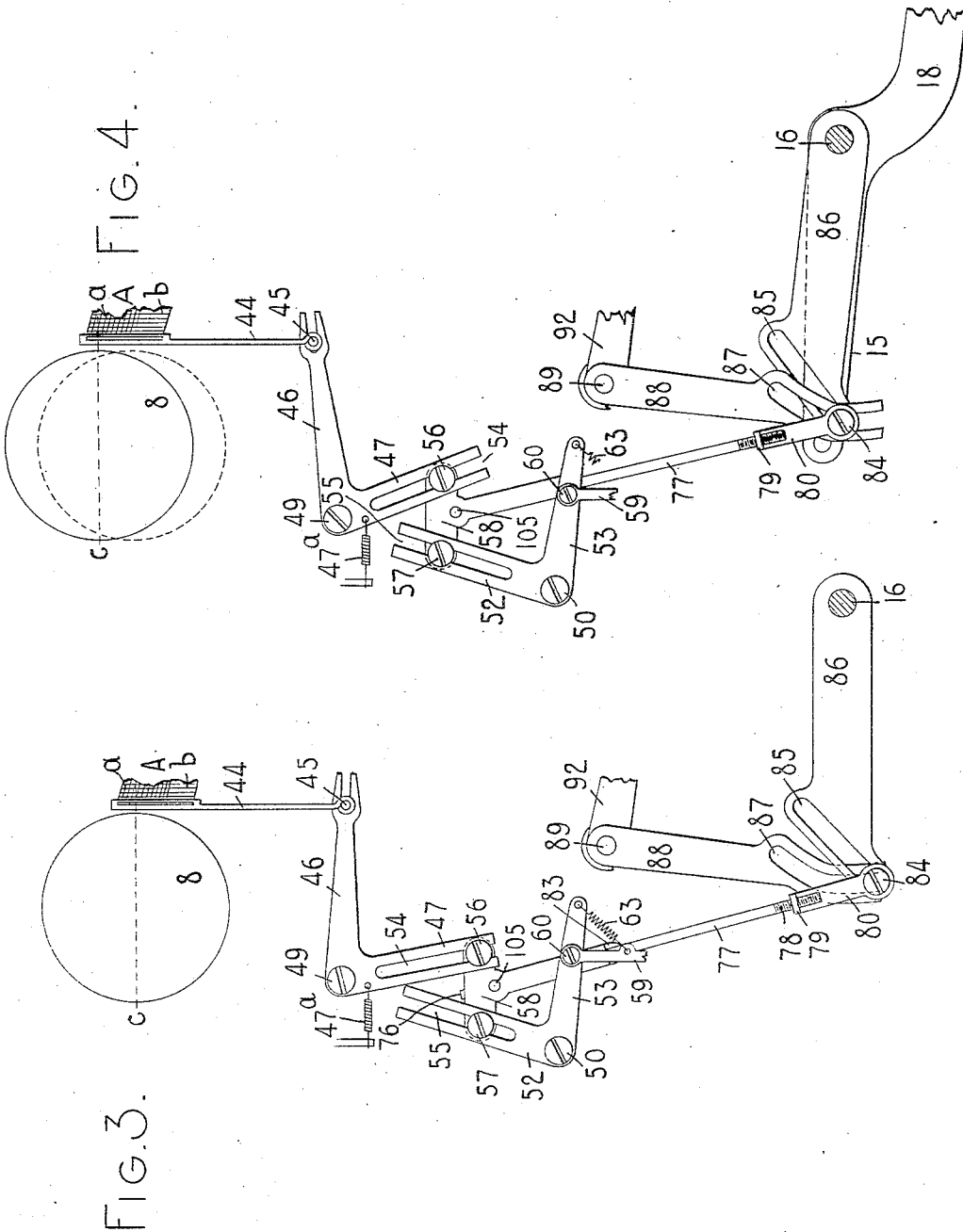
FIG. 2.

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J. T. SCHAAFF.
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5 SHEETS—SHEET 3.

936,044.



WITNESSES:

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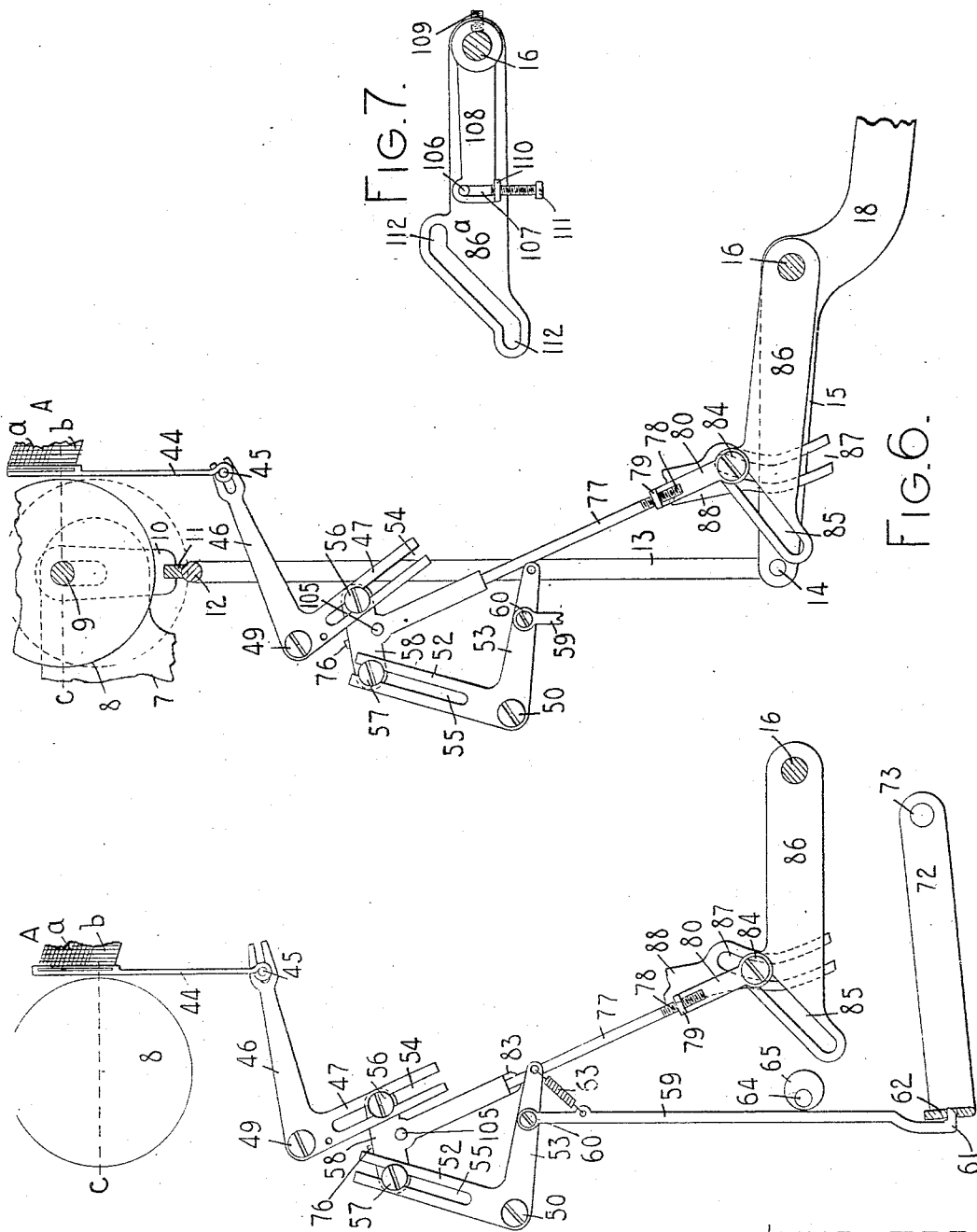
HIS ATTORNEY

936,044.

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TYPE WRITING MACHINE.
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5 SHEETS—SHEET 4.



WITNESSES:

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FIG. 5.

INVENTOR.

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936,044.

FIG. 9.

