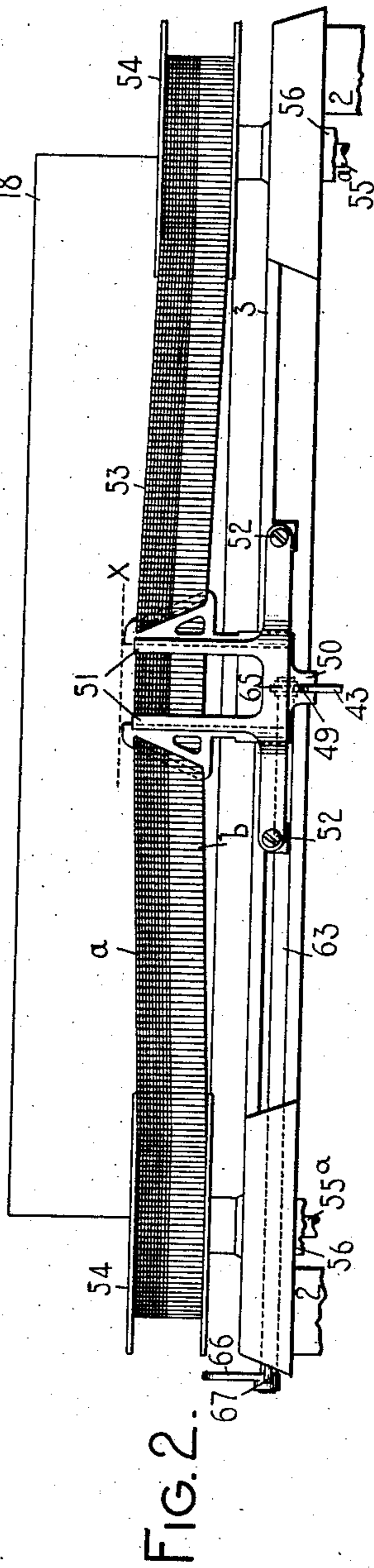
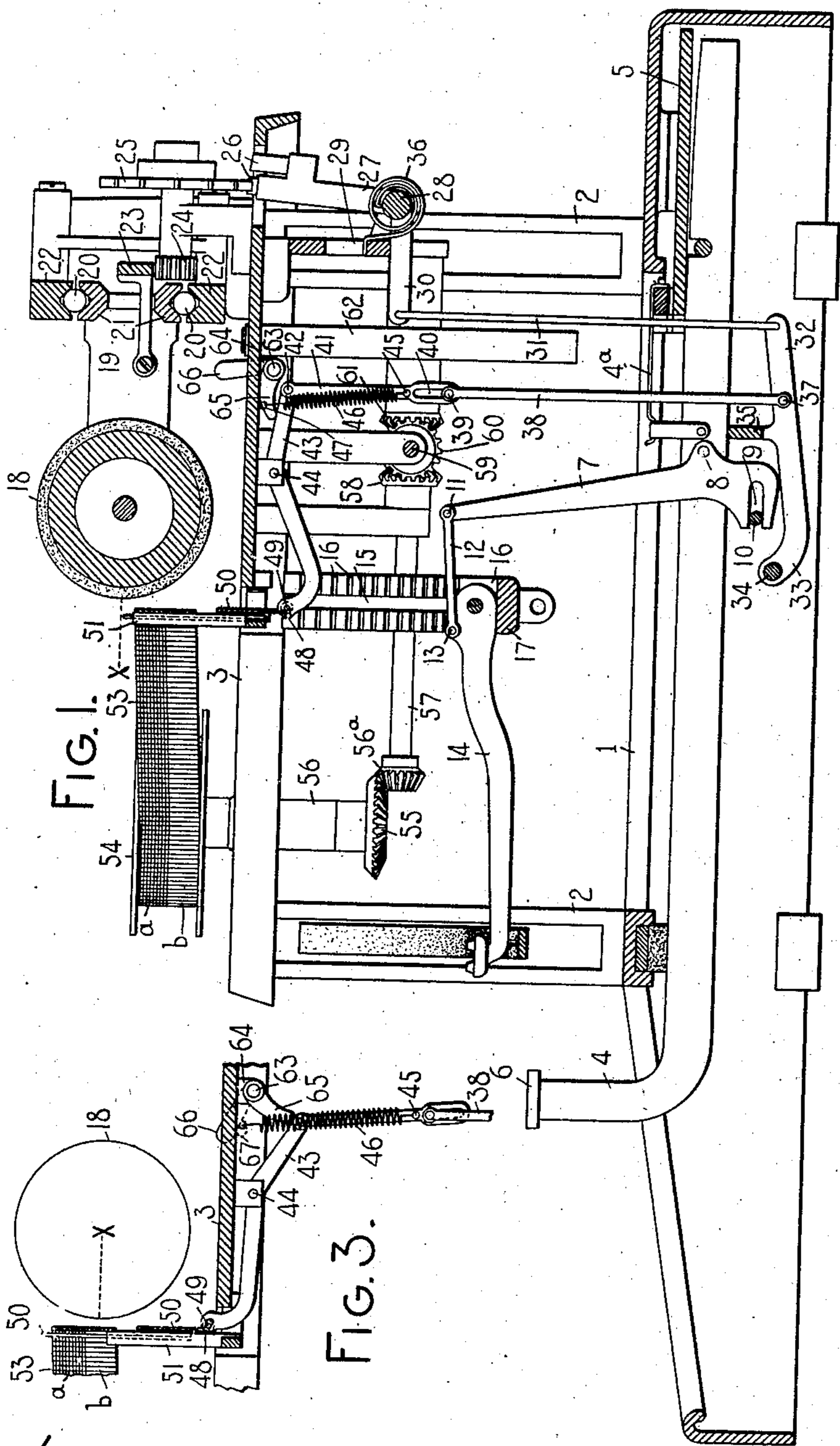


