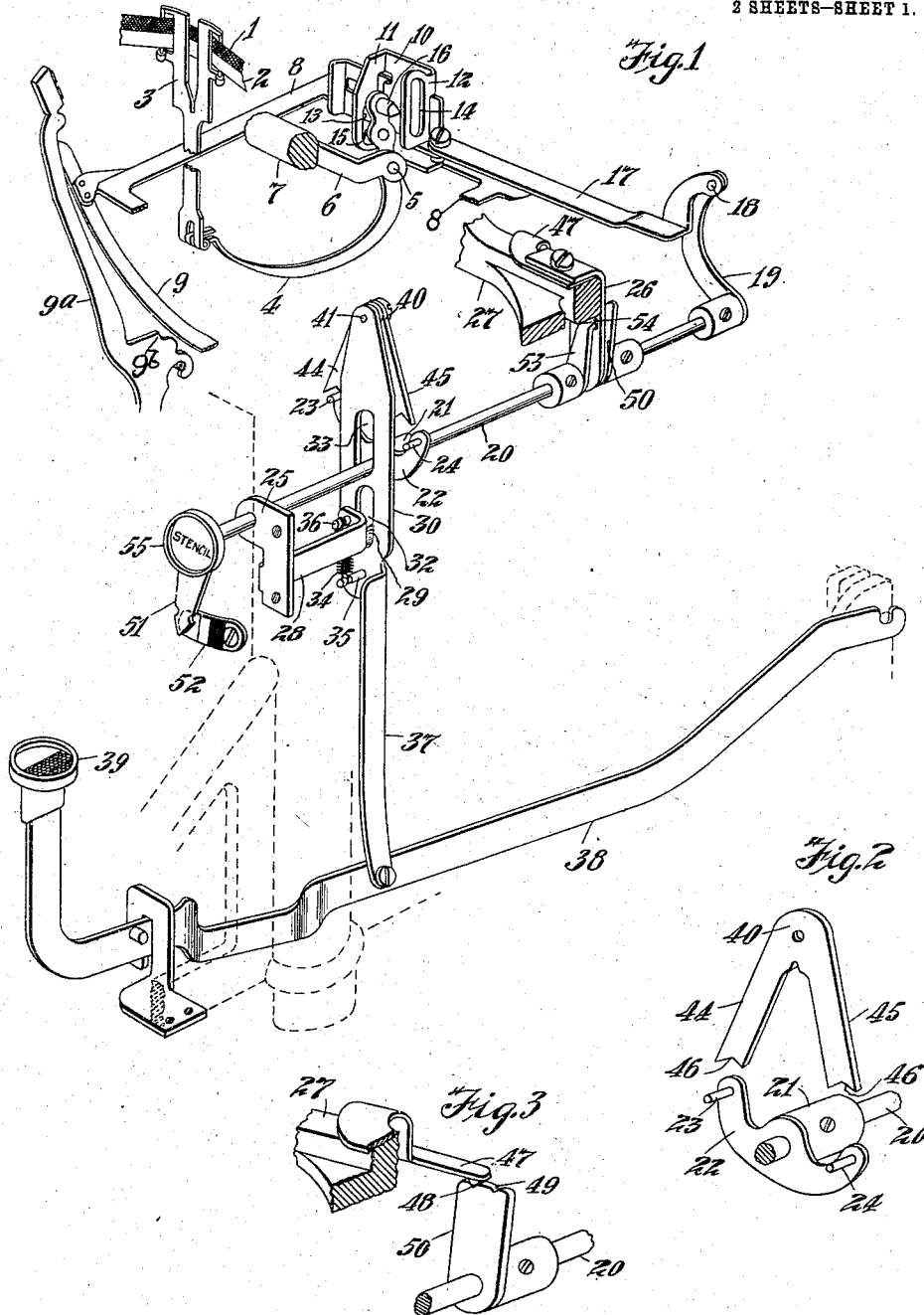


W. E. BARNARD.
TYPE WRITING MACHINE.
APPLICATION FILED AUG. 20, 1910.

1,041,723.

Patented Oct. 22, 1912.

2 SHEETS—SHEET 1.



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2 SHEETS-SHEET 2.