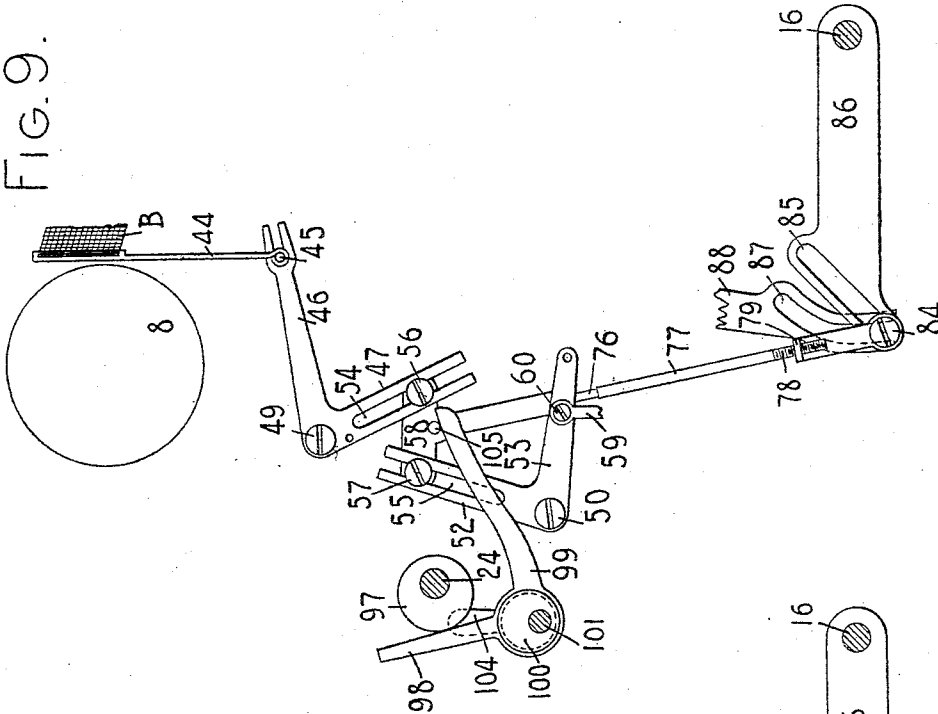
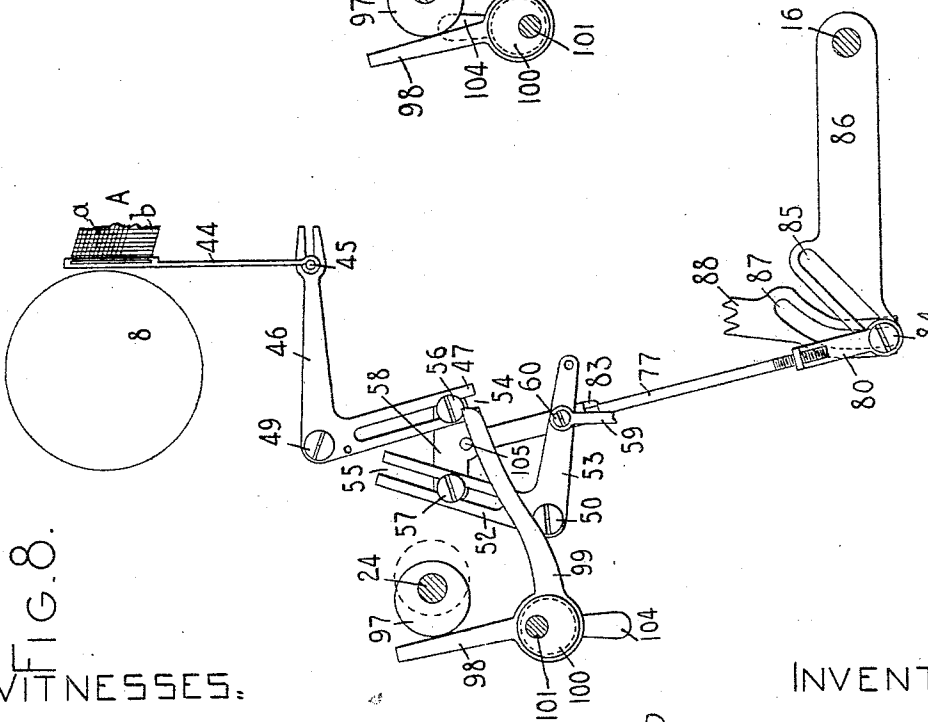


FIG. 8.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN T. SCHAAFF, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

936,044.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed February 15, 1908. Serial No. 416,081.

To all whom it may concern:

Be it known that I, JOHN T. SCHAAFF, citizen of the United States, and resident of Washington, District of Columbia, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to ribbon mechanism.

One object of my invention is to provide simple and efficient mechanism whereby any of a plurality of fields of a ribbon having fields of different characteristics may be brought into operation at will.

A further object of my invention is to provide means of the character specified in which, when the platen is shifted, there is an automatic control of the ribbon vibrating mechanism to compensate for the variation of the printing point due to the shift of the platen.

A further object of my invention is to provide means operable at will to render the ribbon vibrating mechanism inoperative to move the ribbon to the printing point so that mimeograph sheets may be prepared on the machine.

A further object of my invention is to provide means producing a crosswise feed of the ribbon to use different widthwise portions thereof in order to more thoroughly exhaust the ribbon.

Still another object of my invention is to provide means operable at will to render the ribbon vibrating mechanism operative to effect a crosswise feed of the ribbon for substantially the entire width thereof or for only the width of a given field.

To the above and other ends which will hereinafter appear my invention consists in the features of construction, arrangements of parts and combinations of devices to be hereinafter set forth and particularly pointed out in the appended claims.

In the accompanying drawings wherein like reference characters indicate corresponding parts in the different views, Figure 1 is a vertical front to rear sectional view of a typewriting machine embodying my invention, parts unnecessary to an understanding of the invention being omitted or broken away. Fig. 2 is a transverse vertical sectional view of the same looking toward the rear of the machine. Fig. 3 is a detail skele-

tonized diagrammatic side elevation showing portions of the ribbon vibrating mechanism, the ribbon being shown at the printing point in position to print from the upper or black field and with the platen in lowercase position. Fig. 4 is a view that corresponds to Fig. 3 except that the parts are in the positions they assume when the upper field is at the printing point and the platen has been shifted for upper case writing. Fig. 5 is a view which corresponds to Fig. 3 except that the lower or red field of the ribbon is shown in use with the platen in lowercase position. Fig. 6 corresponds to Fig. 5 except that the parts are in the positions they assume when the platen has been shifted for upper case writing. Fig. 7 is a detail side elevation of a portion of the shifting mechanism of a modified construction. Fig. 8 is a view that corresponds to Fig. 3 except that the parts are in the positions they assume when the cross feed is being effected on the upper or black field of the ribbon, the ribbon being shown in the view at the printing point. Fig. 9 is a view which corresponds to Fig. 8 except that the parts are shown adjusted to effect a cross feed of the ribbon substantially the entire width thereof, the ribbon being shown in printing or operative position.

I have shown my invention in the present instance embodied in a front strike machine though it should be understood that said invention may be employed in other styles of typewriting machines.

The frame of the machine comprises a base 1, corner posts 2 and a top plate 3. Fixed guide rails 4 are supported on the top plate and have oppositely disposed grooved faces for coöperation with anti-friction balls 5 that are likewise received in oppositely grooved rails 6 connected to or forming part of a carriage 7 which carries a rotative cylindrical platen 8 and is adapted to travel from side to side of the machine. A platen shaft 9 for the platen is supported in a shiftable yoke-like platen frame 10 supported at 11 upon a shift bar 12 which is bent at its ends to form depending arms 13 one at each side of the machine. These arms are pivotally connected at 14 to rearwardly extending crank arms 15 secured to a rock shaft 16 mounted at its ends on cone pivot screws 17 which extend through tapped openings in the base 1 of the machine. The crank arms 15 are extended forwardly and then

upwardly beyond the rock shaft to form key levers 18 provided with finger keys 19. A depression of either of the finger keys 19 effects an upward shifting movement of the platen to move it to the upper case position. The carriage 7 is connected by a band 20 with a spring drum 21 (see Fig. 2) and suitable mechanism (not shown) is provided for affording a step-by-step feed movement of the carriage at each depression of a printing key.

