

R. H. STROTHER.
TYPE WRITING MACHINE.
APPLICATION FILED JULY 6, 1912.

1,046,893.

Patented Dec. 10, 1912.

3 SHEETS—SHEET 1.

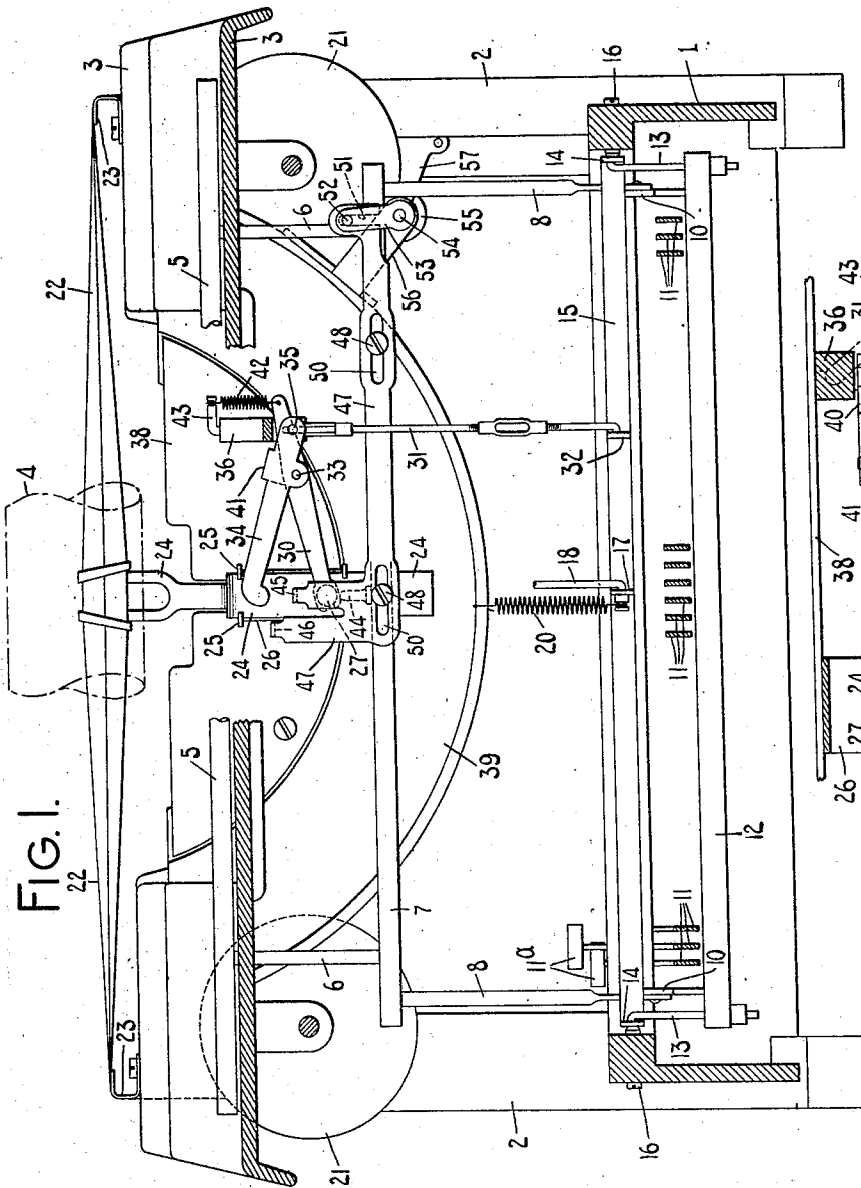


FIG. 1.

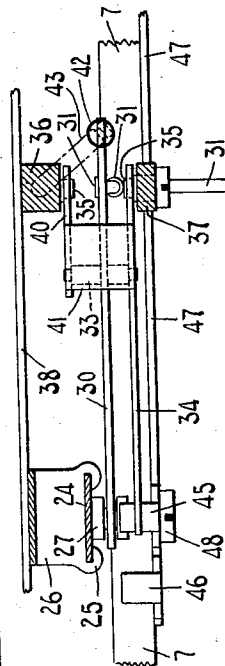


FIG. 2.

