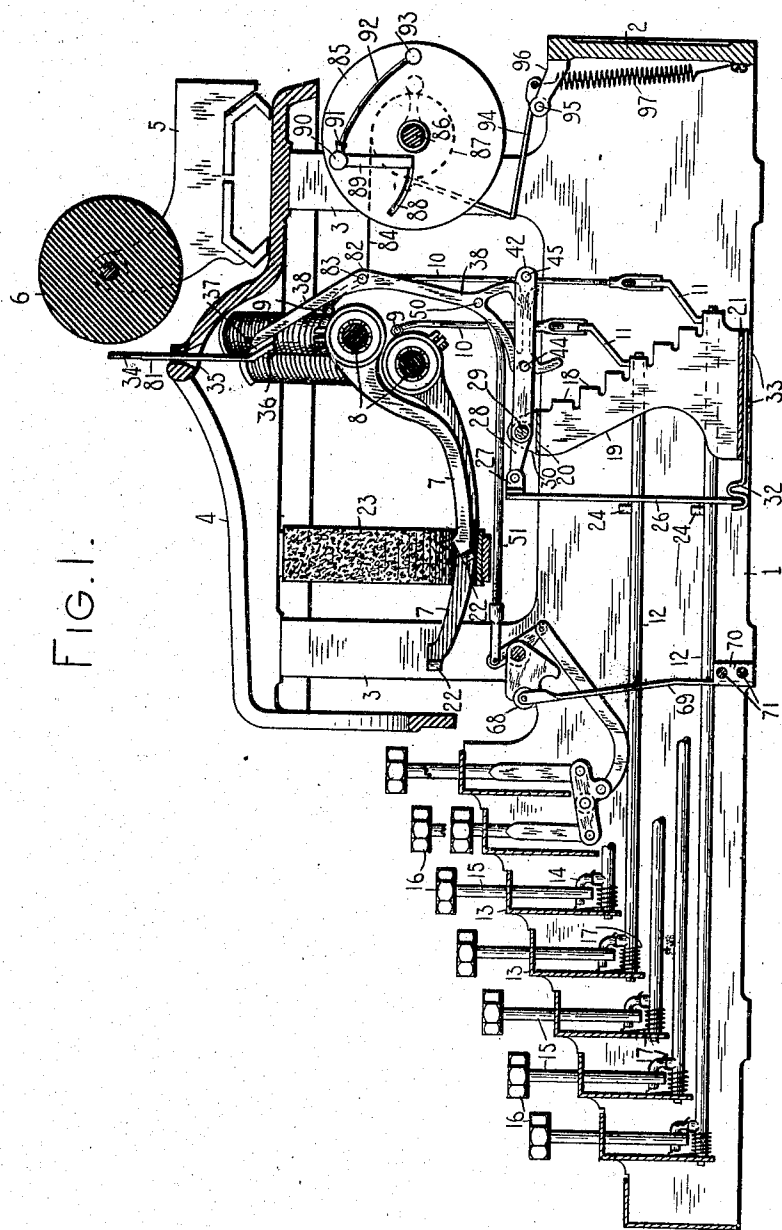


937,413.