Fig. 4

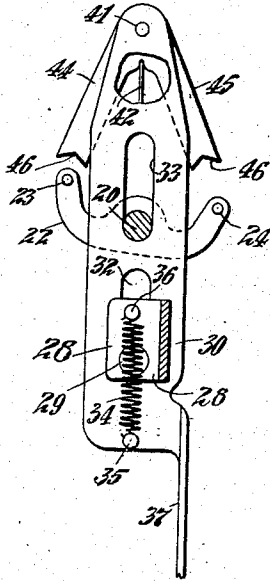


Fig. 5

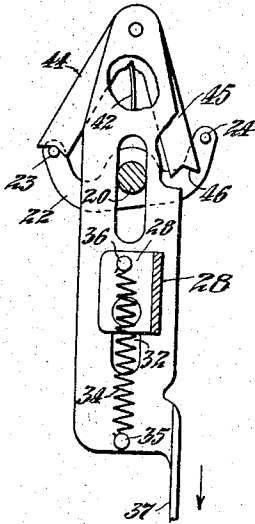


Fig. 6

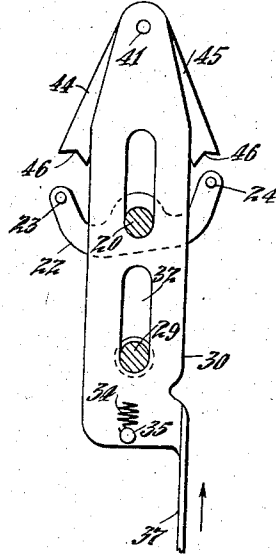


Fig. 7

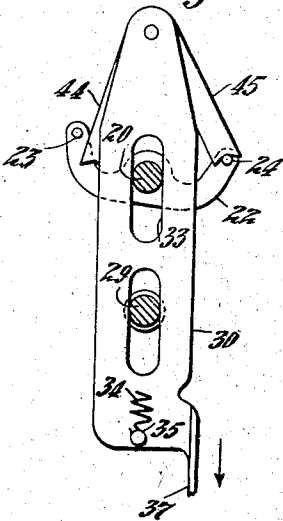


Fig. 8

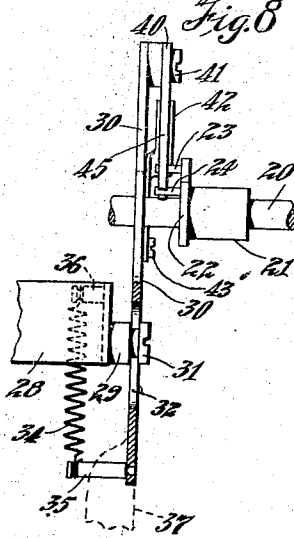
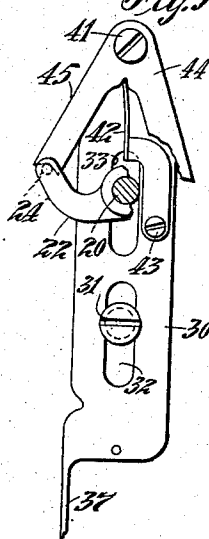


Fig. 9



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UNITED STATES PATENT OFFICE.

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TYPE-WRITING MACHINE.

1,041,723.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed August 20, 1910. Serial No. 578,228.

To all whom it may concern:

Be it known that I, WALTER E. BARNARD, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

The present invention relates to a type-writing machine in which two parallel fields of ribbon, of different color, are shiftable into and out of active position with respect to the printing point of the type, the machine, to this end, comprising means for setting the ribbon-vibrating mechanism so that an actuator which reciprocates at every stroke of the type bars, may give the ribbon vibrator the proper throw to bring the desired ribbon field to active position.

The means for shifting the ribbon vibrator with relation to the actuator has commonly comprised a device, such for instance as a rock shaft, movable to the right to connect the ribbon vibrator and actuator in such manner that thereafter, upon operation of a type bar, the vibrator moves a distance sufficient to bring one of the ribbon fields to the printing point; and movable to the left to make such a connection between the vibrator and the actuator that operation of a type bar then moves the vibrator a different distance to bring the other ribbon field to the printing point. It is also old for the rock shaft or the like to have an intermediate position in which the ribbon vibrator is entirely disconnected from the actuator and cannot be moved by the type bars to bring either ribbon field to the printing point.

The foregoing or equivalent mechanism for setting the actuator for the different ribbon fields has commonly been operated by two distinct keys, one for each ribbon setting.

