J. H. BARR.

TYPE WRITING MACHINE.

APPLICATION FILED MAY 9, 1913.

1,072,899.

Patented Sept. 9, 1913.

2 SHEETS—SHEET 1.

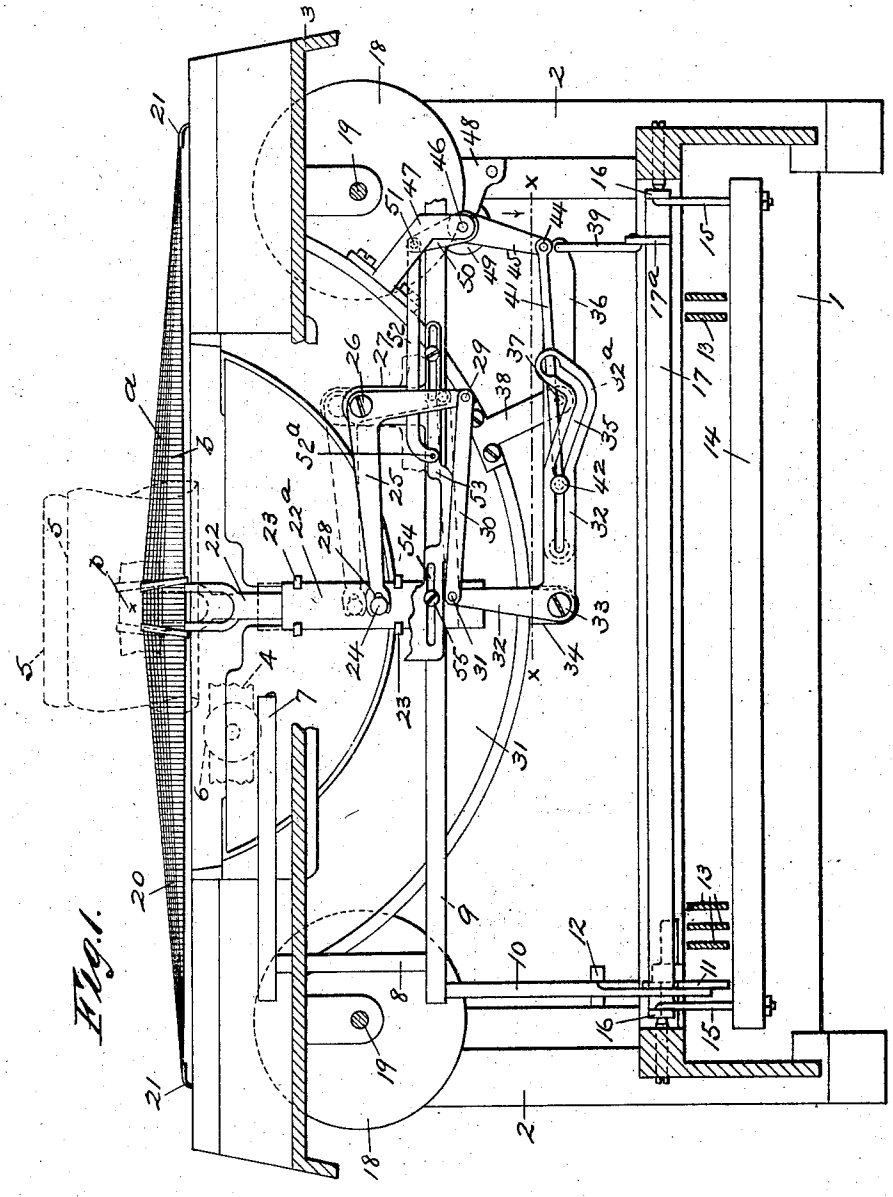


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 3.

