

968,442.

G. F. BALLOU.
TYPE WRITING MACHINE.
APPLICATION FILED JAN. 22, 1910.

Patented Aug. 23, 1910.

4 SHEETS—SHEET 1.

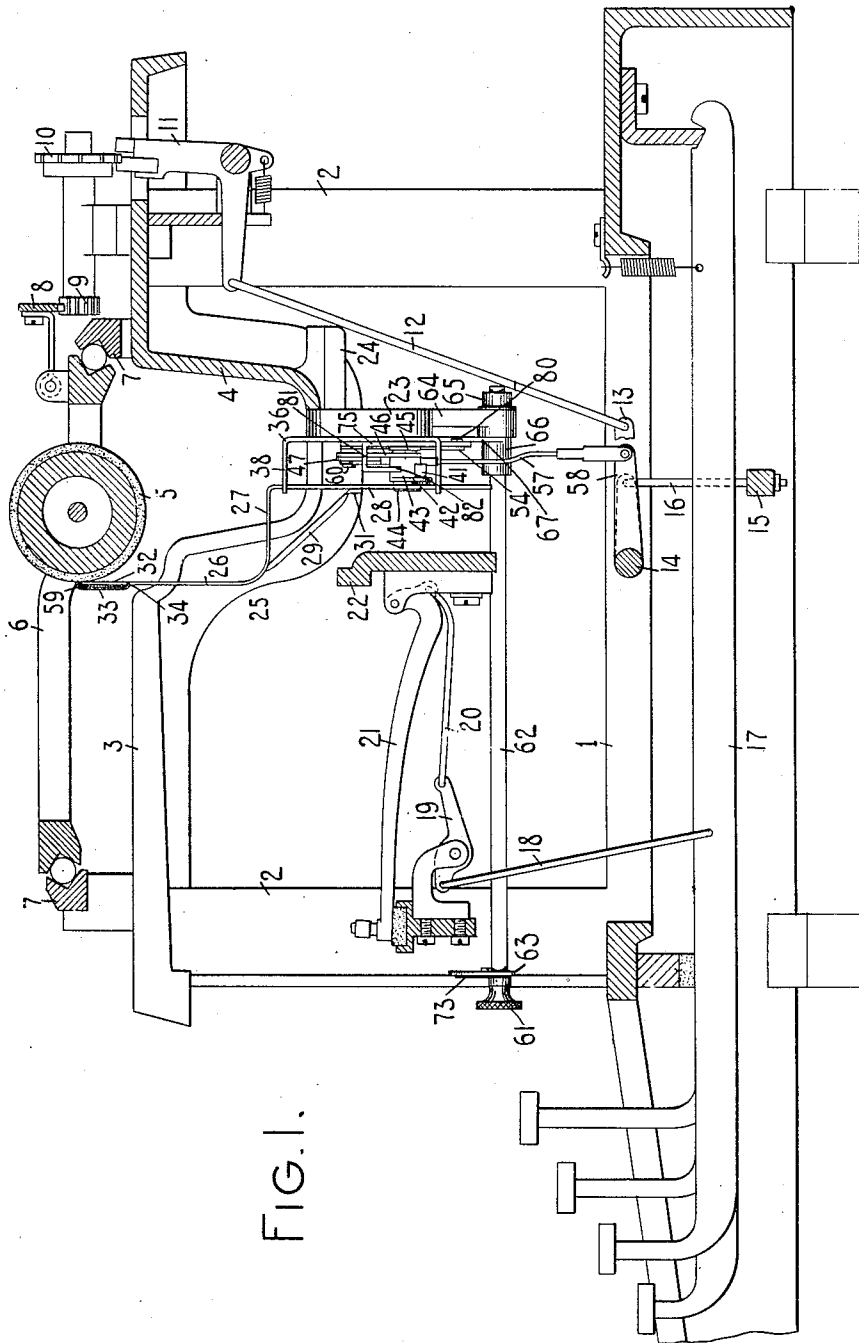


FIG. 1.

