May 15, 1923. 1,455,111

M. C. CRAWLEY

RIBBON SHIFT AND VIBRATING MECHANISM

Filed July 25, 1922 4 Sheets-Sheet 1

Fig. 1a.

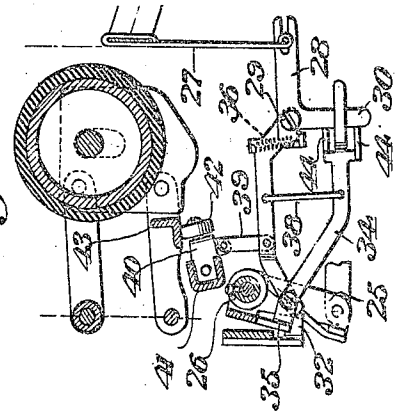
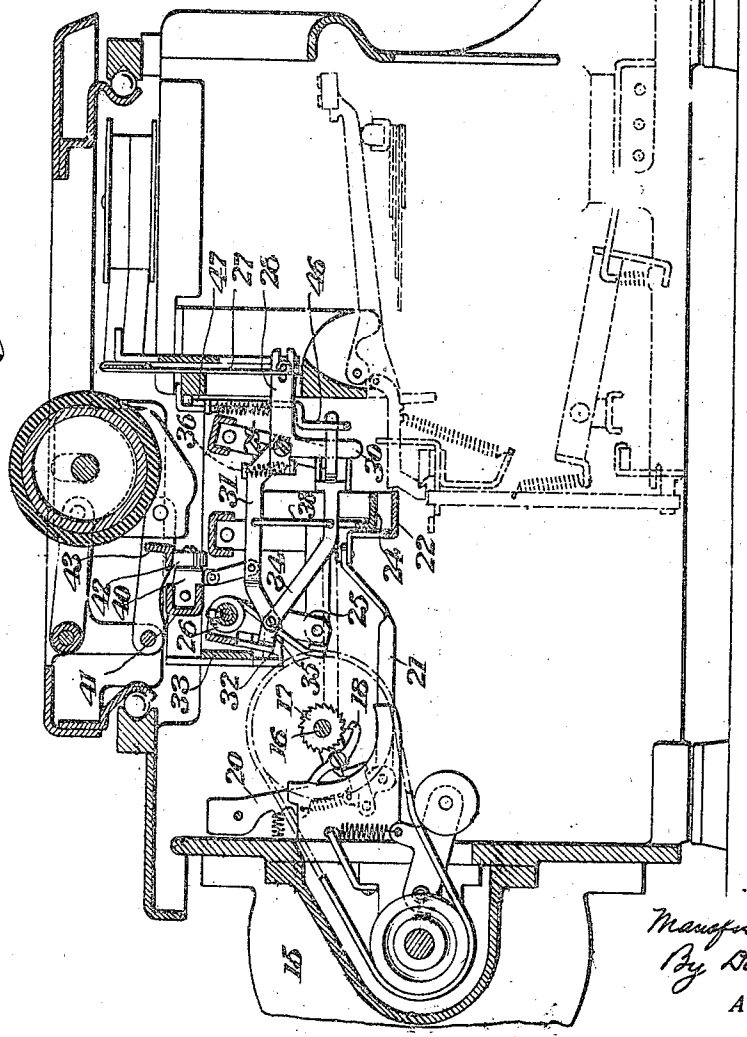


Fig. 1.



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Fig. 2.