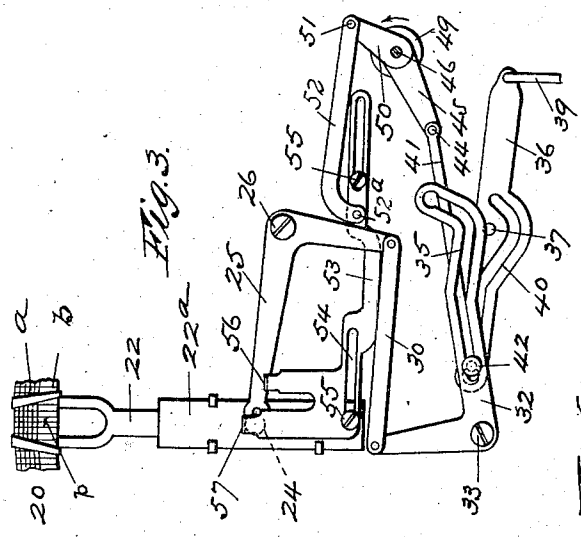


Fig. 5.

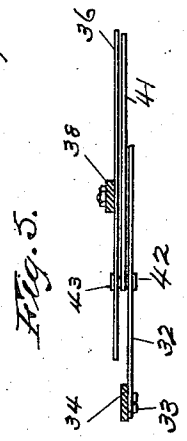


Fig. 6.

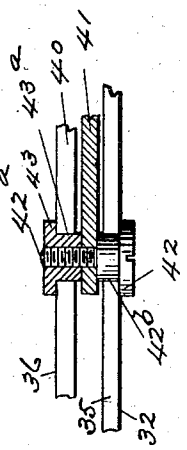


Fig. 2.

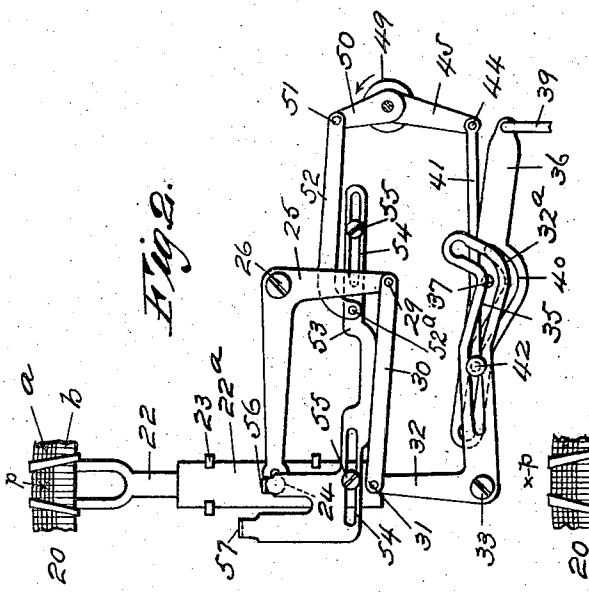
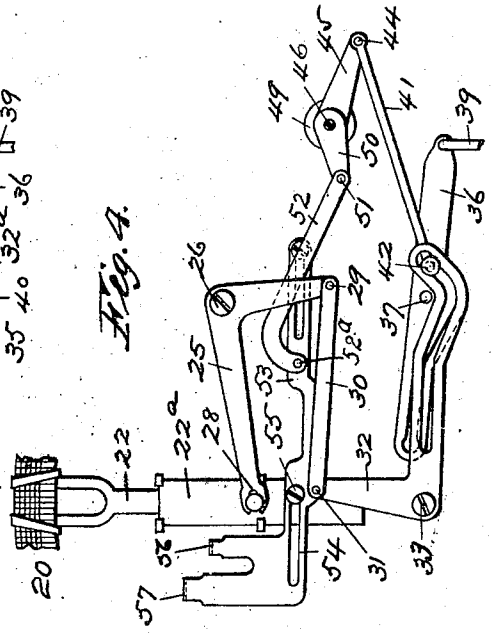


Fig. 4.



Witnesses:

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By his Attorney

Jacob Feldt

UNITED STATES PATENT OFFICE.

JOHN H. BARR, OF NEW YORK, N. Y., ASSIGNOR TO REMINGTON TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,072,899. Specification of Letters Patent. Patented Sept. 9, 1913.