The printing mechanism is not shown but it will be understood that it may consist of a series of upwardly and rearwardly striking type bars which impact against the front face of the platen. The spring drum 21 is provided with a beveled gear 22 which may be operatively connected to the drum by a pawl 21^a and ratchet 21^b in essentially the same manner as the No. 6 Remington machine, for instance, and this gear 22 coöperates with a beveled gear 23 which surrounds a driving shaft 24 that extends transversely of the machine and turns in suitable bearings 25 and 26 depending from the top plate of the machine. The beveled pinion 23 has a hub 27 which loosely surrounds the shaft and is connected thereto by a pin 28 and a slot 29, the pin projecting from the shaft 24 and the slot being formed in the hub 27. The inner end of the hub 27 bears against the bearing lug 25 so as to prevent a movement of the hub 27 in its gear wheel 23 along the shaft in one direction, these parts being prevented from movement longitudinally of the shaft in the opposite direction by the engagement between the beveled gears 22 and 23. Beveled gears 30 and 31 are secured to the shaft 24 near the opposite ends thereof for coöperation with beveled gears 32 and 33, respectively. The shaft 24 is mounted in its bearings so that it may receive a longitudinal movement to bring about the engagement or disengagement between the two sets of coöperative gears 30 and 32 or 31 and 33. The gear 32 is secured to a shaft 34 which extends fore and aft of the machine and is mounted in suitable bearings such as lugs 34^a depending from the top plate of the machine. The forward end of the shaft 34 carries a beveled pinion 35 coöperative with a beveled gear 36 which is carried by an upright shaft received in a bearing 37 which depends from the top plate of the machine. The upper end of this vertical shaft is connected to a ribbon spool 38 at the left-hand side of the machine. The gear connection between the right hand ribbon spool 39 and the gear 33 is the same as that just described between the spool 38 and the gear 32. Thus, the upright shaft of the ribbon spool 39 turns in a bearing 40 and is provided at its lower end with a beveled gear 41 which meshes with a beveled pinion 42 secured to the forward end of a shaft 43

which extends fore and aft of the machine and the rear end of which is connected to the beveled gear 33.

From the foregoing description it will be understood that the longitudinal disposition of the shaft 34 determines which of the two ribbon spools 38 and 39 shall be geared to rotate with the spring drum during the step-by-step movement of the carriage.

A ribbon A extends from spool to spool and passes through guide openings in a bifurcated ribbon guide or vibrator 44 which is situated near the printing point, the types striking between the arms of the bifurcated vibrator in the ordinary manner. The ribbon A is preferably divided into longitudinally extending fields of different characteristics; that is to say, the upper field *a* of the ribbon, for instance, may be impregnated with black ink, whereas the lower field *b* may be impregnated with red ink or with an ink of some contrasting color; or, if desired, the field *a* may be impregnated with record ink and the field *b* with copying ink. The ribbon vibrator 44 has a pivotal and pin and slot connection at its lower end as at 45 with a forwardly extending arm 46 of a vibrator actuating lever which, in the present instance, consists of a bell crank or angular lever having the substantially horizontally disposed arm 46 and a depending substantially vertically disposed arm 47, the lever being pivoted to a depending lug 48 by a headed pivot screw 49. The arm 47 of the lever is connected to one end of a contractile spring 47^a. The opposite end of the spring is secured to a pin projecting from the top plate of the machine, the spring tending to move the angular lever and the parts controlled thereby to normal position with the arm 47 of the lever bearing against a stop pin 47^b. A second actuating lever is pivoted at 50 to a depending arm 51. This lever is also preferably an angular or bell crank lever having an upwardly extending substantially vertically disposed arm 52 and a forwardly projecting substantially horizontally disposed arm 53. The arms 47 and 52 of the two angular levers are substantially parallel and have longitudinally extending substantially parallel slots 54 and 55 respectively, for the reception of pins formed by the stems of shouldered, headed screws 56 and 57. These screws project laterally from a link or connecting member 58 which constitutes an intermediate actuating connection between the two angular levers for transmitting motion from one of said angular levers to the other when the lever 52-53 is turned on its pivot 50.

A depending link 59 is pivoted at 60 to the forwardly extending lever arm 53 and is provided at its lower end with a hook-like engaging member 61 which is adapted to extend through an opening 61^a in the uni-

versal bar 62 when the link is in the full line position shown in Fig. 1. A contractile spring 63 is connected at one end to the forward end of the lever arm 53 and is connected at its opposite end to the link 59. This spring exerts a pressure to normally maintain the engaging portion 61 on the link in the opening 61^a in the universal bar as shown in Fig. 1. A rock shaft 64 extends from side to side of the machine and is mounted to turn in bearings in the base thereof. This rock shaft is provided with an eccentric 65 which is adapted to cooperate with the link 59 in order to force it to the dotted line position shown in Fig. 1 or to enable it to be moved by a spring 63 to the full line position where it engages with the universal bar 62. It will be seen that when the link is in the dotted line position that the engaging member 61 on the link 59 is released from and out of the path of the universal bar and that an actuation of the universal bar at this time is ineffective to transmit motion to the link 59 and the parts controlled thereby to actuate the ribbon vibrator. The rock shaft 64 extends beyond the base of the machine to the outside thereof where it is provided with a finger piece 66 to facilitate a turning of the eccentric 65 through the rock shaft to either the full or dotted line position shown in Fig. 1. When the finger piece is uppermost the eccentric 65 will be maintained in the full line position, whereas when the finger piece is turned down to the dotted line position shown in Fig. 1 it will turn the rock shaft and thereby effect a movement of the eccentric to the dotted line position, to disengage the link 59 from the universal bar to render the ribbon vibrator mechanism inoperative to move the ribbon to the printing point. The purpose of thus freeing the ribbon vibrating mechanism from the control of the universal bar 62 and consequently from control of the printing keys is to render the machine useful for producing mimeograph sheets. The universal bar 62 extends transversely of the machine beneath the entire system of printing key levers 67 which are pivoted to the base of the machine at 68 and are provided with the usual finger keys 69. The universal bar 62 may be the universal bar which actuates the escapement mechanism or may be a separate universal bar operative for actuating the ribbon vibrator mechanism as may be desired.

The printing key levers may be connected by any suitable actuating means to the printing instrumentalities, such printing instrumentalities and connections not being shown in the present instance. The printing key levers 67 are restored to normal position by springs 70 each secured at one end to a fixed portion of the machine as indicated at 71 and connected at its opposite end to a key

lever. The universal bar 62 is bent at its ends to form arms 72 pivoted at 73 to the base of the machine. A restoring spring 74 bears against the bottom of each of the arms 72 to effect an upward movement of the universal bar 62 to normal position. Each depression of a printing key, when the parts are operatively connected, effects an actuation of the angular lever 52—53 which produces an actuation of the angular lever 46—47 through the intermediate link or connecting device 58 so that the ribbon vibrator 44 will be moved upwardly into the path of the type as it approaches the printing position, as indicated, for instance, by the movement of the parts from the position shown in Fig. 1 to those illustrated in Fig. 5. The member 58, as will be seen upon reference to Fig. 2, is provided with a lateral projection 75 perforated to receive the reduced end portion 76 of a rod 77 threaded at its lower end as at 78 where it is received in a tapped opening in a lateral projection 79 which extends from a member 80. The adjustable connection between the rod 77 and the member 80 is effective to produce a lengthening or shortening of the members 58, 77 and 80 which virtually constitute a link. A contractile spring 81 is connected at one end to a pin 82 which projects laterally from the member 80 and is connected at its opposite end to a perforated ear 83 formed on the projection 75.