The particular object of the present invention is to provide a means by which a single key suffices to effect both settings of the actuator, so that no matter for which ribbon field the actuator may happen to be set, the operation of the key resets the actuator for the other ribbon field. The elimination of one of the keys heretofore required is of advantage in that in certain respects the mechanism is simplified, and in that the

keyboard space required for the mechanism is reduced.

It is of course desirable that suitable means be provided for indicating at all times the ribbon field for which the actuator is set; and another feature of the invention is to provide an indicator of the nature which, although suitably connected to the actuator and to the setting key, nevertheless involves practically no added parts to the mechanism.

In connection with the above-mentioned mechanism, I employ a device operated by a so-called "stencil" key for setting the actuator so that neither ribbon field can become active when the type bars are operated for stenciling. In this application no claim is laid specifically to the device for setting the actuator for stenciling; but the manner in which this device is connected to and combined with the single key mechanism above mentioned, does form part of the invention.

Other objects and features of the invention will presently and more fully appear on reference to the accompanying drawings in which—

Figure 1 is a perspective of so much of a type-writer mechanism as suffices to illustrate the invention. Fig. 2 is a detail perspective view of the device which directly operates the rock shaft for setting the actuator. Fig. 3 is a detail perspective view of the detent mechanism for holding the rock shaft against displacement when set. Figs. 4, 5, 6 and 7 are views in front elevation of the rock shaft setting mechanism shown in Fig. 2, and of the plunger which actuates the same, the several views illustrating successive positions assumed by this setting mechanism during two successive operations of the key. Fig. 8 is a view in side elevation of the mechanism shown in Figs. 4 to 7. Fig. 9 is a view in rear elevation of the mechanism shown in Figs. 4 to 7; certain of the parts being broken for the purpose of more clearly illustrating the invention.

Referring to the drawings, the ribbon, composed of fields 1 and 2, is shown threaded into and carried by the vibrator 3, the latter being hinged to one end of a lever 4, fulcrumed at 5 to a bracket 6 attached to the shift rail 7 of the case-shifting mechanism. Mounted on a frame 8 with a universal bar 9 which is vibrated by the type

bars 9^a is an actuator 10. The actuator has a pin and slot connection to the frame 8 so that in addition to moving with the frame it may also have lateral adjustment on the frame. The actuator has two forwardly projecting ears 11 and 12, provided respectively with vertical slots 13 and 14. The arm of the lever 4 beyond the fulcrum 5 carries two wrist pins 15 and 16 positioned at different distances from the fulcrum. The pin 15 projects toward the ear 11 of the actuator and the pin 16 toward the ear 12, and each pin is in alinement with the slot in the actuator ear toward which it projects. The distance between the ears 11 and 12 is such that the actuator may assume a position in which neither of the pins lies within a slot. The actuator in its adjustment on the frame 8 may however be moved to the left to cause the pin 15 to enter the slot 13, or to the right to cause the pin 16 to enter the slot 14. If, while either pin lies within its slot, a type bar and consequently the frame 8 is operated, then the movement of the actuator is transmitted to the lever 4 and ribbon. According to the distance of the wrist pins from the fulcrum of the lever 4, the movement of the ribbon will be greater or less. If the lever 4 receives its shorter movement, the field 1 will be brought to the printing point; whereas if the lever receives its longer movement, it will be the field 2 which is active. If neither pin lies within its slot, then upon movement of the type-bars, no movement is transmitted to the lever 4, and both ribbon fields remain inactive. The mechanism for controlling the three adjustments of the actuator will now be described.

40. Pivotally connected at one end to the actuator 10 is a bar or rod 17, the other end of which is pivotally connected at 18 to an arm 19 fast on a rock shaft 20. Also fast on the rock shaft 20 is a collar 21 carrying a cross plate or arm 22, which at one end carries a pin 23 and at the other end a pin 24. The shaft 20 has a bearing at or near its forward end in a hanger or bracket 25 on the frame of the machine; and to the rear thereof is a hanger or bracket 26 attached to the frame bar 27. The shaft has a limited rocking movement in its bearings, and, as will presently appear, a limited longitudinal movement also. Secured to the frame members 25 is a bracket 28 carrying a stud 29 (see Fig. 8) on which is loosely mounted a plate 30. A screw head 31 holds the plate 30 on the stud 29, and a slot 32 permits of limited up and down movement of the plate 30 on the stud. The plate has a second slot 33 through which the shaft 20 passes; and the shaft and stud together thus hold the plate in vertical position. A spring 34 attached at one end to a pin 35 on the plate and at the other end to a pin 36 on the

bracket 28 normally holds the plate in its uppermost position, with the stud 29 at the lower end of slot 32, and the shaft 20 at the lower end of the slot 33. A draw bar 37 forming part of or attached to the plate 30 connects the same to key lever 38, which carries at its forward end the key 39 from which the actuator is set for the ribbon field. When the key 39 is depressed, the movement is transmitted to the shaft 20 through the plate 30 and a member 40, which remains to be described.