WITNESSES:

E. M. Wells.
R. H. Strother.

INVENTOR.

George F. Ballou
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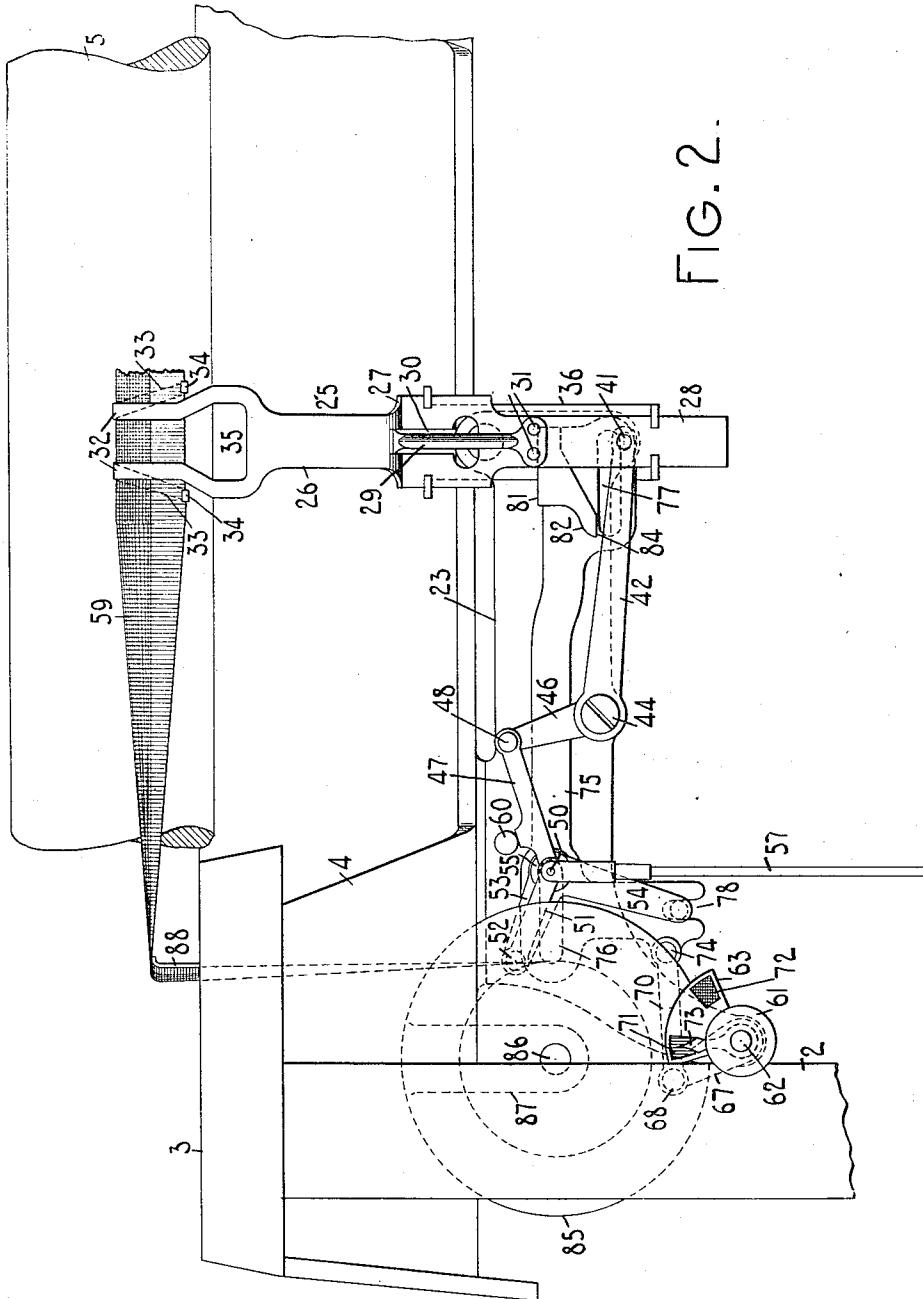


FIG. 2.