No. 842,451.

PATENTED JAN. 29, 1907.

J. FELBEL.  
TYPE WRITING MACHINE.  
APPLICATION FILED MAR. 6, 1905.



WITNESSES:

E. M. Wells.

Charles E. Smith

INVENTOR:

Jacob Felber

# UNITED STATES PATENT OFFICE.

JACOB FELBEL, OF NEW YORK, N. Y., ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## TYPE-WRITING MACHINE.

No. 842,451.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed March 6, 1905. Serial No. 248,569.

*To all whom it may concern:*

Be it known that I, JACOB FELBEL, a citizen of the United States, and a 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 present invention relates to ribbon mechanism for type-writing machines.

In "visible-writing" machines a ribbon-vibrator is automatically moved to and from the printing-point at each printing operation.

The principal object of my present invention is to provide a construction wherein a multicolor ribbon or ribbon having fields of different characteristics may be employed in a machine having a ribbon-vibrator and wherein the parts may be readily set either to effect an automatic movement of the ribbon-vibrator at printing operation to cause one field of the ribbon to cover and uncover the printing-point or to maintain the vibrator fixed during the actuation of the machine with another field of the ribbon at the printing-point. When the parts are set in the latter manner, the vibrator acts as a mere ribbon-guide without, however, materially affecting the visible-writing feature of the machine.

To the above and other ends, which will hereinafter appear, my invention consists in the novel features of construction, arrangements of parts, and combinations of devices to be hereinafter fully described, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a vertical front-to-rear central sectional view of one form of type-writing machine embodying my invention. Fig. 2 is a fragmentary front elevation, showing the upper portion of the machine. Fig. 3 is a detail vertical sectional view showing certain of the parts illustrated in Fig. 1.

I have shown my invention applied to a "Monarch" machine, though it should be understood that it may be employed in various other forms of type-writing machines.

In the drawings, 1 indicates the base of the machine, from which corner-posts 2 extend, and the corner-posts are surmounted by a top plate 3. Key-levers 4 are fulcrumed at their rear ends on a fulcrum-plate 5 and are

each provided with a finger-key 6 and a restoring-spring 4<sup>a</sup>. Each key-lever has a sub-lever 7 pivoted thereto at 8, the lower end portion of said sub-lever being slotted at 9 for the reception of and coöperation with a fulcrum bar or rod 10, that extends beneath the key-levers from side to side of the machine.

