

W. F. HELMOND.
TYPE WRITING MACHINE.
APPLICATION FILED SEPT. 22, 1910.

1,058,971.

Patented Apr. 15, 1913.

2 SHEETS-SHEET 1.

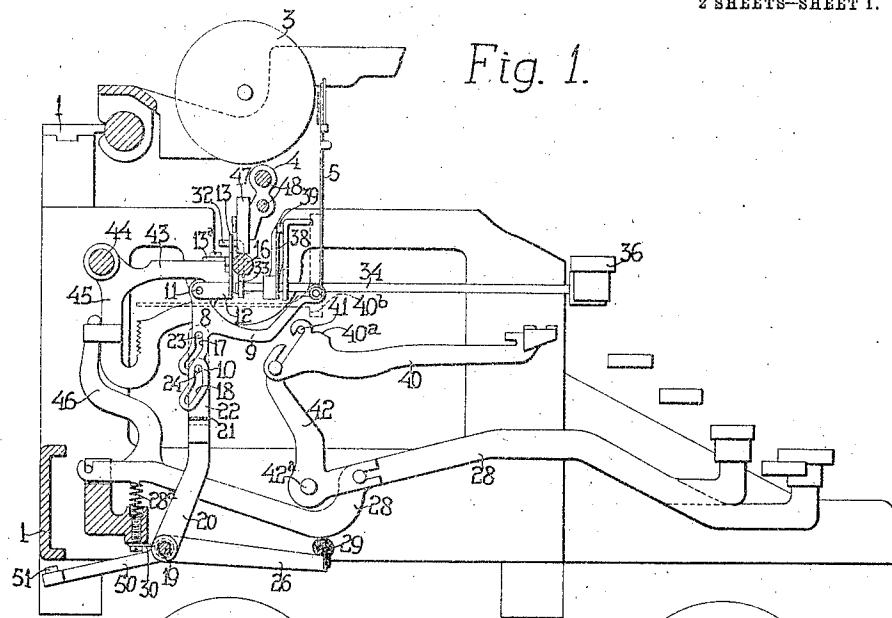
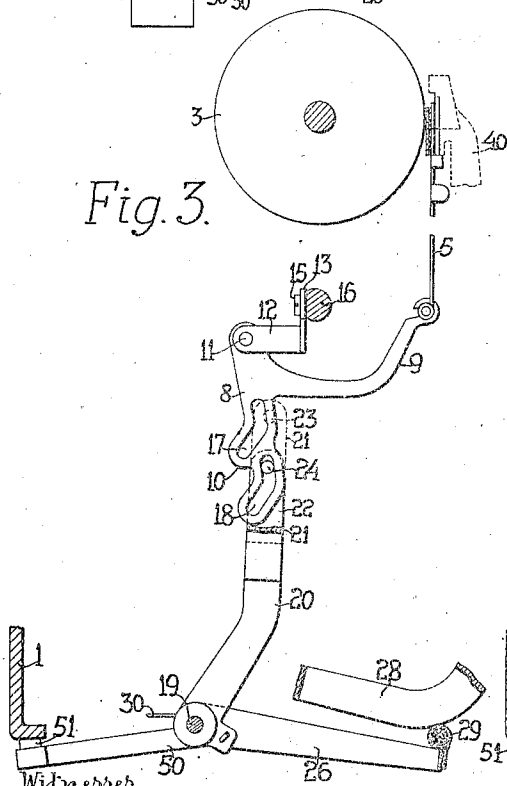


Fig. 1.

