

April 11, 1944.

M. W. NEWBERRY

2,346,323

TYPEWRITING MACHINE

Filed March 30, 1942

3 Sheets-Sheet 1

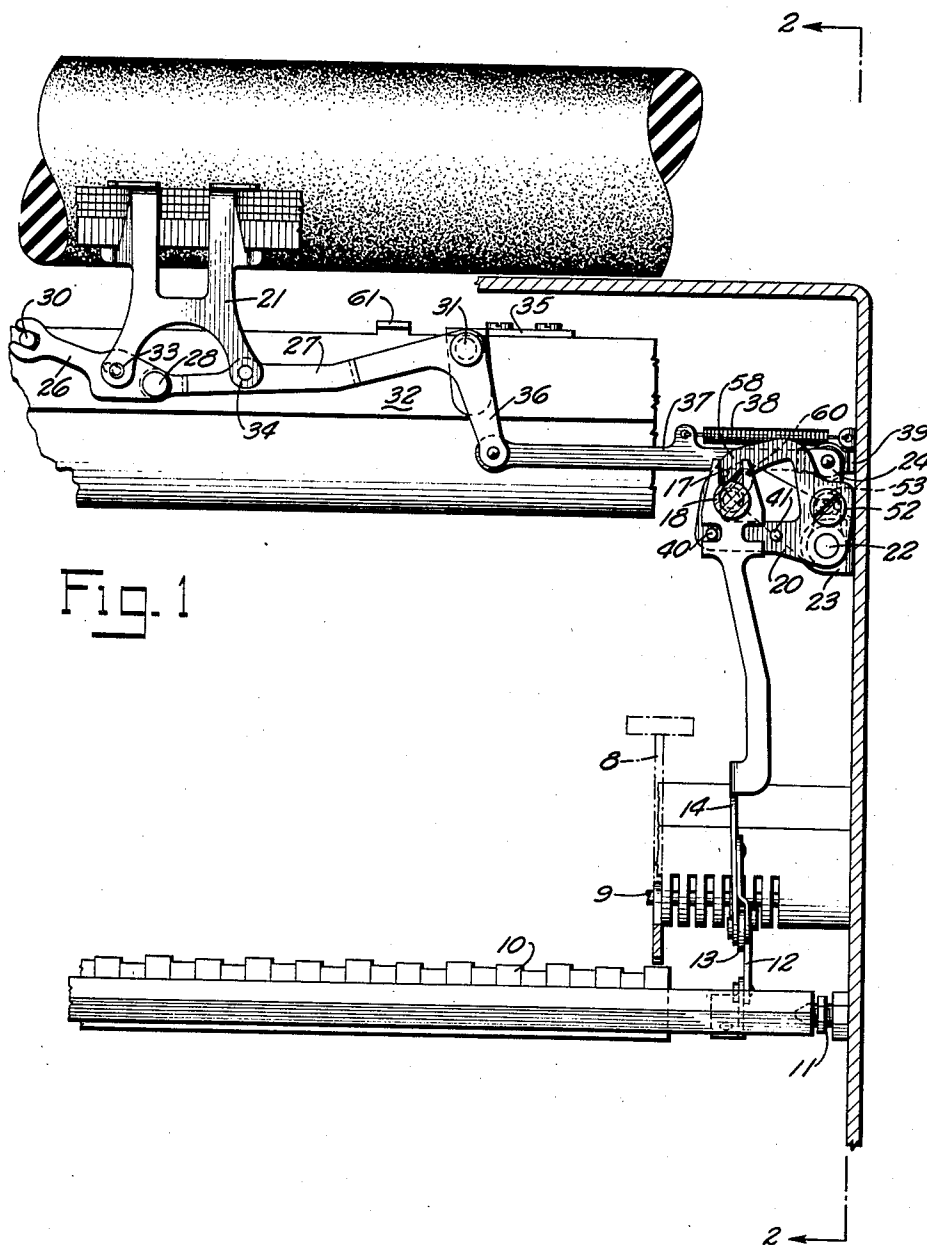


Fig. 1

INVENTOR
MEIGS W. NEWBERRY

BY

R. S. Julian
ATTORNEY

April 11, 1944.