3 SHEETS--SHEET 1.



E. M. Hulls.
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INVENTOR
Alexander T. Brown

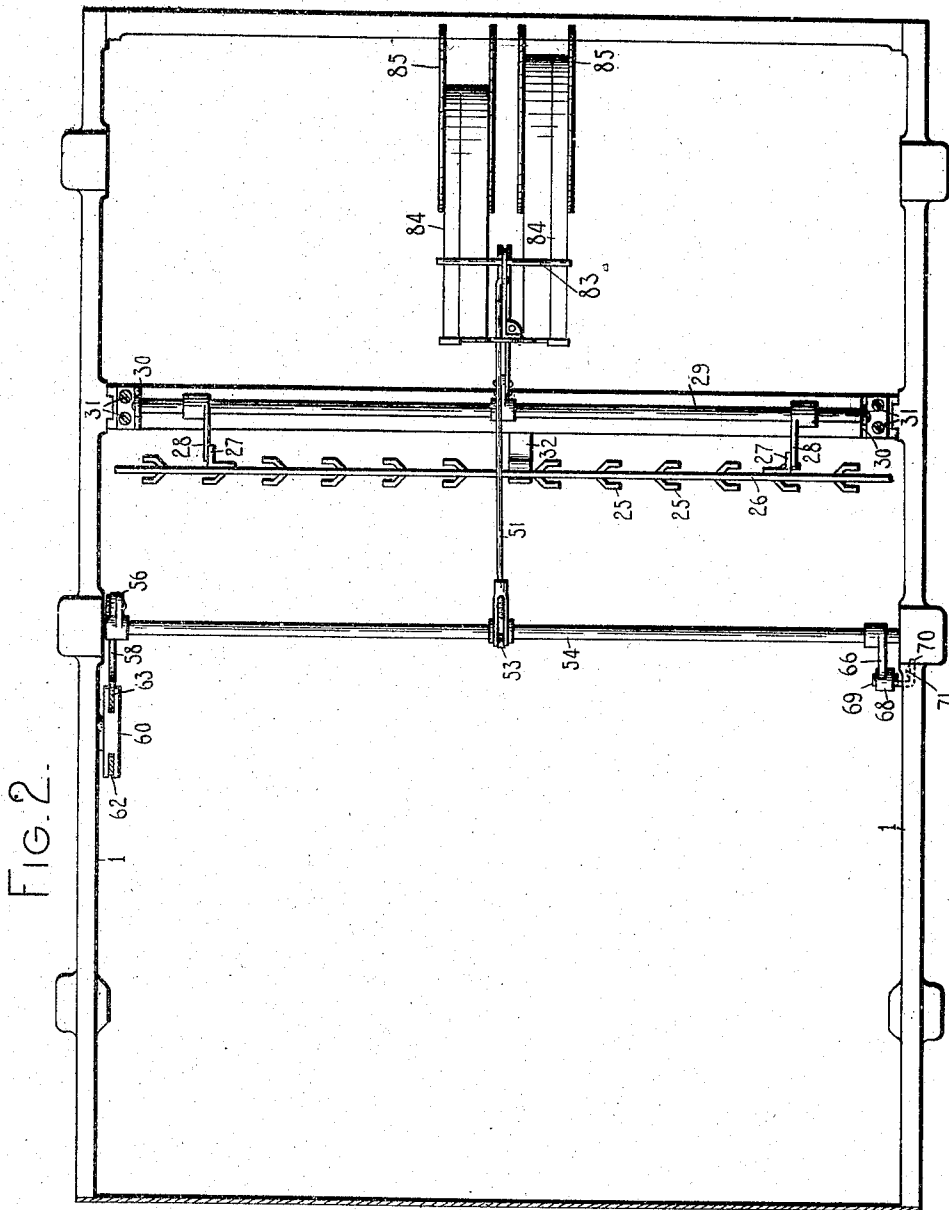
Jacob Felber
ATTORNEY.

A. T. BROWN.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 16, 1905.

937,413.

Patented Oct. 19, 1909.

3 SHEETS—SHEET 2.



WITNESSES:

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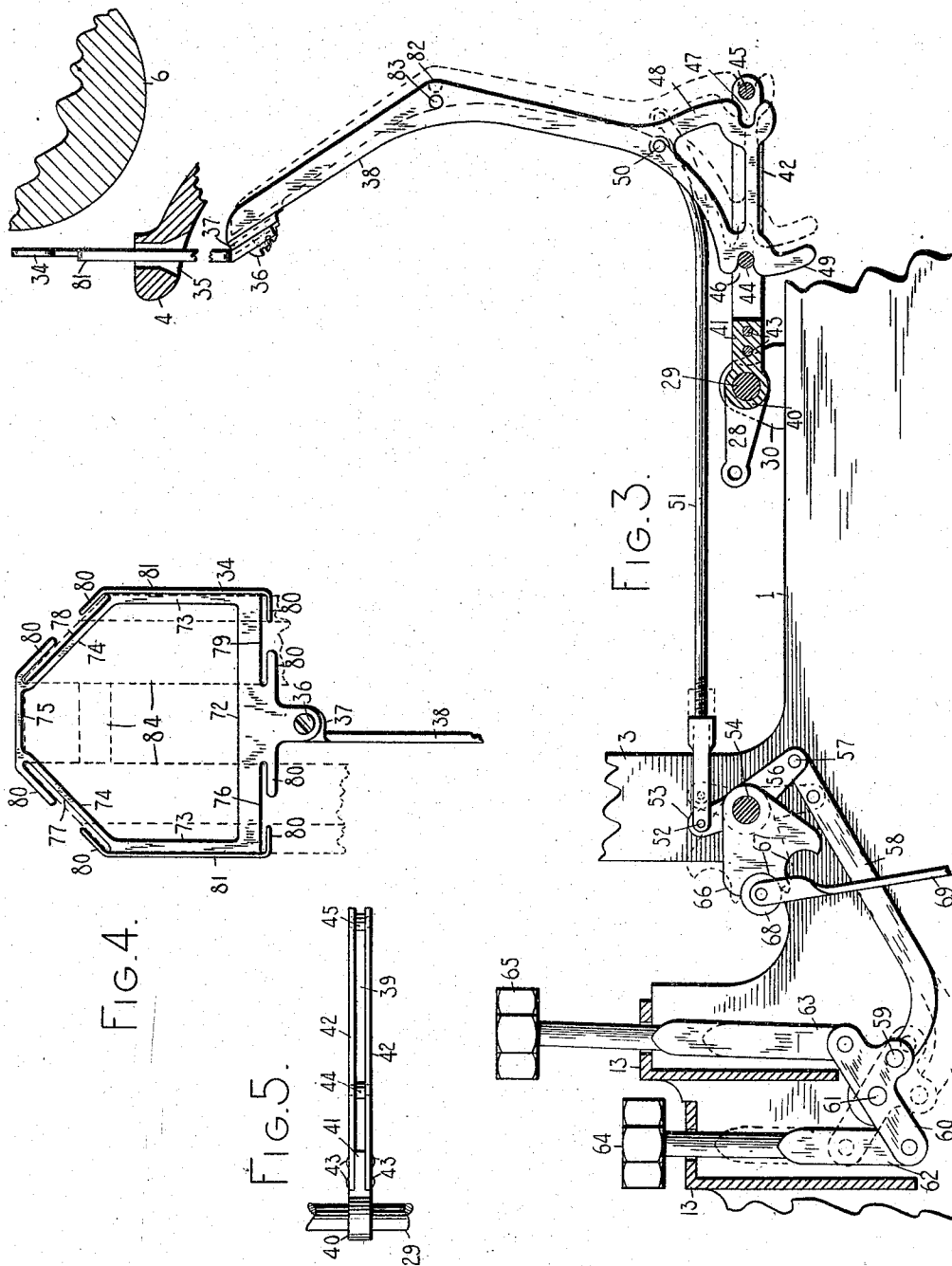
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A. T. BROWN.
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Patented Oct. 19, 1909.
3 SHEETS—SHEET 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALEXANDER T. BROWN, OF SYRACUSE, NEW YORK.

