J. WALDHEIM.

TYPE WRITING MACHINE.

APPLICATION FILED APR. 22, 1911.

1,025,171.

Patented May 7, 1912.

3 SHEETS—SHEET 1.

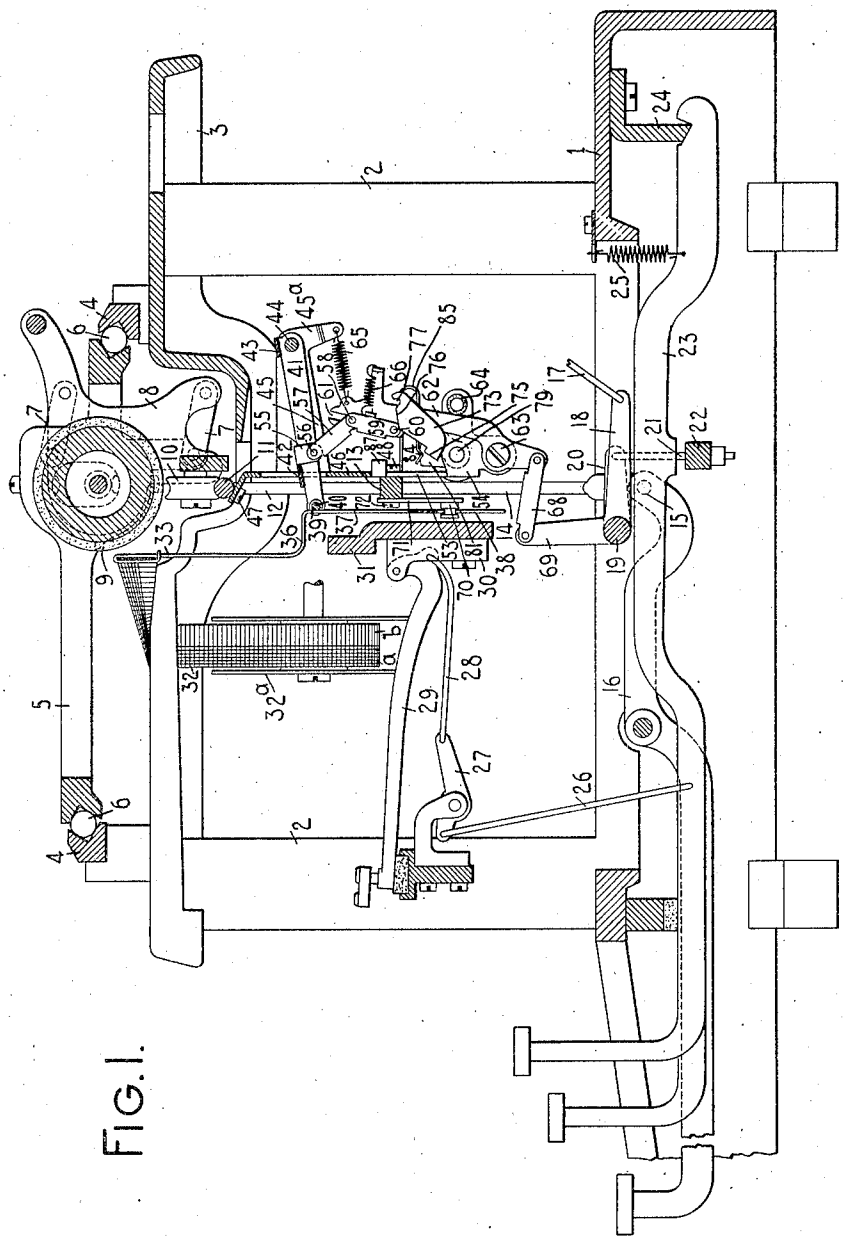

FIG. 1.

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3 SHEETS—SHEET 2.