Application filed May 9, 1913. Serial No. 766,499.

To all whom it may concern:

Be it known that I, JOHN H. BARR, citizen of the United States, and resident of the borough of Manhattan, city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates more particularly to the ribbon mechanism of typewriting machines and has for its main object to provide new, improved and simplified means for controlling the vibratory movements of the ribbon under the operation of the printing keys in order to vary the width-wise portion of the ribbon presented to the types.

A further object of my invention is to provide ribbon controlling means of the character specified and which is particularly applicable to typewriting machines of the shifting platen style or class, the ribbon controlling means operating in either position to which the platen may be shifted.

To the above and other ends my invention consists in the features of construction, combinations of devices and arrangements of parts hereinafter described and particularly pointed out in the claims.

My invention is shown herein as embodied in a No. 10 Remington typewriting machine but the nature of the invention is such that it may readily be applied to other styles of writing machines.

The present improvements relate to a preferred form of the construction shown in my prior application, Serial No. 715,188, filed August 15th, 1912.

In the accompanying drawings, Figure 1 is a rear elevation, partly in section, of a No. 10 Remington typewriting machine embodying my invention, parts of the machine being omitted and parts broken away. Figs. 2, 3 and 4 are fragmentary operating views showing parts of the ribbon mechanism in rear elevation, said figures showing the mechanism as it appears respectively in printing position for the upper edge of the ribbon, in printing position for the lower edge of the ribbon and as said mechanism appears when operated for mimeographing or stencil work. Fig. 5 is a horizontal sectional view taken on a plane indicated by the dotted line x—x in Fig. 1 and looking in the direction of the arrow at said line. Fig. 6 is an enlarged view, partly in horizontal section, showing the novel connecting devices forming part of my invention.

As appears from Fig. 1 of the drawings, the main frame of the machine comprises a base 1, posts 2 and a top plate 3 above which is slidably mounted a carriage truck which shiftably supports a platen frame comprising a bar 4, said frame in turn supporting a platen 5. On the bar 4 is journaled a roller 6 that is adapted to run on a shift rail 7 supported by upright rods 8 rising from a transverse bar 9 which in turn is supported by upright rods 10 pivoted at their lower ends to shift key levers 11 operative by shift keys 12. The platen normally stands in its lower case position as shown in Fig. 1 but may be shifted upward by depressing either of the shift keys 12, thereby actuating the shift frame comprising the rail 7, cross bar 9 and uprights 8 and 10 and thus elevating the platen frame comprising the cross bar 4 which shifts upward the platen. Printing key levers 13 are connected with type bars (not shown) and actuate said bars to coöperate with the front face of the platen, the printing point being designated in various views by the reference character q. A universal bar 14 underlies the key levers and is supported on arms 15 depending from crank arms 16 which project rearward from a transverse rock shaft 17 pivoted at its ends in the sides of the base, said shaft operating the escapement mechanism (not shown).

Ribbon spools 18 are supported one at each side of the machine below the top plate on shafts 19 and a ribbon 20 is wound on said spools and led upward therefrom through openings in the top plate and thence inward over stationary guides 21 to a vibratory ribbon carrier or vibrator 22 arranged about centrally between said stationary guides, the ribbon being threaded through slots formed at the upper end or head of said vibrator. The means for turning the ribbon spools in alternation to feed the ribbon longitudinally to and fro are not herein disclosed but are preferably of the ordinary construction found in the Remington machine. The vibrator is provided with a stem-like portion 22^a which is guided in a stationary guide 23. A stud 24 projects rearward from the stem 22^a and is con-