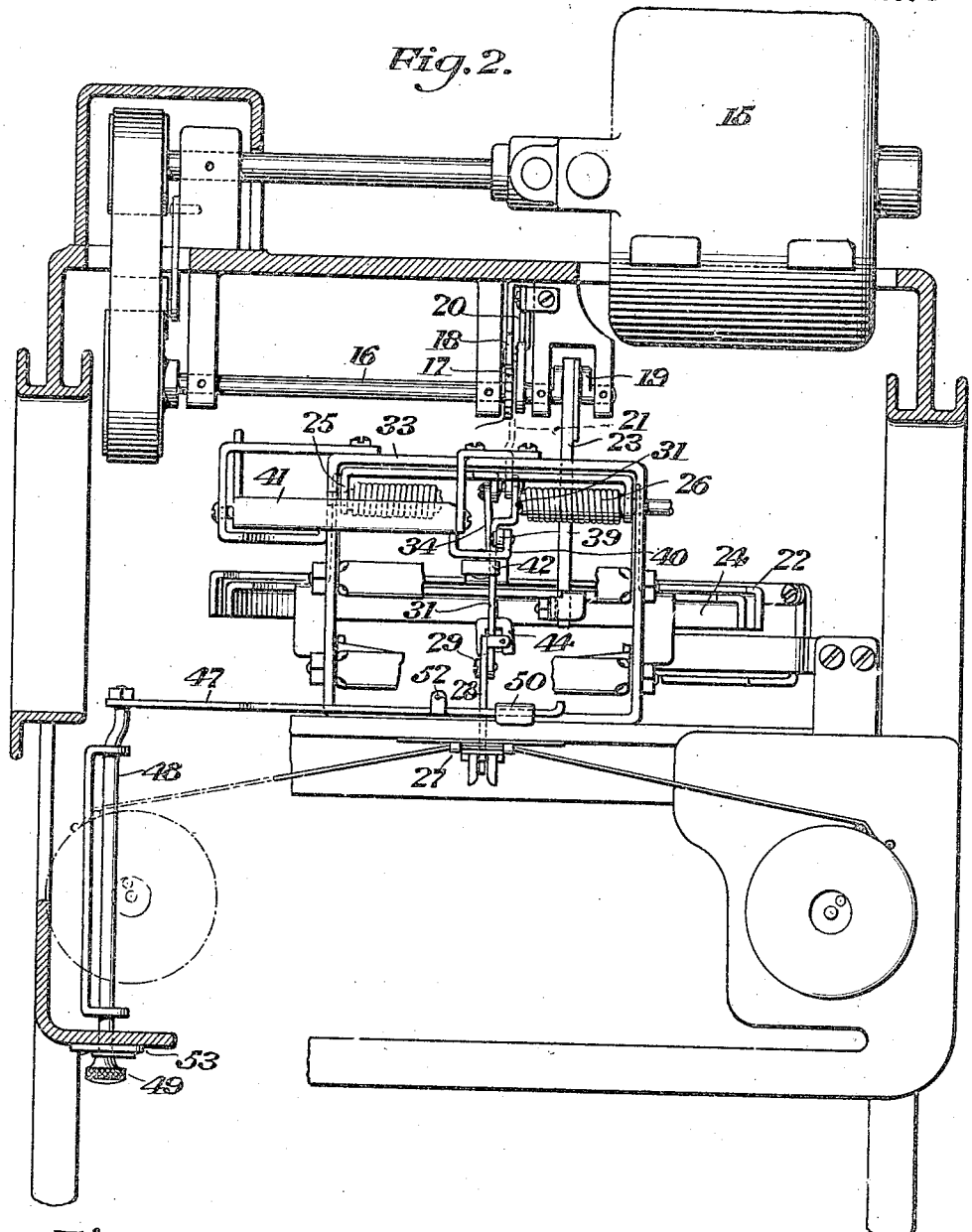


Fig. 3



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Fig.4.

