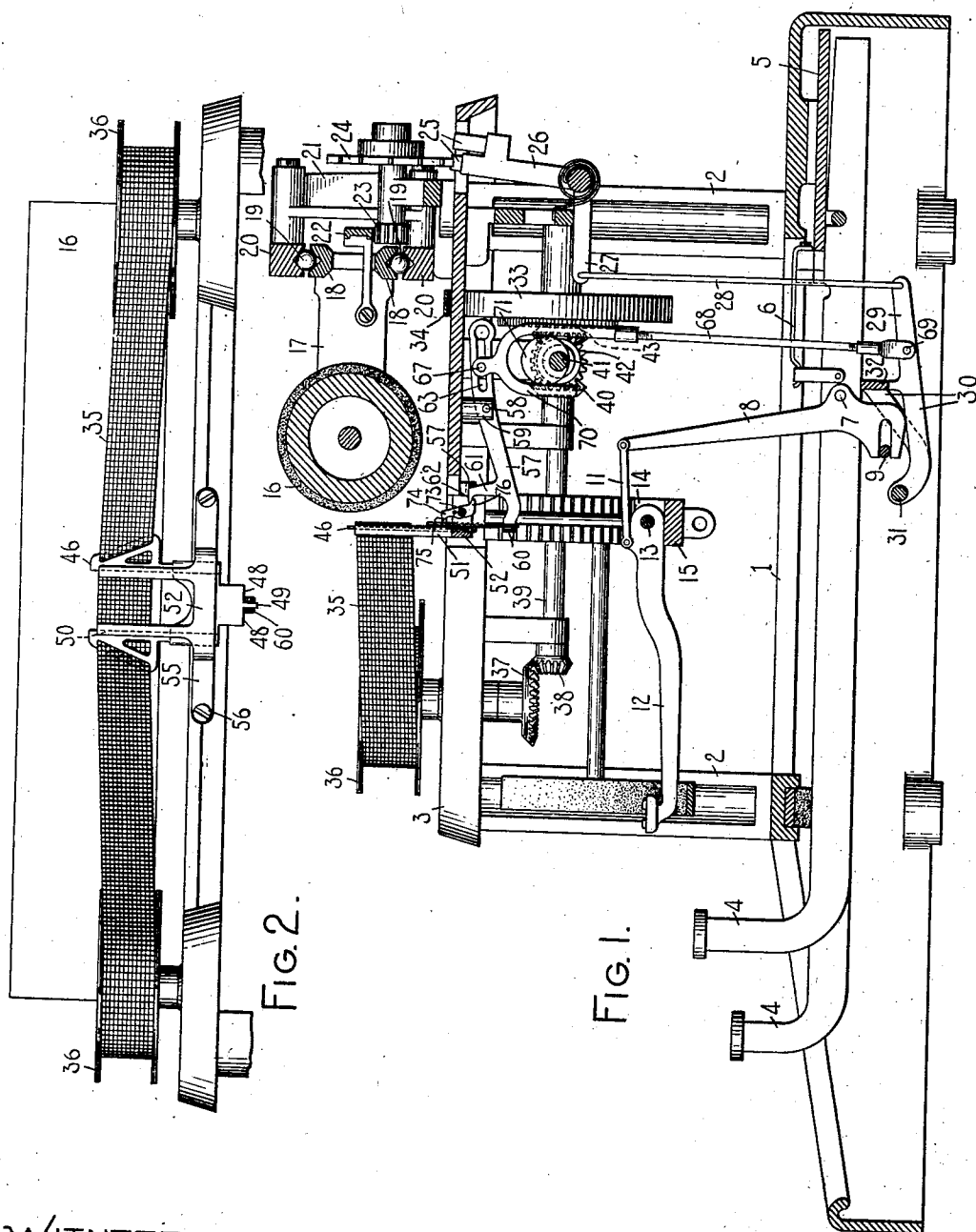


No. 824,581.

PATENTED JUNE 26, 1906.