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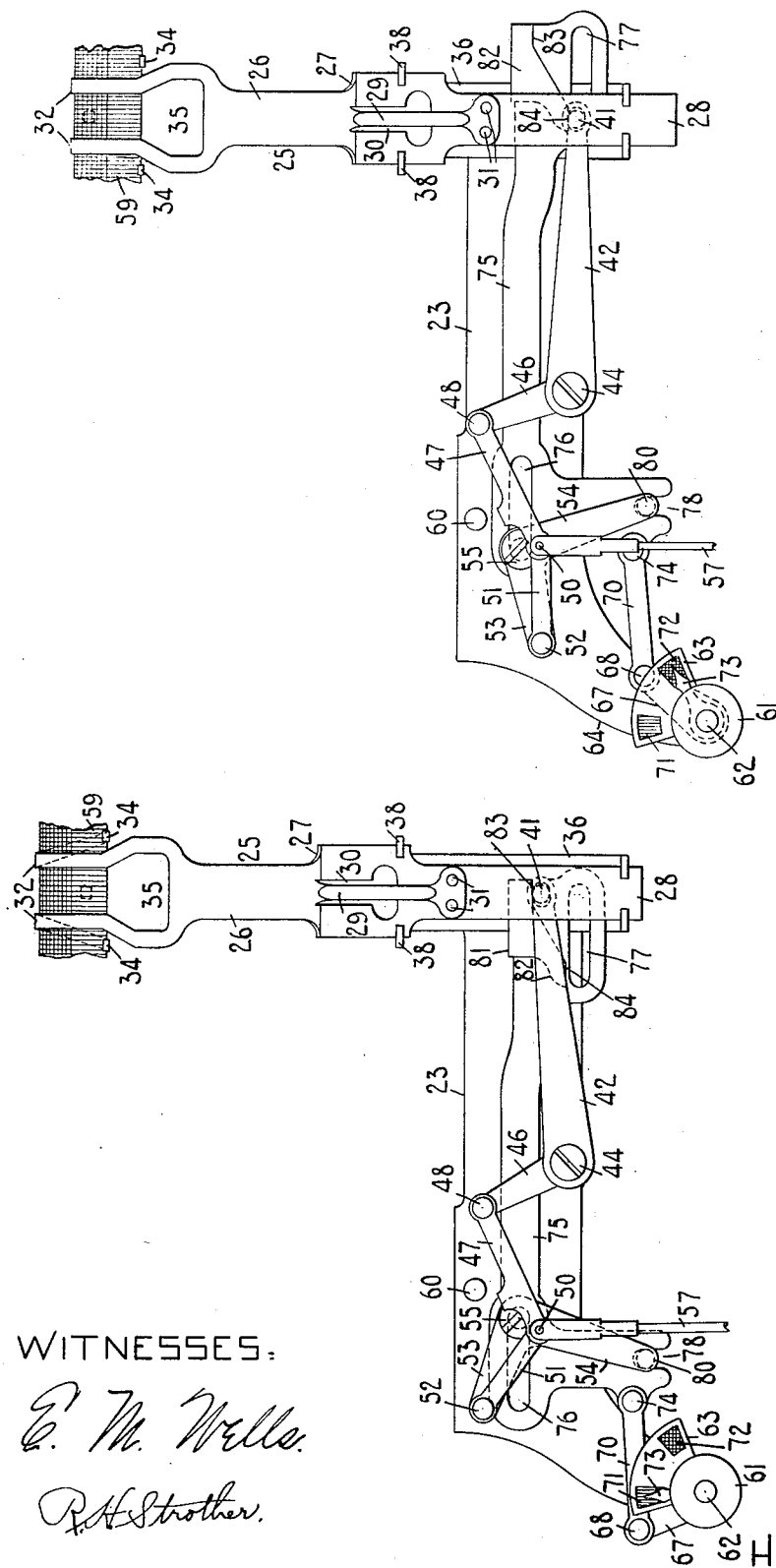


FIG. 4.