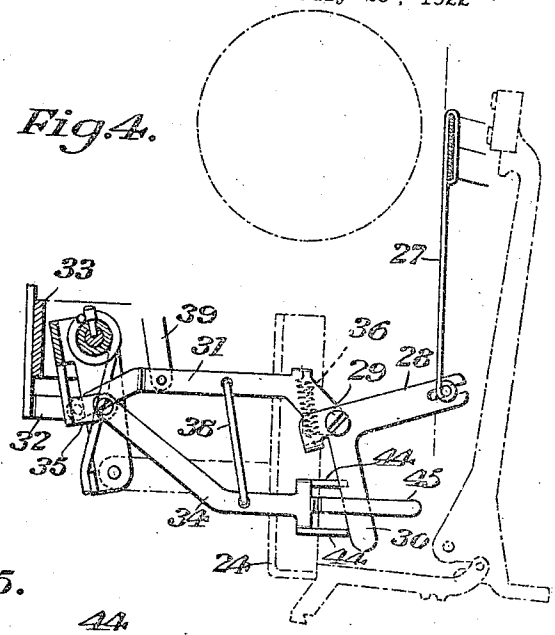


Fig.5.

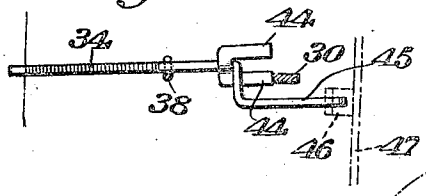


Fig.6.

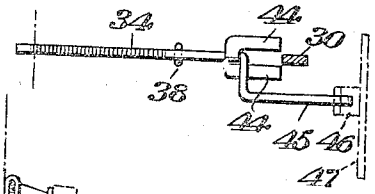


Fig.8.

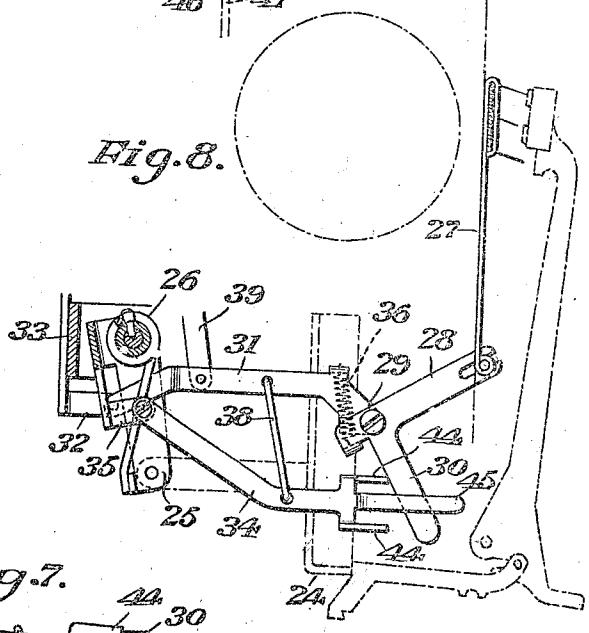
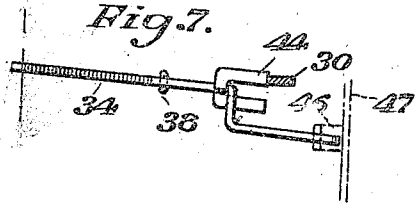


Fig.7.



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RIBBON SHIFT AND VIBRATING MECHANISM