FIG. 3

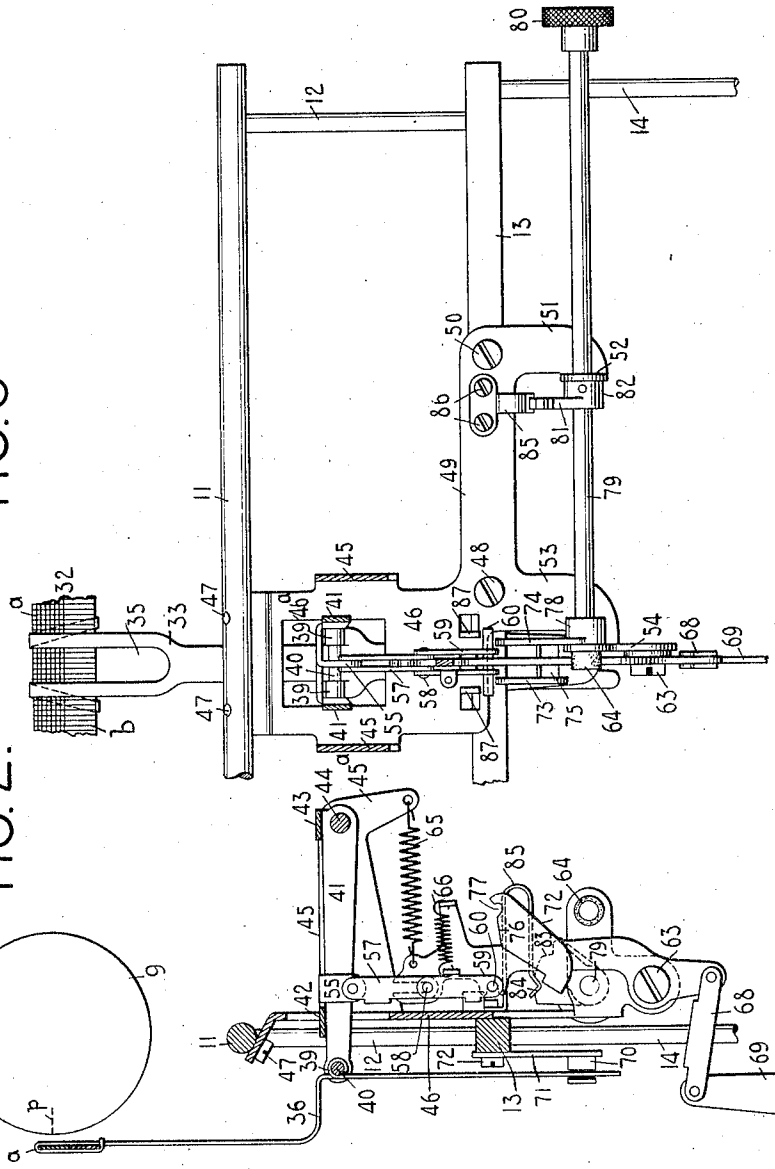
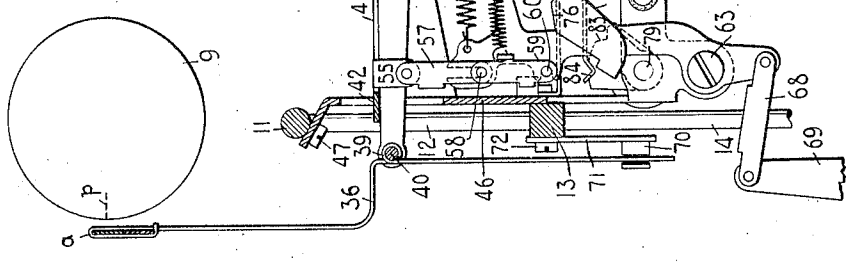


FIG. 2.



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3 SHEETS—SHEET 3.

FIG. 6.

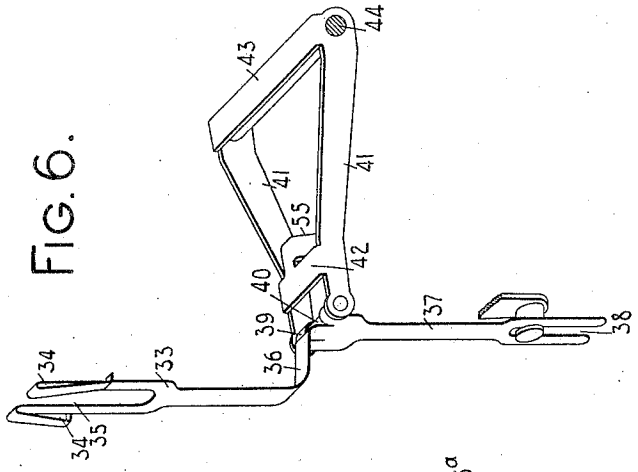


FIG. 7.

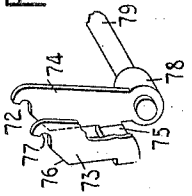


FIG. 5.