WITNESSES:

M. F. Hannweber

E. M. Wells.

INVENTOR:

Robert H. Strother

By Jacob Felbel

HIS ATTORNEY

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3 SHEETS—SHEET 2.

FIG. 3.

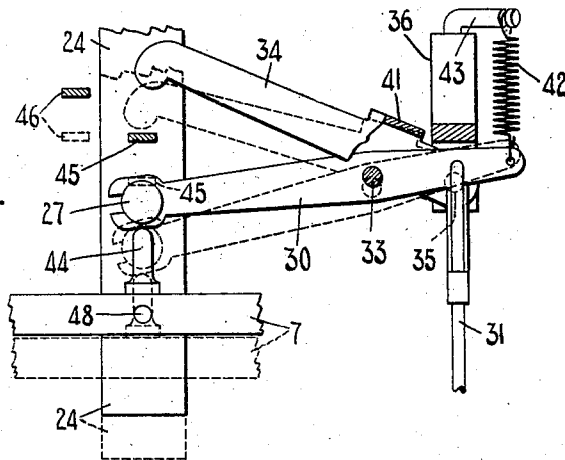


FIG. 4.

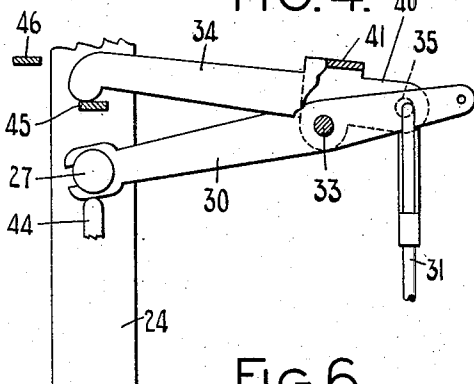


FIG. 5.

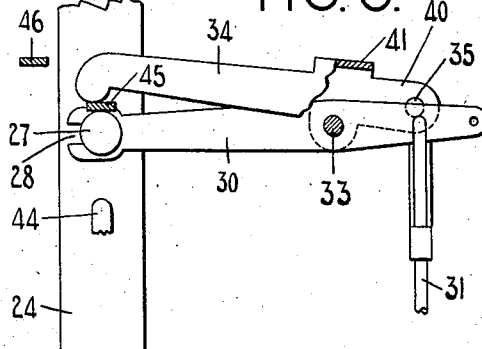


FIG. 6.

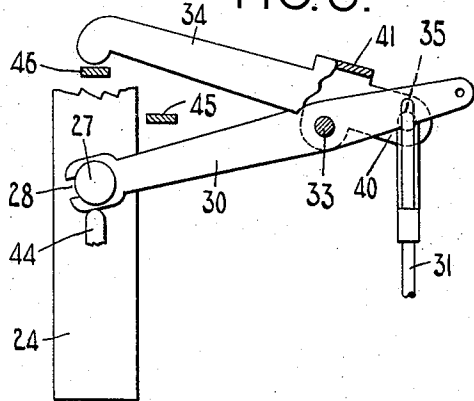
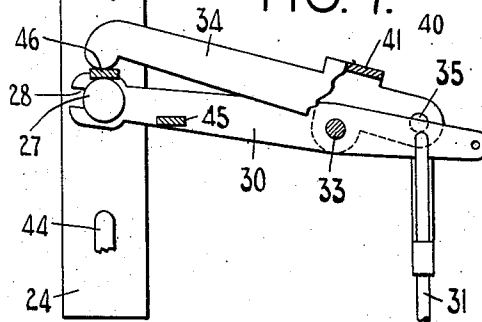


FIG. 7.



WITNESSES:

M. F. Lannocher
E. M. Wells

INVENTOR:

Robert H. Strother
By Jacob Felbel
HIS ATTORNEY

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3 SHEETS—SHEET 3.

FIG. 8.