The shoulder on the rod 77 formed at the junction between the reduced and enlarged portions of the rod acts to limit the relative movement between the rod and the member 58 toward each other and the spring 81 tends normally to maintain a fixed relation between these parts with the shoulder on the rod 77 bearing against the lateral projection 75 on the member 58. The construction is such, however, that the parts 58 and 80 may move away from each other under conditions which will hereinafter appear. The member 80 is provided at its lower end with a screw 84 which is carried by and threaded into a tapped opening in the member 80 and extends into an inclined slot 85 in a crank arm 86 which is secured to the rock shaft 16. The pin or screw 84 likewise extends into a segmental slot 87 on a crank arm 88 connected to the inner end of a rock shaft 89 mounted to turn in a bearing in a bracket 90 and also adapted to turn in a bearing in an upwardly extending projection 91 on the base of the machine to which the bracket is secured by a screw 91^a. The outer end of the rock shaft 89 extends to the outside of the machine where it is provided with an arm 92 which terminates in a finger piece 93. This arm extends through a slot on a plate 94 (Fig. 1) secured to the frame of the machine and having depressions 95 and 96 therein. The arm 92 has a slight pressure toward the edge

of the plate in which the depressions or recesses 95 and 96 are formed so as to snap into either of the recesses when the arm is brought into register therewith in order to lock the arm against accidental displacement from the position to which it is adjusted. The crank arm 86 and members 77 and 80 constitute a connection between the rock shaft and platen shifting mechanism and the member 58 and this connection is automatically actuated to vary the position of the member 58 relatively to the angular actuating levers when the platen is shifted, in order to automatically vary the throw of the ribbon vibrator to compensate for the change in the position of the printing point due to the case shifting movement of the platen.

The members 92, 93, 89, 88 etc. constitute hand controlled means whereby the connections between the member 58 and the platen shifting mechanism may be varied in order to change the relation of the member 58 to the angular actuating levers and thereby vary the throw of the ribbon vibrator to bring any desired field of the ribbon to the printing point at each printing operation. Thus, the arm 86 and the link 77—80 between the member 58 and the rock shaft 16 constitutes a connection whereby when the platen is shifted to the upper case position the pins 56, 57 will be moved upwardly in the slots 54 and 55 respectively in the two angular actuating levers so that the connecting device 58 is moved farther away from the pivot 50 of the lower actuating lever and will be moved toward the pivot 49 of the upper actuating lever, thereby varying the position of the connecting device or member 58 with reference to the two angular levers and changing the leverage so as to produce a greater extent of throw of the ribbon vibrator during the actuation of a printing key when the platen is in the uppercase position in order to compensate for the change of the printing point from the position shown in Fig. 3 for instance to that illustrated in Fig. 4.

When the operator desires to employ the upper field *a* of the ribbon it is merely necessary to depress the finger piece 93 so as to bring the arm 92 into engagement with the lowermost locking recess or notch 96 in the plate 94. The effect of this movement is to turn the arm 88 rearwardly with the rock shaft 89 and to force the pin 84 down to the lower end of the slot 83 in the crank arm 86 as shown in Fig. 3. The effect of this movement of the finger piece 93 is to move the connecting device 58 downwardly from the position shown in Fig. 1 so as to bring said connecting device nearer to the pivot or fulcrum of the lever 52—53 and to move it farther from the fulcrum of the lever 46—47 so that a shorter throw of the ribbon vibrator will be effected than when the parts

are disposed as shown in Fig. 1, and the upper field of ribbon only will be moved to the printing point indicated by the dotted line *c* in Fig. 3. However, if the platen should be shifted for upper case writing, the arm 86 will be elevated to the position shown in Fig. 4, thus automatically effecting a change in position of the member 58 to bring it nearer to the fulcrum 49 of the upper angular actuating lever so as to give an increased extent of throw to the vibrator to compensate for the variation in the position of the printing point from the dotted line *c* indicated in Fig. 3 to that indicated in Fig. 4 which corresponds to the extent of case shift movement of the platen. When the platen is lowered to the normal or lower case position shown in Fig. 3 the arm 86 will be moved downwardly from the position shown in Fig. 4 to that indicated in Fig. 3 and an automatic movement of the member 58 will be effected to change the extent of throw of the vibrator so as to compensate for the variation of position of the printing point. It will be understood that the normal position of the vibrator in this case is not changed but that a greater or less extent of throw is given thereto, depending on the printing case position of the platen and it will also be seen that the fulcrums 49 and 50 of the angular actuating levers are unvariable and remain at all times fixed. The upward and downward movement of the member 58, whether effected automatically during the case shifting movement of the platen or by an actuation of the finger piece 93, does not effect a movement of the angular levers or the vibrator from their normal positions since the movement of the member 58 is an up and down movement and the pins 56 and 57 on the member 58 move in the parallel slots in the angular actuating levers. It will be understood that the change in the position of the member 58 is effected to change the effective lengths of the lever arms 47 and 52 of the angular actuating levers; and I therefore refer herein to the means for effecting such change, as leverage changing devices or differential leverage mechanism.

It is sometimes desirable to effect a crosswise feed of the ribbon within a given field where a polychrome ribbon or one having fields of different characteristics, is employed, in order to effectually use every portion of the ribbon within the field. This is more especially the case where a relatively wide and a relatively narrow field is employed as illustrated in the present instance. In order that such crosswise feed of the ribbon may be effected I have provided an eccentric or cam 97 on the driving shaft 24, and this cam is adapted to cooperate with an upwardly extending arm 98 of an angular actuating lever, an arm 99 extending for-

wardly from said lever. The bearing of the lever 98—99 loosely surrounds an eccentric 100 which is carried upon a rock shaft 101 mounted at its inner end in a bearing in a depending arm 102, the outer end of the rock shaft receiving a bearing in a support 103 on the frame. The outer end of this shaft extends beyond a side of the machine and is provided with a finger piece 104 by which the eccentric 100 may be controlled to vary the pivotal center of the angular lever 98—99. When the finger piece 104 is in the lowermost position shown in Fig. 1 the pivotal center of the angular lever 98—99 will be in the lowermost position and a turning of the eccentric 97 with the shaft 24 at this time will result in effecting a turning movement of the angular lever 98—99 on its pivot, as shown in Fig. 8, and the effect of this movement of the lever is to bring the arm 99 thereof into contact with a pin 105 which extends laterally from the member 58. As the arm 99 of the angular lever is elevated the member 58 will be carried upwardly with it against the tension of the spring 81 (see Fig. 2) so as to automatically vary the position of the member 58 relatively to the two angular levers which it connects. This movement of the device 58 is effected independently of the rod 77 and the devices associated therewith by reason of the contractile spring 81 which connects the device 58 and the rod 77. It will be understood that the eccentric 97 receives a slow intermittent turning movement during the letter space movements of the carriage so that the turning of the eccentric 97 slowly elevates and lowers the arm 99 and slowly changes the relation of the device 58 to the angular actuating levers 52—53 and 46—47. The automatic variation in the throw of the vibrator thus effected produces a widthwise or crosswise feed of the ribbon to vary the point of impact of the type thereon at each letter space movement of the carriage. Should the operator desire to use this automatic crosswise feed in connection with a ribbon of a single color or characteristic as shown at B in Fig. 9, then the finger piece 104 may be moved to the uppermost position shown in Fig. 9 to vary the pivotal center of the angular lever 98—99. The effect of this movement is to produce an automatic crosswise feed of the ribbon throughout substantially the entire width thereof, it being understood that a greater extent of throw is given to the vibrator by this adjustment of the eccentric 100 and that the crosswise feed instead of being limited to a single longitudinal feed of the ribbon, as under the adjustment shown in Fig. 8, will extend substantially throughout the width of the ribbon.

In Figs. 5 and 6 I have shown an adjustment of the parts due to the positioning of

the arm 92 in the upper notch or recess 95 in its guide plate. The effect of this adjustment is to move the pin 84 to the upper end of the slot 85 in the crank arm 86 and to retain it in this position. This adjustment moves the member 58 nearer the fulcrum 49 of the upper angular actuating lever and farther from the pivot 50 of the lower angular actuating lever so as to vary the leverage and thus effect a longer throw of the ribbon vibrator to bring the lower or red field of the ribbon to the printing point at each printing operation whether the printing point *c* on the platen be in the lower case or in the upper case position, as will be seen by an inspection of Figs. 5 and 6 which show the vibrator in the operative positions. When the parts are set so that the red field will be brought to the printing point at each printing operation, and the platen is shifted from the lower to the upper case position as shown in Fig. 6, the arm 86 will be turned to effect automatically a change in the position of the member 58 relatively to the angular actuating levers and thereby position the parts so that a further extent of throw is given the vibrator at each printing operation, to compensate for the variation in the printing point by reason of the shift of the platen from the lower to the upper case position.