FIG. 3.

WITNESSES:

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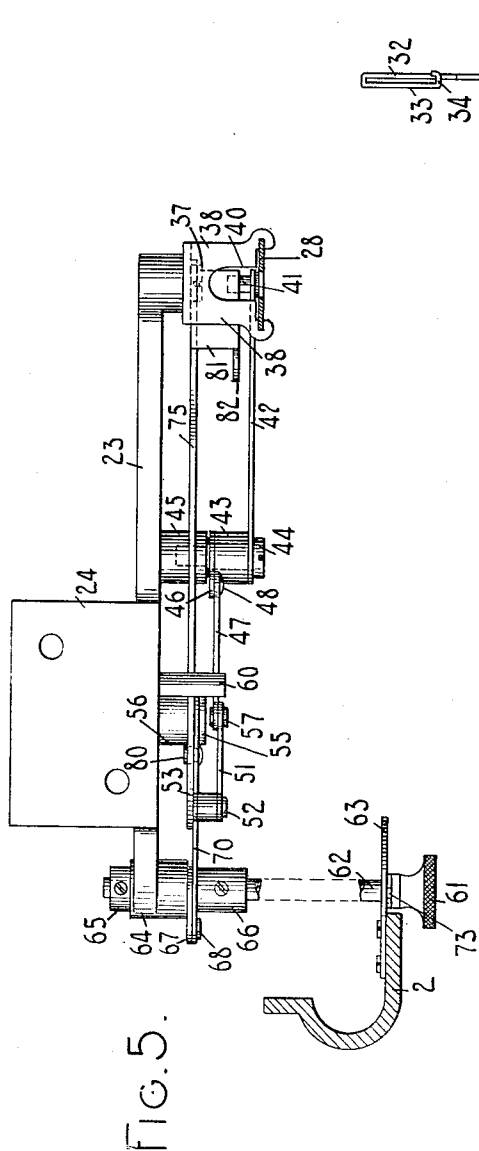


FIG. 5.

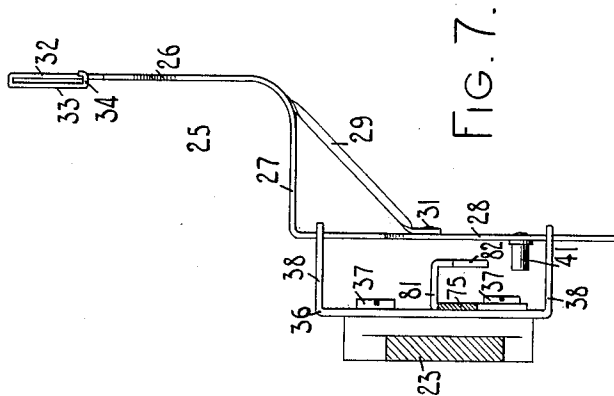


FIG. 7.

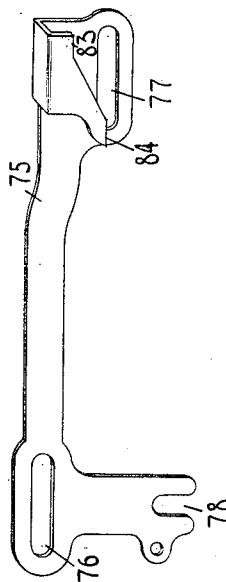


FIG. 6.

WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE F. BALLOU, OF NEW YORK, N. Y., ASSIGNOR TO REMINGTON TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

968,442.