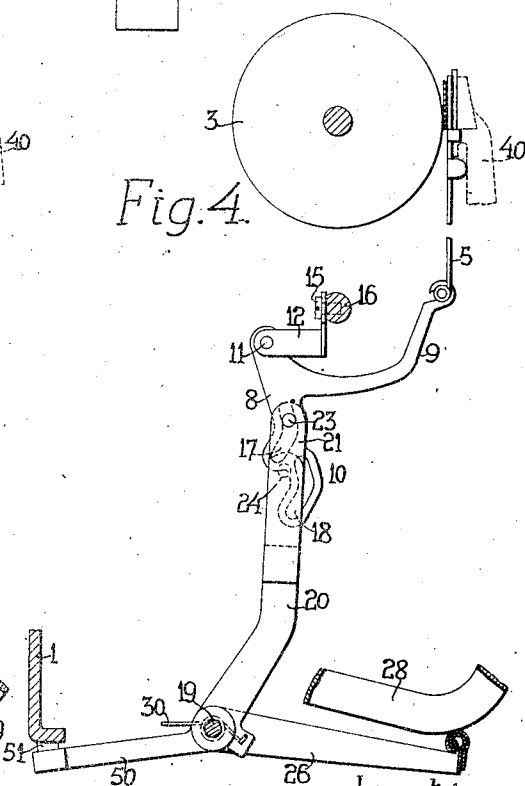
Fig. 3.



Witnesses.

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Fig. 4.



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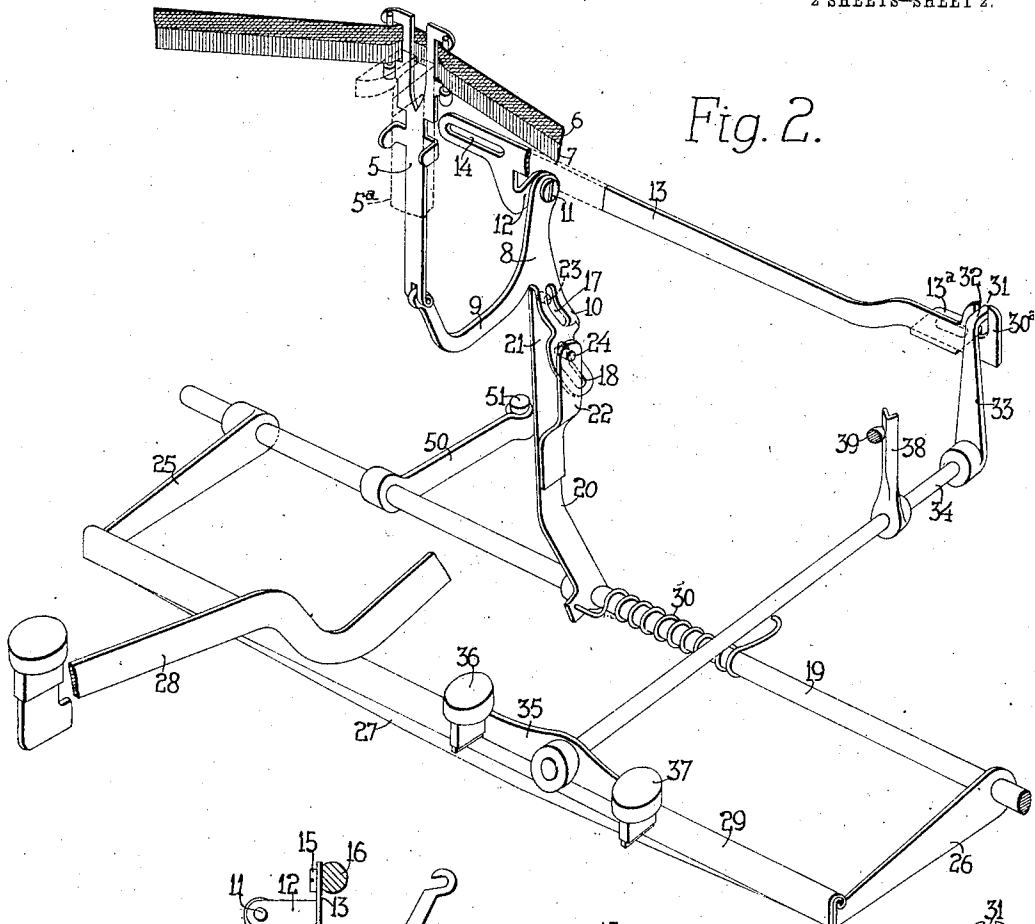


Fig. 2.