The member 40 is a two-armed pawl of inverted V-shape pivotally attached at 41 to the upper end of the plate 30. A leaf or plate spring 42 attached at 43 to the plate 30 (see Fig. 9) tends to rock the member 40 to its central position (as shown in Fig. 4). The arms 44 and 45 of the member 40 are each recessed at 46 for engagement with the pins 23 and 24 of the cross plate 22, when, on depression of the plate 30, either of the pins happens to be in alinement with such a recess. The distance between the pins 23 and 24 is greater than the distance between the recesses 46 however, so that only one at a time of the pins 23 and 24 can be engaged by the member 40, as will now be explained.

Assuming the shaft 20 and cross plate 22 to be in the position shown in Fig. 4, the actuator will then be in its right hand position, and the mechanism is set through the wrist pin 15 and lever 4 for one of the ribbon fields. No pressure being maintained on the key 39, the plate 30 by reason of the spring 34, will be in its uppermost position, and the member 40 by reason of the spring 42 will be in its central position.

If now it be desired to set the actuator for the other ribbon field, the key 39 is depressed, and, through the lever 38 and bar 37, draws down the plate 30 and member 40 against the tension of the spring 34. The pin 23 being in the path of the recess 46 of the arm 44 (see Fig. 4) is engaged by the latter, with the result that further downward movement of the plate 30 causes the cross arm 22 and shaft 20 to be rocked to the position shown in Fig. 5, the member 40 being also rocked against the tension of its spring 42, by reason of the engagement of the arm 44 with pin 23. The rocking of member 40 causes arm 45 and pin 24 to pass each other without engaging, so that finally when the key 39 is fully depressed, the parts are positioned as shown in Fig. 5. The key 39 is then released, and springs 34 and 42 return plate 30 and member 40 to normal position as shown in Fig. 6. The movement of shaft 20 has caused the actuator 10 to engage wrist pin 16, and the other ribbon field is now active when the type bars are operated. To reset the actuator for the first ribbon field, and to return the parts from the Fig. 130

6 position to the position shown in Fig. 4, it is only necessary again to depress the key 39. On this depression of the key it will be the arm 45 and the pin 24 which engage; and members 22 and 40 will be rocked from the Fig. 6 to the Fig. 7 position. When the key is released the members 30 and 40 will be returned by their springs to the Fig. 4 position, and the resetting will have been completed.

To hold the parts against displacement from either the Fig. 4 or the Fig. 6 position, there is mounted on the frame bar 27 a spring detent member 47 adapted to engage either of two nicks 48 and 49, in the periphery of a plate 50 fast to the rock shaft 20. The engagement of the detent with nick 48 causes the parts to be held in the Fig. 4 position; and with nick 49, to be held in the Fig. 6 position.

Fast to the forward end of the shaft 20 is a pointer or needle 51 which coöperates with a dial plate 52 on the face of the frame, to show the setting of the mechanism. When the parts are in the position shown in Fig. 4 the needle registers with the left hand end of the dial plate. In the Fig. 6 position of the parts the needle registers with the right hand end of the dial plate. When the actuator is in stenciling position, the needle overlies the center of the dial plate.

For the purpose of centering the shaft 20 and actuator so that both ribbon fields are inactive, there is fast to the shaft a plate 53 having a spear or wedge-shaped end turned toward the hanger 26. In the hanger 26 is an opening 54 into which the wedge shaped end of the plate 53 is adapted to enter when the shaft is given a longitudinal movement in its bearings by pressure on a key 55. No matter to which side the shaft 20 may have been rocked before the key 55 is pressed, the wedge of the plate 53 by engagement with the walls of the opening 54, causes the shaft 20, when moved longitudinally, to be also rocked to the centering position, in which both ribbon fields are inactive. In this position the hanger holds the shaft against displacement until the key 55 is again drawn out.

It will be understood by persons skilled in the art that the structure herein shown and described is capable of various modifications within the scope of the invention.