It will be understood that there is no crosswise feed of the ribbon when the lower or red field is employed as this field is seldom used and there is no necessity for effecting a crosswise feed of the ribbon within this field. No crosswise feed is effected at this time because the device 58 is elevated to a position where the pin 105 thereon is out of the path of the arm 99 when it is actuated by the rotation of the eccentric 97. It should also be understood that there will be no cross feed of the ribbon when the arm 104 is set in the position shown in Fig. 8 and the platen is shifted to the upper case position. This is due to the fact that the case shifting movement of the platen elevates the member 58 to a position where the arm 99 in its automatic operation will be ineffective on the pin 105; but the cross feed of the ribbon will be effected when the platen is in the normal or lower case position.

In Fig. 7 I have illustrated a modified form of connection between the rock shaft 16 and an arm 86^a. In this construction a pin 106 extends laterally from the crank arm 86^a which is loosely mounted upon the rock shaft and said pin is received in a slot 107 which extends transversely in a crank arm 108 secured to the rock shaft 16 by a set screw 109 or by any suitable means. A laterally extending projection 110 is formed on the crank arm 108 and is tapped for co-operation with a screw 111 which constitutes a stop or abutment that practically

forms one end of the slot 107. By these means the length of the slot may be varied so that different extents of lost motion may be provided between the crank arm 108 and the loosely mounted arm 86^a or the screw may be turned in to a point where it will engage the pin 106 when it is seated in the upper end of the slot, thus preventing any lost motion between the parts. This construction enables a movement of the platen shifting mechanism to any desired extent to take place before movement is transmitted through the rock shaft 16 to the connecting device 58 so that said device 58 may be moved varying extents as may be required by the case shift movements of the platen. The change in the extent of throw of the vibrator due to the shifting movement of the platen may thus be nicely regulated. I prefer to provide a dwell 112 at each end of this cone slot 85 as shown in Fig. 7 to the end that there will be no tendency of the screw or pin 84 to slip up or down the cam slot 85, accidentally during the operation of the machine.

Various changes may be made without departing from the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent is:—

1. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a vibrator, means whereby said vibrator remains fixed during the case shifting movements of the platen, a ribbon having fields of different characteristics, and means for controlling the vibrator to bring any desired field of the ribbon to the printing point whether the platen be in the upper or lower case position.

2. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a vibrator, an actuating lever connected with said vibrator and turning on a fixed axis, means whereby said ribbon vibrator remains fixed during the case shifting movements of the platen, a ribbon having fields of different characteristics, and means for controlling the vibrator to bring any desired field of the ribbon to the printing point whether the platen be in the upper or lower case position.

3. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon vibrator, means whereby said vibrator remains fixed during the shifting movements of the platen, compensating means controlled by the platen shifting means for enabling the vibrator to bring the same portion of the ribbon to the printing point irrespective of the case position of the platen, a ribbon having fields of different characteris-

tics, and hand controlled means operable at will for determining which field of the ribbon shall be brought to the printing point at each printing operation.

4. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon vibrator, an actuating lever connected with said vibrator and turning on a fixed axis, means whereby said ribbon vibrator remains fixed during the case shifting movements of the platen, compensating means controlled by the platen shifting means for enabling the vibrator to bring the same portion of the ribbon to the printing point irrespective of the case position of the platen, a ribbon having fields of different characteristics, and hand controlled means operable at will for determining which field of the ribbon shall be brought to the printing point at each printing operation.

5. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a vibrator, means whereby said vibrator remains fixed during the case shifting movements of the platen, means for controlling the vibrator to bring the same portion of the ribbon to the printing point whether the platen be in the upper or lower case position, and means operable at will for rendering said vibrator inoperative to carry the ribbon to the printing point.

6. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a vibrator, means whereby said vibrator remains fixed during the case shifting movements of the platen, an actuating lever connected with said vibrator and turning on a fixed axis, means for controlling the vibrator to bring the same portion of the ribbon to the printing point whether the platen be in the upper or lower case position, and means operable at will for rendering said vibrator inoperative to carry the ribbon to the printing point for producing mimeograph sheets.

7. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon vibrator, means whereby said vibrator remains fixed during the shifting movements of the platen, compensating means controlled by the platen shifting means for enabling the vibrator to bring the ribbon to the printing point irrespective of the case position of the platen, and means operable at will for rendering said vibrator inoperative to carry the ribbon to the printing point for producing mimeograph sheets.

8. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon vibrator, an actuating lever connected with said vibrator and turning on a

fixed axis, means whereby said ribbon vibrator remains fixed during the case shifting movements of the platen, compensating means controlled by the platen shifting means for enabling the vibrator to bring the ribbon to the printing point irrespective of the case position of the platen, and means operable at will for rendering said vibrator inoperative to carry the ribbon to the printing point, for producing mimeograph sheets.

9. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a vibrator, means whereby said vibrator remains fixed during the case shifting movements of the platen, a ribbon having fields of different characteristics, means for controlling the vibrator to bring any desired field of the ribbon to the printing point whether the platen be in the upper or lower case position, and means operable at will for rendering said vibrator inoperative to carry the ribbon to the printing point, for producing mimeograph sheets.

10. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a vibrator, means whereby said vibrator remains fixed during the case shifting movements of the platen, an actuating lever connected with said vibrator and turning on a fixed axis, a ribbon having fields of different characteristics, means for controlling the vibrator to bring any desired field of the ribbon to the printing point whether the platen be in the upper or lower case position, and means operable at will for rendering said vibrator inoperative to carry the ribbon to the printing point, for producing mimeograph sheets.

11. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon vibrator, means whereby said ribbon vibrator remains fixed during the shifting movements of the platen, compensating means controlled by the platen shifting means for enabling the vibrator to bring the same portion of the ribbon to the printing point irrespective of the case position of the platen, a ribbon having fields of different characteristics, hand controlled means operable at will for determining which field of the ribbon shall be brought to the printing point at each printing operation, and means operable at will for rendering said vibrator inoperative to carry the ribbon to the printing point, for producing mimeograph sheets.

12. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon vibrator, an actuating lever connected with said vibrator and turning on a fixed axis, means whereby said ribbon vibrator remains fixed during the case shifting move-

ments of the platen, compensating means controlled by the platen shifting means for enabling the vibrator to bring the same portion of the ribbon to the printing point irrespective of the case position of the platen, a ribbon having fields of different characteristics, hand controlled means operable at will for determining which field of the ribbon shall be brought to the printing point at each printing operation, and means operable at will for rendering said vibrator inoperative to carry the ribbon to the printing point, for producing mimeograph sheets.

13. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a vibrator, means whereby said vibrator remains fixed during the case shifting movements of the platen, motion transmitting devices for actuating said vibrator, and means controlled by the case shifting movements of the platen to effect a change in the relation of the parts of said motion transmitting devices in order that the same portion of the ribbon may be brought to the printing point whether the platen be in the upper or lower case position.

14. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a vibrator, means whereby said vibrator remains fixed during the case shifting movements of the platen, motion transmitting devices for actuating said vibrator, means controlled by the case shifting movements of the platen to effect a change in the relation of the parts of said motion transmitting devices in order that the same portion of the ribbon may be brought to the printing point whether the platen be in the upper or lower case position, a ribbon having fields of different characteristics, and hand actuated means operable at will for determining which field of the ribbon shall be brought to the printing position at each printing operation.

15. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a vibrator, means whereby said vibrator remains fixed during the case shifting movements of the platen, motion transmitting devices for actuating said vibrator, means controlled by the case shifting movements of the platen to effect a change in the relation of the parts of said motion transmitting devices in order that the same portion of the ribbon may be brought to the printing point whether the platen be in the upper or lower case position, and hand operated means operable at will for rendering said vibrator inoperative to move the ribbon to the printing point.

16. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a

vibrator, means whereby said vibrator remains fixed during the case shifting movements of the platen, motion transmitting devices for actuating said vibrator, means controlled by the case shifting movements of the platen to effect a change in the relation of the parts of said motion transmitting devices in order that the same portion of the ribbon may be brought to the printing point whether the platen be in the upper or lower case position, a ribbon having fields of different characteristics, hand actuated means operable at will for determining which field of the ribbon shall be brought to the printing position at each printing operation, and hand operated means operable at will for rendering said vibrator inoperative to move the ribbon to the printing point.

17. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon vibrator, means whereby said ribbon vibrator remains fixed during the case shifting movements of the platen, differential leverage mechanism for actuating said vibrator, and means under control of the platen shifting means for affecting said differential leverage mechanism so as to bring the same portion of the ribbon to the printing point at each printing operation whether the platen be in the upper or lower case position.

18. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon vibrator, differential leverage mechanism for actuating said vibrator, means under control of the platen shifting means for affecting said differential leverage mechanism to vary the throw of the vibrator and thus to bring the same portion of the ribbon to the printing point at each printing operation whether the platen be in the upper or lower case position, and means operable at will for rendering said vibrator inoperative to move the ribbon to the printing point.

19. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon having fields of different characteristics, a ribbon vibrator, means whereby said ribbon vibrator remains fixed during the case shifting movements of the platen, differential leverage mechanism for actuating said vibrator, means under control of the platen shifting means for affecting said differential leverage mechanism so as to bring the same field of the ribbon to the printing point at each printing operation whether the platen be in the upper or lower case position, and means operable at will to determine which field of the ribbon shall be moved to the printing point.

20. In a typewriting machine, the combi-

nation of a platen, means for shifting said platen to change the case position thereof, a ribbon vibrator, means whereby the ribbon vibrator has the same normal position irrespective of the case position of the platen, actuating means operative to give different extents of throw to the vibrator, means controlled by the platen shifting means for affecting said actuating means to give a greater or less extent of throw to the vibrator according to the case position of the platen, and hand actuated means operable at will for controlling said actuating means to give a different throw to the vibrator.

21. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon vibrator, means whereby the ribbon vibrator has the same normal position irrespective of the case position of the platen, actuating means operative to give different extents of throw to the vibrator, means controlled by the platen shifting means for affecting said actuating means to give a greater or less extent of throw to the vibrator according to the case position of the platen, and hand actuated means operable at will to render said ribbon vibrator inoperative to move the ribbon to the printing point.

22. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon having fields of different characteristics, a ribbon vibrator, means whereby the ribbon vibrator has the same normal position irrespective of the case position of the platen, actuating means operative to give different extents of throw to the vibrator, and means controlled by the platen shifting means for affecting said actuating means to give a greater or less extent of throw to the vibrator according to the case position of the platen and so as to bring the same field of the ribbon to the printing point whether the platen be in the upper or lower case position.

23. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon having fields of different characteristics, a ribbon vibrator, means whereby the ribbon vibrator has the same normal position irrespective of the case position of the platen, actuating means operative to give different extents of throw to the vibrator, means controlled by the platen shifting means for affecting said actuating means to give a greater or less extent of throw to the vibrator according to the case position of the platen and so as to bring the same field of the ribbon to the printing point whether the platen be in the upper or lower case position, and hand actuated means operable at

will for controlling said actuating means to move any desired field of the ribbon to the printing point at each printing operation.

24. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon having fields of different characteristics, a ribbon vibrator, means whereby the ribbon vibrator has the same normal position irrespective of the case position of the platen, actuating means operative to give different extents of throw to the vibrator, means controlled by the platen shifting means for affecting said actuating means to give a greater or less extent of throw to the vibrator according to the case position of the platen and so as to bring the same field of the ribbon to the printing point whether the platen be in the upper or lower case position, and hand actuated means operable at will to render said vibrator inoperative to move the ribbon to the printing point.

25. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon having fields of different characteristics, a ribbon vibrator, means whereby the ribbon vibrator has the same normal position irrespective of the case position of the platen, actuating means operative to give different extents of throw to the vibrator, means controlled by the platen shifting means for affecting said actuating means to give a greater or less extent of throw to the vibrator according to the case position of the platen and so as to bring the same field of the ribbon to the printing point whether the platen be in the upper or lower case position, hand actuated means operable at will for controlling said actuating means to move any desired field of the ribbon to the printing point at each printing operation, and hand actuated means operable at will to render said vibrator inoperative to move the ribbon to the printing point.

26. In a typewriting machine, the combination of a ribbon vibrator, two actuating levers therefor, an intermediate connection between said levers, and means for moving said connection independently of said levers and nearer to the pivotal center of one lever and farther from the pivotal center of the other lever.

27. In a typewriting machine, the combination of a ribbon vibrator, two actuating levers therefor, an intermediate connection between said levers, a platen, platen shifting mechanism, and means under control of said platen shifting mechanism for shifting said connection independently of said levers.

28. In a typewriting machine, the combination of a ribbon vibrator, two actuating levers therefor, an intermediate connection

between said levers, platen, platen shifting mechanism, means under control of said platen shifting mechanism for shifting said connection independently of said levers, and hand actuated means operable at will for shifting said connection.

29. In a typewriting machine, the combination of a ribbon vibrator, two ribbon vibrator actuating levers having substantially parallel arms, an intermediate connection between said substantially parallel arms, and means for shifting the connection independently of said levers and longitudinally of said parallel arms.

30. In a typewriting machine, the combination of a ribbon vibrator, two ribbon vibrator actuating levers having substantially parallel arms, an intermediate connection between said substantially parallel arms, a platen, platen shifting means, and means under control of said platen shifting means for shifting said connection independently of said levers and longitudinally of said substantially parallel arms.

31. In a typewriting machine, the combination of a ribbon vibrator, two ribbon vibrator actuating levers having substantially parallel arms, an intermediate connection between said substantially parallel arms, a platen, platen shifting means, means under control of said platen shifting means for shifting said connection independently of said levers and longitudinally of said substantially parallel arms, and hand actuated means operable at will for shifting said connection.

32. In a typewriting machine, the combination of a ribbon vibrator, two actuating levers therefor, an intermediate connection between said levers, means for moving said connection independently of said levers and nearer to the pivotal center of one lever and farther from the pivotal center of the other lever, and means operable at will for rendering said vibrator inoperative to move the ribbon to the printing point.

33. In a typewriting machine, the combination of a ribbon vibrator, two actuating levers therefor, an intermediate connection between said levers, a platen, platen shifting mechanism, means under control of said platen shifting mechanism for shifting said connection independently of said levers, and means operable at will for rendering said vibrator inoperative to move the ribbon to the printing point.

34. In a typewriting machine, the combination of a ribbon vibrator, two actuating levers therefor, an intermediate connection between said levers, a platen, platen shifting mechanism, means under control of said platen shifting mechanism for shifting said connection independently of said levers, hand actuated means operable at will for

shifting said connection, and means operable at will for rendering said vibrator inoperative to move the ribbon to the printing point.

5 35. In a typewriting machine, the combination of a ribbon vibrator, two ribbon vibrator actuating levers having substantially parallel arms, an intermediate connection between said substantially parallel arms, means for shifting the connection independently of said levers and longitudinally of said arms, and means operable at will for rendering said vibrator inoperative to move the ribbon to the printing point.

15 36. In a typewriting machine, the combination of a ribbon vibrator, two ribbon vibrator actuating levers having substantially parallel arms, an intermediate connection between said substantially parallel arms, means for shifting the connection longitudinally of said arms, a platen, platen shifting means, means under control of said platen shifting means for shifting said connection independently of said levers and longitudinally of said substantially parallel arms, and means operable at will for rendering said vibrator inoperative to move the ribbon to the printing point.

30 37. In a typewriting machine, the combination of a ribbon vibrator, two ribbon vibrator actuating levers having substantially parallel arms, an intermediate connection between said substantially parallel arms, means for shifting the connection longitudinally of said arms, a platen, platen shifting means, means under control of said platen shifting means for shifting said connection independently of said levers and longitudinally of said substantially parallel arms, hand actuated means operable at will for shifting said connection, and means operable at will for rendering said vibrator inoperative to move the ribbon to the printing point.

45 38. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, intermediate angular levers between said universal bar and vibrator, said angular levers being mounted on fixed axes, a connection between said angular levers, and means for shifting said connection relatively to said levers while the levers remain fixed.

50 39. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, intermediate angular levers between said universal bar and vibrator, a connection between said angular levers, a platen, platen shifting means, and means under control of the platen shifting means for shifting said connection relatively to said levers while the levers remain fixed.