nected with novel actuating devices comprising a bell crank 25 fulcrumed at 26 on a bracket or extension 27 rigid on the shiftable cross bar 9. The horizontal arm of the bell crank is formed at its free end with a slot 28 which embraces the shank of the headed pin or stud 24. The downwardly extending arm of said bell crank is pivotally connected at 29 with a substantially horizontally disposed link 30, the opposite end whereof is pivotally connected at 31 with the upright arm of a bell crank 32 that is fulcrumed at 33 on a stationary bracket or support 34. The horizontally disposed arm of the bell crank 32 is bent or curved downward as indicated at 32^a and said horizontal arm is formed with an elongated slot 35 to coöperate with an actuating device or pin hereinafter described. Coöperative with the lever 32 is a lever 36 fulcrumed at 37 on a stationary bracket or support 38, said lever 36 being arranged side by side with the horizontal arm of the bell crank 32 and in front of the same. The outer arm of the lever 36 is connected by a depending link 39 with a crank arm 17^a which is fixed to and projects rearward from the rock shaft 17 near its left-hand end. The construction is such that when said shaft is rocked by the actuation of one of the key levers 13 motion is communicated through the link 39 to the lever 36 which is rocked on its fulcrum 37, the inner or right-hand end of said lever being elevated. As most clearly appears from Fig. 3, the lever 36 is provided with a slot 40 which corresponds with the slot 35 in the bell crank 32, said slot 40 extending lengthwise along the inner or right-hand arm of the lever 36 and being provided with a downward curve extending around and to the right of the fulcrum 37, the lever 36 being broadened to provide stock for this curved portion of the slot. Normally the slots 35 and 40 are in register with each other, as will be understood from Fig. 1.

Novel devices are provided which coöperate with the slots 35 and 40 and may be adjusted or set at predetermined points therealong to variably connect the two levers 32 and 36, resulting in a variable actuation of the ribbon vibrator and ribbon. Said novel devices comprise an arm 41 which, as best appears from Figs. 5 and 6, is arranged between the levers 36 and 32 and at its inner or right-hand end carries a double pin or connecting device proper, the ends of which engage in the slots 35 and 40. The construction of this connecting device is clearly shown in Fig. 6 and comprises a shouldered screw 42 and a coöperating nut 43. The threaded shank 42^a of the screw passes transversely through the end of the arm 41 and the shouldered portion 42^b of said screw engages slidably in the slot 35, the head of the screw being of greater diameter than the width of said slot and preventing accidental disengagement of the parts. The nut 43 is threaded on the shank 42^a at the opposite side of the arm 41 from the body of the screw 42 and said nut is provided with a stem portion 43^a which slidably engages in the slot 40, the head of the nut being outside of the slot and preventing accidental displacement of the parts, said head being wider than said slot. By tightening the nut 43 both it and the screw 42 are securely clamped or fixed to the arm 41 and move with said arm as a single piece. The ends of the slots 40 and 35 are provided with the usual enlargements by which the levers 32 and 36 may be disconnected from the device 42, 43 without unscrewing the nut. Of course in place of the screw and nut a shouldered rivet with suitably formed collar may be used. The arm 41 is movably mounted so that it may be set at will by hand to vary the location of the connecting device 42, 43 with respect to the associate levers. Accordingly the outer or right-hand end of the arm 41 is pivotally connected at 44 to a supporting crank arm 45 fixed to and depending from a rock shaft 46. This rock shaft is or may be the usual rock shaft provided in the Remington machine for controlling the ribbon throw. Said rock shaft is journaled at its rear in a stationary bracket 47 and extends horizontally forward, bearing at its front end in a stationary plate 48, being provided forward of the plate with a finger button or key 49. The usual indicating devices comprising a scale on the plate 48 and pointer on the shaft 46 are not shown herein but may be provided. Fixed also to the rear end portion of the rock shaft 46 is a crank arm 50 connected at 51 with an inwardly extending link 52, the other end whereof is connected at 52^a with a slide bar 53. Said slide bar is supported on the shift bar 9 at the rear face thereof, being provided with slots 54 which are engaged by headed screws 55 fixed to the rear of said slide bar. The slide bar is provided with stops 56 and 57 for coöperation with the stud 24 on the ribbon vibrator.