Specification of Letters Patent. Patented Aug. 23, 1910.

Application filed January 22, 1910. Serial No. 539,501.

To all whom it may concern:

Be it known that I, GEORGE F. BALLOU, 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 to typewriting machines and more particularly to the ribbon mechanism of such machines.

My invention has for its principal object to provide an improved ribbon vibrator mechanism for visible typewriters, in which provision is made for vibrating the ribbon to different extents so as to use either one of a plurality of stripes of the ribbon.

Another object of my invention is to provide an improved construction of vibratory ribbon guide or ribbon vibrator.

Other objects will appear in the course of the description.

To the above ends my invention consists in certain features of construction and combinations and arrangements of parts, all of which will be fully set forth herein and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front to rear vertical section of so much of a typewriting machine as is necessary to illustrate the application of my invention thereto, and having my invention embodied therein. Fig. 2 is a front view of my invention and some of the associated parts of the typewriter and showing the parts in normal position. Fig. 3 is a front view showing the mechanism set to print from the lower or red stripe of the ribbon and with the parts in operated position. Fig. 4 is a view similar to Fig. 3 but showing the mechanism set to print from the upper or black stripe of the ribbon. Fig. 5 is a top view, with parts in section, of the mechanism shown in Fig. 3. Fig. 6 is an isometric view of a certain shifting and stop bar. Fig. 7 is a side view of the ribbon vibrator and some of the associated parts, some of said parts being shown in section.

My invention is applicable or adaptable to visible typewriting machines generally.

The main frame of the machine shown in the drawings comprises a base 1, corner posts 2 and a top plate 3, the last having a transverse trough-like depression 4 which

lies beneath the roller platen 5. Said platen is mounted in a carriage 6 supported by roller bearings in rails 7, which are mounted on the top plate 3. The carriage is controlled by the usual feed mechanism comprising a spring-drum and a feed rack 8, pinion 9, escapement wheel 10, dog rocker 11 and link 12 extending from said dog rocker to an arm 13 which projects from a rock shaft 14 from which a universal bar 15 hangs on rods 16. Said universal bar lies beneath a series of printing key levers 17 which are connected by links 18, sub-levers 19 and links 20, with front-strike type bars 21, said type bars being mounted on a segment 22. The construction is such that when any of the key levers 17 is operated to print, the said key lever depresses the universal bar 15 and rocks the shaft 14 and operates the escapement.

It will be noted that the machine shown resembles in a general way the Remington visible typewriter, but no provision is made for shifting the platen, as the form of my invention shown in the drawings is not adapted for a machine having a platen shift.

My invention, in the specific form here shown, is designed for use in machines having only one type on each type bar, and in machines in which the type bar segment is shifted instead of the platen.

Most of the mechanism of the present invention is mounted on a bracket 23 which is secured to the underside of the trough-like part 4 of the top plate, said bracket being formed, as shown in Figs. 1 and 5, with a horizontal part 24 that lies against the underside of said trough, to which it is secured by screws.

The ribbon vibrator is designated generally by the numeral 25 and it comprises, as best shown in Fig. 7, an upright arm or section 26, the upper end of which stands in front of the platen, a horizontal part 27, a lower upright part 28, and an inclined brace 29 which bridges the angle between the parts 27 and 28. As will be understood by comparing Figs. 2 and 7, the brace 29 is formed integral with the rest of the vibrator, being cut out from said vibrator, leaving an opening 30 that extends throughout the length of the part 27 and part way down the vertical section 28. This brace is folded or ribbed longitudinally and bent into the

form shown, and at its lower end is secured to the section 28 by rivets 31. The upper part of the section 26 of the vibrator is bifurcated, having two upstanding arms 5 32 which are bent back and downward, as shown at 33, and thence forward and upward, forming shallow hooks 34. The arms 33 are inclined outward from the arms 32 with the result that, as seen from 10 the side at Fig. 7, a slot is left through which the ribbon is threaded, but there is, as seen from the front, an opening between each of the arms 32 and 33. The ribbon is inserted into the vibrator by lay- 15 ing it behind said vibrator and drawing it up into the spaces between the arms 32 and 33 and hooking it into the hooks 34. It will be seen that the ribbon can be threaded into the vibrator almost instantly. The entire 20 vibrator is made of one piece of sheet metal, and it is light and rigid in construction. A wide opening 35 is left between the arms 32 below the ribbon in order to render the scale and pointer visible.