M. W. POOL.
TYPE WRITING MACHINE.
APPLICATION FILED FEB. 25, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

E. M. Wells.
W. J. Hammer.

INVENTOR:

Morris W. Pool

By Jacob Feld

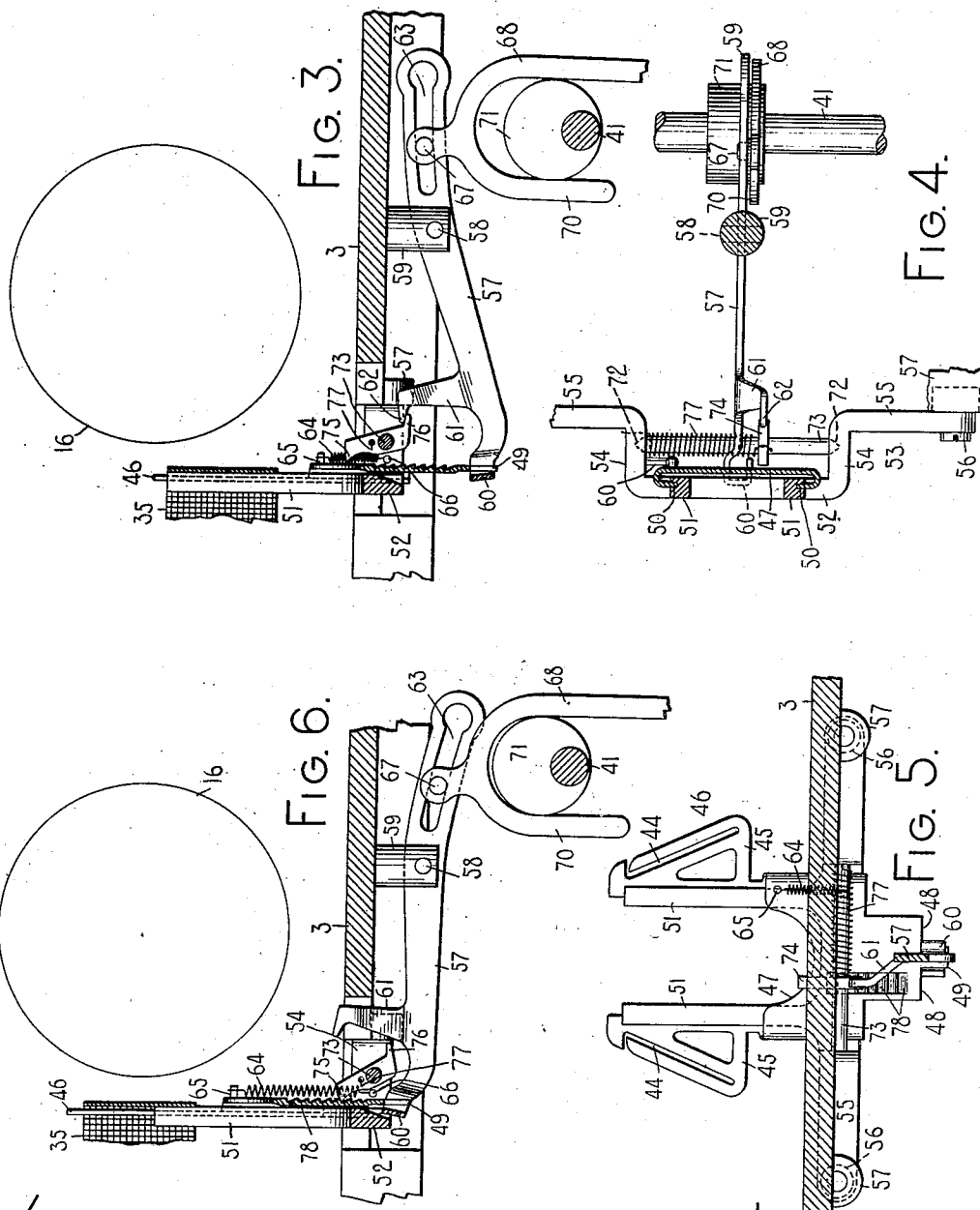
HIS ATTORNEY

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W. J. Hansmeier.

INVENTOR.

Morris W. Pool
By atty. Jacob Feldt

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

MORRIS W. POOL, OF NEW YORK, N. Y., ASSIGNOR TO THE MONARCH TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 824,581.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed February 25, 1905. Serial No. 247,320.