In operation, with the parts set as in Fig. 1, an actuation of one of the printing key levers 13 will operate on the train of vibrator actuating devices which connect the universal rock shaft 17 with the vibrator. As described the link 39 will by this operation be lowered, raising the inner or right-hand end of the lever 36. This movement will cause the lower wall of the slot 40 therein, acting against the stem 43^a of the nut 43, to lift the lifting member 42, 43. The opposite end portion of said member, acting on the upper wall of the slot 35, will turn the bell crank 32 on its fulcrum, the upstanding arm of said bell crank swinging toward the right and pulling the

link 30, which in turn will swing the bell crank 25, the horizontal arm of said bell crank moving upward and carrying with it the ribbon vibrator 22. The parts are so proportioned and adjusted that this operation will lift the vibrator far enough to present the upper edge portion of the ribbon 20 opposite the printing point where the types will coöperate with it. During the vibratory movements of the vibrator the arm 41 will swing around the pivot 44 as a center, said pivot remaining fixed at this time. This operated position of the parts is illustrated in Fig. 2. So long as the connecting device 42, 43 remains adjusted as in Fig. 1 the throw of the ribbon will be constant and its upper edge portion will be presented to the types at each printing operation. Consequently the types will follow a straight part lengthwise of said upper edge portion. The ribbon illustrated in the drawings is a two-color ribbon being divided longitudinally into two stripes or bands *a* and *b* of different characteristics or colors so that from what has been said it is clear that the printing operations above described will take place along the upper stripe or band *a* and the lower stripe or band *b* will not be affected. Assuming that it is desired to dispense with the use of the upper ribbon field *a* and to write along the lower ribbon field *b*, the operator turns the key or finger button 49 in the direction of the arrow in Fig. 2, causing the link 52 to shift the slide bar 53 to the position shown in Fig. 3, resetting the ribbon stops, this movement also operating through the crank arm 45 on the arm or link 41. From the described construction it is clear that the inner or right-hand end of said arm is loose and would drop down but for the fact that it is sustained by the connecting device 42, 43 and the associate levers 32 and 36. The lengthwise movement of the arm 41 and its actuation by the arm 45 will be readily effected and as a result the connecting device 42, 43 will be shifted along the slots 35 and 40 toward the right, being finally arrested in a new set position near the right-hand ends of said slots. As a consequence of this re-location of the connecting member it will be set farther away from the fulcrum 37 of the motion transmitting lever 36 and nearer to the fulcrum 33 of the lever or bell crank 32 to which motion is transmitted. Consequently since the throw of the lever 36 received from the printing key levers is constant, a greater motion will be transmitted from said lever to the lever 32, and furthermore the constant motion transmitted from the key levers will be still further increased by reason of the fact that the connecting member acts on the lever 32 closer than before to the fulcrum 33 thereof. In other words, by the shifting of the member 42, 43 the point of connection between the coöperating levers 32 and 36 is changed, the effective arm of the motion transmitting lever 36 measured by the distance from its fulcrum to the connecting member being increased in length, and the effective arm of the motion receiving lever 32 measured by the distance from the fulcrum 33 to the connecting member being decreased. Each of these changes taken separately would result in an increased throw of the ribbon vibrator, and, consequently, since the changes are combined, the throw is increased that much more. Hence a slight shifting movement of the connecting device or member 42, 43 is all that is necessary in order to increase the throw of the vibrator sufficiently to present the lower ribbon field *b* to the printing point, as shown in Fig. 3, which figure illustrates the parts in operated position as they would appear with the connecting member reset as described. It will be understood that the resetting operation affects only the connecting member 42, 43 of the train of vibrator actuating devices and that during such resetting operation neither the lever 36 nor the lever 32 will move. If the connection 42—43 be placed or set intermediate the positions of Figs. 2 and 3, the ribbon will be raised more than in Fig. 2 and less than in Fig. 3. When using a solid or one-color ribbon this is to be desired, giving three paths or tracks instead of two, and hence greater service from a given ribbon. The index devices at the front of the machine may be set to such intermediate position, being held by a suitable locating spring stop or detent.