Having thus described my invention, I claim:

1. In a typewriting machine, the combination with an actuator which reciprocates at the type strokes, of mechanism, including a rock shaft, for effecting two different settings of the actuator to cause the latter to vibrate either of two fields of ribbon to cover the printing point at the type strokes, a single key controlling said rock shaft for both of said settings, said key having the

same movement in each instance, means whereby the operation of the key effects one end and then the other of said settings of said shaft alternately; and means controlled by an endwise movement of said rock shaft for silencing the ribbon at the type strokes.

2. In a typewriting machine, the combination with an actuator which reciprocates at the type strokes, of mechanism for effecting two different settings of the actuator to cause the latter to vibrate either of two fields of ribbon to cover the printing point at the type strokes, a single key controlling said mechanism for both of said settings, said key having the same movement in each instance, means whereby the movement of the key in one instance effects one of said settings and in another instance effects the other of said settings, and a second key movable in one direction for effecting a third setting of the actuator from either of said settings to render both ribbon fields inactive at the type strokes.

3. In a typewriting machine, the combination with an actuator which reciprocates at the type strokes, of mechanism for effecting two different settings of the actuator to cause the latter to vibrate either of two fields of ribbon to cover the printing point at the type strokes, said mechanism comprising a rock shaft having clockwise movement in effecting one of said actuator settings and anti-clockwise movement in effecting the other of said settings, a single key controlling said mechanism for both of said settings, said key having the same movement in each instance, means whereby the movement of the key in one instance effects clockwise movement of said rock shaft and in another instance anti-clockwise movement of said rock shaft, and means dependent upon the movement of said rock shaft in a third direction for silencing the ribbon-vibrating mechanism.

4. In a typewriting machine, the combination with an actuator which reciprocates at the type strokes, of mechanism for effecting two different settings of the actuator to cause the latter to vibrate either of two fields of ribbon to cover the printing point at the type strokes, said mechanism comprising a rock shaft having clockwise movement in effecting one of said actuator settings and anti-clockwise movement in effecting the other of said settings, a cross plate fast to said shaft for rocking the same, a single key for controlling said mechanism for both of said settings, said key having the same movement for each of said settings, a slide reciprocated by said key, a member carried by said slide adapted on each operation of the key to engage one end of the cross plate on the rock shaft, according to the setting of the latter and to rock the shaft to its other setting; and means dependent upon an end-

wise movement of the shaft for silencing the ribbon-vibrating mechanism.

5. In a typewriting machine, the combination with an actuator which reciprocates at the type strokes, of mechanism for effecting two different settings of the actuator to cause the latter to vibrate either of two fields of ribbon to cover the printing point at the type strokes, said mechanism comprising a rock shaft having clockwise movement in effecting one of said actuator settings and anti-clockwise movement in effecting the other of said settings, and a cross plate fast to said shaft for rocking the same, a single key for controlling said mechanism for both of said settings, said key having the same movement for each of said settings, an element reciprocated by said key, and a two-armed oscillatory lever pivoted to said key reciprocated element and movable with the latter bodily and perpendicularly toward and from the rock shaft and cross plate thereon; the arms of said lever, during this movement, straddling the shaft so that, according to the setting of the shaft, one end of the cross plate will be engaged by one arm of the lever and the cross plate with the shaft thereby rocked to its other setting, the lever, by reason of the engagement of one arm thereof with the cross plate, being rocked to remove its other arm from the path of the cross plate, so that the setting of the latter may be effected.

6. In a typewriting machine, the combination with an actuator which reciprocates at the type strokes, of mechanism for effecting two different settings of the actuator to cause the latter to vibrate either of two fields of ribbon to cover the printing point at the type strokes, said mechanism comprising a rock shaft having clockwise movement in effecting one of said actuator settings and anticlockwise movement in effecting the other of said settings, and a cross plate fast to said shaft for rocking the same, a single key for controlling said mechanism for both of said settings, said key having the same movement for each of said settings, an element reciprocated by said key, and a two-armed oscillatory lever pivoted to said key reciprocated element and movable with the latter bodily and perpendicularly toward and from the rock shaft and cross plate thereon; the arms of said lever, during this movement, straddling the shaft so that, according to the setting of the shaft, one end of the cross plate will be engaged by one arm of the lever and the cross plate with the shaft thereby rocked to its other setting, the lever, by reason of the engagement of one arm thereof with the cross plate, being rocked to remove its other arm from the path of the cross plate, so that the setting of the latter may be effected, a spring for returning the key-reciprocated element to

normal position after each setting, and a spring for swinging the lever on its pivot to normal position when the movement of the key-reciprocated element has disengaged the lever from the cross plate.