TYPE-WRITING MACHINE.

937,413.

Specification of Letters Patent.

Patented Oct. 19, 1909.

Application filed March 16, 1905. Serial No. 250,443.

To all whom it may concern:

Be it known that I, ALEXANDER T. BROWN, citizen of the United States, and resident of Syracuse, in the county of Onondaga 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 to typewriting machines and more particularly to the ink ribbon mechanism of such machines.

My invention relates more especially to front strike typewriting machines. I provide a ribbon vibrator and means whereby said vibrator may be thrown at each operation of the machine to one or another of a plurality of elevations so as to cause the upper or lower part of the ribbon to be raised to the printing point.

The principal object of my invention is to provide an improved mechanism of the character indicated above.

My invention consists in certain features of construction and combinations and arrangements of parts which will be fully set forth herein and particularly pointed out in the claims.

One embodiment of my invention is illustrated in the accompanying drawings, in which,

Figure 1 is a front to rear sectional view of a typewriting machine; Fig. 2 is a top plan view of the machine partly in section and with many parts removed; Fig. 3 is a front to rear sectional view of a portion of the mechanism; Fig. 4 is a front view of the ribbon vibrator; and Fig. 5 is a top view of a lever arm used in my construction.

The main frame of the typewriter shown in the present case comprises a base portion consisting of side plates 1 connected together by a back plate 2. Posts 3 rising from said side plates support a top plate 4 on which a carriage 5 is mounted to move back and forth in the usual manner. A platen 6 is mounted in said carriage. The carriage 5 may be mounted on any suitable rails and may be drawn across the machine by the usual spring drum or by any suitable means, and its motion may be controlled by the usual or any suitable step-by-step feed mechanism. These parts have not been shown herein as the particular construction thereof is not material to the present invention.

The type bars 7 may be mounted in any suitable manner. As here shown, they are mounted on two segments 8 which are secured at their ends to the under side of the top plate 4, one of said segments being of less radius than the other. Said segments are formed with grooves which serve as ball races, and cooperating ball races are formed in the enlarged ends of the type bars. As shown in the present case each of said type bars is formed with an ear 9 to which is pivoted the upper end of a link 10 which is pivoted at its lower end to an arm 11 which projects from the rear end of one of a series of rock shafts 12 which at their forward ends are journaled in frame plates 13. Each of the rock shafts 12 has projecting therefrom an arm 14 which is pivotally connected with the lower end of a key stem 15 which passes loosely through one of the frame plates 13 and which has mounted at its upper end a key 16. Each of the rock shafts is provided with a returning spring 17 which is coiled about the forward end of the rock shaft and which is connected at one end with the frame plate 13 and at the other end with the arm 14. The rock shafts 12 are journaled at their rear ends in ears bent off from fingers 18 which project step fashion from the rear edges of a series of frame plates 19 which are connected at their upper ends with a cross bar 20 and at their lower ends with a cross bar 21. The cross bars 20 and 21 are secured to the side plates 1 of the main frame. The construction is such that when any key 16 is depressed its shaft 12 is rocked and the corresponding type bar is thrown to the printing point by the link 10. Each of said type bars has on its free end an enlargement 22 in which is mounted a single type (not shown). The type bars normally rest against the cushioned segment 23.