To all whom it may concern:

Be it known that I, MORRIS W. POOL, a citizen of the United States, and a resident of the borough of Brooklyn, in the city of New York, in the county of Kings 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 more particularly to the ribbon mechanism of "visible-writing machines," by which term is meant those machines in which the type-writing as it is written is in view of the operator. In such machines that portion of the ribbon between the ribbon-spools is usually controlled by a "ribbon-vibrator," which term as herein employed comprehends any device for automatically moving the ribbon to the printing-point and for thereafter moving the ribbon away from the printing-point. The vibrator or carrier normally positions the ribbon so as to leave the printing-point uncovered. Whenever the type-actuating mechanism is operated, the vibrator in known constructions is affected so as to cause the ribbon to cover the printing-point on the platen. After an impression has been made the vibrator carries the ribbon back to normal position, leaving the printing-point uncovered. The continuous vibration of the ribbon carrier or vibrator during the operation of the machine is sometimes a source of annoyance to the operator. Furthermore, the vibrator itself and that part of the ribbon between the ribbon-spools must be lifted at each printing operation, thereby increasing the amount of power which must be applied to the printing-keys in order to obtain an effective operation of the printing mechanism.

The chief objects of my invention are to obviate these objections, and I do this by providing a mechanism which will cause the ribbon carrier or vibrator to be automatically actuated to cover the printing-point and to be retained automatically in that position during the ordinary operation of the printing devices, the carrier or vibrator automatically returning to normal position whenever the operator pauses in the course of the work.

To these and other ends the invention resides in the features of construction, combination of devices, and arrangement of parts,

to be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical front to rear sectional view taken about centrally of a type-writing machine embodying my invention, parts of the machine being omitted. Fig. 2 is a fragmentary front elevation of the machine. Fig. 3 is an enlarged side elevation, partly in section, of parts of the ribbon mechanism as they appear in normal position. Fig. 4 is a top plan view of some of the parts shown in Fig. 3, certain parts being shown in section. Fig. 5 is a rear elevation of some of the parts shown in Fig. 3; and Fig. 6 is similar to Fig. 3, but showing the parts as they appear in printing position.

In the drawings, 1 indicates the base of the machine, 2 corner-posts, and 3 a top plate mounted thereon. Key-levers 4 are fulcrumed on a fulcrum-plate 5, and each key-lever is provided with a restoring-spring 6 and has pivoted to it at 7 a sublever 8. The lower portion of each sublever coacts with a fixed abutment 9, and at its upper end each of said sublevers is connected by a link 11 with a type-bar 12, which is one of a segmentally-arranged series. The type-bars may, as shown, be pivoted on a curved fulcrum-wire 13 and guided in slots 14 in a segmental type-bar support 15, or each type-bar may be provided with individual pivots and hangers. The type-bars cooperate with a platen 16, mounted in a carriage 17, the latter being provided with oppositely-grooved rails 18, which through antifriction-balls 19 coact with rails 20, fixedly attached to supports 21, secured to the top plate. The carriage 17 is provided with a feed-rack 22, which normally engages with a pinion 23, said pinion being operatively connected with an escapement-wheel 24. Adapted to cooperate with the escapement-wheel are feed-dogs 25, mounted in a pivoted dog-rocker 26, the horizontal arm 27 whereof is connected by a link 28 with the central rearwardly-extending arm 29 of a universal-bar frame 30, provided with a pivot-rod 31, having its bearings in the sides of the base of the frame.

The universal-bar frame carries a universal bar 32, which passes from side to side of the machine beneath the series of key-levers 4 and is adapted to be depressed by each of said

key-levers as it is actuated to cause its associate type-bar 12 to print. A spring-drum 33 is connected by a strap 34 with the carriage 17, and said spring-drum constantly tends to draw the carriage leftward. The depression of the universal bar at each printing operation causes the escapement devices above described to cooperate in a known manner to permit the carriage to move a letter-space in printing direction. The ribbon 35 is mounted on a pair of ribbon-spools 36, said ribbon-spools being horizontally disposed above the top plate, one at each side of the machine and forward of the platen. Each ribbon-spool is operatively connected with a small beveled gear 37, which meshes with a beveled pinion 38, fixed to the front end of the horizontally-disposed rotary shaft 39, secured to the rear end whereof is a beveled pinion 40. The beveled pinion 40 meshes with a beveled pinion (not shown) secured on a driving or power shaft 41, which latter receives motion from the spring-drum 33, with which it is operatively connected by beveled pinions 42 and 43. It is to be understood that each ribbon-spool is connected with the driving-shaft 41 by a gear-train, as above described. The driving-shaft may be shifted endwise in a known manner to cause one or the other of the gear-trains to operate and wind the ribbon 35 on its associate ribbon-spool and off the ribbon-spool at the other side of the machine.