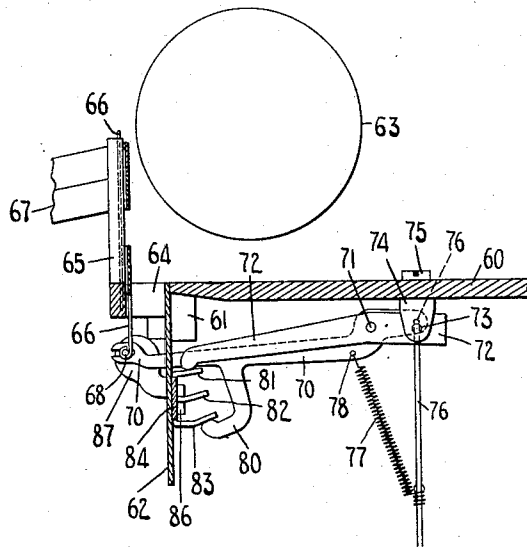
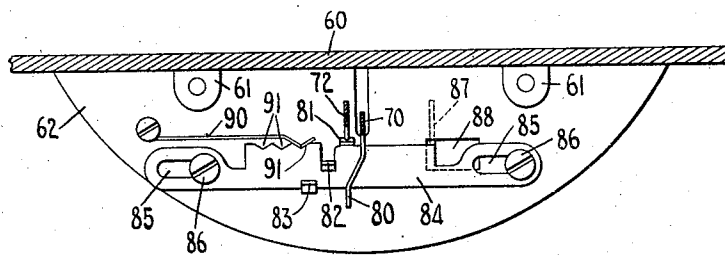


FIG. 9.



WITNESSES:

M. F. Hannacher

E. M. Wells

INVENTOR:

Robert H. Strother

By Jacob Feld

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

ROBERT H. STROTHER, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO UNION TYPE-WRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

1,046,893.

Specification of Letters Patent.

Patented Dec. 10, 1912.

Application filed July 6, 1912. Serial No. 707,984.

To all whom it may concern:

Be it known that I, ROBERT H. STROTHER, citizen of the United States, and resident of Montclair, in the county of Essex and State of New Jersey, 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 vibrator mechanism of visible typewriters.

The principal object of the invention is to provide improved means for varying the widthwise portion of the ribbon that is thrown by the vibrator to the printing point. Means are also provided capable of an adjustment that renders it inoperative to move the ribbon to printing position, in case it is desired to do mimeograph work. These several objects are attained by means that are simple in construction and positive and reliable in operation.

The invention is applicable with practically no additional mechanism whatever to those machines wherein the platen is shifted. In the present instance I have shown the invention applied to a Remington No. 10 typewriter and arranged to give two extents of throw to the vibrator to print on the upper and lower stripes of the ribbon, which stripes may be differently inked, and to leave the vibrator inactive, and to do this whether the platen is in upper case or lower case position. I have also shown a modification applied to a machine having a non-shifting platen.

To the above and other 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 rear view in vertical section of so much of a typewriting machine as is necessary to illustrate my invention. Fig. 2 is a top plan view of some of the mechanism, parts being shown in horizontal section. Fig. 3 is a rear view of some of the principal parts of my invention with parts broken away and parts in section and with the shift frame and associated parts shown in upper position by full lines and in lower position by broken lines. Fig. 4 is a view like part of Fig. 3 but showing the mechanism when a key is partially depressed. Fig. 5 is similar to Fig. 4 but shows the parts when the key is fully depressed. In Figs. 3, 4 and 5 the mechanism is set to operate on the upper stripe of the ribbon. Figs. 6 and 7 show the mechanism set to operate on the lower stripe of the ribbon, the parts being shown in normal position in Fig. 6 and at the end of a key depression in Fig. 7. Fig. 1 is on a reduced scale and Figs. 2 to 7 inclusive are on a larger scale. Fig. 8 is a side view in vertical section of a part of a typewriter having embodied therein a modification of my invention in which there is no platen shift. Fig. 9 is a rear view of the same, partly in section. The mechanism shown in Figs. 8 and 9 is similar, except as to the new parts, to portions of the Monarch typewriter.