Each of the rock shafts 12 has projecting therefrom an arm 24 (Fig. 1) which lies over an ear or lug 25 (Fig. 2) projecting from a universal bar or gate 26. The gate 26 has ears or brackets 27 projecting therefrom near its upper edge, and said brackets are pivoted to arms 28 which are fixed on a rock shaft 29 which extends across the machine above the frame plate 20, and which is journaled at its ends in brackets 30 rising from said frame plate 20, to which said brackets are secured by screws 31. The

rock shafts 12 extend through suitable openings in the gate 26 so that when any rock shaft is operated said gate will be depressed by the engagement of the arm 24 of said rock shaft with one of the lugs 25. The lower edge of the gate 26 is guided by a flat spring 32 which is bent as shown in Fig. 1, to engage said lower edge of the gate both in front and behind and which is secured by screws 33 to the under side of the frame plate or strip 21. The construction is such that the gate 26 is depressed and the rock shaft 29 is rocked slightly toward the front of the machine upon each depression of a key.

A ribbon vibrator 34 normally stands with its upper part below the line of writing and is adapted to move up and down through a guide slot 35 (Figs. 1 and 3) formed in the top plate 4 to cause the ribbon to cover and uncover the printing point. Said ribbon vibrator 34 is secured by a screw 36 to an ear 37 (Figs. 3 and 4) bent off from the upper end of a sheet metal link or stem 38, the lower end of which is of peculiar form and stands in a slot 39 (Fig. 5) in an arm which projects toward the rear of the machine from the rock shaft 29 to which said arm is fixed. Said arm is here shown as having a hub 40 which is fixed on the rock shaft and has an arm 41 projecting therefrom. Two strips 42 are secured to the opposite sides of the arm 41 by rivets 43 and said arms 42 are spaced apart by pins 44 and 45, the latter near the end of the arm and the former between said pin 45 and the shaft 29. The lower end of the link 38 stands between the pins 44 and 45 and it is formed at its forward edge with a notch 46 which is adapted to engage the pin 44, as shown by full lines in Fig. 3, and at its rear edge with a notch 47 which is adapted to engage the pin 45, as shown by dotted lines in Fig. 3. The lower end of the link 38 may be shifted either to the full line position of Fig. 3, in which case the ribbon vibrator will be thrown up by the pin 44 which is comparatively close to the rock shaft 29 or said link may be shifted to the dotted line position of Fig. 3, in which case it will be vibrated by the pin 45 which is comparatively remote from the rock shaft 29 and which will therefore, impart a greater extent of motion to the ribbon vibrator than the pin 44. The pins 44 and 45 constitute the ends of the radial slot 39 and the link 38 is adjustable along said slot to engage one end or the other thereof in order to vary the length of the stroke of the vibrator. It will be perceived that the ribbon vibrator is adapted to utilize two longitudinal lines on the ribbon. When the link 38 is in its forward position the writing will be near the upper edge of the ribbon and when the link 38 is in its rear position the writing will be nearer the

lower edge of the ribbon. The pins 44 and 45 cooperate with the notches 46 and 47 to couple the ribbon vibrator to the arm 42 at either one of two points. It will be observed that these two points are spaced some distance apart, and that a comparatively slight movement of the link suffices to couple said link to one or the other of the pins.

It will be understood that if a key is depressed and the rock shaft 29 is oscillated when the link 38 is in its forward position, shown by full lines in Fig. 3, the pin 45 will rise higher than the notch 47. The rear edge of the link above the notch 47 is therefore made in the form of an arc concentric with the pin 44, as shown at 48. It results from this construction that the link 38 cannot be shifted to its back position while a key is depressed. It will also be perceived that if a key be depressed when the link is in its rear position, shown by dotted lines in Fig. 3, the notch 46 in said link will rise higher than the pin 44. The forward edge of the link 38 below the notch 46 is accordingly formed in the arc of a circle concentric with the pin 45 as shown at 49, with the result that it will be impossible for the link to become disengaged from the pin 45 during the depression of a key.