Between the ribbon-spools the ribbon is threaded through slots 44, formed in the side portions 45 of the ribbon vibrator or carrier 46. The lower parts of the side portion of the vibrator 46 are connected by a central body portion 47, as best seen in Fig. 5, and this central body portion is shouldered away at 48 and terminates at its lower end in a narrow central depending lug 49. The body portion 47 of the vibrator is bent so that the inner edges of the side portion 45 enter oppositely-disposed grooves 50, formed in upright arms 51, attached to the central projecting portion 52 of a supporting-guide 53. The central base portion 52 of the guide 53 is connected by short rearwardly-extending side portions 54 with side members 55; the ends whereof are perforated to receive headed screws 56, which screw into lugs 57 integral with the top plate. The vibrator 46 vibrates vertically between the central projecting portion of the supporting-guide 53 and the front of the central part of the top plate against which the said supporting-guide is secured. Motion is imparted to the vibrator by an operating-lever 57, fulcrumed at 58 in a lug 59, depending from the under side of the top plate 3. The forward end of the operating-lever is bent so as to form a loop or hook 60, as best indicated in Fig. 4, so as to embrace or surround the depending part 49 of the vibrator 46, the upper edge of the bent portion

60, normally abutting against the shouldered portion 48 of said vibrator. A short distance to the rear of the hook 60 the lever 57 is provided with an upwardly-extending arm 61, terminating in a forwardly-projecting lip or lug 62. The rear arm of the operating-lever is formed with an elongated slot 63. The shouldered portions 48 of the vibrator are normally retained in contact with the upper edge of the hook 60 of the operating-lever, the means employed for this purpose, as herein shown, being a vertically-disposed helical wire spring 64, the upper end whereof is attached to a pin 65, projecting rearwardly from the left-hand upper part of the central portion 47 of the ribbon vibrator, the lower end of said spring being secured to a pin 66, projecting inwardly from the right-hand side portion 54 of the supporting-guide 53. Engaging with the slot 63 in the operating-lever and serving to normally position said lever is a stud 67, secured to the upper end of an actuating-link 68, the lower end whereof is pivoted at 69 to the arm 29 of the universal-bar frame. The upper portion of the link 68 is provided with a forwardly and downwardly extending arm 70, which, with the opposite portion of the body of the link, forms a strap which engages with an eccentric 71, secured to the driving or power shaft 41.

During the movements of the carriage in printing direction the eccentric 71, acting on its strap, causes the link 68 to be swung to and fro about its pivot 69 and longitudinally of the operating-lever 57. The stud 67 is thereby caused to act upon the power-arm of the operating-lever at varying distances from the fulcrum 58, the result being that by the mechanism hitherto explained, the ribbon vibrator at the forward end of the operating-lever will be thrown upward from normal position or vibrated a distance which varies with each printing operation. The ribbon is thereby fed progressively crosswise at the same time that it is given a longitudinal movement, the type-impressions making a serpentine or wavy path characteristic of the ribbon-feed of the Monarch type-writing machine, to which my invention is shown as applied. It is to be understood, however, though I have shown my invention as embodied in this particular writing machine and although a larger part of the mechanism hereinbefore described is that of said machine, that, nevertheless, the invention may be adapted to other forms of writing machines, and I do not desire to be limited to the particular construction and mechanism herein set forth and illustrated. It is further to be understood that when in the claims it is stated that the ribbon vibrator is moved or thrown to the printing-line or to the printing-point, it is meant that it is moved so as to cause the ribbon it carries to cover the printing-point.

The inner faces of the side portions 54 of the vibrator-guide are formed with conical depressions 72 to receive the bearing ends of a pivot-rod 73, which is sprung into place in the side walls 54 before the vibrator-guide 53 is secured to the machine. Any other suitable manner of mounting the pivot-rod 73 in its bearings may of course be adopted. Secured to the rod 73 in any suitable manner, as by soldering, is a locking member 74, which is disposed on said rod so as to be in the same vertical plane with the lip or lug 62 on the operating-lever. As best appears in Fig. 4, the arm 61, of which the lip 62 is the termination, is bent to the right of the body portion of the lever 57, and the locking member 74 is secured to the rod 73 somewhat to the right of the center of said rod. The parts are so arranged in order to avoid conflict or interference with a stationary pointer or indicator, which coöperates with the usual carriage-scale, neither the pointer nor the scale being shown in the drawings. The locking member 74, as herein shown, is in the form of a latch which terminates forwardly in a tooth-like portion 75 and at its lower end is provided with a rearwardly-projecting lip or lug 76. A light coiled spring 77 surrounds the rod 73 and has one end secured in a side wall 54 and the other end secured in the locking member 74, said spring tending constantly to press the tooth 75 toward the body portion 47 of the ribbon-vibrator. The rear face of the body portion 47 of the ribbon-vibrator is roughened or corrugated by pressing or otherwise, so as to form a series of notches, serrations, or depressions 78, said series running vertically of the ribbon-vibrator and being so positioned that the serrations will be engaged by the latch 74.