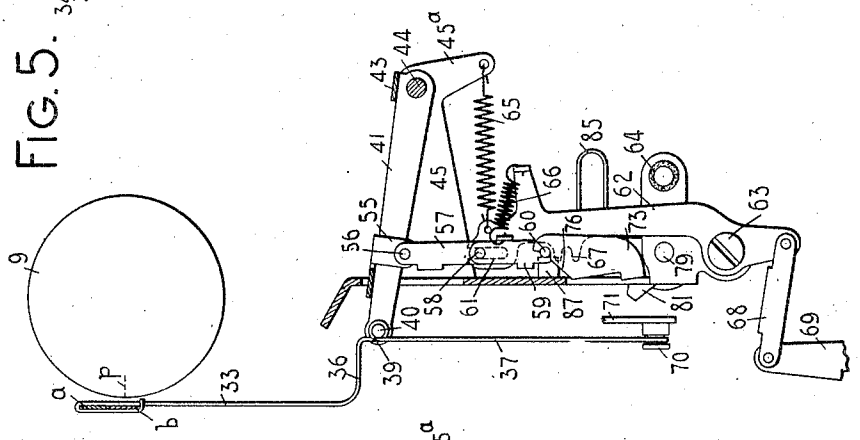
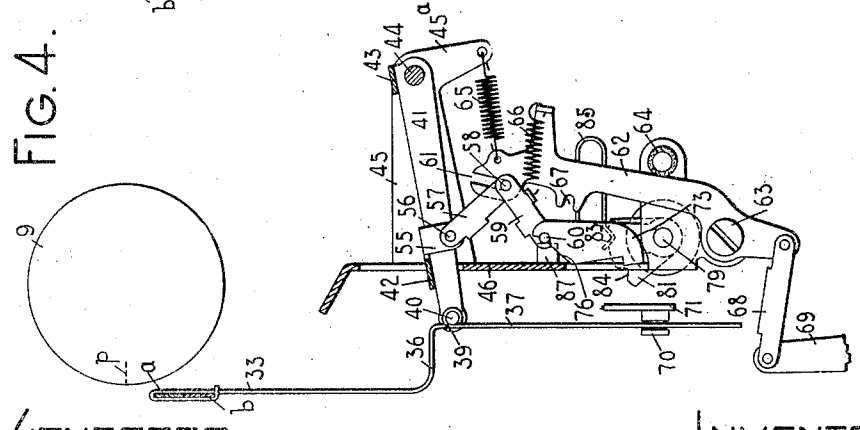


FIG. 4.



WITNESSES.

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UNITED STATES PATENT OFFICE.

JOHN WALDHEIM, OF NEWARK, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

1,025,171. Specification of Letters Patent. **Patented May 7, 1912.**

Application filed April 22, 1911. Serial No. 622,664.

To all whom it may concern:

Be it known that I, JOHN WALDHEIM, citizen of the United States, and resident of Newark, 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 ribbon mechanism for typewriting machines and its general object is to provide improved mechanism of the character specified and more especially to provide devices which positively control the vibratory movements of the ribbon so as to prevent overthrow of the ribbon at printing operation.

In the present instance I have accomplished the result sought by including toggle devices in the train of ribbon vibrating mechanism, the toggle being normally broken and operating, when straightened, at printing operation to raise the ribbon so that it is presented properly to the types. Means are also provided for varying the toggle devices and the normal setting of the toggle devices so that the toggle may operate to position and control the ribbon for a plurality of ribbon fields.

The form of my invention herein shown is adapted to the Remington No. 10 typewriting machine but the principles of the invention may be readily applied to other styles of writing machines.

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.

In the drawings, Figure 1 is a fragmentary vertical front to rear sectional view of a No. 10 Remington typewriting machine embodying my invention. Fig. 2 is a fragmentary side elevation partly in section showing parts of the ribbon mechanism in different relationships from those in which they appear in Fig. 1. Fig. 3 is a rear elevation partly in section corresponding to Fig. 2. Figs. 4 and 5 are operating views of the ribbon mechanism showing the parts set for using the lower ribbon field. Figs. 6 and 7 are perspective views of parts of the ribbon mechanism.