The ribbon vibrator 34 and the long stem or link 38 are rigidly secured together and might, of course, be made in a single piece. These two parts together constitute in effect a vibratory ribbon carrier which is pivotally connected directly with an oscillatory device or pivoted frame consisting of the rock shaft 29 and the arms carried by said rock shaft including the arm which carries the pivot pins 44 and 45, and the universal bar is connected directly with said pivoted frame, the connection between these parts being constantly maintained. It will be perceived that I have provided means for changing the point of connection between said ribbon carrier and its actuating means so as to vary the extent of throw of the vibrator and of the ribbon from a normal position which is constant for all adjustments. In one position of the parts said ribbon carrier is pivoted to said actuating means by the notch 46 and pin 44 which thus constitute a freely working joint, and in another position of the parts said ribbon carrier is pivoted to said actuating means by the notch 47 and pin 45. In these two positions said ribbon carrier is loosely or pivotally connected with its actuating means not only at different points of said actuating means but also at different points of said ribbon carrier. By shifting the ribbon carrier from one position to another its relation with its actuating means is changed without, however, changing the normal position of said actuating means with the result that different fields of the ribbon are brought to the printing

point in the different adjustments of the parts, and by a uniform movement of the actuator.

In order to shift the link 38 to one or another of its two positions, said link is pivoted at 50 to the rear end of a link 51 which is pivoted at 52 to an arm 53 projecting from a rock shaft 54, which is journaled at its ends in the side plates 1 of the main frame. In order to operate the rock shaft 54 to shift the link 38, an arm 56 is rigidly mounted on said shaft, said arm being shown in the present case as located at the extreme left-hand end of the shaft. To this arm is pivoted at 57 (Fig. 3), the forward end of the link 58, the rear end of which is pivoted at 59 to an oscillating member 60 which constitutes in effect a three-armed lever which is pivoted at 61 to the left-hand side plate 1. Two key stems 62 and 63 are pivoted to the lever 60 in front of and back of the pivot 61 respectively. Each of these key stems extends upward through one of the frame plates 13 and keys 64 and 65 are respectively mounted thereon. The construction is such that one or the other of these keys is always depressed and the depression of one key elevates the other. As shown in Fig. 3, the key 64 is depressed and the rock shaft 54 is rocked toward the front of the machine, thus through the link 51 holding the link 38 in its forward position. If the key 65 be depressed the key 64 will be elevated and the link 58 will rock the shaft 54 toward the back of the machine and move the link 38 to its rear position. In order to retain the parts in one or the other of these positions, a segment 66 is mounted on the rock shaft 54, being shown in the present case as mounted at the extreme right-hand end of said shaft. The face of the segment 66 is formed with two notches 67 (Fig. 3) and a roller 68 adapted to rest in one or the other of said notches, is journaled in the upper end of a spring arm 69, the lower end of which is bent off, as shown in Fig. 1 at 70 and is secured by screws or rivets 71 to the right-hand side plate 1. The tension of the spring arm 69 is exerted to force the roller 68 into one of the notches 67, thus tending to position the shaft 54 accurately and to retain it in one or the other of its two positions. When a key 64 or 65 is depressed, the roller 68 is forced out of one of the notches and drops into the other.

The mechanism thus far described is adapted to cooperate with any suitable form of ribbon vibrator. If a ribbon having two fields of different characteristics be used, such, for example, as a ribbon which has an upper stripe of black ink and a lower stripe of red ink, then when the parts stand in the position shown in full lines in Fig. 3 the black stripe of the ribbon will be thrown to the printing point; but if the key 65 be de-

pressed the red stripe of the ribbon will be thrown to the printing point at each operation of a key. If the entire width of the ribbon is inked with the same kind of ink the keys 64 and 65 may be operated occasionally as the machine is used in order to secure a more uniform use of the whole width of the ribbon.

The ribbon vibrator shown in the present case has the form of a six-sided figure, the lower side 72 being horizontal, and having the link 38 connected to the middle thereof. From said lower side 72 rise two vertical sides 73 above which are two sides 74 which are each inclined inward at about 45° and which are connected together by a horizontal side 75. The ribbon runs over a guide edge 76 on the lower left-hand side of the horizontal portion 72 of the ribbon vibrator whence it is led upward across the front face of the vibrator to a guide 77 on the left-hand inclined side 74. The ribbon is bent over this guide and extends horizontally to the guide edge 78 formed on the right-hand inclined side 74, over which it is bent and runs downward across the front face of the vibrator to a guide 79 corresponding to the guide 74. The ribbon is retained on each of these several guides by fingers 80 which extend back part way across the ribbon from each edge thereof. On the right and left-hand edges of the vibrator are formed ribs 81 (Fig. 3) which engage the walls of the slot 35 and prevent the ribbon from coming in contact therewith.