If it be desired to dispense with the use of the ribbon entirely, as when stencil sheets are to be prepared by direct action of the printing types, the key or finger piece 49 is turned or twirled in the direction of the arrow in Fig. 3 until the Fig. 4 position is attained. As a result of this movement the rock shaft 46 will be correspondingly turned and the link 52 will slide the bar 53 inward some distance and then retract it slightly. The turning of the rock shaft will also act on the arm 41 and will swing said arm toward the left, causing it to shift the connecting member 42, 43 leftward in the slots 35 and 40 until it reaches a location near the left-hand ends of said slots. During this shifting movement of the connecting member it will traverse the downwardly curved portions of said slots and will pass around and under the fulcrum 37 of the lever 36. The reason for the shaping of the slots as described will now be apparent since it enables the fulcrum 37 of the lever 36 to be in line with the connecting points of said lever at either end, thus providing for a straight lever instead of an angular one. It will be

observed that as a result of the resetting of the connecting member 42, 43 it will be transferred to the opposite side of the fulcrum 37 and consequently will receive a downward instead of an upward movement from the lever 36 when a printing key lever is operated. This downward movement of the connecting member will be transmitted to the horizontally disposed arm of the bell crank 32, causing the upright arm of said bell crank to push the link 30, instead of pull it, the link operating to depress the horizontally disposed arm of the bell crank 25. As a result the ribbon vibrator and ribbon will be moved downward from normal position at each printing stroke to the position shown in Fig. 4, thus more fully exposing the printing point p than is normally the case. This construction enables the upper end of the ribbon normally to be located quite close to the printing point so that its vibratory upward movement when it is in use is reduced to a minimum. If found desirable for the purpose of reducing friction and promoting ease of operation, the right-hand ends of the slots 35 and 40 may be provided with dwell or straight portions at angles to the curved portions, the connecting devices engaging with these straight portions of the slots.

In the operation of the parts, as heretofore described, it has been assumed that the platen remains in lowercase position. If the platen be shifted upward at any time, the bell crank 25 which is supported on the platen shifting frame will move upward with it as shown by dotted lines in Fig. 1 and will carry the vibrator which will shift an extent corresponding to the platen shift. The only other part of the train of ribbon vibrating mechanism which will be effected by the platen shifting movement will be the link 30 which will turn on the pivotal connection 31 as a fixed center. This point being fixed will operate through the link 30 to compel the vibrator to shift upward when the bell crank 25 is shifted. The tendency of course is for the vibrator to remain down in lowercase position because of gravity but this would require that the horizontal arm of the bell crank should swing downward as a result of the shifting movement and such a downward swing of the bell crank is prevented by the link 30 connected to its depending arm. The link 30 in lowercase position is inclined slightly below the horizontal and as a result of the shift it will be swung correspondingly above the horizontal, as shown by the dotted lines in Fig. 1, this swinging movement not affecting either the bell crank 32, the lever 36 or the connecting device. If with the platen in uppercase position the printing key levers be actuated the train of vibrator actuating mechanism will operate as in lowercase and will lift the vibrator the same extent as though the parts were in lowercase position, this extent depending on the set position of the connecting device 42, 43. The only result therefore of a case shifting operation so far as the vibrating mechanism is concerned will be to shift the initial position of the vibrator correspondingly, enabling the same printing field or edge portion of the ribbon to be presented to the types as before the shift took place. The link 52, which provides a constant connection between the crank arm 50 and the slide member 53, will swing up and down during platen shifting operations about the pivot 51 as an axis. As a result the member 53 may be shifted slightly on its support 9 but not enough to move either of the stops 56 and 57 out of operative position when set for use. When both stops are inoperative, as in the Fig. 4 position, the upward shift of the platen will operate to move the slide member 53 a greater distance than when the stops are set for use, but this greater movement will not operatively affect the stops and both will remain out of use in upper case, as well as in lowercase.