The upper end of each sub-lever is pivoted at 11 to a link 12, which in turn is pivoted at its forward end 13 to a type-bar 14. The type-bars are segmentally arranged and are pivoted on a pivot-wire 15 and operate in slots 16 in a type-bar segment 17. The type-bars are thus arranged to move upwardly and rearwardly to coöperate with a platen 18, that is carried by a carriage 19, supported by antifriction-balls 20, received in grooved rails 21 on the carriage and in oppositely-grooved rails 22, secured to the top plate of the machine.

The carriage is provided with a feed-rack 23, that meshes with a feed-pinion 24, operatively connected in the usual manner to an escapement-wheel 25. Feed-dogs 26 are carried by a dog-rocker 27 and coöperate with the escapement-wheel. The dog-rocker has a rock-shaft 28, that is mounted in a suitable bracket 29, secured to the top plate. A forwardly-extending arm 30 projects from the rock-shaft of the dog-rocker and is connected at its forward end to a depending link 31, the lower end of which is connected to a rearwardly-extending arm 32, that projects from a frame 33, pivoted to the base of the machine at 34. The frame 33 carries a universal bar 35, that extends beneath the various key-levers 4 and the spacing-levers. (Not shown.)

A restoring-spring 36 is connected at one end to the rock-shaft of the dog-rocker, and its opposite end bears against the bracket 29, so as to restore the dog-rocker and the parts connected thereto to the normal positions. Pivoted to the arm 32 at 37 is an upwardly-extending rod or member 38, the upper end of which is provided with a laterally-extending pin 39, that projects into a slot or elongated opening 40 in a link 41. The upper end of the link 41 is pivoted at 42 to an actuating lever or device 43, said lever being pivoted at 44 to a bracket which extends downwardly from the top plate of the machine. The link 41 carries a pin 45, and a contractile

spring 46 has its lower end connected to said pin and its upper end connected to a hook 47, which is secured to the top plate of the machine. The forward end of the lever 43 is apertured at 48 for coöperation with a pin 49, that is carried by a ribbon-vibrator 50.

From an examination of Fig. 2 it will be observed that the ribbon-vibrator is received in grooved guideways in upright members 51, the supporting-bracket of which is secured by screws 52 to the top plate of the machine, and that the ribbon 53 extends through inclined guide-slots in the ribbon-vibrator and extends across the machine from a ribbon-spool 54 at one side of the machine to a ribbon-spool 54 at the other side of the machine. The ribbon 53 is divided longitudinally into different fields *a* and *b*, which are of different characteristics—that is to say, the field *a* may be of one color, such as black, for instance, and the field *b* may be of a contrasting color, such as red, for instance, or the field *a* may be copying-ribbon and the field *b* "record-ribbon."

The ribbon may be fed longitudinally from one spool to another by any suitable means. In the present instance I have illustrated a ribbon-feed mechanism similar to that employed in the Monarch machine; and which is shown in United States patent to Jacob Felbel and Carl Gabrielson, No. 703,339, dated June 24, 1902. In the present construction, however, I do not employ means for imparting a transverse feed to the ribbon, as shown in said patent. A beveled gear 55 is secured to a shaft 55<sup>a</sup>, which rotates in a bearing 56 and has one of the ribbon-spools 54 connected thereto. The gear 55 meshes with a beveled pinion 56<sup>a</sup>, secured to a shaft 57, which carries a beveled pinion 58, that is adapted to mesh with a beveled driving-pinion (not shown) on a shaft 59, this shaft being capable of a longitudinal as well as a rotary movement. Rotary movement is transmitted to the shaft by beveled pinions 60 and 61, the pinion 60 being operatively connected to the shaft and the pinion 61 operatively connected to a spring-drum 62, which draws the carriage across the machine. It will be understood that both spools are provided with similar gear-trains which are adapted to be driven from driving-pinions on the shaft 59 and that the longitudinal disposition of said shaft determines which driving-pinion will be in mesh with its cooperating gear 58, and which ribbon-spool will be turned to wind the ribbon thereon.