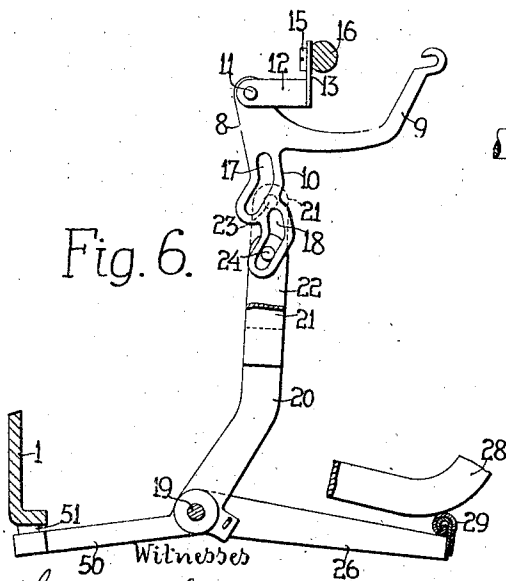


Fig. 6.

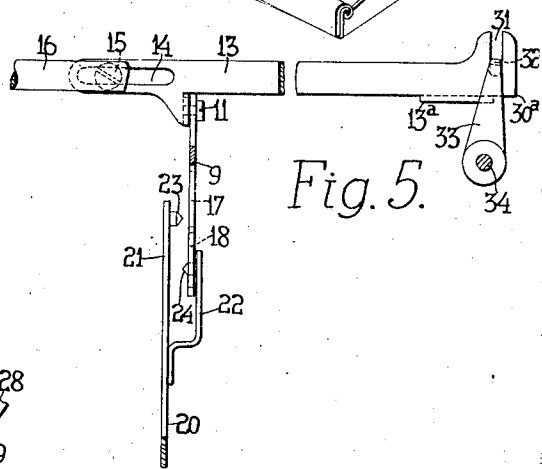


Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM F. HELMOND, OF HARTFORD, CONNECTICUT, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPE-WRITING MACHINE.

1,058,971.

Specification of Letters Patent.

Patented Apr. 15, 1913.

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To all whom it may concern:

Be it known that I, WILLIAM F. HELMOND, 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 type-writing machines of the class in which the ribbon carrier is vibrated at each stroke of the type keys to cause the ribbon to cover and uncover the printing point.

More particularly the invention relates to means whereby the ribbon carrier may be set for different degrees of movement, so that any desired one of a number of parallel color fields of ribbon may be presented to the printing point when the type keys are operated.

The invention is also especially adapted for use in those machines in which the platen is shifted between an upper and a lower type case position, and to this end the connections between the carrier-actuating mechanism and the platen-shifting frame are such that the proper relation of the same is maintained in whichever type case position the platen may be.

The object of the present invention is to provide a mechanism, adapted to the above purposes, which is simple and of few parts and in which the action is positive throughout.

One feature of the invention is an improved arrangement of the universal bar for operating the ribbon, below the type key levers so that the bar may be struck and directly actuated by the key-carrying arms of these levers.

Another feature of the invention is a connection between the universal bar and the ribbon-actuating lever, which permits of ready setting and re-setting of the ribbon actuator, to accord to the different color fields, and which is nevertheless simple and certain in action.

Other features of the invention will appear upon reference to the accompanying drawings in which:

Figure 1 is a view through the machine, from front to rear, showing in side elevation the mechanism relating to the present invention. Fig. 2 is a view in perspective taken from the front of the machine show-

ing the parts for setting and operating the ribbon carrier. Fig. 3 is a view in side elevation of the parts shown in Fig. 2, in conjunction with the platen and type bar, when the ribbon carrier is set for the upper color field of the ribbon. Fig. 4 is a view similar to Fig. 3 except that the ribbon carrier is set for the lower color field of the ribbon. Fig. 5 is a view in front elevation of ribbon carrier-setting mechanism in one position. Fig. 6 is a view similar to Fig. 3 except that the platen-shifting frame is in upper type case position.

