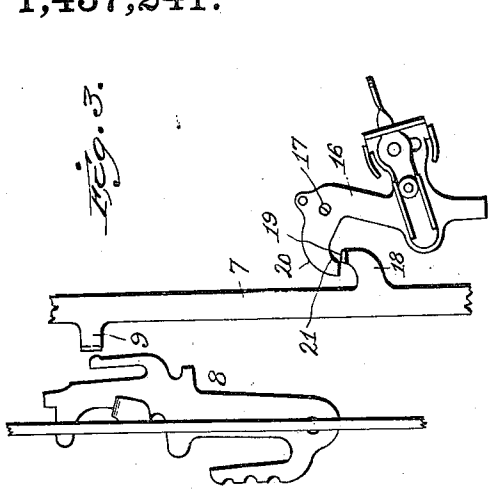
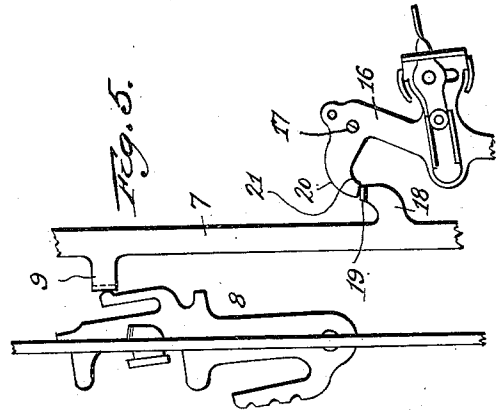
E. L. HARMON.

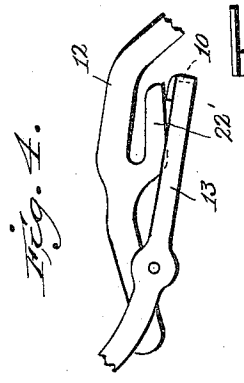
TYPEWRITING MACHINE.

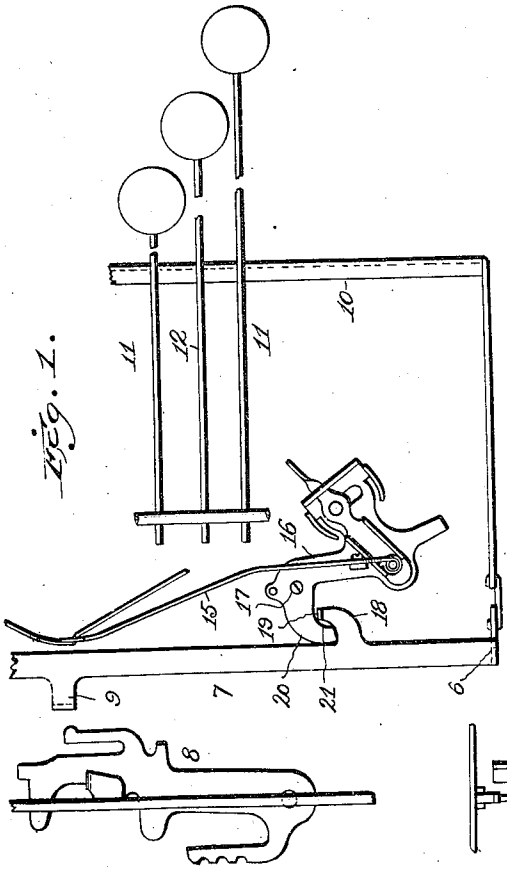
APPLICATION FILED MAR. 22, 1919.

1,437,241. Patented Nov. 28, 1922.









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Attorneys

Patented Nov. 28, 1922. 1,437,241

UNITED STATES PATENT OFFICE.

EDWIN L. HARMON, OF GROTON, NEW YORK, ASSIGNOR TO CORONA TYPEWRITER COMPANY, INC., OF GROTON, NEW YORK, A CORPORATION OF NEW YORK.

TYPEWRITING MACHINE.

Application filed March 22, 1919. Serial No. 284,327.

To all whom it may concern:

Be it known that I, EDWIN L. HARMON, a citizen of the United States of America, and a resident of Groton, in the county of Tompkins and State of New York, have invented certain new and useful Improvements in Typewriting Machines, of which the following is a full and clear specification.

This invention has relation to dead-key actions in which the action is so constructed that an operation of the dead-key will feed the ribbon as well as operate the ribbon-vibrator but will not operate the carriage-feed, these dead actions being employed for operating the type-heads carrying the underscores, accents, etc., in which it is desirable that the carriage shall be kept from feeding until the subsequent character is printed either above the underscore or below the accent mark previously printed; and the object of the present invention is to simplify this type of key-action, as more fully hereinafter set forth. I have illustrated my invention in connection with a Corona type of carriage and ribbon-operating devices, an instance of which is shown in patent to Otto Petermann No. 1,121,044, dated December 15, 1914.