As shown in Fig. 1 the main frame of the machine comprises a base 1, corner posts 2 and a top plate 3 which supports fixed track ways 4 for a platen carriage comprising a truck 5 connected through anti-friction balls 6 with said track ways. The truck is connected by links 7 with a shiftable platen frame 8 in which is mounted a cylindrical platen 9. On the platen frame 8 is a roller 10 which coöperates with a shift rail 11 secured at the top of a shiftable frame comprising uprights 12, a cross bar 13 and downwardly extending arms 14 pivotally connected at their lower ends at 15 to shift key levers 16. The letter space feed movements of the carriage are controlled by escapement devices (not shown), certain of which are connected to a link 17 pivoted to an arm 18 on a rock shaft 19, said rock shaft being mounted in the base of the machine and being provided near its ends with crank arms 20 from which depend arms or links 21 supporting a universal bar 22. Said universal bar underlies a set of printing key levers 23 fulcrumed on a plate 24 and each provided with a restoring spring 25. Each key lever is connected by devices comprising a link 26, a lever 27 and a second link 28 with a type bar 29 supported on a hanger 30 secured to a segment 31, the type bars, when actuated, coöperating with the front face of the platen 9. A ribbon 32 which, in the present instance, is divided into longitudinal fields *a* and *b* of different characteristics, is wound upon ribbon spools, one of which 32^a is shown, the ribbon spools being arranged below the top plate one at each side of the machine and being adapted to be alternately connected by mechanism of known character (not herein shown) with the carriage, during leftward movements thereof, so as to feed the ribbon longitudinally back and forth in opposite directions. The ribbon is led up from the spools over fixed guides and directed inward and rearward toward the platen, being threaded centrally of the machine through a vibratory ribbon carrier or vibrator which, as shown in Fig. 6, comprises an upper portion or body 33 provided with ribbon guiding slots 34 and a type opening 35. The vibrator is provided with a rearward off-set 36 and from the off-set portion depends a stem 37 having a guide slot 38. The upper part of the stem is provided with ears 39 which coil around and pivotally engage a cross pin 40 carried at the forward ends of arms 41 of a lever member, which further

comprises cross bars 42 and 43 connecting the arms. The lever member is fulcrumed on a rod 44 which is supported on parallel ears 45 comprised in a supporting bracket which further includes a body portion 46, the upper end whereof, as appears from Figs. 2 and 3, is forwardly inclined and is secured by screws 47 to the shift rail 11. A screw 48 likewise secures the bracket 46 to the cross bar 13 of the shift frame. The bracket has a lateral extension 49 which is also secured to the cross bar by a screw 50 and terminates in a downward extension 51 having a rearwardly bent ear 52. The bracket further comprises a downward extension 53 having a rearwardly bent portion 54.

The arm 42 of the lever member has a rearward and downward extension 55 which is pivotally connected at 56 with a depending toggle member 57, the lower end of which is pivotally connected at 58 with a second toggle member 59, the lower end whereof carries a cross pin 60 having projecting end portions. As shown in Fig. 1 the pivotal connection or pin 58 is engaged by a slot 61 at the upper end of a lever 62 which is fulcrumed on a screw pin 63 mounted on the bracket portion 54. Normally the lever 62 is positioned against a limiting stop 64 as shown in Fig. 1 by a coiled spring 65, one end of which is connected to the upper end of the lever 62 and the other end to an ear 45^a on the left-hand ear 45. The toggle comprising the members 57 and 59 is normally maintained broken as in Fig. 1 by a coiled spring 66 which is connected at its front end to the toggle member 59 and at the rear end to the lever 62. In the position shown in Figs. 1 and 2 the cross pin 60 is maintained in a notch or slot 67 on the front edge of the lever 62. The lower arm of said lever is connected by a link 68 with an upright crank arm 69 secured to the rock shaft 19. The construction is such that when the universal bar is actuated by one of the printing keys it swings the crank arm 69 rearward, operating through the link 68 to vibrate the lever 62, the upper arm whereof swings forward and operates to straighten the toggle 57, 59 as shown in Fig. 2. The straightening of the toggle swings up the operating lever 41—43 which moves upward in a slot or opening 46^a in the bracket 46 and thereby raises the vibrator so as to present the upper ribbon field *a* to the types as will be understood from Fig. 2 wherein the printing point is indicated by the dotted line *p*. The vibrator is guided during its vibratory movements by a grooved pin 70 secured to a plate 71 fixed by a screw 72 to the shift bar 13. It will be observed that during the movement from Fig. 1 to Fig. 2 the toggle member 59 is rigid on the lever 62, being controlled by the pins 58 and 60 which are maintained seated in the slots 61 and 67, respectively. In effect then the toggle, during the movement from normal position as shown in Fig. 1 to the printing position for the upper field *a* as shown in Fig. 2, may be said to comprise the member 57 and the member 62, the two members being pivotally connected at 58 and the member 62 having a fixed pivot 63.