The link 38 is not straight but extends upward and backward from its lower end to about its middle from which point it extends upward and forward to the point at which the vibrator 38 is attached to it, thus forming an elbow 82 at about the middle of the link. At, or about this point in the link a pin 83 is secured and extends from the link in both directions transversely of the machine, as shown in Fig. 2. The ink ribbon 84 passes under this pin on both sides of the link and extends back to two ribbon spools 85 which are situated side by side on a shaft 86 which is suitably mounted in the machine. Any suitable means may be provided for turning one or the other of these spools to wind the ribbon thereon, but I have not shown such means in the present case. It will be observed that the up and down motion of the link 38 is substantially vertical and that the course of the ribbon from the spools to the pin 83 is substantially or approximately horizontal, so that as the vibrator moves up and down, the length of the strip of ribbon extending from the pin 83 to the spool is not materially changed by the motion of the pin.

Each of the ribbon spools may comprise a drum 87 (Fig. 1) and two side flanges, and one or both of said flanges may have a slot

88 through which projects an arm bent off from a lever 89 which is pivoted to the outside of the flange at 90. The drum 87 may be formed with a slot into which said arm may be moved to retain the end of the ink ribbon in place. The lever 89 has an arm 91 projecting therefrom, which arm is connected with one end of a spring 92, the other end of which is connected to a pin 93 projecting from the side of the flange of the ribbon spool. The tension of the spring 92 is exerted to hold the lever 89 in the position shown in Fig. 1 to maintain the end of the ribbon in place on the spool, but said lever may be rocked by hand to release the ribbon or to insert a new ribbon. I have shown in Fig. 1 an angled plate or lever 94 which is pivoted at 95 to a bracket 96 projecting from the back plate 2 of the main frame. The lever 94 has a rearwardly extending arm to which is connected one end of a spring 97, the other end of which is connected to the main frame, and which presses the free end of the lever 94 against the ribbon on the drum 87 in order to act as a brake to keep the ribbon under proper tension on that spool from which said ribbon is being unwound.

Various changes in the details of construction and arrangement may be made without departing from the gist of my several improvements.

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

1. In a typewriting machine, the combination of a ribbon vibrator, a link for operating said ribbon vibrator, a series of keys, an oscillatory member operated by said keys, a pivot on said oscillatory member, and means for connecting said link with or disconnecting it from said pivot.

2. In a typewriting machine, the combination of a ribbon vibrator, a link for operating said ribbon vibrator, a series of keys, an oscillatory member operated by said keys, two pivots on said oscillatory member, and means for connecting said link with one of said pivots and disconnecting it from the other.

3. In a typewriting machine, the combination of a series of keys, a ribbon vibrator, a member to which said ribbon vibrator is rigidly secured, a lever arm which is rocked upon each depression of a key, and means for pivotally connecting said member with said lever arm at any one of a plurality of different points.

4. In a typewriting machine, the combination of a ribbon vibrator, an oscillatory member that is rocked upon each depression of a key and which operates said ribbon vibrator, and means for loosely connecting said ribbon vibrator with said oscillatory member at any one of a plurality of points at different distances from the axis of said

oscillatory member to vary the throw imparted to said vibrator.

5. In a typewriting machine, the combination of a ribbon vibrator, an oscillatory member that is rocked upon each depression of a key and is pivotally connected with said vibrator, and means for varying the point in said oscillatory member at which said ribbon vibrator is connected therewith and thereby varying the throw of the ribbon.

6. In a typewriting machine, the combination of a member mounted to oscillate about a fixed axis upon each operation of a key, a ribbon vibrator pivotally connected with said member, and means for varying the distance from said fixed axis at which said ribbon vibrator is connected with said oscillatory member and thereby varying the throw of the ribbon.

7. In a typewriting machine, the combination of a series of keys, a member which is oscillated upon each depression of a key, a ribbon vibrator pivotally connected with said member, and means for disconnecting said ribbon vibrator from said member at one pivotal point and connecting said ribbon vibrator with said member at another point.

8. In a typewriting machine, the combination of a series of keys, an oscillatory member which is rocked upon each depression of a key, a stem or link having a ribbon vibrator mounted upon its upper end and pivotally connected at its lower end with said oscillatory member, and means for changing the point of connection between said ribbon vibrator and said oscillatory member.

9. In a typewriting machine, the combination of a series of keys, an oscillatory member which is rocked upon each depression of a key, a ribbon vibrator, means for connecting said ribbon vibrator with said oscillatory member, said connecting means comprising two pivot pins and two notches so arranged that said connecting means may be adjusted to disconnect one of said pins from its notch and to connect the other of said pins with its notch, and means for shifting said connecting means.

10. In a typewriting machine, the combination of a series of keys, a ribbon vibrator, operative connections between said keys and said vibrator comprising a link and a lever, means whereby said link may be shifted toward or from the pivotal axis of said lever, and means for coupling said link to said lever at either one of two points, said points being situated apart a distance greater than the distance through which said link is shifted.