On the main frame 1 of the machine is the carriage frame, supporting the platen 3 and other parts (not shown), in a manner common to the "Underwood" machine. The platen frame 4 is shiftable up and down in the main frame between upper and lower type case positions. In the ribbon carrier 5 is threaded a polychromatic ribbon, having color fields 6 and 7. The carrier 5 is adapted to be moved up and down on the guide 5^a. At its lower end it is pivotally connected to a bell crank lever 8, having arms 9 and 10, and pivoted at 11 to a rearwardly extending ear or lug 12 on a slide or bar 13. The slide 13 has a slot 14 engaging a headed screw 15 on a rail or bar 16 forming part of the frame 42 which shifts the platen frame 4. A slotted ear 13^a on the other end of the bar 13 is a second point of attachment of the bar to the frame 43, similar to the first. The slot and screw connections of slide 13 and frame 43 cause the slide to be moved up and down with the rail 16, but permit of movement of the slide with the ribbon carrier, longitudinally of the rail.

In the arm 10 of the bell crank lever 8 are two slots, 17 and 18 respectively, one below the other. Fast to a rock shaft 19 pivoted in the main frame of the machine, is an actuator in the form of an arm or lever 20 which terminates in a fork comprising two arms, 21 and 22, between which the arm 10 of the lever 8 depends. The arm 21 is of greater length than the arm 22 and carries near its upper end a pin 23 which lies opposite to and is adapted, when the slide 13 is shifted longitudinally with the lever 8 to the left, to enter the slot 17. The arm 22 carries near its upper end a pin 24 which lies opposite to and is adapted to enter the slot 18 when the bell crank lever 8 is shifted by the bar or slide 13 to the right.

Fast to the rock shaft 19 are two arms 25 and 26 supporting a universal bar 27, which latter is adapted to be engaged and rocked by each of the type key levers 28 when any of the latter are operated. The universal bar 27 carries a strip of leather or other material 29 for cushioning the blow of the type key levers. An arm 50 fast to the shaft 19 carries a stop 51 which engages with the frame 1 to limit the movement of the parts carried by the shaft. A spring 30 on the rock shaft 19 serves to return the universal bar with the lever arm 20 to normal position when the type key is released. Springs 28^a return the key levers 28 to normal position. As usual in the Underwood machine, the levers 28 through sub-levers 42 swing the type bars 40 against the front of the platen 3; said type bars having heels 40^a to operate the usual universal bar 40^b for operating the usual letter-feeding devices (not shown).

From the foregoing, it will appear that whenever either of the pins 23 or 24 is within its respective slot 17 or 18, by reason of the longitudinal position of the slide 13, the arm 8 will rock with the arm 20, to lift the ribbon carrier, upon operation of a type key. Since, however, the slot 17 is nearer the pivot 11 of the lever 8 than the slot 18, the motion of the lever 8 is greater when it is engaged by the pin 23 than when it is engaged by the pin 24. The movement of the lever 8 effected through the pin 23 is the proper movement to bring the lower color field 7 to the printing point; and the movement of the lever 8 as effected through the pin 24 is the movement for bringing the upper color field 6 to the printing point.

The slide 13 at its end 30^a is slotted at 31 to receive the nose 32 of a lever arm 33 fast to a rock shaft 34, which latter is pivotally mounted in the main frame of the machine. On the forward end of the shaft 34 is a cross bar 35 carrying on one end a key 36, and on the other end a key 37. Upon depression of the key 36, the arm 34 is rocked counter-clockwise, looking from the front, and throws the bar or slide 13 to the left so as to connect the carrier lever arm 10 to the lever 20 through the pin 23. When the key 37 is depressed, the movement of the shaft 34 is such as to bring the lever 8 into engagement with the lever 20 through the pin 24. For the purpose of holding the rock shaft 34 in either of its set positions, there is fast to the rock shaft a spring member 38 adapted to be engaged on one side or the other, according to the position of the shaft, by a detent member 39 carried on the frame of the machine.