In order to use the lower ribbon field *b* means are provided for changing the normal setting of the toggle member 59 and providing said member with a stationary support independent of the lever 63. Said means comprises a member 72 which is shown clearly in Fig. 7. Said member includes parallel side arms 73 and 74 joined by a cross bar 75. Each arm is formed with an inclined or cam edge 76 and a seat or depression 77, which are adapted to cooperate with the end portions of the cross pin 60, the member 72 being positioned to underlie the cross pin 60. The lower end of the arm 74 is provided with a hub 78 which is secured to the inner end of a rock shaft 79. Said rock shaft, as clearly appears from Fig. 3, bears in the ears 52 and 54 on the bracket 46 and extends leftward, terminating in a finger button 80 by which the rock shaft and the member 72 may be manually turned.

Detent devices are provided for maintaining the rock shaft and the member 72 in either of two set positions. Said detent devices comprise an arm 81 having a hub 82 which is fixed to the rock shaft 79 (Figs. 2 and 3). The outer end of the arm 81 is formed with notches 83 and 84 with which coöperates a U-shaped spring detent 85 secured by screws 86 to the bracket portion 49. When the detent 85 is engaged with the notch 84 as shown in Fig. 2 the member 72 will be maintained in inoperative position as shown in Figs. 1 and 2. By turning the rock shaft 79 forward until the spring detent 85 engages with the notch 83, as shown in Fig. 4, the cam edges 76 are caused to contact with the pin 60, forcing the lower end of the member 59 forward and upward until it contacts with limiting stops 87 formed by rearwardly bent ears on the bracket 46. At the arresting moment the cross pin 60 will be seated in the notches or depressions 77 which form a bearing for said cross pin and consequently for the lower toggle member 59, which, it will be observed, has, by the above described operation, been raised to a new normal position and provided with a support or pivot independent of the lever 62. The resetting of the toggle member 59 does not affect the upper toggle member 57 and consequently the normal position of the vibrator and the operating lever is not altered by the resetting operation.

If, with the parts set as in Fig. 4, one of the printing key levers be actuated, the toggle comprising the members 57 and 59 will be straightened by the action of the upper end of the lever 62 on the pivot pin 58. The straightening of the toggle, as shown in Fig. 5, will operate to elevate the operating lever or member and the vibrator. The upward movement of the vibrator will be of a greater extent than that described in connection with Figs. 1 and 2 and will be sufficient to present the lower ribbon field *b* to the types as shown in Fig. 5. On the return movement the parts will be restored to normal position by the various restoring devices comprising the springs 65 and 66. It will be apparent that for both extents of throw the vibrator will be so controlled by the toggle devices that it will be positively limited to predetermined extents of movement, the toggles positively preventing an overthrow, since, in one instance, the lower end of the toggle has the fixed pivot 63 and in the other instance the lower end of the toggle has the fixed pivot 60. Thus without the employment of ribbon stops and the consequent noise and sudden arresting of the parts, I secure equivalent results by a comparatively noiseless mechanism. Furthermore, it will be seen that the vibrator and the actuating and controlling devices therefor comprising the operating lever member and the toggle devices down to and including the lever 62 are all mounted and supported on brackets which are carried by the platen shifting frame so that when the platen is shifted the vibrator and the actuating and controlling devices aforesaid are shifted with it and maintain the same relationship subsequent to the shift as prior thereto. During such shifting movements the link 68 will swing upward about its connection with the crank arm 69 as a center.