In the drawings—

Fig. 1 is a plan view of so much of a Corona machine as is necessary to illustrate my invention;

Fig. 2 is a side elevation thereof;

Fig. 3 is a fragmentary plan view showing the parts in the position they assume when a dead-key is struck;

Fig. 4 is a fragmentary view showing the operation of a dead key;

Fig. 5 is a view similar to Fig. 3 showing the carriage-feeding parts in the position they are moved to by the operation of a live key.

In this Corona type of carriage-feed, a bail is employed which consists of a pair of upright arms 6 pivoted at their lower ends and connected at their top ends by a bar 7. The rearward movement of the bar 7 operates the usual escapement 8 through the medium of a tappet 9 projecting rearwardly from said bar 7; and this rearward movement of the bar 7 is produced by the direct or indirect operation of the universal-bar 10 through the medium of the key-levers 11 or 12, said universal-bar being connected to the bail in any suitable manner, preferably as shown, namely, by a pair of pivoted side-arms 13, each connected by a link to the adjacent upright 6 of the bail, so that when said universal-bar is depressed by a key-lever the upright bail will be swung rearwardly.

The ribbon may be fed by the movement of the top-bar 7 of the bail in the usual manner, an instance of this being shown in the above-referred-to patent to Petermann No. 1,121,044, Dec. 15, 1914. The movement of the bail 7 will also bring about the usual vibration of the ribbon-vibrator-arm 15 through the medium of an oscillating plate 16 pivoted to an adjacent part of the carriage-bed at 17, as shown in said patent to Petermann, No. 1,121,044. In the present construction, I modify the connection between the vibrating plate 16 and the bar 7 so as to especially adapt the construction to operate either with a dead-key action or a live-key action. In the preferred construction, I form on the bar 7 a forwardly-extending hook-like finger 18 which curves inwardly toward the longitudinal center of the machine and is provided with an upright finger 19 which lies in the path of a reversely-turned hook 20 formed on the ribbon-vibrating-plate 16, the inner edge 21 of the hook being curved so as to act in the manner of a cam when the bar 7 is thrown rearwardly, to thus swing the hooked end 20 of the vibrating-plate horizontally inwardly toward the center of the machine, thereby causing a vertical throw of the ribbon-supporting-arm 15 in the manner set forth in said patent or in any other suitable manner. When the bar 7 of the bail is thus thrown rearwardly, the hook 20 rides out of the hook 18 and rests upon the inwardly-facing flat side of the finger 19, as shown in Fig. 3, at which point the vibrating-arm 15 has completed its upward stroke, which brings the ribbon to a point where it covers the printing point. At this point, there is a dwell in the movement of the ribbon-vibrating mechanism in that the completion of the rearward movement of the bar 7 causes no further movement on the part of the ribbon-vibrating devices; that is to say, in the further backward movement of the bar 7 which is necessary to bring about an operation of the carriage-feed, the end of the hook 20 lies against the flat face of the upstanding finger 19 without producing any further

movement on the part of the ribbon-vibrating-plate 16. It will thus be seen that, in order to render any one of the character keys a dead key, it will simply be necessary to provide means for causing said key to give to the bail 6—7 a shorter movement than the other keys impart to the bail, that is, a movement that will carry it to the position shown in Fig. 3, in which position, as stated, it has completely operated the ribbon-vibrator but has not operated the carriage-feed. To do this in a simple way, I simply increase the usual lost-motion between the key-lever and the universal-bar. In the present construction, each key-lever is provided with a bendable finger 22 arranged at the under side of the lever, so that when the lever is depressed the finger will strike the universal-bar. The usual lost-motion space 23 is arranged between the finger and the universal-bar to bring about the usual partial operation of the type-bar before the universal-bar is encountered by the finger. To convert any one of the keys into a dead-key action, I simply bend its finger 22 upwardly as shown at 22′ in Figs. 2 and 4 to increase the lost-motion sufficiently to give the necessary short movement to the bail. In the present instance, I have shown the key-lever 12 as having its finger bent upwardly, as shown in Figs. 2 and 4. It will be understood that the necessary lost-motion in the key-action may be provided for in other ways, it being simply necessary in all cases that the ribbon-vibrating and carriage-feeding devices shall be so constructed as to ensure a complete covering operation of the ribbon-vibrator during the initial movement of the carriage-feeding devices, so that it will require only a partial movement of the carriage-feeding devices to complete the operation of the ribbon-raising lever.