The frame-work of the Remington No. 10 machine comprises a base part 1, corner posts 2 and top plate 3, on which last are mounted suitable rails for a carriage, said carriage supporting a platen 4. This platen, as is well known in the art, is mounted on a shiftable platen frame having a roller that rides on a shift rail 5, which shift rail is supported by two posts 6, which in turn are supported by a shifting bar 7 and said shifting bar is supported by two posts 8, which are pivoted at their lower ends to the shift key levers 10. As this shift mechanism is well known in the art it has been shown only partially in the drawings. By depressing a shift key the rear ends of the levers 10 are moved upward, which moves up the frame comprising the bars 7 and 5 and the posts 6 and 8, and said frame, when it is moved upward lifts the platen frame to its upper case position.

The printing is effected by printing key levers 11, having printing keys 11^a thereon and which operate suitable type bars. These key levers also overlie a universal bar 12 which is hung at its ends by wires 13 from arms 14 projecting toward the rear from a rock shaft 15, which at its ends is mounted on pivots 16. An arm 17 projects toward the rear from the rock shaft 15 and is connected by full lines and in lower position by broken lines. Fig. 4 is a view like part of Fig. 3 but showing the mechanism when a key is partially depressed. Fig. 5 is similar to Fig. 4 but shows the parts when the key is fully depressed. In Figs. 3, 4 and 5 the mechanism is set to operate on the upper stripe of the ribbon. Figs. 6 and 7 show the mechanism set to operate on the lower stripe of the ribbon, the parts being shown in normal position in Fig. 6 and at the end of a key depression in Fig. 7. Fig. 1 is on a reduced scale and Figs. 2 to 7 inclusive are on a larger scale. Fig. 8 is a side view in vertical section of a part of a typewriter having embodied therein a modification of my invention in which there is no platen shift. Fig. 9 is a rear view of the same, partly in section. The mechanism shown in Figs. 8 and 9 is similar, except as to the new parts, to portions of the Monarch typewriter.

5 nected by a link 18 with the escapement mechanism, not shown, which mechanism controls the carriage feed. A spring 20 connected with this arm 17, constitutes the restoring spring of the universal bar frame.

10 The ribbon mechanism comprises two spools 21 from which the ribbon 22 is led upward and over guides 23 and across the front of the platen where it is threaded through a ribbon vibrator 24. The stem of

15 this vibrator is guided in notched or slotted ears 25 of a supporting plate 26 which is secured to the stationary framework of the machine so as to leave the vibrator free to be slid up and down. A headed pin 27 projects from the rear face of the stem of the

20 vibrator and is embraced by a slot 28 formed in the free end of a lever 30, which lever is connected by a link 31 with an arm 32 projecting toward the rear from the rock shaft 15. The lever 30 is a floating lever, pivoted at 33 to another lever 34, which in turn is pivoted at 35 to the stationary framework. These levers 30 and 34 can be varied

25 very considerably in their details of construction and the precise form that they have been given in the present instance has been determined to some extent, at least, by the construction of the machine in which they are shown.

30 In the Remington machine there is a bracket 36 having a depending branch 37, Fig. 2, and secured to a stationary front plate 38, which in turn is secured to the type bar segment 39. I make the lever 34 with

35 a branch 40 connected with the body of said lever by a yoke piece 41 and the pivot 35 consists of two posts or studs projecting inward toward each other from the bracket

40 parts 36 and 37. The pivot 33 consists of a pin or axle passing through the lever 30 and entering both branches of the lever 34. The link 31 is pivoted to the lever 30 between the two branches of the lever 34. This is of advantage in a shift machine because it enables

45 the lever 30 to pass at times through the pivotal axis of the lever 34. It will be noted that the pivot 33 is between the pivot 35 and the vibrator and that the free end of the lever 34 normally stands as shown in Figs.