It will be observed that by my present invention ribbon vibrating mechanism is provided comprising two slotted levers arranged side by side and facing each other, one of said levers acting to actuate the other and the effect of such actuation being varied at will by a connecting member or pin which extends transversely of the levers from one to the other and connects the two, engaging in parallel slots in said levers; that said pin is controlled by hand actuated devices which may be operated to vary its normal position, resetting it at predetermined points along said slots so as to vary the action of one lever on the other but without affecting the normal relationship of the two levers which is constant; that the said pin or connection is settable at opposite sides of the fulcrum of one of the levers to reverse the direction of movement of the other lever and thus vary the direction of motion of the ribbon vibrator from normal position; that the position of the ribbon vibrator is constant for all set positions of the connection or pin; and that neither the connection or pin nor the two levers which it connects is affected by the shifting movements of the platen.

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

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

1. In a typewriting machine, the combination of a ribbon vibrator and ribbon vibrating mechanism comprising two slotted levers, a connecting pin extending from one slot to the other, and means for setting said pin at predetermined points along said slots

to vary the action of one lever on the other, one of said levers being straight and fulcrumed between its ends, the slots in both said levers being curved so that said pin may move around said fulcrum from one side to the other.

2. In a typewriting machine, the combination of a ribbon vibrator, a bell crank directly connected thereto, a slotted bell crank, a link connecting the two bell cranks, a slotted lever arranged side by side with said slotted bell crank, a hand controlled connecting pin extending from the slot in said slotted bell crank to the slot in said lever, and key controlled connections to said slotted lever.

3. In a typewriting machine, the combination of a shiftable platen, a platen shifting frame, a ribbon vibrator, a bell crank fulcrumed on said frame and directly connected to said vibrator, a slotted bell crank having a fixed fulcrum, a link connecting the two bell cranks, a slotted lever having a fixed fulcrum, a hand controlled variably settable connecting device connecting the slots in said bell crank and said lever, and key controlled connections to said slotted lever.

4. In a typewriting machine, the combination of a shiftable platen, a platen shifting frame, a ribbon vibrator, a bell crank fulcrumed on said frame and directly connected to said vibrator, a slotted bell crank having a fixed fulcrum, a link connecting the two bell cranks, a slotted lever having a fixed fulcrum and arranged side by side with said slotted bell crank, a hand controlled variably settable connecting pin extending from the slot in said slotted bell crank to the slot in said lever, and key controlled connections to said slotted lever.

5. In a typewriting machine, the combination of a shiftable platen, a platen shifting frame, a ribbon vibrator, a bell crank fulcrumed on said frame and directly connected to said vibrator, a slotted bell crank having a fixed fulcrum, a link connecting the two bell cranks, a slotted lever having a fixed fulcrum and arranged side by side with said slotted bell crank, a connecting pin extending from the slot in said slotted bell crank to the slot in said lever, key controlled connections to said slotted lever, and hand actuated devices connected to said pin and comprising an arm supporting said pin, a rock shaft, and a crank arm fixed to said rock shaft and pivotally connected to said first named arm.

6. In a typewriting machine, the combination of a shiftable platen, a platen shifting frame, a ribbon vibrator, a bell crank fulcrumed on said frame and directly connected to said vibrator, a slotted bell crank having a fixed fulcrum, a link connecting the two bell cranks, a slotted lever having a fixed fulcrum and arranged side by side with said slotted bell crank, a connecting pin extending from the slot in said slotted bell crank to the slot in said lever, key controlled connections to said slotted lever, and hand actuated devices connected to said pin and comprising an arm supporting said pin, a rock shaft, and a crank arm fixed to said rock shaft and pivotally connected to said first named arm.

7. In a typewriting machine, the combination of a ribbon vibrator and vibrator actuating mechanism comprising two levers arranged side by side, a connecting device extending from one of said levers to the other, and means for changing the relationship of said device to said levers while the relationship of said levers with each other remains constant.