There is another important advantage in my construction, and this advantage applies as well to the live keys as to the dead keys. In many key-actions, it is a common fault, when the ribbon-vibrator is adjusted for printing on the lower (usually red) zone of the ribbon, that, through lost-motion and sluggishness in the parts, the type will beat the ribbon to the platen, i. e., print before the ribbon has been raised far enough to bring the lower zone of the ribbon into printing position, resulting in striking of the type on the dividing line between the two colors, thus printing the character in the two colors, the lower part in red and the top edge of the letter in black. This, of course, occurs only in very rapid writing, as in slow writing there is ample time for the ribbon to be elevated into proper position. With my present construction, it will be observed that this disadvantage is done away with by reason of the fact that the ribbon-vibrator completes its movement to printing position during the initial part of the operation of the carriage-feed devices and is there held during the remaining part of the movement of said devices. In this way, it will be seen that it is impossible for the type to reach printing position before the ribbon-vibrator has completed its upward throw, so that printing across the dividing line between the two colors on the ribbon will be impossible.

The nature and scope of the invention having been thus indicated and its preferred embodiment having been specifically described, what is claimed as new is:

1. In a typewriting machine, the combination of a carriage escapement, a ribbon vibrator, a swinging actuator for shifting the vibrator, keys, a swinging universal key-operated member, said actuator and member having slidably engaging portions forming a direct cam connection therebetween for imparting a full throw to the actuator during an initial movement of the universal key-operated member in one direction and holding the actuator and vibrator stationary during the final movement of the universal member in the same direction when a key is depressed, and means on the universal key-operated member for operating the escapement while the actuator and vibrator are held stationary by said cam connection.

2. In a typewriting machine, the combination of a carriage escapement, a ribbon vibrator, an oscillating actuator for the vibrator, an escapement operating member having a direct cam connection with said actuator for imparting a full throw to the actuator during initial movement of said member in one direction and for holding the actuator stationary during the final movement of said member in the same direction, means carried by said member for operating the escapement while the vibrator actuator is held stationary, live character keys adapted to move said member a sufficient distance to operate the escapement, and a silent character key adapted to move said member only a sufficient distance to impart a full throw to the vibrator actuator.

3. In a typewriting machine, the combination of a carriage escapement, a ribbon vibrator, a universal bar, an oscillating actuator for the ribbon vibrator provided with a cam surface having an active portion and a dwell portion, a swinging member operable by the universal bar and provided with a fixed part adapted to ride over the cam surface of the vibrator actuator, live key levers adapted to engage and depress the universal bar sufficiently to cause said fixed part to ride first over the active portion and then over the dwell portion of the cam surface of the actuator when the keys thereon are depressed, means carried by said member for operating the escapement during movement of the fixed part thereon over the

dwell portion of the cam surface, and a silent key lever having an initial idle downward movement relatively to the universal bar and a final downward movement in engagement with said bar for shifting said bar only far enough to cause the fixed part to ride over the active portion of the cam surface of the actuator.

4. In a typewriting machine, the combination of an upstanding inverted U-shaped member for operating an escapement and ribbon vibrator, means pivotally supporting the side arms of said member adjacent their lower ends to rock about an axis extending transversely of the machine, a universal key-actuated frame extending fore and aft of the machine, means pivotally supporting said frame intermediate its ends to rock up and down about an axis extending transversely of the machine, key-actuated levers coacting with said frame forward of its pivotal axis for rocking the frame, and a pair of links pivotally connected at their rear ends to the side arms of said upstanding member and pivotally held at their forward ends to said frame at the rear of the pivotal axis of the frame.

5. In a typewriting machine, the combination of an upstanding rocking member for actuating an escapement and ribbon vibrator, means pivotally supporting said member to rock fore and aft of the machine, a universal bar, key levers overlying the universal bar and adapted to depress the same when keys are depressed, a pair of levers supporting the universal bar at their forward ends, a pair of normally rearwardly and upwardly extending links directly connecting the rear ends of said levers with said rocking member at points above the pivotal axis of the member, and means pivotally supporting the levers intermediate their ends to rock up and down about an axis extending transversely of the machine.

6. In a typewriting machine, the combination of a universal bar, key levers overlying said bar and having permanently bendable lugs adapted to engage and depress the universal bar, the lug on one of said levers being bent upwardly away from said bar, a rocking escapement-actuating member movable rearwardly by the universal bar when said bar is depressed, a ribbon vibrator, an oscillating vibrator-actuating member supported on a vertical pivot and provided with a rearwardly extending cam having a dwell portion at its rear end, and a forwardly extending arm carried by said rocking member provided with a lug adapted to ride over said cam.

7. In a typewriting machine, the combination of an escapement and a ribbon vibrator, a pivotally supported member connected with the vibrator for shifting the same, a cam on said member having an active portion and a dwell portion, key-actuated means adapted to ride over said cam to swing said member about its pivot, live and silent key levers, means whereby the live key levers impart a greater movement to the key-actuated means than the silent key levers for causing said means to ride successively over the active and dwell portions of the cam during the depression of a live key, and a tappet movable with the key-actuated means a sufficient distance to actuate the escapement only when a live key lever is actuated.

This specification signed this 17 day of March, A. D. 1919.

EDWIN L. HARMON.