Filed July 25, 1922 4 Sheets-Sheet 4

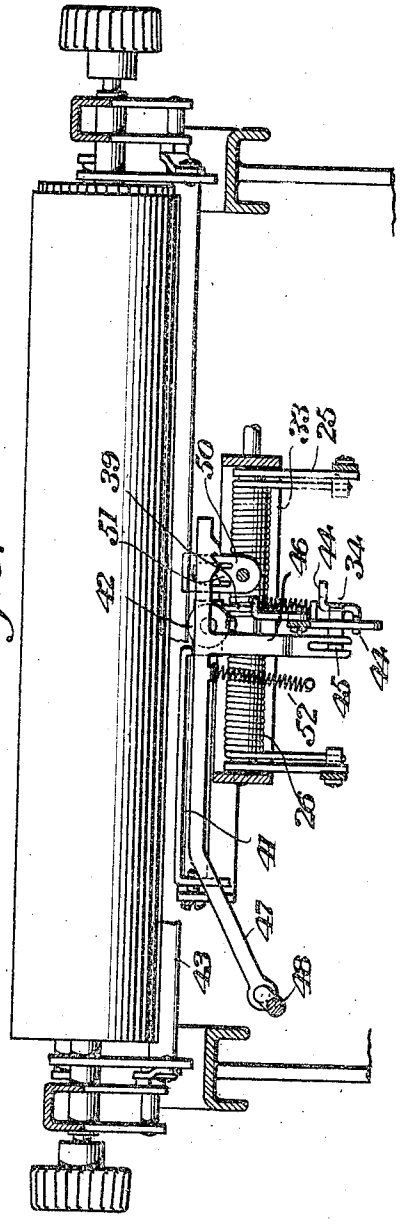


Fig. 9.

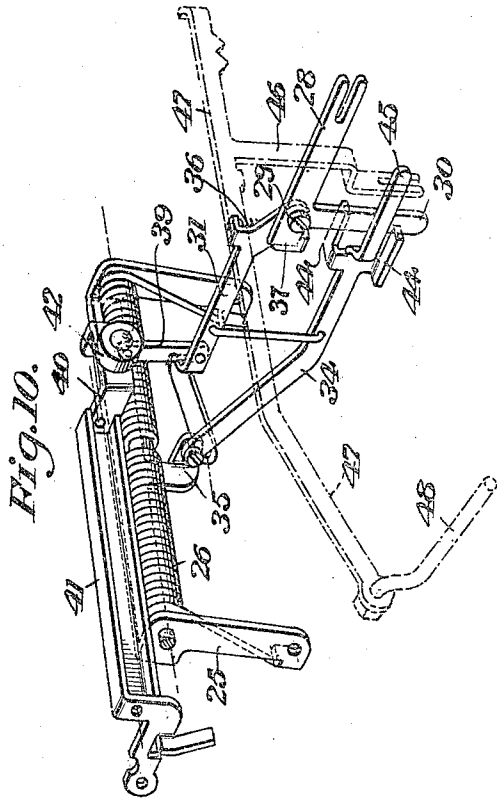


Fig. 10.

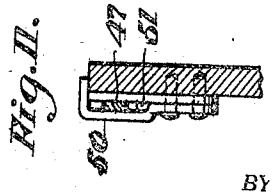


Fig. 11.

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Patented May 15, 1923. 1,455,111

UNITED STATES PATENT OFFICE.

MANSFIELD C. CRAWLEY, OF GROTON, NEW YORK, ASSIGNOR TO ADDOGRAPH COMPANY, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

RIBBON SHIFT AND VIBRATING MECHANISM.

Application filed July 25, 1922. Serial No. 577,361.

To all whom it may concern:

Be it known that I, MANSFIELD C. CRAWLEY, a citizen of the United States of America, and a resident of Groton, county of Tompkins, and State of New York, have invented certain new and useful Improvements in Ribbon Shift and Vibrating Mechanisms, of which the following is a specification.

The main features of this invention have relation to that type of power-driven machine disclosed in my former Patent No. 1,156,061, dated October 12, 1915, in which a spring-actuated actuator is employed for actuating the type-bars and a continuously-driven motor for pulling pack the actuator after each working stroke thereof is employed, the actuator being automatically latched back until again released by an operation of one of the printing keys. It is the special object of the present invention to adapted a ribbon vibrator mechanism for use on such machine, this mechanism being connected to the actuator in such manner that the working stroke thereof will raise the ribbon-guide to printing position, the ribbon-guide being thereafter quickly returned to normal, lower position by the act of returning or cocking the actuator by the motor, as more fully hereinafter set forth. A further object is to provide a simple color-shift mechanism for use in connection with this type of vibrator mechanism; and a still further object is to provide a simple means for adjusting the vibrating and color-shift devices to compensate for change in case, as more fully hereinafter set forth.

