

W. J. BARRON.
TYPE WRITING MACHINE.
APPLICATION FILED AUG. 22, 1910.

1,003,415.

Patented Sept. 19, 1911.

2 SHEETS—SHEET 1.

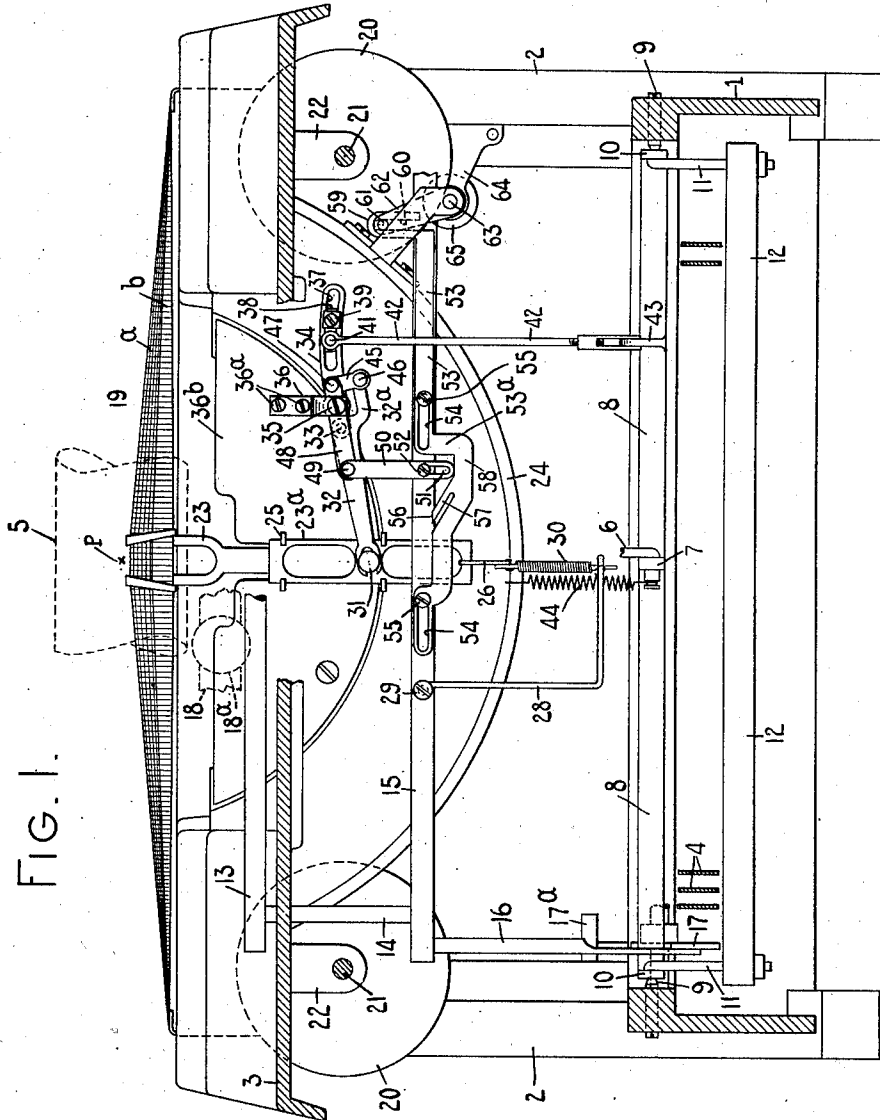


FIG. 1.

WITNESSES:

M. F. Hammer

M. W. Pool

INVENTOR:

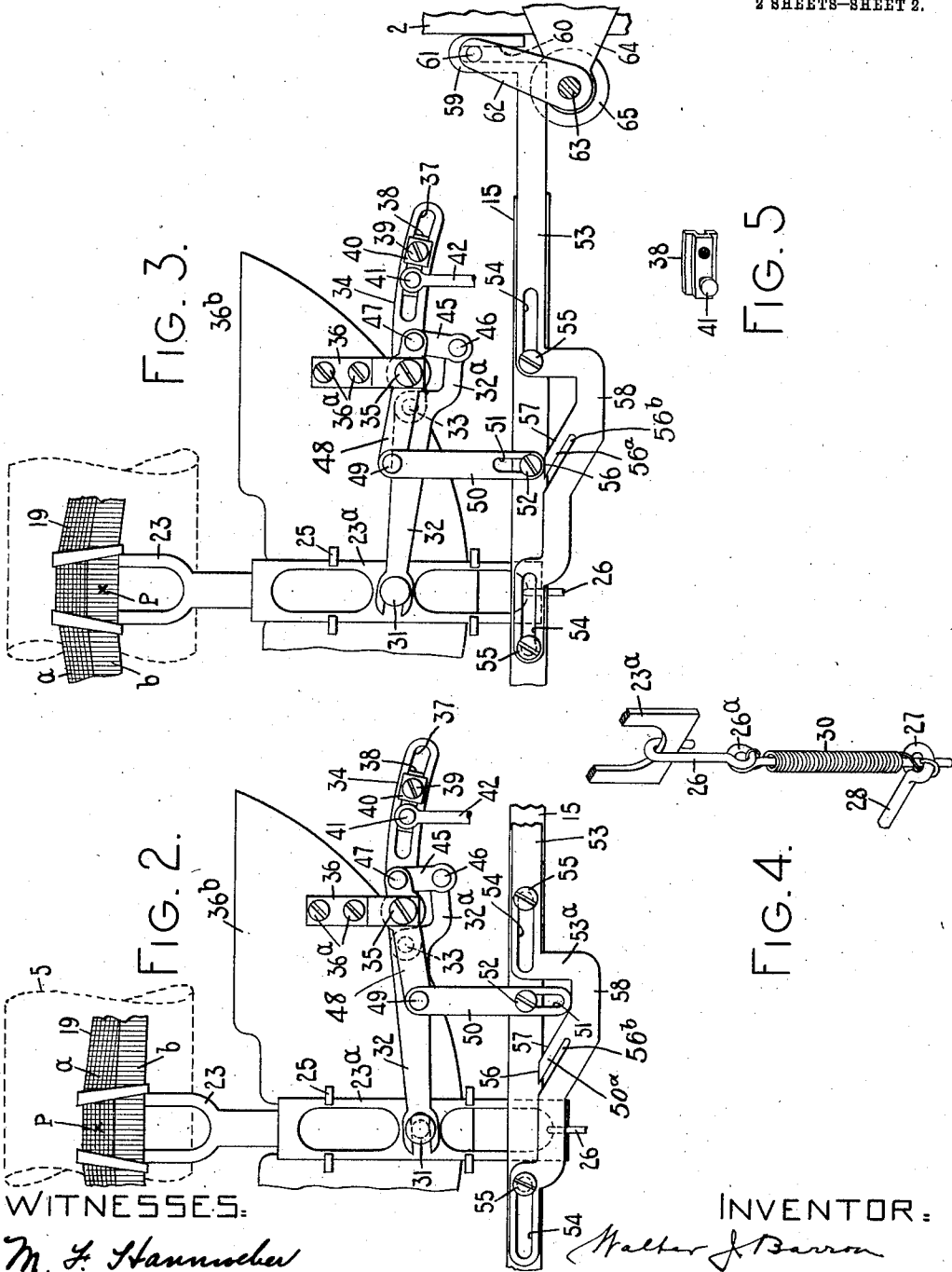
Walter J. Barron
By Jacob F. Bell

HIS ATTORNEY

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2 SHEETS—SHEET 2.



WITNESSES:

M. F. Hannacher
M. W. Pool

INVENTOR:

Walter J. Barron
By Jacob F. Fabel

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

WALTER J. BARRON, OF NEW YORK, N. Y., ASSIGNOR TO REMINGTON TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,003,415.

Specification of Letters Patent. Patented Sept. 19, 1911.

Application filed August 22, 1910. Serial No. 578,361.

To all whom it may concern:

Be it known that I, WALTER J. BARRON, citizen of the United States, and resident of the borough of Brooklyn, city of New York, in the county of Kings 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 especially to ribbon mechanisms for typewriting machines and its object, generally stated, is to provide improved devices of the character specified.

More specifically the object of my invention is to provide for employing at will selected ribbon fields of a vibratory ribbon mechanism adapted to machines of the platen shifting class.