A rock-shaft 63 is mounted in bearings 64, which depend from the top plate of the machine, and the inner end of this rock-shaft is provided with a crank-finger 65, that is positioned at a point where it is adapted to coöperate with the rear end portion of the ribbon-vibrator-actuating lever 43. The opposite end of the rock-shaft extends beyond the

top plate of the machine and is provided with a finger-piece 66, by means of which the rock-shaft 63 may be turned to either one of two positions. A stop-pin 67 is arranged in the path of the finger-piece 66, so as to limit the downward movement of the finger-piece, and thus regulate the movement of the rock-shaft in one direction. When the finger-piece has been turned up to the position illustrated in Figs. 1 and 2, the crank-arm or finger 65 is turned up to a position where it does not interfere with the operation of the actuating-lever 43. When, however, the finger-piece is turned down to the position illustrated in Fig. 3, the rear end of the actuating-lever will be depressed and the forward end of the lever and the ribbon-guide 50 will be elevated, so as to bring the field *b* of the ribbon to the printing-point. The link 41 is moved down against the tension of the spring 46 to a position where the pin 39 will normally be seated in the upper instead of the lower end of the slot 40. The construction is such that when the finger-piece 66 lies against the stop-pin 67 the arm 65 is at or a little past the dead-center, so that the parts will remain in this position until they are restored by hand.

From the foregoing description the operation of the machine will be understood. When the finger-piece 66 and its associated parts are in their normal positions, as represented in Fig. 1, the depression of a key-lever will effect an actuation of a type-bar to move it upwardly and rearwardly to the printing-point and will also depress the universal bar 35, which, through the intermediate connections between the lever and universal bar, will carry down the rear end of the actuating-lever 43. The effect of this movement is to elevate the ribbon-vibrator automatically, so as to bring the field *a* of the ribbon into the path of the type as the type-bar approaches the printing position. When the finger-key is released, the key-lever will be restored to its normal position, and spring 36 of the escapement mechanism will restore the universal bar and the link 38 to their normal positions, and the spring 46 will return the link 41, the actuating-lever 43, and the ribbon-vibrator to their normal positions. When, however, the finger-piece 66 stands in the position illustrated in Fig. 3, the ribbon-vibrator is maintained in the raised position, where the field *b* of the ribbon is in the path of the types on the type-bars and the pin 39 stands normally at the top of the slot 40. An actuation of the finger-keys at this time merely results in moving the pin 39 down and up in its slot 40 without transmitting any movement to the link 41, the actuating-lever 43, or the ribbon-vibrator.

From the foregoing description it will be understood that when the parts are set to afford an actuation of the vibrator at each

printing operation the vibrator normally maintains the ribbon away from the printing-point to expose the printing point or line (indicated by the dotted line *x*) to the view of the operator, whereas the act of setting the parts by the hand-actuated finger-piece 66, so that the vibrator remains at rest during the actuation of the machine, is effective to move the vibrator to and maintain it in a position where the field *b* of the ribbon will cover the printing-point or be interposed between the types and the printing-point; that the vibrator is adapted to be operatively connected to its actuating means or to be thrown out of operative connection therewith; that one printing-field of the ribbon is employed when the parts are so connected and the other when they are disconnected; that when the vibrator is connected to its actuating means it automatically causes one field of the ribbon to cover the printing-point at printing operation, and that when the vibrator is disconnected from its actuating means it causes another field of the ribbon to cover the printing-point and to be maintained fixed against movement, but that it does not materially affect the visible feature of the machine, since the ribbon slants down from the vibrator to the ribbon-spools and exposes the writing on either side of the vibrator; that the ribbon-vibrator is adapted to move with or independently of its actuating means in order that one or another field of the ribbon may be employed; that means are employed for throwing the connections between the ribbon-vibrator and its actuating means into and out of coöperative relation, and that in one case the finger-keys are effective to transmit movement to the vibrator through said connections to bring one field of the ribbon to the printing-point and in another case they are ineffective for this purpose and another field of the ribbon is maintained at the printing-point; that when the vibrator is maintained at rest the finger-keys, type-bars, and escapement mechanism may be moved independently thereof, and that the vibrator which is fixed at this time does not, therefore, interfere with the actuation of these parts, and that in either case the ribbon will be automatically fed in the direction of its length.