When the parts are in normal position, the lip 62, contacting with the lug 76, overcomes the pressure of the spring 77 and holds the latch 74 so that the toothed portion 75 thereof stands slightly away from the rear face of the body portion 47 of the ribbon-vibrator. Whenever a printing-key 4 is depressed, the universal bar is rotated downwardly about its pivot 31, causing the link 68 through the stud 67 to swing the forward arm of the operating-lever upwardly about the fulcrum 58, the extent to which the arm is moved depending upon the position of the stud 67 in the slot 63. As the forward arm of the operating-lever 57 moves upward the lip 62 rising with it ceases to press on the lug 76 of the latch 74, allowing the spring 77 to press the toothed portion of the latch into contact with the rear face of the ribbon-vibrator. The continuation thereafter of the upward movement of the lip 62 carries said lip out of contact with the lug 76 of the latch, since the latter is held from further rotation by the rear face of the ribbon-vibrator. As the for-

ward arm of the operating-lever 57 starts to move upward the ribbon-vibrator is caused to move upward with it against the tension of the coiled draw-spring 64 by reason of the contact of the top edge of the hook 60 with the shouldered portions 48 of the vibrator. During this upward movement or throw of the vibrator the toothed portion of the latch enters the corrugations or serrations 78, the latter sliding over said toothed portion until the vibrator reaches the limit of its upward movement. When the limit of upward movement has been reached, the operating-lever starts to return; but the ribbon-vibrator is prevented from returning with it by reason of the engagement of the toothed portion 75 of the latch with one of the corrugations or depressions 78, the particular depression depending upon the extent of the throw of the vibrator and that depending, as hitherto explained, upon the position of the stud 67 in respect of the fulcrum 58 of the operating-lever. In Fig. 6 the parts are shown at the limit of upward movement, with the toothed portion of the latch 74 in engagement with one of the lower notches 78 of the series of notches, the stud 67 being positioned in the slot 63 by the eccentric 71, so as to give such a result. Moving downward from the position indicated in said Fig. 6 under the influence of the universal-bar-restoring spring, (not shown,) the hook portion 60 of the operating-lever 57 separates from the shouldered portion 48 of the vibrator, which remains motionless, and the lip 62 moves downward toward the rearwardly-projecting lug 67 of the latch or locking member 74. In the ordinary operation of the machine before the universal bar 32 has moved upward from its depressed position sufficiently far to allow the lip 62 to contact with the lug 76 said universal bar will be depressed by the operator and will be swung downward again, thereby causing the lip 62 to again move upward. The parts are so related and adjusted that it is not until the universal bar has almost returned to normal position and the limit of the downward movement of the lip 62 has been reached that the latter will contact with the lug 76. At the ordinary speed with which the machine is operated the universal bar returning toward normal position after being depressed by one key-lever will be met while still some distance from normal position by the next succeeding key-lever that is depressed. The result is that the ribbon-vibrator will stay motionless (latched at the printing-point) until the operator pauses or until a key-lever is actuated at an interval after the immediately preceding key was actuated sufficient to allow the universal bar to reach or almost reach its position of rest. As the universal bar nears normal position the lip 62 nears the lug 76, and if the universal bar is permit-

ted to return far enough the lip contacts with the lug and pressing downward on the latter swings the tooth part 75 of the latch out of engagement with the depression 78 in the ribbon-vibrator. As the tooth 75 swings clear of the depressions 78 the ribbon-vibrator is instantly pulled downward by the draw-spring 64 until the shoulders 48 contact with the top of the hook 60. At the next printing operation the ribbon-vibrator is moved upward, and the spring 77 moves the latch 74 so as to bring the tooth 75 thereon into engagement with one of the depressions 78, the particular depression depending upon the position of the stud 67 in the slot 63. The vibrator will stay at the printing position until the operator again pauses or operates the printing-keys slowly enough to permit the lip 62 to contact with the lug 76 and disengage the latch from the vibrator. The parts may of course be so arranged and proportioned that the latch will be released by even a slighter movement of the lip 62 than that indicated in the drawings.