It will be observed that by my present invention I provide ribbon vibrating mechanism for typewriting machines, which vibrating mechanism comprises a toggle; that in the present instance said mechanism includes a ribbon vibrator and an operating lever and that the toggle is directly connected to the operating lever; that in a front-strike typewriting machine I combine with a vertically disposed ribbon vibrator, a horizontally disposed operating lever or member with which said vibrator is connected, and a toggle, one element whereof is connected to the operating lever between its fulcrum and the vibrator, said toggle being normally broken and becoming substantially, vertically disposed when straightened by the operation of one of the printing keys; that ribbon field changing mechanism is provided which comprises toggle devices, said toggle devices being variable, the variation being effected by manually controlled means and resulting in a variation in the printing field of the ribbon or in the widthwise portion of the ribbon presented to the types; that means are provided for throwing into and out of operation certain of the toggle devices to vary the printing field of the ribbon; that in the present instance the device which is thrown out of and into operation is the lower toggle arm, element or member 59 which at times is moved bodily with the lever 62 and at other times is operated or swung pivotally about a fixed support by said lever 62; that the toggle has a movable pivot at the top of its upper arm and that the lower arm of the toggle may be changed from one element, 62, to another element, 59, and thereby the fixed pivot or anchorage at the lower end of the toggle may be changed or raised and the length of the lower toggle arm altered, or decreased in length and vice versa; that in combination with a ribbon vibrator there is provided a toggle, an actuating device for the toggle and means for rendering the actuating device part of the toggle; that said actuating device is in the present instance the lever 62; and that a hand controlled shifter is provided for throwing the arm 59 into and out of operation as a toggle member, said shifter operating as a support for said toggle member when it is operating as such independently of its former support, 62, the construction providing toggle devices having a plurality of anchorages and means for at will changing from one anchorage to another.

The principles of my invention may be adapted in whole or in part to other constructions besides the one illustrated and described herein and various changes may be made in the described construction, without departing from the spirit and scope of my said invention.

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

1. Ribbon vibrating mechanism for a typewriting machine comprising toggle devices provided with a plurality of anchorages and means for at will changing from one anchorage to another to vary the vibration of the ribbon.

2. In a typewriting machine, the combination of a ribbon vibrator, and actuating devices therefor including toggle devices provided with a plurality of anchorages and means for at will changing from one anchorage to another to vary the vibration of the ribbon.

3. In a typewriting machine, the combination of a ribbon vibrator, and actuating devices therefor including a toggle, said toggle being normally broken and being operative when straightened to move the vibrator to present the ribbon in the path of the types.

4. In a typewriting machine, the combination of a ribbon vibrator, an operating lever, and devices for actuating said lever comprising toggle devices provided with a plurality of anchorages and means for at will changing from one anchorage to another to vary the vibration of the ribbon.

5. In a typewriting machine, the combination of a ribbon vibrator, an operating lever directly connected thereto, a toggle directly connected to said operating lever and supporting the same, and means for actuating said toggle at printing operation.

6. In a typewriting machine, the combination of a ribbon vibrator, an operating lever directly connected thereto, a toggle directly connected to said operating lever, said toggle being normally broken, and means for straightening said toggle at printing operation to present the ribbon in the path of the types.

7. In a front strike typewriting machine, the combination of a vertically disposed ribbon vibrator, a horizontally disposed operating lever with which said vibrator is pivotally connected, and means for actuating said operating lever including a toggle, one element whereof is directly connected to said operating lever between its fulcrum and the vibrator, said element coöperating with the other toggle element to sustain the operating lever and vibrator in normal position.

8. In a front strike typewriting machine, the combination of a vertically disposed ribbon vibrator, a horizontally disposed operating lever with which said vibrator is connected, and means for actuating said operating lever including a toggle, one element whereof is connected to said operating lever between its fulcrum and the vibrator, said toggle being normally broken and being substantially vertically disposed when straightened to the operated position, the toggle elements coöperating normally to sustain the ribbon vibrator and operating lever in normal position.

9. In a typewriting machine, the combination with case shifting mechanism, of a ribbon vibrator, and actuating devices therefor including a toggle, the vibrator being automatically shifted when the case shifting mechanism is operated and the toggle operating independently of the case shifting mechanism.

10. Ribbon field changing mechanism for a typewriting machine comprising a ribbon holding device, and devices for vibrating said holding device, the vibrating devices including a toggle and means for varying the length of one arm of the toggle.

11. In a typewriting machine, the combination of a platen, shifting devices therefor, a ribbon vibrator, an operating lever, and devices for actuating said lever comprising a toggle, the vibrator, the operating lever and the toggle being shiftable by the platen shifting devices.

12. In a typewriting machine, the combination with a shiftable platen, of a ribbon vibrator, and actuating devices therefor including a toggle, the vibrator and the toggle being shifted when the platen is shifted and the relationship between the toggle elements being the same after the shift as prior thereto.