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 in the present application as applied to the No. 10 Remington typewriting machine and is designed as an improvement on the ribbon mechanism found in said machine and which forms the subject-matter of several prior patents including the patent to Felbel, 903,461, granted November 10th, 1908 and that to Yaw No. 920,410, granted May 4th, 1909. The aforesaid machine is of the shifting platen, front-strike style, but it is to be understood that the nature of the invention is such that it may be adapted in whole or in part to other makes of front-strike typewriting machines as well as to other kinds of writing machines.

In the accompanying drawings which illustrate one form of my invention, Figure 1 is a vertical transverse rear view of a No. 10 Remington typewriting machine embodying my invention, parts of the machine being omitted and parts broken away. Figs. 2 and 3 are fragmentary rear elevations showing parts of the ribbon mechanism, certain of the parts being shown in different relations in the two figures. Fig. 4 is a perspective view of the vibrator restoring spring and its adjuncts. Fig. 5 is a detail perspective view of an adjustable block which provides a connection between the operating lever and actuating link.

The main frame of the machine com-

prises, as shown in Fig. 1, a base frame 1 from which rise posts 2 supporting a top plate 3. Key levers 4 are fulcrumed in the base frame and are connected with type bars which are adapted to co-act with the front face of a platen 5 mounted on a traveling carriage, said carriage comprising a platen frame shiftable on a truck to change case, said truck being connected with a spring drum, letter space movements of the carriage being controlled by escapement devices. The type bars and connections, carriage truck, spring drum and escapement devices are omitted from the drawings but may be of the usual or any other suitable construction. The escapement devices are operative from a link 6 which connects to an arm 7 extending horizontally rearward from the middle of a rock shaft 8 pivoted to pins 9 supported in the base frame. The rock shaft is provided at its ends with rearwardly extending arms 10 from which depend arms 11 supporting a universal bar 12 which underlies the key levers 4. Each key lever is adapted, when actuated, to operate the universal bar and rock the shaft 8 to actuate the escapement devices and permit letter feeding of the carriage.

As shown in the No. 10 Remington machine and in the patents aforesaid, the platen is shiftable by a key controlled shift frame which comprises a shift rail 13 supported at its ends by upright rods 14 which are connected to a cross bar 15, said bar being supported at its ends on vertical arms 16 pivotally connected with shift levers 17, each shift lever being provided with a key 17^a at one side of the key-board of the machine. The operation of either shift key 17^a raises the platen shift frame comprising the bar 15 and rod 13 and thereby lifts the platen and platen frame to upper case position, the lower bar 18 of the platen frame being provided with a roller 18^a which runs on the rail 13.

A ribbon 19 which as illustrated is divided longitudinally into stripes *a* and *b* of different characteristics or colors is wound upon ribbon spools 20. The ribbon spools are vertically arranged one at each side of the machine below the top plate and forward of the platen, each spool being supported at the front end of a horizontal shaft 21 bearing in lugs 22 depending from the top plate. The shafts are adapted to be alternately

connected by the mechanism shown in the machine or in any other suitable way to the spring drum or carriage power, the connections operating to turn the spools in alternation to wind the ribbon first on one spool and then on the other and thus feed it longitudinally back and forth.

Midway between the ribbon spools the ribbon 19 is threaded through the slots in a vibratory ribbon carrier or vibrator 23. Said ribbon carrier or vibrator is vertically disposed at the front of the platen and of the segmental type bar support 24 and at its lower end curves rearward, terminating in a stem 23^a which extends vertically downward behind the type bar support and is guided and supported upon a bracket 25 suitably secured to said support. As appears from Figs. 1 and 4 a wire arm 26 is hooked over the lower end of the stem 23^a and depends therefrom, said arm 26 being guided at its lower end in an eye 27 formed at the free end of an L-shaped wire guide 28 which is fastened by a screw 29 to the shiftable bar 15. A coiled spring 30 surrounds the lower portion of the arm 26 and is hooked at its upper end over a loop 26^a in said arm, the lower end of said spring being hooked over the eye 27. The spring 30 serves as a restoring spring to return the vibrator to normal position after it has been actuated.