11. In a typewriting machine, the combination of a series of keys, a series of rock shafts operated by said keys, a rock frame, a universal bar hung from said rock frame,

means whereby when a key is depressed said universal bar is also depressed, an arm on said rock frame that is elevated when the universal bar is depressed, a ribbon vibrator, and a link connecting said ribbon vibrator with said arm.

12. In a typewriting machine, the combination of a series of keys, a series of rock shafts operated by said keys, a rock frame having a universal bar connected therewith, means whereby when a key is depressed said universal bar is also depressed, an arm on said rock frame that is elevated when a universal bar is depressed, a ribbon vibrator, a link connecting said ribbon vibrator with said arm, and means for varying the distance from the axis of said rock frame at which said link is connected to said arm.

13. In a typewriting machine, the combination of a series of keys, a ribbon vibrator, means for operating said ribbon vibrator when any key is depressed, said means comprising a shiftable connecting member, a link 51 for shifting said connecting member, a lever arm to which said link 51 is connected, two keys mounted on opposite ends of a lever, and means whereby said lever operates said link.

14. In a typewriting machine, the combination of a series of keys, a ribbon vibrator, and operative connections between said keys and vibrator comprising a coupling device, a lever 60 having a key connected with each end thereof so that when one of said keys is depressed the other is elevated, means whereby said lever controls said coupling device, and a detent device for retaining said lever 60 and said coupling device in one or another of the positions to which they may be set by said keys.

15. In a typewriting machine, the combination of a series of keys, a lever arm that is oscillated upon each depression of a key, a ribbon vibrator, an operating member for said ribbon vibrator which may be connected with said lever arm at either of two points, a shifting link 51 for shifting said operating member to connect it with said lever arm at one or the other of said points, a rock shaft 54 having an arm 53 to which said link 51 is connected, means for rocking said rock shaft, and a detent device for retaining said rock shaft in one or the other of its positions.

16. In a typewriting machine, the combination of a three-armed lever 60, two keys each connected with an arm of said lever, a link connected with the third arm of said lever, a ribbon vibrator, and a shiftable operating device for said ribbon vibrator controlled by said link.

17. In a typewriting machine, the combination of a lever arm having pins 44 and 45, a ribbon vibrator, a link for said ribbon vibrator having notches 46 and 47 for co-

operating with the pins 44 and 45 respectively and having the concentric parts 48 and 49 for the purpose set forth, and means for shifting said link into engagement with one or another of said pins.

18. In a typewriting machine, the combination of a vibratory ribbon carrier, actuating means to which said ribbon carrier is directly pivoted, and means for changing the pivotal point of connection between said ribbon carrier and its actuating means.

19. In a typewriting machine, the combination of a vibratory ribbon carrier, a pivoted oscillatory operating device pivotally connected directly with said ribbon carrier, and means for changing the pivotal point of connection between said ribbon carrier and said operating device while the normal position of said operating device remains the same.

20. In a typewriting machine, the combination of a vibratory ribbon carrier, actuating means therefor including an oscillatory operating device connected directly with the carrier, and means for altering the normal relation between said ribbon carrier and said operating device to vary the extent of throw of said carrier without altering the normal position of said operating device.

21. In a typewriting machine, the combination of a vibratory ribbon carrier comprising a stem having a plurality of bearing points, and actuating means comprising an oscillatory operating device adapted to be connected with said ribbon carrier at any one of said bearing points.

22. In a typewriting machine, the combination of a ribbon having fields of different characteristics, a ribbon vibrator, an oscillatory actuating device for said vibrator, a fixed, unchanging pivot for said actuating device, a universal bar, constantly maintained and positive connections between said universal bar and said actuating device, and means for adjusting the parts to cause any desired field of the ribbon to be thrown to the printing point.

23. In a typewriting machine, the combination of a vibratory ribbon carrier, a key-actuated universal bar, a pivoted frame with which said universal bar is connected, said frame being provided with a plurality of engaging devices arranged at different distances from its pivotal axis, and connections between said vibrator and said universal bar frame, said connections including a member carrying a plurality of engaging devices, each of which is coöperative with one of the engaging devices mounted on the universal bar frame, said member being adjustable at will to connect one or another of its engaging devices with the associate engaging devices on the universal bar frame in order to vary the throw of the ribbon carrier.