25 The vibrator is mounted to slide up and down in a sheet metal bracket which is secured by screws 37 to the front face of the bracket 23. The bracket 36 consists of an upright strip of metal having forwardly ex- 30 tending branches 38 at the top and bottom thereof, said branches being cut out, as shown in Fig. 5 at 40, and formed with notches which receive the edges of the vibrator so as to hold said vibrator in place, but 35 leaving it perfectly free to slide up and down. Between the branches 38 said vibrator has a pin 41 projecting therefrom toward the rear, said pin projecting through a suitable slot formed in the end of a horizontal 40 lever arm 42. Said lever arm has a hub 43 (Fig. 5) which is pivoted on a shouldered and headed screw 44 threaded into a boss 45 of the bracket 23. Said hub also carries a lever arm 46 to the free end of which a link 45 47 is pivoted at 48. The free end of the link 47 is pivoted at 50 to the free end of a link 51, which is pivoted at 52 to the arm 53 of a bell crank having another arm 54, said bell crank being pivoted on a shouldered and 50 headed screw 55 which is threaded into a boss 56 (Fig. 5) of the bracket 23. The links 47 and 51 are operated by the universal bar 15 by means of a link 57 which at its lower end is pivoted to an arm 58 projecting from 55 the rock shaft 14. This link may be connected with either of the links 47 or 51 in any suitable manner, but, as here shown, it is pivoted on the same pivot pin 50 that connects said links. In fact, in the specific 60 construction shown, this pin is a rigid part of the link 57. The construction is such that when the universal bar 15 is operated by one of the printing keys the link 51 will be swung downward and to the left about 65 its pivot or anchor 52 and will drag the link

47 after it, thus operating the lever-arm 46 and the vibrator.

When the universal bar is in normal position the pivot pin 50 stands directly in front of the screw 55 on which the bell 70 crank 53, 54 is pivoted, so that the pivot of this bell crank and the joint between the links 51 and 47 are co-axial, or substantially so. The parts are arrested in this position, 75 as shown in Fig. 2, by means of a stop pin 60 projecting from the bracket 23 into the path of the link 47. It will be seen therefore that if the bell crank 53, 54 be rocked about its pivot, it will swing the link 51 80 about the pin 50 as a center without affecting the link 47 or the vibrator. Such an adjustment of the bell crank will move the anchorage point 52 of the link 51 about the joint 50 as a center, and this will make a difference in the extent of motion imparted 85 by the linkage to the arm 46 and to the vibrator. The bell crank can be adjusted by any suitable means to any desired extent within the limits of motion of which the parts are capable, and the extent of throw 90 of the vibrator can be varied accordingly. This variation in the extent of throw is due to changing the direction of motion of the link 51. When the anchor 52 of this link is down in the position shown in Fig. 4, the 95 joint 50 moves in a path not far from straight up and down, whereas when the anchor 52 is in the position shown in Fig. 3, the joint 50 swings farther toward the left, thus imparting a greater extent of longitudinal motion to the link 47 and of swinging 100 motion to the lever-arm 46. The link 51 acts as a guide or controller for the link 47, and changing the anchorage of the link 51, changes the direction in which the link 47 105 moves when a key is operated. This device of providing a guide or controller for a part of the operating mechanism for a ribbon vibrator and moving said guide, or of changing the point of anchorage of a link 110 included in the train of connections between the universal bar and the vibrator, is capable of many variations. In the present instance the point of anchorage is changed by providing a pivoted support, namely, the 115 lever arm 53, for said anchorage, said support having its pivotal axis coincident with the normal position of the joint 50. As shown in the present instance also, the part whose motion is varied directly by this 120 change in the point of anchorage of the link 51, is the second link 47. In the present instance, these two links, 51 and 47, together constitute a toggle which is flexed by the universal bar acting through the link 57; 125 and the support 53 has its pivotal axis coincident with the normal position of the joint 50 of this toggle.