The actuating devices for the vibrator comprise a stud 31 on the stem 23^a, said stud projecting rearward and being grooved to cooperate with the slotted inner end of the shiftable part 32 of an operating lever. The lever part 32 extends from the ribbon vibrator leftward (rightward as viewed from the rear in Figs. 1 to 3) and is pivotally connected at 33 with the second or main part 34 of the operating lever, said part 34 being in itself a lever and fulcrumed at 35 to a stationary bracket 36 which is secured by screws 36^a to a segmental plate 36^b fixed to the type bar support 24. The pivot 33 is on one arm of the lever part 34 at one side of the fulcrum 35 while the other arm of said lever part is formed with a longitudinal slot 37 which receives a slidable block 38 (Fig. 5) which is adapted to be set or clamped in adjusted position on the lever part by a clamping screw 39 and a washer 40. The block carries a lateral pin 41 which is engaged by the upper end of a depending link 42, said link extending downward and being connected at its lower end with a crank arm 43 extending rearward from the rock shaft 8. It will be understood that when a key lever is depressed the rock shaft will be turned to pull the link down and operate the lever part 34 and through it the lever part 32 and the vibrator. When the operated key lever 4 is released the parts will return to normal position, be-

ing assisted by the spring 30 and by a coiled spring 44 which is connected to the rock shaft 8 and to the type bar support 24.

During vibratory movements the relationship between the lever parts 32 and 34 of the operating lever are controlled by means next to be described. The operating lever, it may be said, is made in two parts as 32 and 34 to enable one of the parts to be shifted relatively to the other for the sole purpose heretofore of automatically changing the relationship of said lever parts during the platen shifting operation to compensate for the platen shift and enable the normal relationship of the printing portion of the ribbon to the printing point on the platen to remain unaltered as a result of the platen shift. The devices for controlling the relationship between the two parts of the lever comprise a link 45 which is pivotally connected at 46 to a tail or extension 32^a on the lever part 32, said tail extending leftward below the fulcrum 35. The link 45 extends upward from the pivot 46 and is pivotally connected at 47 with a lever 48 fulcrumed at 35 and pivotally connected at 49 with an arm 50 extending upward from the shift bar 15. As shown in the Remington machine and in the patent to Yaw aforesaid, the arm corresponding with 50 is fixed to the bar 15 but in the present construction the bar and arm have a variable slidable connection, the arm being provided with a vertical slot 51 which is engaged by a screw pin 52 on the shift bar 15. The normal relationship between the arm 50 and the bar 15 is preferably maintained as hereinafter described. It will be noted, however, that independently of any other means the screw pin 52 is adapted to cooperate with the top of the slot 51 to maintain a normal relationship between the two parts of the operating lever in both lower and upper case positions. When the member or lever part 34 is vibrated on its fulcrum 35 through the described connections with the printing keys, the pivot 33 carried on said member 34 will be correspondingly vibrated and the lever part 32 supported on the pivot 33 will be bodily raised and lowered. During these vibratory movements the part 32 will be controlled so far as rotative movement on its pivot 33 is concerned by the link 45, the upper pivotal point of connection 47 of said link remaining fixed during these vibratory movements of the member 34. By reason of the controlling of the part 32 as just described, the relationship it will bear to the lever part 34 when in printing position can be accurately predetermined and the throw communicated to the part 32 through the part 34 can be adjusted readily so as to present a predetermined portion of the ribbon to the printing point at will. When the adjustable block 38 is clamped along the lever

part 34 to hold the pin or stud 41 set in the position shown in Figs. 1 to 3, then the pull of the link 42 when actuated from any one of the printing keys will operate to lift the lever part 32 and the ribbon carrier from the normal position shown in Fig. 1 to the abnormal position shown in Fig. 2. From Fig. 2 it will be observed that the ribbon 19 has been lifted far enough to present its upper field *a* to the printing point *p* on the platen.