The type bars, one of which is shown at 40 in Fig. 1, are pivoted at 41, and are connected by sub or bell crank levers 42, pivoted at 42^a, to the key levers 28, so that when

a key lever is depressed, the corresponding type bar will be brought to the platen, as shown in Figs. 3 and 4. In Figs. 3 and 4, the type bar is shown with its lower case type at the printing point. When the upper case type is to be brought to the printing point, the shift key is operated to lift the platen. The shift key lever is like the type key levers, except that no lever 42 is connected to it, and it has an arm 46 which is not found on the type key levers. The platen is lifted in a well known manner by movement of the shift frame 43 around pivot 44. The frame 43 has a depending member 45 engaged by the arm 46 of the shift key lever so that when the latter is depressed, the frame 43 is moved on its pivot. The frame member or rail 16 carrying the sliding bar 13 is, as heretofore stated, secured to the frame member 43, and therefore, has upward movement with the latter when the shift key is operated. The upward movement of the bar or rail 16 is transmitted to the platen 3 through roller 47 and the bars 48 in the platen frame which carry the roller. When, therefore, the shift key is operated, the ribbon carrier and platen are simultaneously lifted. This movement of the ribbon carrier is necessary in order that the ribbon may be brought to the printing point when the type keys are operated for upper case type.

The rock shaft 19 (see Fig. 2) is mounted in the main frame of the machine and has no upward movement upon operation of the shift key; and therefore, the slots 17 and 18 in the carrier lever arm 10 must be of sufficient length to permit of the shift upward of the lever 8 without interference by the pins 23 and 24. The slots are shown as of length sufficient for this purpose. As the movement of the lever 20 is the same, whether the platen is in upper or lower case position, and as the lifting of the pivot 11 of the lever 8 lengthens the effective arm 10, the movement of the arm 10 by the lever 20 is less in upper case than in lower case position. Consequently when the platen is shifted up, the lever arm 9 must have a normal position slightly nearer the platen than its normal lower case position if the ribbon is to be brought to the printing point by the lever 20. To this end the slots 17 and 18 are inclined at their lower ends slightly rearwardly, so that with the pin in the slot, the carrier lever arm 9 is held at a slightly higher angle in upper case than in lower case position. Another reason for holding the arm 9 at a higher angle when the platen is in upper case position, is that the rail 16, on which the lever 8 is carried, is nearer the pivot 44 of member 43 than is the platen, so that the platen gets a greater shift than the pivot 11 of lever 8. To compensate for this difference in shift,

the arm 9 should be held nearer the platen in upper case position than in lower case position. The ribbon-setting shaft 34 is also in the main frame and has no upward movement. The slot 31 in the slide 13, however, permits of up and down movement of the slide with the shift frame without disturbance of the connection of the slide to the shaft 34.

The structure above 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 of a platen, a ribbon carrier, mechanism operated from the type keys for actuating the carrier to bring the ribbon to the printing point at each operation of a type key, said carrier actuating mechanism comprising key levers pivoted on the frame of the machine, a universal bar acted upon by said key levers, two parallel arms spaced one from the other and connected to the universal bar, a lever connected to the ribbon carrier for actuating the latter, said carrier-actuating lever lying between said parallel arms, and means for effecting a relative shifting movement between said lever and said arms, to bring said actuating lever into operative engagement with either of said parallel arms at unequal distances from the pivot of said carrier actuating lever.

2. In a typewriting machine, the combination of a platen, a ribbon carrier, type keys, a universal bar acted upon by said keys, an element comprising two parallel arms spaced one from the other, another element comprising a lever, one of said elements connected to the universal bar and the other connected to the ribbon carrier for actuating the latter, said lever element lying between said parallel arms, and means for effecting a shift to bring said actuating lever into operative engagement with either of said parallel arms at unequal distances from the pivot of the lever element.