In the drawings—

Fig. 1 is a vertical sectional view of a typewriting machine embodying a preferred form of my invention;

Fig. 1ª is a detail view partly in side elevation and partly in section showing the parts in the position they assume when the platen is raised;

Fig. 2 is a plan view, partly in section, of the machine;

Fig. 3 is a detail view of the color-shift indicator;

Fig. 4 is a detail vertical side view of the vibrating mechanism shifted to printing position for the upper color, the type-bar-actuator being partly in dotted lines;

Figs. 5, 6 and 7 are detail views of the color-shift devices showing different adjustments;

Fig. 8 is a view similar to Fig. 4, but with the parts shifted to print the lower color;

Fig. 9 is a detail vertical sectional view showing more particularly a front view of the color-shift adjusting devices;

Fig. 10 is a perspective view showing the same color adjustment shown in Fig. 4;

Fig. 11 is a detail view of the guide for the adjusting rod of the color-shift devices.

Referring to the drawings annexed 15 designates the motor whose shaft is belted to a counter-shaft 16 journaled in suitable bearings on the back-wall of the frame of the machine. Carried by the shaft 16 is a ratchet-wheel 17, and cooperating with this ratchet-wheel is a pawl 18 which is pivotally mounted on an arm carried by an independent crank-shaft 19 axially in alinement with the shaft 16, said arm being adapted to cooperate with a stop carried by a latch 20, which latch is connected by a link 21 to the arcuate release-bar 22. The crank-shaft 19 is connected by means of a pull-back line 23 to the frame which carries the arcuate type-bar-actuator 24, said frame consisting mainly of depending arms 25 and suitable members connecting the arms 25 to the actuator 24, said frame being adapted to be normally projected forwardly by means of a spring 26. The foregoing parts are constructed substantially in accordance with my aforesaid patent and my copending case Serial No. 577,362, filed July 25, 1922. The operation of the parts is briefly as follows:

Operation of one of the printing keys, through the medium of the release-bar 22, link 21 and latch 20, releases the pawl-carrying arm, whereupon the coil-spring 26 instantly throws the actuator-frame forwardly, to thereby cause the actuator-bar 24 to throw the type-bar to the platen; at a predetermined point, the pawl 18 snaps into engagement with the continuously-rotated ratchet-wheel 17, whereby the actuator-frame is retracted and the devices are latched in their retracted position, ready for another printing operation.

The usual vertically-movable ribbon-guide 27 is pivotally and adjustably connected to the forwardly-projecting arm 28 of the bell-crank-lever which is pivoted on a pivot 29 and has its other arm 30 depending from

said pivot. The pivot 29 is supported on the forward end of a bar 31 which is pivotally connected at its rear end to a forwardly-extending lug 32 rigidly attached to a rigid member 33 of the frame.

A push-bar 34 is pivotally attached to the forwardly-extending lug 35 carried by the type-bar-actuator frame in such position as to swing fore-and-aft with said frame, the forward end of this push-bar being in normal engagement with the rear edge of the depending arm 30 of the bell-crank, whereby, when the actuator-frame is thrown by its spring 26 forward on its working stroke, the push-bar will swing said arm 30 forwardly and thus shift the ribbon-guide to printing position. Upon return of the actuator-frame back to inoperative, latched position, the push-bar will be drawn back with it, and the ribbon-guide and bell-crank will gravitate to normal position, assisted by a retractile coil-spring 36 arranged between a lug on bar 31 and a lug carried by a rearward extension 37 of the horizontal arm 28 of the bell-crank. This spring 36 not only assists in returning the parts quickly to normal position, but also serves to cushion the blow of the push-bar against the bell-crank arm. With this simple mechanism, it will be observed that the ribbon-guide is actuated to printing position with the least possible lost-motion and with the highest degree of certainty each time a printing character is operated, thereby eliminating all possible danger of the type beating the color to the platen.