If at any time it is desired to change from lower to upper case, one of the shift keys 17^a may be operated, lifting the shift frame and the platen so that the upper case types will coöperate with the platen instead of the lower case types as theretofore. When the shift frame is raised the part or bar 15 comprised therein will rise and through devices hereinafter described raise the arm 50, causing said arm to raise one arm of the lever 48 and correspondingly lower the other arm of said lever, forcing downward the link 45 pivoted to said other arm at 47. Said link in its downward movement operates on the tail 32^a of the lever part 32, forcing the tail downward about the pivot 33 and lifting the body portion of the lever part 32 and also lifting the ribbon vibrator 23. Thus the vibrator will be shifted automatically when the platen is shifted, and the parts are so proportioned and arranged that the normal relationship between said platen and printing portion of the ribbon, or that portion between the slots in the vibrator, will not be altered by reason of the platen shift but will be the same subsequent to the shift as prior thereto. The part 34 of the operating lever will remain quiescent during the automatic change of position of the part 32 and the vibrator due to the platen shift; and consequently the vibratory movement communicated to the vibrator through the lever part 34 and link 42 will be the same in extent subsequent to the shifting as prior thereto. The result will be that when in upper case position the vibrator will be lifted at printing operation to present the upper ribbon field *a* to the printing point just the same as prior to the platen shift.

In the Remington No. 10 machine and in the prior patents aforesaid, when it is desired to change ribbon fields this result is accomplished by shifting the link 42 relatively to the lever part 34 so as to vary the distance from the fulcrum 35 at which said link 42 acts. In other words, when it is desired to present the lower ribbon field to the types the link is set closer to the fulcrum to communicate a greater extent of throw to the operating lever and vibrator. This change in the setting of the link, it will be understood, does not affect the normal position of the lever parts. By my present invention I provide for changing the ribbon fields

without disturbing the set relationship between the lever part 34 and the link 42. Instead, I accomplish this result by varying the normal relationship between the lever parts 32 and 34.

To vary the normal relationship between the lever parts 32 and 34 to change ribbon fields, I provide manually controlled devices which in the present instance comprise a slide bar 53 provided with longitudinal slots 54 which receive headed screws 55 engaging in the rear of the shift bar 15. The bar 53 is thus slidably secured to the rear face of the bar 15 and will participate in the shift movements communicated to said bar when the platen is shifted. As viewed from the rear the slidable member or bar 53 extends rightward from its left hand supporting screw 55 and just to the left of the arm 50 is provided with a horizontal seat or supporting portion 56 from which the upper edge of the bar 53 is inclined downward and rightward, forming a cam edge 57 terminating in a lower horizontal seat 58 for the lower end of the arm 50. The part 56^a forming the seat 56 and cam 57 is separated by a slot 56^b from the body of the bar so that said part 56^a may be readily bent for adjustment. At the end of the seat 58 the bar 53 has a vertical portion 53^a and thence extends rightward behind the shift bar 15, terminating in a vertical portion 59 formed with a vertical slot 60. Engaging with the slot is a pin 61 carried at the outer end of a crank arm 62, said crank arm being fixed to a shaft 63, the latter bearing in fixed supports 64 and extending horizontally forward, being provided at the front of the machine with a key or finger button 65. By turning the key 65 the shaft 63 may be rocked carrying the crank arm 62 from the position shown in Fig. 1 to that shown in Fig. 3. During the change of position of the crank arm in pin 61 will operate through the slot 60 to shift the slide bar 53 along the bar 15. As the slide bar shifts the cam edge 57 will act against the lower end of the arm 50 and will raise said arm until, when the movement of the parts cease, said arm will be seated on the upper seat 56 as shown in Fig. 3. The upward movement of the arm 50 acts through the lever 48 and link 45 to change the normal position of the lever part 32, raising the inner or left hand end of said lever part and correspondingly raising the vibrator 23 to a new normal position. This change in the normal position of the lever part 32 and vibrator 23 takes place without altering the normal position of the lever part 34 and link 42 which remain as in Fig. 1. It will be apparent that owing to the raising of the normal position of the vibrator the printing portion of the ribbon will be correspondingly lifted. The parts are so proportioned that if now a printing key be

operated it will act through the universal bar and the link 42 on the lever part 34 and through it on the lever part 32 to raise the vibrator far enough to present the lower ribbon field *b* to the printing point on the platen. The position of the parts at the printing moment is shown in Fig. 3.

It will be apparent that since the field changing member 53 and the arm 50 which it controls shift with the bar 15 and the remainder of the platen shifting frame, the effect of shifting the bar 53 to change color will be the same in lower case as in upper case and that after such shift or change has been effected in one case position, as lower case position for example, it will continue after the platen has been shifted. In other words, if the bar 53 be shifted to change from the upper field *a* to the lower field *b* when the platen is in lower case position, then after the platen has been shifted to upper case position the actuation of the printing keys will still operate to present the lower field *b* to the types; and on the other hand if the shift of ribbon fields had been effected in upper case position, the new ribbon field would still be presented to the types after the platen had been restored to lower case position.