8. In a typewriting machine, the combination of a ribbon vibrator, and vibrator actuating mechanism comprising two levers arranged side by side, a pin connecting said levers and operative to transmit motion from one to the other, and means for varying the normal position of said pin while the relationship of said levers remains constant.

9. In a typewriting machine, the combination of a ribbon vibrator, and vibrator actuating mechanism comprising two levers, one lever having an arm operating to transmit motion to an arm of the other lever, and means for simultaneously varying the effective lengths of the motion transmitting arm and of the arm to which motion is transmitted to vary the extent of throw of the vibrator and also the direction of throw.

10. In a typewriting machine, the combination of a ribbon vibrator, and ribbon vibrating mechanism comprising two slotted levers, a connecting pin extending transversely of said levers and engaging at its opposite end portions with said slots, and means for setting said pin at predetermined points along said slots to vary the action of one lever on the other.

11. In a typewriting machine, the combination of a ribbon vibrator, and ribbon vibrating mechanism comprising two slotted levers, a connecting device extending from one slot to the other, and means for setting said device at predetermined points along said slots to vary the extent of motion communicated by one lever to the other and also to vary the direction of motion of one of said levers.

12. In a typewriting machine, the combination of a ribbon vibrator, and vibrator actuating mechanism comprising two coacting levers each having a fixed fulcrum and being arranged face to face, and a hand controlled connection extending transversely of said levers and from one to the other for transmitting motion from one lever to the other, said connection being set-

table at opposite sides of the fulcrum of one of said levers to reverse the direction of movement of said last mentioned lever and thus vary the direction of motion of the ribbon vibrator from normal position.

13. In a typewriting machine, the combination of a ribbon vibrator, and vibrator actuating mechanism comprising two co-acting levers arranged face to face and a hand controlled connection extending transversely of said levers and from one to the other for transmitting motion from one lever to the other, said connection being settable in two positions at opposite sides of the fulcrum of one of said levers to reverse the direction of motion of said last named lever, the position of the ribbon vibrator being constant for both of the set positions of said connection.

14. In a typewriting machine, the combination of a ribbon vibrator, and vibrator actuating mechanism comprising two co-acting levers face to face and a hand controlled connection extending transversely of said levers and from one to the other for transmitting motion from one lever to the other, said connection being settable at opposite sides of the fulcrum of the motion transmitting lever so as to vary the direction of motion of the lever to which the motion is transmitted, the position of the ribbon vibrator being the same in both set positions of said connection.

15 In a typewriting machine, the combination of a shiftable platen, a ribbon vibrator, and vibrator actuating mechanism comprising two co-acting levers and a hand controlled connection for transmitting motion from one lever to the other, said connection being settable to reverse the direction of motion of the lever to which motion is transmitted and thus to vary the direction of motion of the ribbon vibrator from normal position, the position of both of said levers and also of said connection being the same for both shift positions of the platen.

16. In a typewriting machine, the combination of a shiftable platen, a ribbon vibrator, and vibrator actuating mechanism comprising two co-acting levers and a hand controlled connection for transmitting motion from one lever to the other, said connection being settable at opposite sides of the motion transmitting lever so as to vary the direction of the motion of the lever to which motion is transmitted, both of said levers having the same position for both shift position of said platen.

17. In a typewriting machine, the combination of a shiftable platen, a ribbon vibrator shiftable with said platen, a train of ribbon vibrating devices including a motion transmitting member, a motion receiving member and a connecting member, and means for moving said connecting member in opposite directions at will to move the vibrator in opposite directions from normal position, all three of said members having the same position for both shift positions of the platen.

18. In a typewriting machine, the combination of a shiftable platen, a ribbon vibrator shiftable with the platen, and a train of actuating devices for said vibrator including a lever, and means for at will transmitting power from said lever at opposite sides of its fulcrum, said lever having a constant position for both shift positions of said platen.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 7th day of May, A. D. 1913.

JOHN H. BARR.

Witnesses:
E. M. WELLS,
CHARLES E. SMITH.