13. In a typewriting machine, the combination of a ribbon vibrator, means for actuating the same comprising toggle devices, and means for selecting at will certain of said toggle devices to provide an operative toggle, and other key actuated devices for thereafter actuating said operative toggle to vary the widthwise portion of the ribbon presented to the types.

14. In a typewriting machine, the combination of a vibrator, operating devices therefor including a toggle, an actuating device for the toggle, and means for rendering said device part of the toggle.

15. In a typewriting machine, the combination of a ribbon vibrator, means for actuating the same comprising toggle devices, and manual means for changing the normal relationship of said toggle devices and also for changing the toggle devices themselves to vary the widthwise portion of the ribbon presented to the types.

16. Ribbon vibrating mechanism for typewriting machines comprising toggle devices, and means for throwing into and out of operation certain of said toggle devices to vary the printing field of the ribbon.

17. In ribbon vibrating mechanism for typewriting machines, a plurality of toggle elements, one of said elements being adapted to be bodily supported on another of said elements.

18. In ribbon vibrating mechanism for typewriting machines, a plurality of toggle elements, one of said elements being adapted to be bodily supported on a second of said elements, and means for at will providing said bodily supported element with a support independent of said second element.

19. Ribbon vibrating mechanism for a typewriting machine comprising a toggle member operating for each vibration of the ribbon, and a plurality of other toggle members selective one at a time for coöperation with said first named toggle member.

20. In a typewriting machine, the combination of a ribbon vibrator, actuating mechanism therefor including toggle devices provided with a plurality of anchorages, and means for at will changing from one anchorage to another to vary the vibration of the ribbon and for at the same time substituting one toggle element for another.

21. In a typewriting machine, the combination of ribbon vibrator, a toggle member connected thereto, a lever having a fixed pivot and coöperative with said toggle member to provide a toggle, key actuated means for operating said lever, an additional toggle element, and means for at will bringing said additional element into and out of operation as part of the toggle.

22. In a typewriting machine, the combination of a platen, a key controlled platen shifting frame, a ribbon vibrator, an operating lever, actuating devices therefor including a toggle, and key controlled devices for varying the toggle, the operating lever, the toggle and the key controlled devices being supported on the platen shifting frame.

23. In a typewriting machine, the combination of a ribbon vibrator, an operating lever, a toggle arm connected thereto, two toggle arms connected to said first toggle arm, and means for at will selecting either of said two toggle arms for coöperation with said first toggle arm to provide a toggle.

24. In a typewriting machine, the combination of a ribbon vibrator, an operating lever, a toggle arm connected thereto, two toggle arms connected to said first toggle arm, and means for at will selecting either of said two toggle arms for coöperation with said first toggle arm to provide a toggle, one of said two toggle arms being adapted to be bodily supported on the other of said two toggle arms.

25. In a typewriting machine, the combination of a ribbon vibrator, actuating devices therefor including toggle elements, and a hand controlled shifter for throwing into and out of operation certain of said toggle elements to vary the printing field of the ribbon.

26. In a typewriting machine, the combination of a ribbon vibrator, toggle members connected thereto, a lever adapted to bodily support one of said toggle members, and a manually controlled device settable at will to support said last named toggle member.

27. In a typewriting machine, the combination of a ribbon vibrator, toggle members connected thereto, a lever adapted to bodily support one of said toggle members, and a manually controlled movable support settable to provide a fulcrum for said last named toggle member, said lever operating to move said last named toggle member pivotally when the same is fulcrumed on its movable support.

28. In a typewriting machine, the combination with a shiftable platen, a key controlled platen shifting frame, a ribbon vibrator supported on said frame, means for vibrating said vibrator including toggle elements, and manual devices for varying said toggle elements, said toggle elements and said manual devices being supported on said shift frame.

29. In a typewriting machine, the combination of a platen, a platen shifting frame, a ribbon vibrator, a supporting bracket on said frame, toggle devices on said bracket, and manual changing means for said toggle devices also supported on said bracket.

30. In a typewriting machine, the combination of a ribbon vibrator, an operating lever, a toggle arm connected to said lever, a second toggle arm, a lever supporting said second toggle arm, a support settable by hand to engage said second toggle arm and shift it to a support independent of said lever, and means for thereafter operating said lever to straighten the toggle comprising said first and second toggle 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 April A. D. 1911.

JOHN WALDHEIM.

Witnesses:
E. M. Wells,
Charles E. Smith.