3. In a typewriting machine, the combination of a platen, a ribbon carrier, and mechanism operated from the type keys for actuating the carrier to bring the ribbon to the printing point at each operation of a type key, said carrier actuating mechanism comprising key levers pivoted on the frame of the machine, a universal bar acted upon by said key levers, two parallel arms spaced one from the other and connected to the universal bar, a lever connected to the ribbon carrier for actuating the latter, said carrier-actuating lever lying between said parallel arms, and means for shifting said actuating lever into pin and slot engagement with either of said parallel arms at unequal distances from the point of at-

tachment of said parallel arms to the universal bar.

4. In a typewriting machine, the combination of a platen, a ribbon carrier, and mechanism operated from the type keys for actuating the carrier to bring the ribbon to the printing point at each operation of a type key, said carrier actuating mechanism comprising a universal bar, two parallel arms spaced one from the other, a lever, said arms and lever operated by the universal bar and connected to the ribbon carrier for actuating the latter, said lever lying between said parallel arms, and means for shifting said lever into operative engagement with either of said arms at points differently removed from the pivot of said lever.

5. In a typewriting machine, the combination of a platen, a ribbon carrier, and mechanism operated from the type keys for actuating the carrier to bring the ribbon to the printing point at each operation of a type key, said carrier-actuating mechanism comprising key levers pivoted on the frame of the machine, a universal bar acted upon by said key levers, two parallel arms spaced one from the other and connected to the universal bar, a lever connected to the ribbon carrier for actuating the latter, said carrier-actuating lever lying between said parallel arms, a pin carried by each of said arms at different distances from the pivot of said carrier-actuating lever, two slots in said actuating lever at different distances from the pivot thereof and each lying opposite one of the pins on the parallel arms, and means for shifting said actuating lever into pin and slot engagement with either of said parallel arms.

6. In a typewriting machine, the platen, a ribbon carrier, and means operated from the type keys for actuating the carrier to bring the ribbon to the printing point at each operation of a type key, means for giving the carrier a plurality of settings with respect to its operating mechanism whereby the carrier may be moved different distances to bring different ribbon color fields to the printing point, and a frame for shifting the platen between upper and lower case positions; said ribbon carrier setting and actuating mechanism comprising type key levers, a universal bar operated by the key levers, two arms spaced apart and connected to the universal bar, a ribbon carrier actuating lever carried by the platen shifting frame and lying between said arms, a pin on each arm at different distances from the pivot of said actuating lever, said lever having two slots, one to be engaged by each of said pins, and each slot being of a length sufficient to permit of the engagement thereof with its respective pin in both type case positions of the platen shifting frame, and

means for shifting said carrier actuating lever on the platen shifting frame into pin and slot engagement with either of said arms.

- 5 7. In a typewriting machine, the platen, a ribbon carrier, and means operated from the type keys for actuating the carrier to bring the ribbon to the printing point at each operation of a type key, means for giving the carrier a plurality of settings with respect to its operating mechanism whereby the carrier may be moved different distances to bring different ribbon color fields to the printing point, said carrier setting and actuating mechanism comprising a universal bar pivotally mounted in the frame of the machine, means for operating said bar from the type keys, arms fast to said bar, a pin carried by each arm, said pins being at different distances from the point of attachment of said arms to the universal bar, a lever attached to the ribbon carrier for actuating the same, said carrier actuating lever lying between said arms and being slotted to engage either of said pins, and means for shifting said carrier lever into pin and slot engagement with either of said arms.

8. In a typewriting machine, the combination of a platen, a ribbon carrier, and mechanism operated from the type keys for actuating the carrier to bring the ribbon to the printing point at each operation of a type key, said carrier actuating mechanism comprising key levers pivoted on the frame of the machine, a universal bar acted upon by said key levers, two parallel arms spaced one from the other and connected to the universal bar, a lever connected to the ribbon carrier for actuating the latter, said carrier-actuating lever lying between said parallel arms, and means for shifting said actuating lever into operative engagement with either of said arms at points unequally distant from the pivot of said lever.