By my present invention I provide a simple and effective means for varying the widthwise portion of the ribbon presented to the types, said means being effective either in the lower case position or in the shifted position of the platen, the change of ribbon fields being effected without varying the normal relationship between the operating lever or member and the means for actuating it which means in the present instance comprises the link 42; that is to say, the leverage is always the same.

It will be observed that I combine with a platen and platen shifting means a ribbon vibrator having a support (such as the two-part operating lever) mounted on a fixed part (such as the bracket 36) which is independent of the platen shifting means, together with means for shifting the vibrator with the platen and for at will shifting the vibrator independently of the platen; that when the vibrator is shifted with the platen, the normal relationship between the two is not varied, while when the vibrator is shifted independently of the platen the normal relationship between said vibrator and said platen is varied; that connections between the vibrator and platen shifting means are combined with means operating on said connections independently of said shifting means for shifting the vibrator, the independently operating means in the present instance comprising the key controlled member, device or slide bar 53; that said device operates to shift the vibrator so that

when the latter is subsequently operated a different widthwise portion of the ribbon is presented to the types; that devices including the slide bar 53 are operative at will by hand through the finger button 65 or automatically through the shifting bar 15 when the platen is shifted; that separate means including the link 42 are provided for actuating the vibrator and the operating lever at printing operation; that said operating lever is in two parts one jointed to the other; that it has a fixed fulcrum; that one of the parts is connected to the vibrator and is movable therewith independently of the other or main part which has a fixed point of connection with the actuating device or link 42; that through said actuating device the two-part operating lever is operated as a whole at printing operation; that the means for changing the vibrator to change the ribbon fields operates on the lever part which is connected directly with said vibrator and does not affect the other lever part; that means are provided for holding the two parts of the operating lever in one or another of a plurality of normal positions, said means in the present instance comprising a link pivoted to one part and a second lever to which said link is also pivoted, said second lever being connected through the device or arm 50 to the shift bar 15; that said second lever is concentric or co-axial with the operating lever, the axis of both levers being fixed; that the connections between said second lever and the platen shifting mechanism comprise the device or arm 50; that said arm has a variable relationship with the platen shifting devices including the bar 15; that means are provided for varying said relationship, the said means comprising the slidable bar 53; that the vibrator is connected with restoring devices which return it to normal position after actuation, said restoring devices comprising an arm depending from said vibrator, a guide member for said arm, and a spring connection between said arm and said guide member; and that said connection in the present instance includes a spring coiled around said depending arm.

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, a ribbon vibrator, an operating lever, shifting means for the platen connected to one arm of said operating lever, devices for shifting the vibrator independently of said platen, said devices being connected to the same arm of said operating lever as said platen shifting means, and key operated means for vibrat-

ing said vibrator at printing operations, said key operated means being connected to the other arm of said operating lever.

2. In a typewriting machine, the combination of a shiftable platen, platen shifting means, a ribbon vibrator, an operating lever, mechanism connected to one arm of said operating lever for shifting said vibrator with said platen and for at will shifting said vibrator independently of said platen, and key operated means connected to the other arm of said operating lever for vibrating said vibrator at printing operation.

3. In a typewriting machine, the combination of a shiftable platen, platen shifting means, a ribbon vibrator, an operating lever, mechanism connected to said lever for at will shifting said vibrator independently of said platen, printing keys, and connections between said printing keys and said operating lever, said connections being independent of said mechanism.

4. In a typewriting machine, the combination of a platen, shifting means therefor, a ribbon vibrator, an operating lever having a fixed fulcrum, mechanism operative on said lever for shifting said vibrator with said platen and for at will shifting said vibrator independently of said platen, and key operated means for vibrating said vibrator at printing operation, said key operating means being connected to said operating lever independently of said mechanism.

5. In a typewriting machine, the combination of a shiftable platen, platen shifting means, a ribbon vibrator having a support mounted on a fixed part independent of said shifting means, key controlled means for actuating said vibrator including a lever, connections between said platen shifting means and said lever for actuating said lever from said platen shifting means, and means operative at will independently of said platen shifting means for shifting said lever.