24. In a visible writing machine, the com-

- combination of a ribbon vibrator which holds the ribbon at a single normal position so as to expose the printing point, an actuating device for said ribbon vibrator, and means for changing the extent of throw of the ribbon vibrator from said single normal position, said means including means for changing the point of connection between said ribbon vibrator and said actuating device.
25. In a visible writing machine, the combination of a ribbon carrier which holds the ribbon substantially at a single normal position so as to expose the printing point, an operating arm connected directly to said ribbon carrier, and means for changing the extent of throw imparted to said ribbon carrier by said operating arm without changing the throw of said arm, whereby different widthwise portions of the ribbon are brought to the printing point.
26. In a typewriting machine, the combination of a vibratory ribbon carrier, operating means therefor including a universal bar, a pivoted frame which carries said universal bar, and an arm on said pivoted frame; and means for connecting said vibratory ribbon carrier with said arm at different points at different distances from the pivotal axis of said frame.
27. In a typewriting machine having a ribbon vibrator, the combination of a swinging arm having a radial slot, means for swinging said arm at the type strokes, a link connected to said ribbon vibrator and having means to engage said slot, and means for adjusting said link along said slot to vary the length of stroke of said vibrator.
28. In a typewriting machine having a ribbon vibrator, the combination of a link connected at one end to said vibrator, a swinging arm, means for swinging said arm at the type strokes, means for connecting the other end of said link to said swinging arm in such a manner as to permit adjustment of the link toward and away from the axis of said swinging arm, so as to vary the length of stroke of said vibrator, and means for detaining the link where adjusted.
29. In a typewriting machine having a ribbon vibrator, the combination of a link connected at one end to said vibrator, a swinging arm, means for swinging said arm at the type strokes, means for connecting the other end of said link to said swinging arm, a finger lever mounted upon the framework of the machine, and connected to said link, to adjust it relatively to said swinging arm, so as to vary the stroke of the ribbon vibrator, and means for detaining said lever where adjusted.
30. In a typewriting machine having a ribbon vibrator the combination of a link connected at one end to said vibrator, a swinging arm having a radiating slot, means for swinging said arm at the type strokes, means for engaging the other end of said link with said slot, a finger piece mounted upon the framework of the machine, and a second link connecting said finger piece to the first link to adjust it along said slot, so as to vary the stroke of the ribbon vibrator.
31. In a typewriting machine having a ribbon vibrator the combination of a swinging arm having a radiating slot, means for swinging said arm at the type strokes, a connecting device between said ribbon vibrator and said slot, a finger piece having means to adjust said connecting device along said slot, and means for detaining said finger piece where adjusted.
32. In a visible typewriting machine, the combination of an ink ribbon having fields of different characteristics, a ribbon vibrator, printing keys, actuating connections for said vibrator operative to actuate the vibrator at printing operations, said connections comprising two cooperative members, one of which is an oscillatory member, hand operated means for effecting a relative movement of adjustment between said members to move the point of connection between the members toward or from the center of oscillation of said oscillatory member to vary the extent of throw imparted to said vibrator for the purpose of bringing one or the other of said ribbon fields to printing position, and means for maintaining said members in either adjusted relation according to the ribbon field to be used.
33. In a visible typewriting machine, the combination of an ink ribbon having fields of different characteristics, a ribbon vibrator, printing keys, actuating connections for said vibrator operative to actuate the vibrator at printing operations, said connections comprising an oscillatory member having a fixed center of oscillation and a second member cooperative with said oscillatory member, hand operated means for effecting an adjustment of said second member to move its point of connection with said oscillatory member nearer to or farther from the center of oscillation of said oscillatory member to vary the extent of throw imparted to said vibrator for the purpose of bringing one or the other of said ribbon fields to printing position, and means for maintaining said second member in either adjusted position according to the ribbon field to be used.
34. In a visible typewriting machine, the combination of an ink ribbon having fields of different characteristics, a ribbon vibrator, printing keys, actuating connections for said vibrator operative to actuate the vibrator at printing operations, said connections comprising an oscillatory member and a link cooperative with said oscillatory member, hand operated means for adjusting said link to move the point of connection between

it and said oscillatory member nearer to or farther from the center of oscillation of said oscillatory member to vary the extent of throw imparted to said vibrator for the purpose of bringing one or the other of said ribbon fields to printing position; and means for maintaining said link in either adjusted position according to the ribbon field to be used.

10 35. In a visible typewriting machine, the combination of an ink ribbon having fields of different characteristics; a ribbon vibrator; printing keys; a universal bar operated by said printing keys; connections between
15 said vibrator and universal bar, said connections comprising an oscillatory member

or lever and a link; hand operated means for adjusting said link toward or from the center of oscillation of said oscillatory member to vary the extent of throw imparted to said vibrator for the purpose of bringing one or the other of said ribbon fields to printing position; and means for maintaining said link in either of its adjusted positions according to the ribbon field to be used.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 14th day of March A. D. 1905.

ALEXANDER T. BROWN.

Witnesses:

CHARLES E. TOMLINSON,
ARTHUR J. BRIGGS.