M. W. NEWBERRY

2,346,323

TYPEWRITING MACHINE

Filed March 30, 1942

3 Sheets-Sheet 2

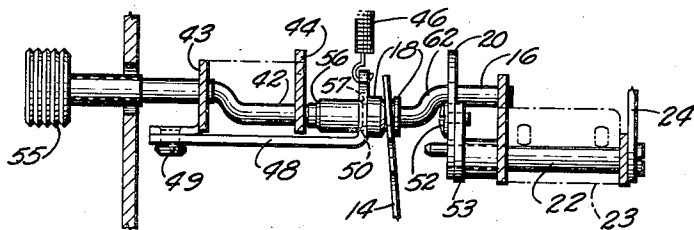


Fig. 3

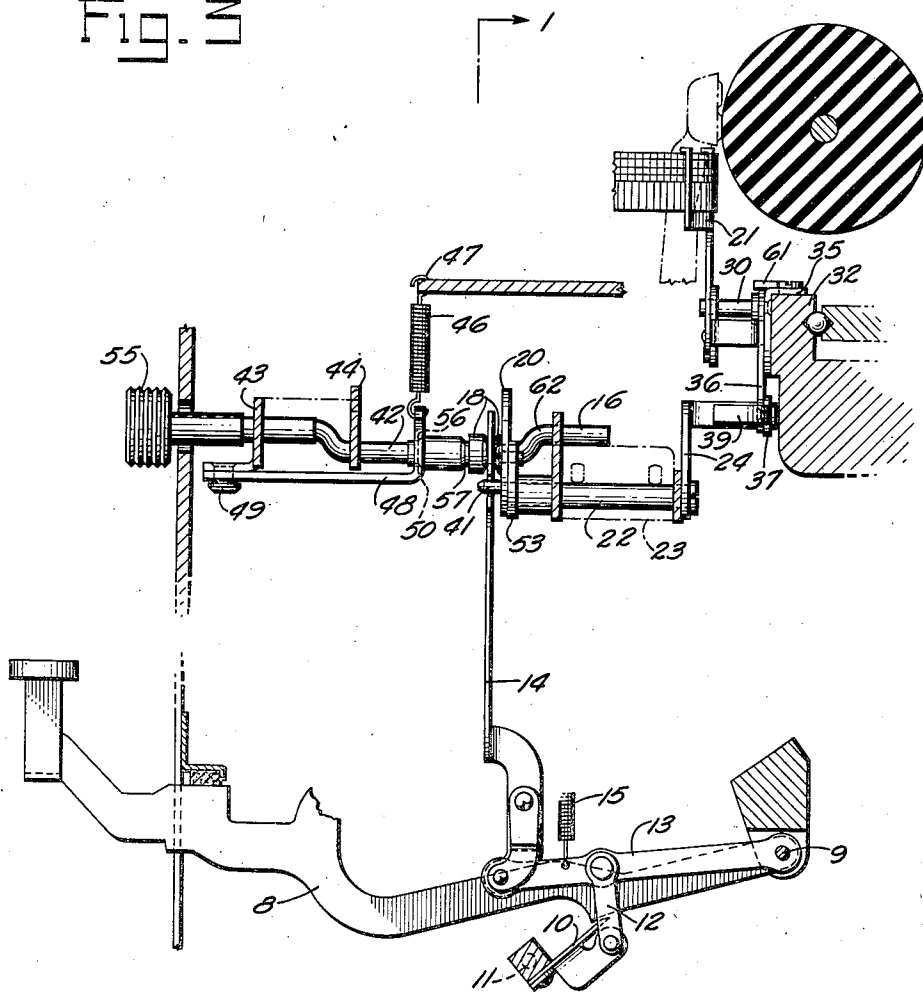


Fig. 2

INVENTOR
MEIGS W. NEWBERRY
BY
R. S. J. J. J.
ATTORNEY

April 11, 1944.