Various changes may be made without departing from the spirit of my invention, which, from certain aspects, contemplates, broadly, the provision of means which may be regulated at will to afford an automatic movement of the ribbon transversely of the platen to cover and uncover the printing-point and to bring one field of the ribbon to the printing-point or to afford a maintenance of the ribbon fixed against such transverse movement during the actuation of the machine in order that another field of the ribbon may be positioned at the printing-point.

It is to be understood that a ribbon of uniform character may be employed with the invention, which will enable the ribbon to be used lengthwise in a plurality of fields or lines, thereby tending to more thoroughly and evenly exhaust the inked surface.

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

1. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a ribbon-vibrator, means for automatically moving said vibrator so as to bring one of the fields of said ribbon to the printing-point, and means for maintaining the vibrator against movement with another of the fields of said ribbon at the printing-point.

2. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of means for automatically vibrating the ribbon so as to move one of said fields to and from the printing-point, and means adapted to maintain the ribbon against such vibration during the operation of the machine with another of said fields at the printing-point.

3. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of means for automatically vibrating the ribbon so as to move one of the fields thereof to and from the printing-point at printing operation, hand-actuated means operable at will to position the ribbon with another of the fields thereof at the printing-point, and means adapted to render the said vibrating means ineffective to move the ribbon.

4. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of means for normally maintaining the ribbon away from the printing-point to expose said printing-point to the view of the operator, means for vibrating the ribbon so that one of the fields thereof will cover the printing-point at printing operation, and hand-actuated adjustable means for moving the ribbon and maintaining it in such position that another field thereof covers the printing-point and for simultaneously adjusting the parts so that the said vibrating means are rendered ineffective to move the ribbon.

5. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a ribbon-vibrator, means for automatically actuating said vibrator at printing operation so as to bring one of the fields of the ribbon to the printing-point, and means adapted to maintain the vibrator in a position of rest during the actuation of the machine with another field of the ribbon at the printing-point.

6. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a ribbon-vibrator, ac-

tuating means cooperating therewith to cause the vibrator to normally maintain the ribbon-vibrator away from the printing-point and to automatically move the ribbon so as to present one of the fields thereof to the printing-point at printing operation, and hand-actuated means to effect a change in the relative disposition of the parts so as to render the actuating means ineffective to move the ribbon-vibrator and to maintain another field of the ribbon at the printing-point.

7. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a ribbon-vibrator, actuating means operatively connected to said ribbon-vibrator and adapted to normally maintain the ribbon away from the printing-point and to automatically move the ribbon so that one of the fields thereof will cover the printing-point at printing operation, hand-actuated means adapted to effect a change in the position of the vibrator relative to its actuating means and to maintain the vibrator during the actuation of the machine in a fixed position where another field of the ribbon will cover the printing-point, and means which afford a movement of said actuating means independently of the vibrator.

8. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a ribbon-vibrator, means under the control of the operator for either automatically moving said vibrator or maintaining it fixed during the actuation of the machine, one field of the ribbon being presented at the printing-point when the vibrator is automatically actuated and another field of the ribbon being presented at the printing-point when the vibrator is maintained fixed.

9. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a ribbon-vibrator, actuating means therefor for presenting one field of the ribbon at the printing-point at printing operation, and means for operatively connecting said vibrator to said actuating means or disconnecting it therefrom and presenting another field of the ribbon at the printing-point.

10. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a ribbon-vibrator, actuating means therefor, and means for operatively connecting said vibrator to or disconnecting it from said actuating means, said vibrator being so disposed as to cause one field of the ribbon to cover and uncover the printing-point when the vibrator is connected to its actuating means and to cause another field of the ribbon to cover the printing-point when the vibrator is disconnected from its actuating means.

11. In a type-writing machine, the combi-

nation with a ribbon having fields of different characteristics, of type-bars, finger-keys therefor, and a ribbon-vibrator adapted to be automatically moved to interpose one field of the ribbon in the path of a type on a type-bar at the depression of a finger-key or to remain fixed with another field of the ribbon at the printing-point during the depression of a finger-key, as may be desired.

12. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a platen, type-bars, finger-keys therefor, a ribbon-vibrator having ribbon-guides thereon, means controlled by said finger-keys for automatically moving the vibrator to effect a movement of one of the fields of the ribbon transversely of the platen to cover and uncover the printing-point, and means to render the automatically-actuating moving means ineffective to move the vibrator and for maintaining another field of the ribbon at the printing-point.

13. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a ribbon-vibrator, connections for said vibrator, actuating means cooperating with said connections for automatically moving the vibrator during the operation of the machine, so as to present one of the fields thereof at the printing-point, and means for moving said connections out of operative relation with the actuating means and for maintaining the ribbon with another field thereof at the printing-point.

14. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a ribbon-vibrator, connections for said vibrator, actuating means cooperating with said connections for automatically moving said vibrator to present one field of the ribbon at the printing-point during the operation of the machine, and means for moving said connections out of operative relation with the actuating means and for moving the vibrator so as to bring another field of the ribbon to the printing-point and maintain it in such position during the operation of the machine.

15. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of finger-keys, a ribbon-vibrator, connections from said finger-keys to said vibrator to move the vibrator so as to bring one of the fields of the ribbon to the printing-point, and means for rendering the connections inoperative to transmit movement from the finger-keys to the ribbon-vibrator so that the ribbon-vibrator may be maintained with another field of the ribbon at the printing-point during the operation of the machine.

16. In a type-writing machine, the combination with a ribbon having fields of differ-

ent characteristics, of finger-keys, a ribbon-vibrator, intermediate connections between said finger-keys and said vibrator, which connections are adapted to move the vibrator at the actuation of a finger-key to bring one of the fields of the ribbon into use, and means for displacing one portion of said connections relatively to another so that an actuation of the finger-keys will be inoperative to transmit motion to the vibrator and so that another field of the ribbon may be brought into use while the vibrator is prevented from vibrating.

17. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of finger-keys, a ribbon-vibrator, intermediate connections between said finger-keys and said ribbon-vibrator, which connections are adapted to move the vibrator at actuation of a finger-key to bring one field of the ribbon to the printing-point, and hand-actuated means for displacing one portion of said connections relatively to another and for at the same time moving the ribbon-vibrator to and maintaining it in a position where another field of the ribbon covers the printing-point, so that the vibrator will maintain the ribbon in position to receive the impact of the types on one field thereof during the automatic actuation of the vibrator and will maintain the ribbon in position to receive the impact of types on another field of the ribbon when the vibrator is maintained at rest.

18. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a platen, type-bars, finger-keys therefor, a universal bar, a ribbon-vibrator and intermediate connections between said vibrator and said universal bar to effect a movement of the vibrator at actuation of a finger-key, hand-actuated means for controlling the relation of the parts of said connections one to another so that the connections may be rendered effective or ineffective to transmit motion to the ribbon-vibrator, the construction and the arrangement of the parts being such that one field of the ribbon will be exposed to the impact of the types when the ribbon-vibrator is actuated by said connections and so that another field of the ribbon will be presented to the impact of the types when the vibrator is maintained at rest.

19. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a platen, type-bars, finger-keys therefor, a universal bar, a ribbon-vibrator, intermediate connections between said vibrator and said universal bar to effect a movement of the vibrator at actuation of a finger-key, and hand-actuated means for controlling the relation of the parts of said connections one to another so that the connections may be rendered effective or ineffective

to transmit motion to the ribbon-vibrator; the construction and arrangement of the parts being such that the said hand-actuated means and the parts controlled thereby are maintained in the positions to which they are moved when actuated to render the connections ineffective to move the vibrator, and such that a key-actuated movement of the vibrator will bring one field of the ribbon to the printing-point while when the vibrator is maintained at rest another field of the ribbon will be presented at the printing-point.

20. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a platen, type-bars, finger-keys therefor, a universal bar, a ribbon-vibrator which is adapted to normally maintain the ribbon out of the path of the types of the type-bars, intermediate connections between said vibrator and said universal bar to automatically effect a movement of the vibrator at actuation of a finger-key so as to interpose one field of the ribbon in the path of the types on the type-bars, and hand-actuated means for controlling the relation of the parts of said connections one to another so that the connections may be rendered effective or ineffective to transmit motion from the universal bar to the ribbon-vibrator; the construction and arrangement of the parts being such that the said hand-actuated means and the parts controlled thereby are maintained in the positions to which they are moved when actuated to render the connections ineffective to move the vibrator so that the vibrator will then maintain another field of the ribbon at the printing-point.

21. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a platen, a carriage, type-bars, finger-keys therefor, escapement mechanism for said carriage, a ribbon-vibrator, intermediate connections between said escapement mechanism and said vibrator, which connections are adapted to actuate the vibrator at actuation of a finger-key to bring one field of the ribbon to the printing-point, and means for affording a movement of the finger-keys, type-bars and escapement mechanism independently of the ribbon-vibrator, whereby the ribbon-vibrator while held motionless may maintain another field of the ribbon at the printing-point.

22. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a ribbon-vibrator, an means for shifting one field of the ribbon into and another out of use and for simultaneously fixing the vibrator against movement so that the new field coöperates with the type at the time when the parts are adjusted to prevent reciprocation of the vibrator.

23. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a normally reciprocatory

ribbon-carrier which at printing operation presents one field of the ribbon to the printing position, a shifting mechanism for presenting another field of the ribbon to the printing position, and for simultaneously preventing reciprocation of the vibrator so that the last-named field of the ribbon co-operates with the type at the time when the parts are adjusted to prevent reciprocation of the carrier.

24. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a normally reciprocatory ribbon-carrier which at printing operation presents one field of the ribbon to the printing position, means for feeding the ribbon from one spool to another, a shifting mechanism for arresting the movement of the ribbon-carrier and at the same time presenting another field of the ribbon to the printing position without interfering with the movement of the ribbon from spool to spool, the result being that the new field of the ribbon co-operates with the type at the time when the parts are adjusted to prevent reciprocation of the carrier.

25. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a ribbon-vibrator, and means for shifting one field of the ribbon into and another out of use, and for simultaneously fixing the vibrator against movement, said shifting means comprising a pin-and-slot connection between the ribbon-vibrator and its vibrating means, and hand-actuated means for shifting said parts relatively to each other and for moving the vibrator to and maintaining it in a position beyond the point where it is normally moved in the automatic actuation thereof.

26. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a ribbon-vibrator, and means for shifting one field of the ribbon into and another out of use and for simultaneously fixing the vibrator against movement so that the new field co-operates with the type at the time when the parts are adjusted to prevent reciprocation of the vibrator, said shifting means comprising an actuating-lever operatively connected to the ribbon-vibrator, a

pin-and-slot connection between said lever and its actuating means, and independent hand-actuated means for moving said lever and maintaining it in the position to which it is moved.

27. In a type-writing machine, the combination with a ribbon having fields of different characteristics, of a ribbon-vibrator, and means for shifting one field of the ribbon into and another out of use and for simultaneously fixing the vibrator against movement, said shifting means comprising an actuating-lever operatively connected to the ribbon-vibrator, a pin-and-slot connection between said lever and its actuating means, a rock-shaft, hand-actuated means for turning said rock-shaft, and means controlled by the rock-shaft for moving said actuating-lever and ribbon-vibrator and for maintaining them in the positions to which they are moved.

28. In a type-writing machine, the combination of printing devices; a ribbon; means for feeding the ribbon longitudinally; means for automatically vibrating the ribbon so that said printing devices will write lengthwise of one portion of the ribbon; and means for bringing another portion of the ribbon into use and maintaining the ribbon against vibration during the operation of the machine so that the printing devices will write lengthwise of such other portion of the ribbon.

29. In a type-writing machine, the combination of mechanism for feeding the ribbon longitudinally, a ribbon-vibrator, means for automatically moving said vibrator so as to bring one portion of the width of the ribbon to the printing-point, and means for maintaining the vibrator against movement while another portion of the width of said ribbon is at the printing-point, the mechanism for feeding the ribbon longitudinally remaining operative while the vibrator is so maintained.

Signed at the borough of Manhattan, city of New York, in the county of New York and State of New York, this 4th day of March, A. D. 1905.

JACOB FELBEL.

Witnesses:

E. M. WELLS,  
J. B. DEEVES.