50 3 and 6 above the free end of the lever 30 and behind the stem of the vibrator. The parts are held in this position by a spring 42 which is connected with the lever 30 at

55 the end of said lever outside of the link 31 and pulls upward, the upper end of said spring being connected with a pin or post 43. It will be seen that this spring pulls upward on the link 31 but as this link cannot

60 move upward beyond a certain point determined by certain stops, not shown, which limit the upward motion of the universal bar, the tendency is for the lever 30 to pivot about the upper end of said link 31 and thus

65 to throw the free end of said lever down-

ward. This downward motion of the lever 30 is arrested by a stop 44 mounted on the shifting bar 7. When in contact with the stop 44 it tends to pivot about said stop, thus pulling upward on the pivot 33 and compelling the lever 34 to stand up in the

70 normal position shown in Fig. 1. When a key is depressed and the link 31 moves down, the tension of the spring 42 at first tends to hold the free end of the lever 30 down against the stop 44 so that the effect is to

75 swing the lever 34 downward on its fulcrum 35. If, however, said lever 34 is arrested at any point the pivot 33 then becomes a fixed pivot and the downward motion of the link 31 moves the free end of the lever 30 up-

80 ward and during this upward motion the lever 30 will of course carry the ribbon vibrator with it. The parts are so proportioned that at the bottom of a key stroke the two levers 30 and 34 occupy a definite

85 relative position as shown in Figs. 5 and 7, but the actual position can be any where between the normal position of the lever 34 and the normal position of the lever 30.

90 In order to determine the height to which the ribbon vibrator is shifted, two stops 45 and 46 are provided which can be thrown alternatively in between the levers 34 and 30, and these stops are at different heights. As

95 shown in Fig. 1 said stops consist of ears bent off toward the front of the machine from a sliding bar or plate 47 which is mounted on the shifting bar 7 by means of

100 screws 48 threaded into said bar 7 and passing through slots 50 in the sliding bar 47. Said bar 47 can be slid to either one of three positions. When it stands as shown in Figs.

105 1 to 5 inclusive, the mechanism is set to write on the upper stripe of the ribbon because then the lower stop 45 is in position to arrest the two levers 30 and 34. When the

110 stop 45 is set in operative position and a key is depressed the first part of the key depression moves the lever 34 down against the stop 45, as shown in Fig. 4. This takes perhaps something like half of the key

115 stroke. When the lever 34 strikes the stop 45 the pivot 33 becomes a fixed pivot and the lever 30 becomes a lever of the first order. A continued downward motion of the universal bar and of the link 31 causes the free

120 end of the lever 30 to rise to the position shown in Fig. 5 where it is arrested by the pin 27 striking against the underside of the stop 45, which stop is, therefore, as it were, pinched in between the two levers. It will

125 be seen that the vibrator is thrown upward positively and that it is positively arrested when the pin 27 encounters the stop 45. It will also be seen that the operation takes place just the same whether the platen is in the upper case position or in the lower case

position. When the parts are moved to upper case position, as shown in full lines in 130

Fig. 3, the stop 44 carries the lever 30 and the vibrator upward to the same extent as the platen is shifted. It also carries the stops 45 and 46 upward to the same extent and also the lever 34, which last is pivoted to the lever 30 at 33. If a key is operated with the parts in this upper case position the lever 34 will move down until it strikes the stop 45, after which the lever 30 will move up until arrested by said stop and the vibrator will be in the same position with relation to the platen as when the parts were operated in lower case position.

When it is desired to write on the lower stripe of the ribbon, which, if said ribbon is a polychrome ribbon, will probably be a red stripe, the plate 47 is shifted until the stop 46 is moved under the lever 34. If, then, a key be depressed said lever 34 will be arrested almost immediately and the downward motion of the link 31 will begin almost immediately to move the vibrator upward, and it will move it upward until the pin 27 is arrested by the stop 46, as shown in Fig. 7. It will readily be seen that this operation also is the same whether the platen be in its upper case or in its lower case position. By moving the slide bar 47 to the left of the position shown in Fig. 1, both stops 45 and 46 will be moved out of range of the levers 30 and 34. When the stops are in such inoperative positions the operation of the universal bar will merely cause the lever 34 to be moved down almost to the normal position of the lever 30, which lever 30 will not be lifted off of its stop 44 and the vibrator will not be operated. The slide can be set to this inoperative position when it is desired to use the machine for mimeographing.