By my invention the ribbon-vibrator is automatically actuated to printing position when a key-lever is depressed and stays at the printing position during the ordinary operation of the succeeding printing-keys. When the operator pauses to inspect the work or for any other purpose, the vibrator is caused automatically and independently of its operating-lever to return to normal position, exposing the printing-point. The result is that during ordinary or rapid operation the vibrator remains motionless at the printing-point, thereby relieving the operator after the first key-depression from applying power sufficient to lift the ribbon-vibrator itself, as well as the length of the ribbon between the ribbon-spools, in addition to the power required to operate the type-actuating and escapement mechanisms. Furthermore, the annoying vibration of the ribbon-carrier or vibrator which occurs at each printing operation is obviated by the use of my invention.

Various changes in the construction and arrangements of the parts may be effected within the spirit of the invention.

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

1. In a type-writing machine, the combination of printing-keys; a ribbon-vibrator adapted to be moved to the printing-point by the actuation of said keys; and means for automatically retaining said vibrator in printing position when thus moved thereto by the keys and for permitting return movement of said keys independently of the vibrator.

2. In a type-writing machine, the combination of printing-keys; a ribbon-vibrator adapted to be moved to the printing-point by the actuation of said keys; means for automatically retaining said vibrator in printing position when thus moved thereto by said

keys; and means for automatically restoring said vibrator to normal position.

3. In a type-writing machine, the combination of a ribbon-vibrator; means for automatically moving said vibrator to printing position; means for automatically locking said vibrator in printing position; and means for automatically unlocking said vibrator.

4. In a type-writing machine, the combination of a ribbon-vibrator; means for automatically moving the ribbon-vibrator to and from the printing-point; and means, operating to maintain the ribbon-vibrator automatically against movement during a plurality of successive printing operations, said means being automatically brought into play.

5. In a type-writing machine, the combination of a ribbon; means for automatically vibrating the ribbon to cover the printing-point at each printing operation; and means automatically operated to retain the ribbon at the printing-point when thus moved thereto and to render said vibrating means inoperable on the ribbon during succeeding printing operations.

6. In a type-writing machine, the combination of a ribbon-vibrator; means for automatically actuating said vibrator at a printing operation; and automatic means adapted to maintain said vibrator quiescent during one or more succeeding printing operations, said means being automatically brought into play.

7. In a type-writing machine, the combination of a ribbon; means for normally maintaining the ribbon away from the printing-point; means for automatically moving the ribbon to cover the printing-point at a printing operation; and means for automatically maintaining the ribbon in position to cover the printing-point during one or more succeeding printing operations and to render said moving means inoperable on said ribbon.

8. In a type-writing machine, the combination of printing-keys; a ribbon-vibrator; means for actuating said vibrator operated by all the printing-keys; and automatic means for disconnecting said vibrator from said actuating means.

9. In a type-writing machine, the combination of printing-keys; a ribbon-vibrator; means for actuating said vibrator operated by all the printing-keys; and automatic means for operatively connecting said vibrator with and disconnecting it from said actuating means.

10. In a type-writing machine, the combination of a ribbon-vibrator; means for actuating said vibrator; and automatic means for disconnecting said vibrator from said actuating means, said vibrator being adjusted to cause the ribbon normally to uncover the printing-point when the vibrator is connected with its actuating means and to cover the printing-point when said vibrator is disconnected from its actuating means.

11. In a type-writing machine, the combination of a ribbon-vibrator; means for automatically moving said vibrator to the printing-point; means for automatically maintaining the vibrator at the printing-point; and means for automatically moving the vibrator from the printing-point independently of said first-named means.

12. In a type-writing machine, the combination of printing devices; finger-keys for actuating said devices; and a ribbon-vibrator adapted to be moved automatically to interpose the ribbon in the path of one of said printing devices at the depression of one of said finger-keys and to thereupon be caused automatically to remain fixed in the path of said printing devices during one or more next succeeding depressions of the finger-keys.

13. In a type-writing machine, the combination of a platen; printing-keys; a ribbon-vibrator; means for automatically moving the vibrator transversely of the platen when a printing-key is depressed; and means for automatically maintaining said vibrator motionless during the depression of one or more printing-keys next succeeding, said means being automatically brought into play.