In the present construction I have shown a two-color ribbon 59 and means for adjust- 130

ing the bell crank to two set positions, one shown in Figs. 2 and 3 for printing from the bottom stripe of the ribbon, and the other shown in Fig. 4 for printing from the upper stripe of the ribbon.

It will be seen that in Fig. 4 the toggle is normally more nearly straight than it is in Fig. 3, so that when a given extent of motion is imparted to the joint of the toggle, a less extent of motion of the arm 46 results in Fig. 4 than in Fig. 3. The effect of changing the anchorage point of the toggle is, of course, to change the leverage of the link 57 on the vibrator. In order to adjust the bell crank 53, 54 conveniently, I have provided a finger button or milled head 61 on the forward end of a rock shaft 62 which, at its forward end, is pivoted in a bracket 63 secured to one of the front corner posts 2 of the machine. The rear end of this shaft is pivoted in an arm 64 of the bracket 23 behind which the shaft is provided with a collar 65 secured to it by a set screw to prevent endwise motion of said shaft. Near its rear end the shaft 62 has secured thereon the hub 66 of an arm 67 to which is pivoted at 68 a link 70 by means of which the bell crank 53, 54 is controlled. The bracket 63 is made of the segmental form shown in the front views, and it has on its front face a section 71 colored red and a section 72 colored black or blue, these sections coöperating with a pointer 73 projecting from the shaft 62 to indicate to the operator what color the machine is set for.

The link 70 may be connected directly with the depending arm 54 of the bell crank and thus control the position of the anchorage of the toggle. I prefer, however, to pivot this link at 74 to a depending arm of a shifting bar 75, which bar is formed with two horizontal slots 76 and 77, the former riding on the pivot screw 55 and the latter on one of the screws 37 which maintains the bracket 36 in position, this screw being made with a shoulder for the purpose. The depending arm of the slide 75 has formed therein an open slot 75 into which a pin 80 projects from the arm 54 of the bell crank. The construction is such that when the shaft 62 is turned by the thumb-wheel 61, the slide 75 is moved toward the right or toward the left, as the case may be, and carries the arm 54 with it.

The parts thus far described constitute a complete and operative vibrator mechanism capable of being set to print either from the upper or lower stripe of the ribbon. It may be desirable in some instances, however, to provide positive stops to limit the upward throw of the vibrator, and I have shown such stops in the drawings. Just back of the section 28 of the vibrator the slide bar 75 has an ear bent off toward the front of the machine, and

this ear is thence bent downward as shown at 82, the section 82 standing above the pin 41 that projects from the vibrator. This ear 82 is cut out in the form shown in the front views so as to have its lower edge forming a stop 83 that stands over the pin 41 when the slide is in its left-hand position, shown in Fig. 3, and another stop 84 which stands over the pin 41 when the slide is in the right-hand position, shown in Fig. 4. The first of these stops is adapted to arrest the pin at exactly the right height for using the red stripe of the ribbon, and the other is adapted to arrest the pin at a lower point suitable for using the upper stripe of the ribbon. The ribbon can be fed longitudinally by any suitable means. In the present instance it is wound on two spools 85, only one of which is shown in Fig. 2. The spools are mounted on shafts 86 mounted in hangers 87 depending from the top plate, and the ribbon is led from the spool upward through a hole in the top plate over a curved guide plate 88.