6. In a typewriting machine, the combination of a shiftable platen, a one-piece ribbon vibrator, vibrating means including a lever and an actuating member, means for shifting the vibrator with the platen without changing the relationship between said lever and said member and means for shifting the vibrator independently of the operation of the platen shifting means and without changing the point of connection between said lever and said member.

7. In a typewriting machine, the combination of a ribbon vibrator, a two-part operating lever, a key controlled member for actuating said lever, and means for shifting the vibrator to change the widthwise portion of the ribbon presented to the

types by varying the relationship between the lever parts but without changing the point of connection between said lever and said member.

8. In a typewriting machine, the combination of a platen, platen shifting means, a ribbon vibrator, a two-part operating lever connected with said vibrator, a key controlled actuating member having an unvarying point of connection with said operating lever, connections between said platen shifting means and one part of said operating lever for shifting said one part when the platen is shifted, and means for shifting said one part independently of the platen.

9. In a typewriting machine, the combination of a shiftable platen, a ribbon vibrator shiftable with said platen, an operating lever having a single fulcrum, which fulcrum has the same normal position for both shift positions of the platen, means for shifting said vibrator both with the platen when it is shifted and independently of the shifting of the platen, and separate means for actuating said lever at printing operation, said separate means being connected to said lever independently of said first named means.

10. In a typewriting machine, the combination of a shiftable platen, means for shifting the same, a ribbon vibrator, an operating lever therefor having a fixed fulcrum, said operating lever being made in parts, one part being connected to said vibrator and being movable therewith independently of the other part of said lever, and means connected with the platen shifting means for automatically shifting one part of said lever and the connected ribbon vibrator simultaneously with the shifting of the platen, said means being operative independently of the platen shift to change the normal position of said vibrator.

11. In a typewriting machine, the combination of a ribbon vibrator, a two-part operating lever, means for actuating said lever as a whole at printing operation, and means operative on one part only of said lever to vary the relationship between the two parts of said lever and change the position of said vibrator, said means being operative both automatically and by hand.

12. In a typewriting machine, the combination of a platen and platen shifting mechanism of a ribbon vibrator, a two-part jointed operating lever having one part pivotally connected to said vibrator, an actuating link connected to the other lever part, and means connected with the platen shifting mechanism to change the relationship between the jointed parts of said lever, said vibrator being movable at will to present different widthwise portions of the ribbon

to the types without changing the point of connection between said lever and said actuating link.

13. In a typewriting machine, the combination of a ribbon vibrator, a two-part operating lever therefor, means for holding the two parts of said lever in one or another of a plurality of normal relations, said means comprising both a link pivoted to one part and also a second lever to which said link is also pivoted, means for actuating said last named means both automatically and by hand, and means for vibrating said operating lever at printing operation.

14. In a typewriting machine, the combination with a platen and platen shifting devices, of a vibratory ribbon carrier, a two-part operating lever, one lever part having a fixed fulcrum and pivotally supporting the other lever part, a link pivoted to said other lever part, a second lever to which said link is also pivoted, connections between said second lever and said platen shifting devices, and means for at will varying said connections.

15. In a typewriting machine, the combination with a platen and platen shifting devices, of a vibratory ribbon carrier, an operating lever comprising two parts, one lever part having a fixed fulcrum and pivotally supporting the other lever part, a link pivoted to said other lever part, a second lever to which said link is also pivoted, connections between said second lever and said platen shifting devices, said connections comprising an arm having a variable relationship with said platen shifting devices, and means for changing the relationship between said arm and said platen shifting devices.

16. In a typewriting machine, the combination with a platen and platen shifting devices, of a ribbon vibrator, an operating lever comprising two parts, one lever part having a fixed fulcrum and pivotally supporting the other part, connections between said other part and said platen shifting devices, and means for at will varying the normal relationship between said connections and said platen shifting devices.

17. In a typewriting machine, the combination with a platen and platen shifting devices, of a ribbon vibrator, a two-part operating lever, one part pivotally supporting the other part, connections between said other part and said platen shifting devices, and means operative at will on said connections to vary the normal relationship between the two parts of said lever.