For the purpose of elevating the ribbon-vibrating mechanism when the platen is elevated in case-shifting, I connect the push-bar 34 to the supporting rod 31 by means of a link 38, and by means of another link 39 to a vertically-movable member of the case-shift mechanism, so that, when said member is elevated in shifting for case, the entire ribbon-vibrating mechanism will be correspondingly elevated. In the present instance, I have shown the link 39 pivotally connected to a forwardly-extending arm 40 which is carried by a sheet-metal rock-shaft 41 and which is provided with roller 42 for engagement with the shift-rail 43 on the shift-frame of the platen, this case-shifting mechanism being disclosed in my copending case Serial No. 577,357, filed July 25, 1922.

To adapt my ribbon-vibrating mechanism for use with a polychrome ribbon, I provide the push-bar 34, at its forward end, with a pair of forwardly-projecting fingers 44 arranged in different horizontal planes and in different vertical planes, the lateral separation being sufficient to permit the fingers 44 to receive between them the depending arm of the bell-crank. With this simple construction, it will be observed that when the push-bar 34 is adjusted laterally to the position shown in Fig. 6, and the push-bar is moved forwardly, the two fingers 44 will pass at opposite sides of the bell-crank-arm 30 and thus cause no actuation thereof; this adjustment is for stenciling purposes. When the push-rod is swung laterally to the right, to the position shown in Fig. 5, the lower one of the fingers 44 is brought into alinement with the arm 30 of the bell-crank at a point distant from its pivotal point 29 so that it will cause the ribbon-guide to be shifted only high enough for the upper color zone of the ribbon; and when the push-bar is swung far enough to the left to bring its upper finger 44 into action, this point of contact being closer to the pivot 29, it will cause a greater movement of the bell-crank and will thus raise the ribbon-guide far enough to bring its lower color zone into action.

To permit the push-bar 34 to be thus laterally swung on its pivot, the pivotal connection is made slightly loose, and, as a convenient means for thus shifting the push-bar laterally, I provide the same with a forward extension 45, which engages the lower forked end of an arm 46 carried by a transversely-arranged rod 47 which at one end is connected to a crank-shaft 48 journaled in the frame of the machine and provided with a thumb-nut 49 at the front of the machine. By turning the thumb-nut, the part 47 will be reciprocated in either direction to thus shift the push-rod laterally to any one of its three positions. To hold the shift-rod 47 in its adjusted position, I extend the same through a guide 50 mounted on a convenient rigid member of the frame of the machine, and at the bottom of this guide I provide an upwardly-extending V-shaped lug 51 which is adapted to engage with similarly-shaped teeth on the bottom edge of the shift-bar 47, a coil-spring 52 being provided for pulling the free end of the shift-bar 47 downwardly into engagement with said bevelled lug 51. It will be understood, of course, that any other form of detent device may be employed for lightly holding the push-rod 47 in its adjusted position, and, as shown in Fig. 3, a color indicator-plate 53 may be employed in connection with a pointer on the thumb-nut 49 for color indication.

This application is a substitute in part for my co-pending application Serial No. 278,872, filed February 24, 1919, the claims of which application will be subordinated to this application.

I claim:

1. In a typewriting machine, a type-carrier-actuator, a ribbon-guide, mechanism for actuating the ribbon-guide through the medium of said type-carrier-actuator embodying color-shift devices, and means on the

frame of the machine for adjusting said color-shift devices.

2. In a typewriting machine, a type-bar-actuator and power means for actuating the same, a ribbon-guide, mechanism actuated from the type-bar-actuator for vibrating said ribbon-guide, said mechanism embodying color-shift devices, case-shift devices and means for connecting the same to the ribbon-vibrating mechanism to compensate for changing case, and means on the frame for adjusting said color-shift devices having constant connection with said color-shift devices during the case-shift movement.

3. In a typewriting machine, a type-carrier-actuator, a ribbon-guide, a bell-crank-lever having one arm connected to the ribbon-guide, and a push-bar connected to said actuator and adapted to engage the other arm of the bell-crank, for the purpose set forth.