In order to adjust the slide bar 47, said slide bar is formed as shown in Fig. 1 with a vertical slot 51 into which a pin 52 extends from an arm 53 mounted on the rear end of a horizontal shaft 54, which shaft extends to the front of the machine where it is provided with a finger button or milled head 55 for turning it. The shaft 54 may be journaled in brackets 56 and 57 and it may be provided with any suitable indicating device and with any suitable means for retaining it in any one of the three positions to which it is intended that it be adjusted.

It will be perceived that by suitably manipulating the button 55 the ribbon mechanism can be set for either mimeographing or for writing on the upper stripe of the ribbon or for writing on the lower stripe of the ribbon. The adjustment of the said button 55 has no other effect than to adjust the slide 47, which slide carries the stops 45 and 46. It will be noted that the ribbon vibrator can be caused to move to a greater or less extent to enable writing to be done from either stripe or from neither stripe

of the ribbon and in either upper or lower case position of the platen; that the control of the vibrator is positive; and that these functions are obtained by extremely simple mechanism, the parts operated by the universal bar consisting only of the link 31 and the two levers 30 and 34 and the adjustable part consisting merely of the stops 45 and 46.

Figs. 8 and 9 show an adaptation of my invention to the Monarch typewriter in which the type bar segment is shifted and in which the platen has no shifting movement. In these figures 60 represents the top plate of the Monarch machine having ears 61 to which is secured by screws a segmental front plate 62 which occupies part of the space between the type bar segment and the top plate. The platen is represented at 63 and at 64 is the bracket which supports the guide 65 and the ribbon vibrator 66, through which is threaded the ribbon 67. The lower end of the vibrator has a cross pin 68 that plays in a slot in the free end of an operating lever 70, which lever is pivoted at 71 to a second lever 72, which last is pivoted at 73 to a hanger 74 secured to the underside of the top plate as by a screw 75. The lever 70 is connected by a link 76 with the universal bar frame in the manner usual in the Monarch machine and said link is controlled by a spring 77 connected at one end to the link and at the other end at 78 to the lever 70. Said spring is connected to the lever 72 through the lever 70, the point 78 being preferably forward of the pivot 71. It will be perceived that the tension of the spring 77 is exerted to hold both the levers 70 and 72 down at their forward ends. The lever 70 is formed with a branch 80 which extends downward and thence forward, as shown, so as to lie below the level of three stops 81, 82 and 83 consisting of ears bent off from a slide bar 84, which slide bar is formed with slots through which pass screws 86 that are threaded into the plate 62 from the rear thereof. As shown in Fig. 9, the arm 80 is offset so as to bring its lower end directly beneath the levers 72. The stops 81, 82 and 83 are arranged in the stepped formation shown in Fig. 9; that is to say, they are arranged one above another and the two higher stops being each to the right of the stop below it.

The bar 84 can be moved lengthwise by means of a handle 87 projecting forward therefrom through a slot 88 in the plate 62. Said bar 84 is yieldingly retained in any one of three positions by means of a detent spring 90 adapted to engage at will with any one of three notches 91 in the bar 84. When said bar 84 stands in the position shown in Fig. 9 and a key is operated and the link 76 is drawn down, the stop 81 standing as

shown prevents the lever 72 from moving downward. The pivot 71 is therefore a fixed pivot and the lever 70 acts as a lever of the first order, which is operated by the link 76 until arrested by the arm 80 striking the underside of the stop 81, which stop will then be pinched in between the two levers. The ribbon is thus thrown to its highest point and the actuated type bar will co-act with the lower stripe thereof. If the bar 84 be moved one notch to the right in Fig. 9 the middle stop 82 will be brought into operative position. If, now, a key be depressed the first part of the key stroke will cause the lever 72 to move downward until it is arrested by the stop 82. The remainder of the stroke will cause the lever 70 to move upward until it is arrested by the same stop which positively arrests the vibrator at proper position to write from the upper stripe of the ribbon. If the bar 84 be moved another notch to the right in Fig. 9, the stop 83 will be brought to operative position and if now a key be operated the lever 70, and with it the vibrator, will not be thrown up to bring the ribbon to printing position, the whole motion of the link 76 being expended idly in moving the lever 72 downward. The stop 83 has no other function than to prevent positively any motion of the vibrator at this time. I do not consider this stop 83 to be necessary but it can be employed if desired or if found advantageous, and it will of course be obvious that a similar stop can be used if desired in the form of the invention shown in the other figures of the drawing.