18. In a typewriting machine, the combination with a platen and platen shifting devices, of a ribbon vibrator, a two-part operating lever therefor, the first part of said lever having a fixed fulcrum and the second part being pivoted on said first part, a

second lever having axis of rotation coincident with the axis of rotation of said operating lever and connected thereto, connections between said second lever and said platen shifting devices, and means operative at will on said connections to vary the normal relationship between the two parts of said operating lever.

19. In a typewriting machine, the combination with a platen and platen shifting devices, of a ribbon vibrator, a two-part operating lever therefor, the first part of said lever having a fixed fulcrum and the second part being pivoted on said first part, a second lever having axis of rotation coincident with the axis of rotation of said operating lever and connected thereto, connections between said second lever and said platen shifting devices, a link connecting said second lever and said second part of said operating lever, a key actuated universal bar, connections between said universal bar and the first or main part of said operating lever, and hand-controlled means for varying the connections between said second lever and said platen shifting devices.

20. In a typewriting machine, the combination of a platen, platen shifting devices comprising a shiftable bar, a vibratory ribbon carrier, an operating lever therefor comprising two parts, the first part having a fixed fulcrum and the second part being pivoted on the first part and being provided with a tail or extension, a second lever having a fixed fulcrum, a link connecting one arm of said second lever with said tail or extension, an arm connected to said shiftable bar and pivotally connected with said second lever at the side of its fulcrum opposite from said link, means for varying the relationship between said arm and said universal bar, and means for actuating said operating lever at printing operation.

21. In a typewriting machine, the combination of a platen, platen shifting devices comprising a shiftable bar, a vibratory ribbon carrier, an operating lever therefor comprising two parts, the first part having a fixed fulcrum and the second part being pivoted on the first part and being provided with a tail or extension, a second lever having a fixed fulcrum, a link connecting one arm of said second lever with said tail or extension, an arm connected to said shiftable bar and pivotally connected with said second lever at the side of its fulcrum opposite from said link, means for varying the relationship between said arm and said shiftable bar, and means for actuating said operating lever at printing operation, said last named means comprising a hand controlled slide rod operative to slide said arm on said shiftable bar.

22. In a typewriting machine, the combination of a platen, platen shifting devices

comprising a shiftable bar, a vibratory ribbon carrier, an operating lever therefor comprising two parts, the first part having a fixed fulcrum and the second part being pivoted on the first part and being provided with a tail or extension, a second lever having a fixed fulcrum, a link connecting one arm of said second lever with said tail or extension, an arm connected to said shiftable bar and pivotally connected with said second lever at the side of its fulcrum opposite from said link, means for varying the relationship between said arm and said universal bar, said last named means comprising a shiftable bar for setting said arm, and devices for shifting said bar, said devices comprising a crank arm having a loose connection with said bar, a shaft carrying said crank arm, and a finger key connected to said shaft for turning the same.

23. In a typewriting machine, the combination of a platen, platen shifting devices comprising a shiftable bar, a vibratory ribbon carrier, an operating lever therefor comprising two parts, the first part having a fixed fulcrum and the second part being pivoted on the first part and being provided with a tail or extension, a second lever having a fixed fulcrum, a link connecting one arm of said second lever with said tail or extension, an arm connected to said shiftable bar and pivotally connected with said second lever at the side of its fulcrum opposite from said link, and means for varying

the relationship between said arm and said shiftable bar, said last named means comprising a hand controlled slide bar provided both with a cam operative on said arm and also with two supporting or resting portions one above the other and at opposite ends of said cam.

24. In a typewriting machine, the combination of a ribbon vibrator, actuating devices therefor, and restoring devices for returning said vibrator after actuation, said restoring devices comprising an arm depending from said vibrator, a guide member for said arm, and a spring connection between said arm and said guide member.

25. In a typewriting machine, the combination of a ribbon vibrator, actuating devices therefor, and restoring devices for returning said vibrator after actuation, said restoring devices comprising an arm depending from said vibrator, an arm loosely depending from said vibrator, a member having an eye for guiding the lower end portion of said arm, and a coiled spring surrounding said arm and connected thereto and also connected to said eye.

Signed at Hingham, in the county of Plymouth, and State of Massachusetts this 18th day of August A. D. 1910.

WALTER J. BARRON.

Witnesses:

ERNEST E. LINCOLN,
CARRIE V. WHITE.