4. In a typewriting machine, a type-carrier-actuator, a ribbon-guide, a bell-crank-lever having one arm connected to the ribbon-guide, a push-bar connected to said actuator and adapted to engage the other arm of the bell-crank, and spring means for returning the bell-crank and ribbon-guide to normal position after each actuation.

5. In a typewriting machine, a power-actuated type-bar-actuator, a ribbon-guide, ribbon-vibrating mechanism connecting the ribbon-guide to the type-bar-actuator embodying a bell-crank having one arm connected to the ribbon-guide, a push-bar in engagement with the other arm of the bell-crank at its forward end and having pivotal connection at its rear end to the type-bar-actuator, and a fore-and-aft swinging link for hanging said push-bar to a support.

6. In a typewriting machine, a ribbon-vibrating mechanism, a spring-actuated type-bar-actuator adapted to operate said robbin mechanism to shift its ribbon-guide to printing position upon each of its working strokes, and a case-shift device connected to the ribbon-vibrating mechanism to vertically adjust the same to compensate for the shift for case.

7. In a typewriting machine, a ribbon-vibrating mechanism, a spring-actuated type-bar-actuator adapted to operate said ribbon mechanism to shift its ribbon-guide to printing position upon each of its working strokes, and a platen-shift device connected to the ribbon-vibrating mechanism to vertically adjust the same to compensate for the shift of the platen.

8. In a typewriting machine, a power-actuated type-bar-actuator, a case-shift mechanism embodying a vertically-movable member, a ribbon-guide, mechanism actuated by said type-bar-actuator for vibrating the ribbon-guide embodying a push-bar and a bell-crank, a supporting member pivoted to the frame of the machine, means for pivotally connecting the supporting member to the aforesaid vertically-movable member of the case-shift mechanism, and additional means for pivotally hanging said push-bar to this supporting member.

9. In a typewriting machine, a ribbon-vibrating mechanism embodying a lever and an adjustable push-bar for engagement with one arm thereof, said push-bar having a pair of push-fingers adapted to engage said arm at different distances from its fulcrum, means actuated by the printing instrumentalities for reciprocating said push-bar, said push-bar having an extension finger or pin on its forward end, means on the frame for laterally adjusting the push-bar embodying an endwise adjustable bar having engagement with said extension finger or pin, and means for holding this endwise adjustable bar in its adjusted position.

10. In a typewritnig machine having a case-shift mechanism and a power-driven type-bar-actuator, a supporting member linked to the case-shift mechanism and pivoted at one end to the frame of the machine and having pivotally mounted on its other end a bell-crank connected to the ribbon-guide, a laterally-adjustable push-bar connected to the actuator at its rear-end and having its front-end in engagement with said bell-crank, a link for supporting said push-bar, and devices at the forward end of said push-bar for varying the throw of the bell-crank by laterally shifting said push-bar with reference to the bell-crank.

11. In a typewriting machine, a type-bar-actuator-frame and means for giving it a to-and-fro movement, said frame embodying pendent arms carrying an arcuate type-bar-actuator-bar at its lower end, a ribbon-vibrating mechanism located within the frame, below the plane of the pivotal suspension points and above the actuator-bar, and connected to said actuator-frame so as to vibrate with it, and a ribbon-guide connected to said ribbon-vibrating mechanism.

12. In a typewriting machine, a type-bar-actuator-frame and means for giving it a fore-and-aft movement, said frame embodying swinging pendent arms and a type-bar-actuator carried at the lower end of the frame, a supporting member attached at its rear end to the frame of the machine and extending into said type-bar-actuator-frame, a bell-crank lever pivotally mounted on the forward end of the supporting member having one end connected to the ribbon-vibrator, and means connected to the type-bar-actuator-frame for actuating the other arm of the bell-crank when the type-bar-actuator-frame is given its working stroke.

In testimony whereof I hereunto affix my signature.

MANSFIELD C. CRAWLEY.