It will be perceived that the levers 30 and 34 in the first form of my invention and the levers 70 and 72 in the second form, are two parts connected together and with the printing keys in such a way that the sum of the motions of said two parts at a key stroke is substantially constant and that the variation in the action of the ribbon vibrator is brought about by variable stopping means variably distributing such constant sum of motions between the two parts or levers. Stated in another way, these two parts or levers are given at each key stroke a definite amount of relative motion which may be variably distributed between said two parts. It will also be perceived that primarily it is the lever 34 in the first form of my invention and the lever 70 in the second form that is arrested by the stop, a greater or less part of the key stroke being lost in moving this lever to the stop. It is not absolutely essential that the floating lever be arrested by said stop or by any positive stop. The action of the parts is rendered more positive and exact, however, by having said floating lever also arrested and with it the vibrator itself.

Various changes, other than those speci-

cally described, 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 printing keys; two parts; connections between said parts and to said keys, whereby said parts are operated by said keys and said connections being such that the sum of the motions of said two parts at a key stroke is substantially constant; variable stopping means for variably distributing such motion between the two said parts; and a ribbon vibrator operated by said parts. 70
2. In a typewriting machine, the combination of printing keys, two parts connected together with freedom for relative movement, connections to said keys for causing at a given stroke a definite amount of relative motion between said parts, variable stopping means for variably distributing such relative motion between the two parts, and a ribbon vibrator operated by said parts. 75
3. In a typewriting machine, the combination of printing keys, two key operated, relatively movable parts; variable stopping means coöperative with one of said parts, the extent of movement of the other of said parts depending upon the point of arrest of the stop-arrested part; and a ribbon vibrator operated by said parts. 80
4. In a typewriting machine, the combination of two relatively movable parts, a vibrator connected to one of said parts, means for variably arresting one of said parts, and key operated means for imparting a definite and constant extent of relative movement to the two said parts. 85
5. In a typewriting machine, the combination of two members connected together for relative movement and normally held apart, printing keys, means operated by said keys for drawing said members together, variable stopping means capable of being interposed at different points between said members, and a ribbon vibrator operated by said members. 90
6. In a typewriting machine, the combination of printing keys, a pair of levers jointed together, means operated by said keys for imparting to said levers a definite extent of relative turning movement about their point of juncture, variable stopping means for arresting said levers in a definite relative position, and a ribbon vibrator operated by said levers. 100
7. In a typewriting machine, the combination of printing keys, two levers jointed together and one of them pivoted to the framework, a connection from the other of said levers to said keys, variable arresting means for arresting said levers in a definite relative position but in variable actual position. 105

tions, and a ribbon vibrator operated by said levers.

8. In a typewriting machine, the combination of printing keys, two levers connected together, variable stopping means between them, means for pinching said levers together on said stopping means at a key-stroke, and a ribbon vibrator operated by said levers.

9. In a typewriting machine, the combination of printing keys, two levers connected between their ends, one of said levers being pivoted to a relatively stationary part, operating means acting on the other lever, variable stopping means for said levers, and a ribbon vibrator variably operated by said levers.

10. In a typewriting machine, the combination of printing keys, two levers connected together between their ends, one end of one of said levers being pivoted on a fixed pivot, operating means connected with the corresponding end of the other lever, variable stopping means for said levers, and a ribbon vibrator operated by said levers.

11. In a typewriting machine, the combination of a lever pivoted on a fixed pivot, a floating lever pivoted to the first mentioned lever, means for moving one end of said floating lever a definite distance, variable stopping means for the other said lever, and a ribbon vibrator operated by the said levers.