14. In a type-writing machine, the combination of a ribbon-vibrator; actuating means connected with said vibrator and adapted to move it to the printing-point during the printing operation of the machine; and means for automatically maintaining said vibrator at the printing-point and for automatically disconnecting the vibrator from said actuating means.

15. In a type-writing machine, the combination of printing-keys; a ribbon-vibrator; connections between said vibrator and said printing-keys; and automatic means for rendering said connections inoperative to transmit motion from said printing-keys to said ribbon-vibrator.

16. In a type-writing machine, the combination of printing-keys; a ribbon-vibrator; connections between said printing-keys and said vibrator; and automatic means for moving one portion of said connections relatively to another so that one or more succeeding actuations of said printing-keys may be ineffective to transmit motion to said vibrator.

17. In a type-writing machine, the combination of a ribbon-vibrator; a part movable therewith and through which motion may be transmitted to said vibrator; and automatic means for effecting a change in the relation between said vibrator and said part and whereby said part is rendered inoperative on said vibrator.

18. In a type-writing machine, the combination of a ribbon-vibrator which normally maintains the ribbon away from the printing-point; printing-keys; means operable by the printing-keys to move the vibrator to the printing-point when a printing-key is oper-

ated; and means for automatically rendering said mechanism inoperative on the ribbon-vibrator when one or more succeeding printing-keys are operated.

19. In a type-writing machine, the combination of a ribbon-vibrator; means for moving said vibrator to the printing-point; and a latch adapted to maintain said vibrator at the printing-point, said latch operating automatically when the vibrator is moved to the printing-point.

20. In a type-writing machine, the combination of a ribbon-vibrator; means for moving said vibrator to the printing-point; a latch adapted to maintain said vibrator at the printing-point automatically; and means for automatically unlatching said latch.

21. In a type-writing machine, the combination of a ribbon-vibrator; means for moving said vibrator to the printing-point; a latch adapted to maintain said vibrator at the printing-point automatically; means for automatically unlatching said latch; and means for automatically restoring said vibrator to normal position.

22. In a type-writing machine, the combination of a ribbon-vibrator; an operating-lever adapted to move said vibrator to the printing-point; and means for maintaining said vibrator at the printing-point, said operating-lever being operable upon said means to cause the latter to release said ribbon-vibrator.

23. In a type-writing machine, the combination of a ribbon-vibrator; an operating-lever adapted to move said vibrator to the printing-point; means for maintaining said vibrator at the printing-point, said operating-lever being operable upon said means to cause the latter to release said ribbon-vibrator; and means for restoring said vibrator to normal position.

24. In a type-writing machine, the combination of a ribbon-vibrator; means for throwing said vibrator varying distances transversely of the printing-line; and means for automatically maintaining said vibrator in any of the positions to which it may be thrown.

25. In a type-writing machine, the combination of a ribbon-vibrator; an operating-lever therefor; a link for actuating said operating-lever; means for moving said link progressively longitudinally of said operating-lever whereby said lever is caused to throw said ribbon-vibrator different distances; and means for automatically maintaining said vibrator in any position to which it may be thrown.

26. In a type-writing machine, the combination of a ribbon-vibrator; an operating-lever therefor; a link for actuating said operating-lever; means for moving said link progressively longitudinally of said operating-lever whereby said lever is caused to throw

said ribbon-vibrator different distances; and a latch adapted to lock said vibrator automatically in any position to which it may be thrown.

27. In a type-writing machine, the combination of a ribbon-vibrator; an operating-lever therefor; a link for actuating said operating-lever; means for moving said link progressively longitudinally of said operating-lever whereby said lever is caused to throw said ribbon-vibrator different distances; and a latch adapted to lock said vibrator automatically in any position to which it may be thrown, said operating-lever being adapted to actuate said latch to release said ribbon-vibrator.

28. In a type-writing machine, the combination of a ribbon-vibrator; an operating-lever therefor; a link for actuating said operating-lever; means for moving said link progressively longitudinally of said operating-lever whereby said lever is caused to throw said ribbon-vibrator different distances; a latch adapted to lock said vibrator automatically in any position to which it may be thrown, said operating-lever being adapted to actuate said latch to release said ribbon-vibrator; and independent means for restoring said vibrator to normal position.

29. In a type-writing machine, the combination of a ribbon-vibrator formed with a plurality of depressions or corrugations; a latch; and means for throwing said vibrator to cause said latch to engage with any of said depressions and thereby to maintain said vibrator at the printing-point.