9. In a typewriting machine, the combination with key-operated types, and a carriage-feeding universal bar operated only during the last portion of each type stroke, of a ribbon-vibrating mechanism including a second universal bar operable by the keys, a ribbon vibrator connected to said second universal bar to operate during substantially the entire stroke of each key, a platen-shifting mechanism, and a loose connection between said vibrator and the second universal bar, to permit shifting of the ribbon vibrator with the platen.

10. In a typewriting machine, the combination with key-operated types, and a carriage-feeding universal bar operated only during the last portion of each type stroke, of a ribbon-vibrating mechanism including a second universal bar operable by the keys, a ribbon vibrator connected to said second universal bar to operate during substantially

the entire stroke of each key, a platen-shifting mechanism, a loose connection between said vibrator and the second universal bar to permit shifting of the ribbon vibrator with the platen, and means for varying the connection between the second universal bar and the vibrator, to regulate the throw of the latter.

11. In a typewriting machine, the combination with key-controlled types, a platen-shifting mechanism, and a carriage-feeding universal bar operated only during the last portion of each type stroke, of a ribbon-vibrating mechanism including a ribbon vibrator, a second universal bar operable by the keys and operating during substantially the entire stroke of each key, an arm connected to said second universal bar, and a ribbon-vibrating lever having an arm extending to the first mentioned arm and loosely connected thereto to permit shifting of the ribbon vibrator with the platen.

12. In a typewriting machine, the combination with key-controlled types, a platen-shifting mechanism, and a carriage-feeding universal bar operated only during the last portion of each type stroke, of a ribbon-vibrating mechanism including a ribbon vibrator, a second universal bar operable by the keys and operating during substantially the entire stroke of each key, an actuator connected to said second universal bar, a ribbon-vibrating lever having an arm extending to said actuator and loosely connected thereto to permit shifting of the ribbon vibrator with the platen, and means for varying the point of connection between said actuator and said arm to regulate the throw of the vibrator.

13. In a typewriting machine, the combination with key-controlled types, a platen-shifting mechanism, and a carriage-feeding universal bar operated only during the last portion of each type stroke, of a ribbon-vibrating mechanism including a ribbon vibrator, a second universal bar operable by the keys and operating during substantially the entire stroke of each key, an actuator element connected to said second universal bar, a ribbon-vibrating lever having an arm element extending to said actuator element and loosely connected thereto to permit shifting of the ribbon vibrator with the platen, and means for varying the point of connection between said actuator and arm elements to regulate the throw of the vibrator, one of said elements having slots, and the other having wrists or pins to engage said slots; means being provided to silence either pin at will.

14. In a typewriting machine, the combination with key-controlled types, a platen-shifting mechanism, and a carriage feeding universal bar operated only during the last portion of each type stroke, of a ribbon vi-

brating mechanism including a ribbon vibrator, a second universal bar operable by the keys and operating during substantially the entire stroke of each key, an actuator element connected to said second universal bar, a ribbon-vibrating lever having an arm element extending to said actuator element and loosely connected thereto to permit shifting of the ribbon vibrator with the platen, and means for varying the point of connection between said actuator and arm elements to regulate the throw of the vibrator, one of said elements having slots, and the other having wrists or pins to engage said slots; means being provided to silence either pin at will by means of a lateral movement of one of said arms.

15. In a typewriting machine, the combination with key-controlled types, a platen-shifting mechanism, and a carriage-feeding universal bar operated only during the last portion of each type stroke, of a ribbon vibrating mechanism including a ribbon vibrator, a second universal bar operable by

the keys and operating during substantially the entire stroke of each key, an actuator element connected to said second universal bar, a ribbon-vibrating lever having an arm element extending to said actuator element and loosely connected thereto to permit shifting of the ribbon vibrator with the platen, and means for varying the point of connection between said actuator and arm elements to regulate the throw of the vibrator, one of said elements having slots, and the other having wrists or pins to engage said slots; means being provided to silence either pin at will; said platen shifting mechanism including a vibrating frame whereon said ribbon-vibrating lever is pivoted, and said slots being of angular form to compensate for the vibration of said platen shifting frame.

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Witnesses:

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