60 40. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, intermediate angular levers between

said universal bar and vibrator, said levers 65 being mounted on fixed axes, a connection between said angular levers, a platen, platen shifting means, means under control of the platen shifting means for shifting said connection relatively to said levers, and hand 70 controlled means operable at will for shifting said connection.

41. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, intermediate angular levers between 75 said universal bar and vibrator, said levers being mounted on fixed axes, a connection between said angular levers, means for shifting said connection relatively to said levers, and hand actuated means operable at will 80 for rendering the universal bar inoperative on said angular levers.

42. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, intermediate angular levers between 85 said universal bar and vibrator, said levers being mounted on fixed axes, a connection between said angular levers, a platen, platen shifting means, means under control of the platen shifting means for shifting said con- 90 nection relatively to said levers, and hand actuated means operable at will for rendering the universal bar inoperative on said angular levers.

43. In a typewriting machine, the com- 95 bination of a ribbon vibrator, a universal bar, intermediate angular levers between said universal bar and vibrator, said levers being mounted on fixed axes, a connection between said angular levers, a platen, platen shift- 100 ing means, means under control of the platen shifting means for shifting said connection relatively to said levers, hand controlled means operable at will for shifting said connection, and hand actuated means 105 operable at will for rendering the universal bar inoperative on said angular levers.

44. In a typewriting machine, the combination of a ribbon vibrator, vibrator actu- 110 ating levers having substantially parallel arms slotted longitudinally thereof, a connecting device engaging the slotted parallel arms of said actuating levers and movable independently of said levers and longitu- 115 dinally of the slotted arms thereof, and means for effecting a movement of said connecting device longitudinally of the slotted arms of said levers.

45. In a typewriting machine, the combination of a ribbon vibrator, vibrator actu- 120 ating levers having substantially parallel arms slotted longitudinally thereof, a connecting device engaging the slotted parallel arms of said actuating levers and movable independently of said levers and longi- 125 tudinally of the slotted arms thereof, a platen, a platen shifting means, and means under control of said platen shifting means

for effecting a movement of said connecting device longitudinally of the slotted arms of said levers.

46. In a typewriting machine, the combination of a ribbon vibrator, vibrator actuating levers having substantially parallel arms slotted longitudinally thereof, a connecting device engaging the slotted parallel arms of said actuating levers and movable independently of said levers and longitudinally of the slotted arms thereof, means for effecting a movement of said connecting device longitudinally of the slotted arms of said levers, and hand actuated means operable at will for rendering said vibrator inoperative to move the ribbon to the printing point.

47. In a typewriting machine, the combination of a ribbon vibrator, vibrator actuating levers having substantially parallel arms slotted longitudinally thereof, a connecting device engaging the slotted parallel arms of said actuating levers and movable independently of said levers and longitudinally of the slotted arms thereof, a platen, a platen shifting means, means under control of said platen shifting means for effecting a movement of said connecting device longitudinally of the slotted arms of said levers, and hand actuated means operable at will for rendering said vibrator inoperative to move the ribbon to the printing point.

48. In a typewriting machine, the combination of a ribbon vibrator, two angular actuating levers each having a substantially horizontally disposed arm and a substantially vertically disposed arm, a substantially vertically shiftable connection between the vertically disposed arms of said angular levers, and means for shifting said connection independently of said levers.

49. In a typewriting machine, the combination of a ribbon vibrator, two actuating levers having substantially parallel arms which extend in opposite directions from the fulcrums of said levers, a connection between said parallel lever arms, and means for shifting said connection longitudinally of said parallel lever arms.

50. In a typewriting machine, the combination of a ribbon vibrator, two angular actuating levers each having a substantially horizontally disposed arm and a substantially vertically disposed arm, a substantially vertically shiftable connection independent of said levers and between the vertically disposed arms thereof, means for shifting said connection, a platen, platen shifting means, and means under control of the platen shifting means for shifting said connection relatively to said levers.

51. In a typewriting machine, the combination of a ribbon vibrator, two angular

actuating levers mounted on fixed axes and each having a substantially horizontally disposed arm and a substantially vertically disposed arm, a substantially vertically shiftable connection between the vertically disposed arms of said angular levers, means for shifting said connection, a platen, platen shifting means, means under control of the platen shifting means for shifting said connection relatively to said levers, and hand actuated means operable at will for shifting said connection.

52. In a typewriting machine, the combination of a ribbon vibrator, two angular actuating levers mounted on fixed axes and each having a substantially horizontally disposed arm and a substantially vertically disposed arm, a substantially vertically shiftable connection between the vertically disposed arms of said angular levers, means for shifting said connection relatively to said levers, and means for rendering said ribbon vibrator inoperative to move the ribbon to the printing point.

53. In a typewriting machine, the combination of a ribbon vibrator, two angular actuating levers mounted on fixed axes and each having a substantially horizontally disposed arm and a substantially vertically disposed arm, a substantially vertically shiftable connection between the vertically disposed arms of said angular levers, means for shifting said connection, a platen, platen shifting means, means under control of the platen shifting means for shifting said connection relatively to said levers, and means for rendering said ribbon vibrator inoperative to move the ribbon to the printing point.

54. In a typewriting machine, the combination of a ribbon vibrator, two angular actuating levers mounted on fixed axes and each having a substantially horizontally disposed arm and a substantially vertically disposed arm, a substantially vertically shiftable connection between the vertically disposed arms of said angular levers, means for shifting said connection, a platen, platen shifting means, means under control of the platen shifting means for shifting said connection relatively to said levers, hand actuated means operable at will for shifting said connection, and means for rendering said ribbon vibrator inoperative to move the ribbon to the printing point.

55. In a typewriting machine, the combination of a ribbon vibrator, two actuating levers having substantially parallel arms which extend in opposite directions from the fulcrums of said levers, a connection between said parallel lever arms, a platen, platen shifting means, and means under control of said platen shifting means for shifting said connection.

56. In a typewriting machine, the combi-

nation of a ribbon vibrator, two actuating levers having substantially parallel arms which extend in opposite directions from the fulcrums of said levers, a connection between said parallel lever arms, a platen, platen shifting means, means under control of said platen shifting means for shifting said connection, and hand actuated means operable at will for shifting said connection.

57. In a typewriting machine, the combination of a ribbon vibrator, two actuating levers having substantially parallel arms which extend in opposite directions from the fulcrums of said levers, a connection between said parallel lever arms, means for shifting said connection longitudinally of said parallel lever arms, and means for rendering said ribbon vibrator inoperative to move the ribbon to the printing point.

58. In a typewriting machine, the combination of a ribbon vibrator, two actuating levers having substantially parallel arms which extend in opposite directions from the fulcrums of said levers, a connection between said parallel lever arms, a platen, platen shifting means, means under control of said platen shifting means for shifting said connection, hand actuated means operable at will for shifting said connection, and means for rendering said ribbon vibrator inoperative to move the ribbon to the printing point.

59. In a typewriting machine, the combination of a ribbon vibrator, actuating means for the vibrator comprising two levers one of which transmits motion to the other, and controlling means for effecting a change in the effective lengths of certain of the arms of said levers while the levers remain at rest, the effective length of an arm on one lever being decreased as the effective length of an arm on the other lever is increased.

60. In a typewriting machine, the combination of a ribbon vibrator, actuating means for the vibrator comprising two levers one of which transmits motion to the other, controlling means for effecting a change in the effective lengths of certain of the arms of said levers, the effective length of an arm on one lever being decreased as the effective length of an arm on the other lever is increased, a platen, means for shifting said platen, and means controlled by said shifting means for shifting said controlling means independently of said levers and while the levers remain at rest.

61. In a typewriting machine, the combination of a ribbon vibrator, actuating means for the vibrator comprising two levers one of which transmits motion to the other, controlling means for effecting a change in the effective lengths of certain of the arms of said levers without affecting the normal position of the vibrator, the effective length of an arm on one lever being decreased as

the effective length of an arm on the other lever is increased, a platen, means for shifting said platen, means controlled by said platen shifting means for shifting said controlling means, and hand actuated means operable at will for shifting said controlling means.