Various changes can be made in the details of construction and arrangement without departing from my 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, means for operating said vibrator, a guide or controller for a part of said operating means, and means for turning said guide or controller to change the direction of motion of said part and thereby to change the extent of throw imparted to said vibrator.

2. In a typewriting machine, the combination of a ribbon vibrator, means for operating said vibrator, said operating means comprising a toggle; and means for changing the point of anchorage of said toggle in order to vary the extent of throw imparted to the vibrator.

3. In a typewriting machine, the combination of a ribbon vibrator, means for operating said vibrator, said operating means comprising a toggle; and means for adjusting the anchor of said toggle about the joint of the toggle as a center in order to vary the extent of throw imparted to the vibrator.

4. In a typewriting machine, the combination of a ribbon vibrator, a lever operatively connected with said vibrator, a toggle having one end connected with said lever and the other end anchored, printing keys, means for flexing said toggle at each operation of a printing key; a pivoted support for said anchorage having its pivotal axis normally coincident with the joint of the toggle, and means for adjusting said support about its pivot in order to vary the extent of throw of the vibrator.

5. In a typewriting machine, the combination of a ribbon vibrator, means for operat-

ing said vibrator, said operating means including a toggle and means for flexing said toggle; a pivoted support for the anchor of said toggle, said support having its pivotal axis normally coincident with the joint of the toggle; a rock shaft extending to the front of the machine and arranged to be turned by hand, and a connection between said rock shaft and said support, for adjusting said support.

6. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, a link anchored at one end and having its other end free to swing about its anchored end, means connected with the free end of said link for operating said vibrator, and means for changing the point of anchorage of said link in order to vary the extent of throw imparted to the vibrator.

7. In a typewriting machine, the combination of a ribbon vibrator, a link anchored at one end and free to swing about the anchorage as a center, means connected with the free end of said link for operating the vibrator, a pivoted support for said anchorage having its pivotal axis coincident with the normal position of the free end of said link, and means for adjusting said support about its pivot in order to vary the extent of throw imparted to the vibrator.

8. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, a link anchored at one end and connected with said universal bar and with said vibrator, a pivoted support for the anchorage of said link having its pivotal axis coincident with the normal position of the point of connection of said link with said vibrator, and means for turning said support about its pivot in order to vary the extent of throw imparted to the vibrator.

9. In a typewriting machine, the combination of printing instrumentalities, a ribbon vibrator, a bell-crank having a horizontal arm connected to said vibrator, an approxi-

mately horizontal toggle connected with the other arm of said bell-crank, means for operating said toggle at each operation of said printing instrumentalities, and means for changing the anchorage of said toggle.

10. In a typewriting machine, the combination of printing key levers, a universal bar, a ribbon vibrator, a bell-crank having a horizontal arm connected to said vibrator, an approximately horizontal toggle connected with the other arm of said bell-crank, a link connecting said toggle with said universal bar, and means for changing the anchorage of said toggle.

11. In a typewriting machine, a ribbon vibrator composed of a strip of sheet metal having a bend therein, and a brace bridging the angle of said bend and consisting of a strip cut out from the metal of the vibrator.

12. In a typewriting machine, a ribbon vibrator having at its upper part two upstanding arms each bent backward and downward to form a loop through which the ribbon can be threaded, the downwardly bent part of each of said arms being set at an angle with the upwardly extending part of the arm, as seen from the front, so as to leave a space between the upward and downward sections, and each of said downward sections being bent into a hook at its lower end to support the ribbon, whereby the ribbon can be threaded into the vibrator by drawing it up through the spaces left between the upward and downward sections of the respective arms.

Signed at the borough of Manhattan, city of New York, in the county of New York and State of New York, this 21st day of January, A. D. 1910.

GEORGE F. BALLOU.

Witnesses:

E. M. WELLS,
CHARLES E. SMITH.