30. In a type-writing machine, the combination of a ribbon-vibrator formed with a plurality of depressions or corrugations; a latch; means for throwing said vibrator to cause said latch to engage with any of said depressions and thereby to maintain said vibrator at the printing-point; and means for unlocking said latch to release said vibrator.

31. In a type-writing machine, the combination of a ribbon-vibrator formed with a plurality of depressions; a latch; and an operating-lever adapted to throw said vibrator so as to cause said latch to engage with any one of the depressions in said vibrator, said lever being further adapted to unlock said latch and release said vibrator.

32. In a type-writing machine, the combination of a ribbon-vibrator formed with a plurality of depressions; a latch; an operating-lever adapted to throw said vibrator so as to cause said latch to engage with any one of the depressions in said vibrator, said lever being also adapted to unlock said latch and release said vibrator; and independent means for restoring said vibrator to normal position.

33. In a type-writing machine, the combination of a corrugated ribbon-vibrator; an operating-lever adapted to throw said vibrator for different distances; a spring-pressed piv-

oted latch adapted to engage with the corrugations of said vibrator to maintain the latter at the printing-point; and a lip or hook on said lever adapted to unlock said latch and thereby to release said vibrator.

34. In a type-writing machine, the combination of a corrugated ribbon-vibrator; an operating-lever adapted to throw said vibrator different distances; a spring-pressed pivoted latch adapted to engage with the corrugations of said vibrator to maintain the latter at the printing-point; a lip or hook on said lever adapted to unlock said latch and release said vibrator; and a draw-spring adapted to restore said vibrator to normal position.

35. In a type-writing machine, the combination of a ribbon-vibrator; a lever operable on said vibrator to throw it to the printing-point; an automatically-actuated latch adapted to maintain said vibrator at the printing-point and disconnect it from said operating-lever; and means for unlocking said latch and reconnecting said vibrator with said operating-lever.

36. In a type-writing machine, the combination of a shouldered corrugated ribbon-vibrator; an operating-lever therefor provided with a hook which normally engages with the shoulders of said vibrator; a spring-pressed pivoted latch adapted to engage the corrugated portion of said ribbon-vibrator to maintain the latter at the printing-point when it is moved thereto by the operating-lever, the hook portion of said lever separating from the shouldered portion of the ribbon-vibrator when the vibrator is latched, said lever being further provided with a lip which is adapted to disconnect said latch from said vibrator; and a draw-spring adapted to reconnect the shouldered portion of said vibrator with the hook portion of said operating-lever.

37. In a type-writing machine, the combination of a ribbon-vibrator; printing-keys; means controlled by said keys for moving the ribbon-vibrator to printing position; means for retaining said vibrator at printing position during a part of the return stroke of a key; and means for feeding the ribbon longitudinally while thus retained in printing position.

38. In a type-writing machine, the combination of a ribbon-vibrator; printing-keys; means for moving said vibrator to printing position during the printing stroke of a key; means for temporarily holding said vibrator at printing position during a portion of the return stroke of said key; and means for restoring said vibrator to normal position after the key has completed its return stroke.

39. In a type-writing machine, the combination of a ribbon-vibrator; printing-keys; means for moving said vibrator to cover and uncover the printing-point at each operation of a printing-key when the keys are operated

slowly; and means for preventing said vibrator from returning to normal position during a number of successive key operations when the keys are operated in rapid succession.

5 40. In a type-writing machine, the combination of a ribbon-vibrator; means for feeding the ribbon longitudinally; printing-keys; means enabling said printing-keys to control said vibrator; and means for taking said vibrator out of the control of said printing-keys
10 without interfering with the ribbon-feeding means.

15 41. In a type-writing machine, the combination of a ribbon-vibrator; printing-keys; means controlled by said keys for moving the ribbon-vibrator to printing position; and means operative to retain said vibrator at printing position during a part only of the re-

turn stroke of the printing-key when the printing-keys are operated slowly.

20 42. In a type-writing machine, the combination of a ribbon-vibrator; printing-keys; means enabling said printing-keys to control said vibrator; and means for automatically taking said vibrator out of the control of said
25 printing-keys during the operation of said printing-keys.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 24th day of February, A. D. 1905. 30

MORRIS W. POOL.

Witnesses:

E. M. WELLS,

M. F. HANNWEBER.