62. In a typewriting machine, the combination of a ribbon vibrator, actuating means for the vibrator comprising two levers one of which transmits motion to the other, controlling means for effecting a change in the effective length of certain of the arms of said levers without affecting the normal position of the vibrator, the effective length of an arm on one lever being decreased as the effective length of an arm on the other lever is increased, a platen, means for shifting said platen, means controlled by said platen shifting means for shifting said controlling means, hand actuated means operable at will for shifting said controlling means, and hand actuated means operable at will for rendering the ribbon vibrator inoperative to move the ribbon to the printing point.

63. In a typewriting machine, the combination of a ribbon, means for feeding said ribbon longitudinally, a ribbon vibrator, leverage motion-transmitting mechanism for actuating said vibrator, said motion-transmitting mechanism including a device which is automatically shifted to change the leverage of said mechanism during the longitudinal feed of the ribbon, and hand actuated means operative to determine the extent of change of leverage effected during the longitudinal feed of the ribbon.

64. In a typewriting machine, the combination of a ribbon vibrator, leverage motion-transmitting mechanism for actuating said vibrator, said motion-transmitting mechanism including a link which is automatically shifted to change the leverage of said mechanism without affecting the normal position of the vibrator, and means for lengthening and shortening said link.

65. In a typewriting machine, the combination of a platen shiftable to change the case position thereof, a ribbon vibrator, leverage motion-transmitting mechanism for actuating said vibrator, said motion-transmitting mechanism including a link which is automatically shifted to change the leverage of said mechanism during the case shifting movements of the platen without affecting the normal position of the vibrator, and hand actuated means operable at will for shifting said link.

66. In a typewriting machine, the combination of a ribbon vibrator, leverage motion-transmitting mechanism for actuating said vibrator, said motion-transmitting mechanism including two levers and a link which is shiftable along the arms of said levers to vary the link relatively to the fulcrum of

both of said levers to change the leverage of said mechanism, a universal bar, and hand actuated means for operatively connecting and disconnecting said universal bar and motion-transmitting mechanism.

67. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, intermediate motion-transmitting mechanism between the universal bar and ribbon vibrator, said mechanism including leverage varying mechanism and a pivoted link having a hook-like portion that is adapted to engage the universal bar, hand actuated means operable at will for effecting a pivotal movement of the link toward and away from the universal bar to operatively connect and disconnect the universal bar and vibrator, and independent means for varying the leverage changing mechanism.

68. In a typewriting machine, the combination of a platen, platen shifting means including an arm, a ribbon vibrator, ribbon vibrator actuating means, a connecting device between said arm and the ribbon vibrator actuating means, and hand actuated means operable at will for adjusting said connecting device with reference to said arm and independently of the ribbon vibrator actuating means.

69. In a typewriting machine, the combination of a platen, platen shifting means including an arm, a ribbon vibrator, ribbon vibrator actuating means, a connecting device between said arm and the ribbon vibrator actuating means, and hand actuated devices operable at will for adjusting said connecting device with reference to said arm and independently of the ribbon vibrator actuating means and which permits the connecting device to be moved independently of said hand actuated device.

70. In a typewriting machine, the combination of a ribbon vibrator, means for effecting different extents of throw of said ribbon vibrator, said means comprising two levers, a connecting device between said levers, and means for shifting said device independently of said levers and nearer to the pivotal center of one lever as said device is shifted farther from the pivotal center of the other lever.

71. In a typewriting machine, the combination of a ribbon vibrator, and means for effecting different extents of throw of said ribbon vibrator, said means comprising two levers, a connecting device between said levers, and means for shifting said device independently of said levers and nearer to the pivotal center of one lever as said device is shifted farther from the pivotal center of the other lever while both of said levers remain at rest.

72. In a typewriting machine, the combination of a platen, platen shifting means including a part having a slot therein, a

ribbon vibrator, means for actuating said vibrator, the actuating means including a part that is movable in the slot, and hand actuated means for moving said part to different positions in the slot independently of said slotted part.

73. In a typewriting machine, the combination of a platen, platen shifting means including a part having a slot therein, a ribbon vibrator, means for actuating said vibrator, the actuating means including a part that is movable with said platen shifting means and is movable independently thereof in the slot, and hand actuated means operable at will for moving said part independently of the platen shifting means.

74. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a vibrator which remains fixed during the case shifting movements of the platen, means for controlling the vibrator to bring the same portion of the ribbon to the printing point whether the platen be in the upper or lower case position, and automatically actuated means for controlling said vibrator to give a cross feed of the ribbon to use different widthwise portions thereof.

75. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a vibrator which remains fixed during the case shifting movements of the platen, means for controlling the vibrator to bring the same portion of the ribbon to the printing point whether the platen be in the upper or lower case position, automatically actuated means for controlling said vibrator to give a cross feed of the ribbon to use different widthwise portions thereof, and hand controlled means operable at will for changing said automatic means to vary the extent of cross feed of the ribbon.

76. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon vibrator which remains fixed during the shifting movements of the platen, compensating means controlled by the platen shifting means for enabling the vibrator to bring the ribbon to the printing point irrespective of the case position of the platen, and automatically actuated means coöperative with said compensating means to vary the throw of the ribbon vibrator to effect a crosswise feed of the ribbon.

77. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a vibrator which remains fixed during the case shifting movements of the platen, a ribbon having fields of different characteristics, means for controlling the vibrator to bring any desired field of the ribbon to the printing point whether the platen be in the

upper or lower case position, and automatically actuated means coöperative with said controlling means to cause a crosswise feed of the ribbon to be effected in order to use
5 different widthwise portions of the ribbon.

78. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a vibrator which remains fixed during the
10 case shifting movements of the platen, a ribbon having fields of different characteristics, means for controlling the vibrator to bring any desired field of the ribbon to the printing point whether the platen be in
15 the upper or lower case position, automatically actuated means coöperative with said controlling means to cause a crosswise feed of the ribbon to be effected in order to use
20 different widthwise portions of the ribbon, and hand actuated means operable at will for changing said automatically actuated means to vary the extent of crosswise feed of the ribbon.

79. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a vibrator which remains fixed during the case
25 shifting movements of the platen, motion-transmitting devices for actuating said vibrator, means controlled by the case shifting movement of the platen to effect a change in the relation of the parts of said motion-transmitting devices in order that the same
30 portion of the ribbon may be brought to the printing point whether the platen be in the upper or lower case position, and automatically actuated means coöperative with said motion-transmitting devices to cause a
35 transverse feed of the ribbon to be effected in order to use different widthwise portions of the ribbon.

80. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a
45 vibrator which remains fixed during the case shifting movements of the platen, motion-transmitting devices for actuating said vibrator, means controlled by the case shifting movement of the platen to effect a change
50 in the relation of the parts of said motion-transmitting devices in order that the same portion of the ribbon may be brought to the

printing point whether the platen be in the upper or lower case position, automatically actuated means coöperative with said motion-transmitting devices to cause a trans- 55
verse feed of the ribbon to be effected in order to use different widthwise portions of the ribbon, and hand actuated means operable at will for changing the extent of cross- 60
wise feed of the ribbon.

81. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a ribbon vibrator, differential leverage mech- 65
anism for actuating said vibrator, means under control of the platen shifting means for affecting said differential leverage mechanism so as to bring the same portion of the ribbon to the printing point at each printing 70
operation whether the platen be in the upper or lower case position, and automatically actuated means coöperative with said differential leverage mechanism for automatically bringing different widthwise portions of the 75
ribbon to the printing point at printing operations.

82. In a typewriting machine, the combination of a platen, means for shifting said platen to change the case position thereof, a 80
ribbon vibrator, differential leverage mechanism for actuating said vibrator, means under control of the platen shifting means for affecting said differential leverage mechanism so as to bring the same portion of the 85
ribbon to the printing point at each printing operation whether the platen be in the upper or lower case position, automatically actuated means coöperative with said differential leverage mechanism for automatically 90
bringing different widthwise portions of the ribbon to the printing point at printing operations, and hand actuated means for changing said automatically actuated means to vary the extent of widthwise feed of the 95
ribbon.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 14th day of February A. D. 1908.

JOHN T. SCHAAFF.

Witnesses:

CHARLES E. SMITH,
J. B. DEEVES.