7. In a typewriting machine, the combination with an actuator which reciprocates at the type strokes, of mechanism for effecting two different settings of the actuator to cause the latter to vibrate either of two fields of ribbon to cover the printing point at the type strokes, said mechanism comprising a rock shaft having clockwise movement in effecting one of said actuator settings and anti-clockwise movement in effecting the other of said settings, a single key controlling said mechanism for both of said settings, said key having the same movement in each instance, means whereby the movement of the key in one instance effects clockwise movement of said rock shaft and in another instance anti-clockwise movement of said rock shaft, said shaft being also movable longitudinally in its bearings, and means cooperating with said shaft, when the latter is moved longitudinally, to cause the shaft to be rocked from either side to a position in which the actuator can vibrate neither ribbon field.

8. In a typewriting machine, the combination with an actuator which reciprocates at the type strokes, of mechanism for effecting two different settings of the actuator to cause the latter to vibrate either of two fields of ribbon to cover the printing point at the type strokes, said mechanism comprising a rock shaft having clockwise movement in effecting one of said actuator settings, and anti-clockwise movement in effecting the other of said settings, and a cross-plate having at each end a pin, and being fast to said shaft for rocking the same, a single key for controlling said mechanism for both of said settings, said key having the same movement for each of said settings, an element reciprocated by said key, a two-armed oscillatory lever pivoted to said key-reciprocated element and movable with the latter bodily and perpendicularly toward and from the rock shaft and cross plate thereon; the arms of said lever, during this movement, straddling the shaft so that, according to the setting of the shaft, one of the pins on the cross plate will be engaged by one arm of the lever, and the cross plate with the shaft thereby rocked to its other setting; and means dependent upon an endwise movement of the shaft for silencing the ribbon-vibrating mechanism.

9. In a typewriting machine, the combination with an actuator which reciprocates at the type strokes, of mechanism for effecting two different settings of the actuator to cause the latter to vibrate either of two fields of ribbon to cover the printing point at the type strokes, said mechanism com-

prising a rock shaft having clockwise movement in effecting one of said actuator settings, and anti-clockwise movement in effecting the other of said settings, and a cross-plate fast to said shaft for rocking the same, a single key for controlling said mechanism for both of said settings, said key having the same movement for each of said settings, an element reciprocated by said key, and a two-armed oscillatory lever pivoted to said key-reciprocated element and movable with the latter bodily and perpendicularly toward and from the rock shaft and cross-plate thereon; the arms of said lever, during this movement, straddling the shaft so that, according to the setting of the shaft, one end of the cross plate will be engaged by one arm of the lever, and the cross plate with the shaft thereby rocked to its other setting, and means for returning said lever on its pivot from whichever side it may have been rocked, to a central position with respect to the shaft after each operation of the key.

10. The combination with a ribbon-vibrating mechanism operated by the type strokes, of shiftable mechanism for varying the operation of the ribbon-vibrating mechanism, to cause different colors or stripes of ribbon to cover the printing point, a key, means operated by successive similar strokes of said key for effecting alternate shifts of said shifting mechanism, and a second key or finger piece movable in one direction to adjust said shiftable device, from either position to which it has been shifted, to a posi-

tion to silence the ribbon-vibrating mechanism.

11. In a typewriting machine, a shiftable vibratory ribbon mechanism comprising, as primary elements, both a key-operated member, and a shiftable member for varying the color field or stripe of the ribbon through which the types strike; a duplex double-acting pawl being provided on one of said primary elements, and cooperative teeth or projections being provided upon the other of said primary elements, whereby repeated operations of said key effect alternate shifts of the other primary element; and means to silence said vibratory ribbon mechanism.

12. In a typewriting machine, a shiftable vibratory ribbon mechanism comprising, as primary elements, both a key-operated member, and a shiftable member for varying the color field or stripe of the ribbon through which the types strike; a duplex double-acting pawl being provided on one of said primary elements, and cooperative teeth or projections being provided upon the other of said primary elements, whereby repeated operations of said key effect alternate shifts of the other primary element, and a second finger-piece effective by movement thereof in one direction to move the last-mentioned primary element to a ribbon-silencing position from either position to which it has been shifted by said key.

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