12. In a typewriting machine, the combination of printing keys, a platen, means for shifting said platen to change the case, two parts, connections between said parts and to said keys whereby said parts are operated by said keys and such that the sum of the motions of said two parts at a key stroke is substantially constant, variable stopping means for variably distributing such motion between the two said parts, said stopping means being shiftable with said platen, and a ribbon vibrator operated by said parts.

13. In a typewriting machine, the combination of printing keys, two parts connected together with freedom for relative movement, connections to said keys for causing at a stroke a definite amount of relative motion between said parts, variable stopping means for variably distributing such relative motion between the two parts, a ribbon vibrator operated by said parts, a shiftable platen, and means for shifting said vibrator and said stopping means with said platen.

14. In a typewriting machine, the combination of printing keys, a shiftable platen, a pair of levers joined together and one of said levers pivoted to a fixed part, means operated by said keys for imparting to said levers a definite extent of relative turning movement about their point of juncture, variable stopping means for arresting said levers in a definite relative position, a ribbon

vibrator operated by said levers, and means for shifting said vibrator, the free ends of said levers and said stopping means with said platen.

15. In a typewriting machine, the combination of printing keys, variable stopping means, two relatively movable parts, means operated by said keys for imparting a relative motion to said parts but said parts being free to move together independently of said key operated means, variable stopping means for determining the actual positions to which said parts are moved by said keys, and a ribbon vibrator operated by said parts.

16. In a typewriting machine, the combination of a lever pivoted at one end to the framework, a floating lever pivoted to the first mentioned lever scissors-wise, means connecting one end of said floating lever with said printing keys, a ribbon vibrator connected with the other end of said floating lever, and variable stops that can be interposed between said floating lever and the first mentioned lever.

17. In a typewriting machine, the combination of a lever pivoted at one end to the framework, a floating lever pivoted to the first mentioned lever scissors-wise, means connecting one end of said floating lever with said printing keys, a ribbon vibrator connected with the other end of said floating lever, variable stops that can be interposed between said floating lever and the first mentioned lever, a shiftable platen, and a shift frame on which said variable stops are mounted.

18. In a typewriting machine, the combination of printing keys, two levers connected together, variable stopping means between said levers, means for pinching said levers together on said stopping means at a key-stroke, and a ribbon vibrator operated by said levers, said stopping means being capable of being rendered inoperative and the construction being such that said levers do not then move said vibrator to printing position.

19. In a typewriting machine, the combination of printing keys, two parts, connections between said parts and to said keys, whereby said parts are operated by said keys and such that the sum of the motions of said two parts at a key-stroke is substantially constant, variable stopping means for variably distributing such motion between the two said parts, and a ribbon vibrator operated by said parts, said stopping means being variable to cause said vibrator not to be moved to printing position.

20. In a typewriting machine, the combination of printing keys, key operated relatively movable parts, variable stopping means coöperative with one of said parts, the extent of movement of the other of said parts depending upon the point of arrest of

the stop-arrested part, and a ribbon vibrator operated by said parts, said stopping means being capable of being rendered inoperative to arrest said stop-arrested part and the mechanism in that event being inoperative to move the ribbon vibrator to printing position.

21. In a typewriting machine, the combination of a ribbon carrier, vibrating means therefor comprising two connected levers, and ribbon stop mechanism comprising a stop adapted to be interposed at will between said levers.

22. In a typewriting machine, the combination of a ribbon carrier, vibrating means therefor comprising two connected levers, and a plurality of ribbon stops, each stop being adapted to cooperate at will with both said levers.

23. In a typewriting machine, the combination of a ribbon carrier, means for actuating the same at printing operation comprising a pair of levers jointed together, and variable ribbon stop mechanism adjustable separately from said levers and adapted to vary the effect of one of said levers on the other in such fashion that when said stop mechanism is set to shorten the motion of one lever, the other lever has a longer motion.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 5th day of July, A. D. 1912.

ROBERT H. STROTHER.

Witnesses:

CHARLES E. SMITH,
M. F. HANNWEBER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."