M. W. NEWBERRY

2,346,323

TYPEWRITING MACHINE

Filed March 30, 1942

3 Sheets-Sheet 3

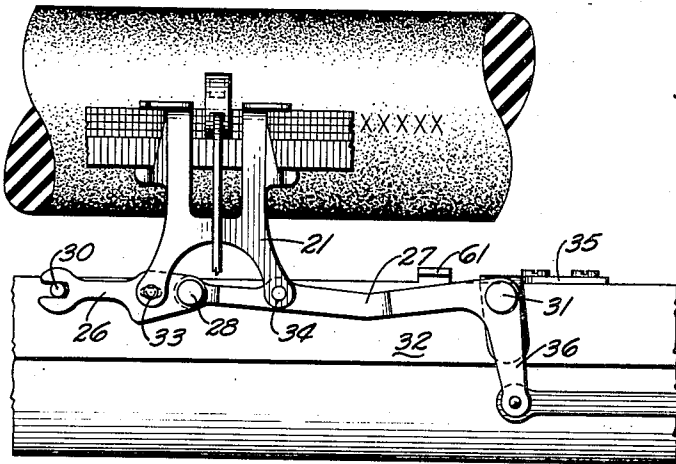


Fig. 4

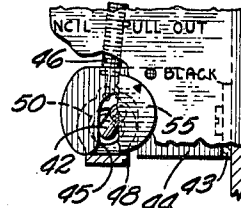


Fig. 5

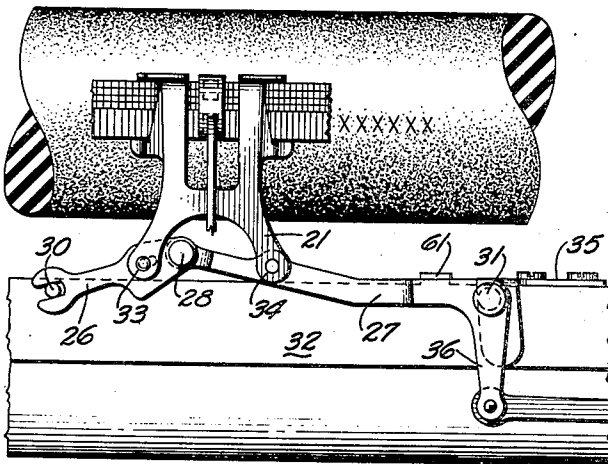
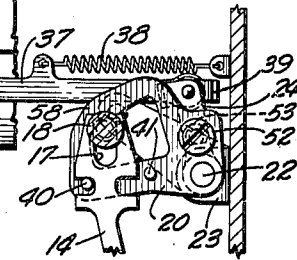


Fig. 6

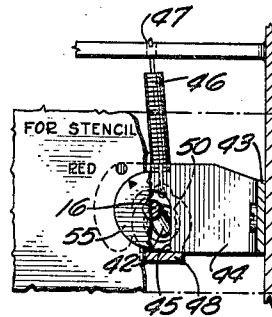
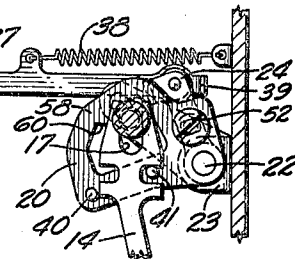


Fig. 7



INVENTOR
MEIGS W. NEWBERRY
BY *R. J. Juhn*
ATTORNEY

UNITED STATES PATENT OFFICE

2,346,323

TYPEWRITING MACHINE

Meigs W. Newberry, South Windsor, Conn., assignor to Underwood Elliott Fisher Company, New York, N. Y., a corporation of Delaware

Application March 30, 1942, Serial No. 436,851

12 Claims. (Cl. 197—157)

This invention relates to devices, in typewriting machines and the like, for the selective control of the bi-chrome ribbon-vibrator mechanism, providing for ribbon color-band selection and for rendering the vibrator inactive for stencil typing.

Selective control devices of ribbon-vibrator mechanisms usually have a single control element such as a finger knob or pointer movable along a dial on which indicia for "black," "red" and "stencil," arranged in sequence, represent the several settings for the control element. The selection of the desired one of these three settings is made by moving the knob or pointer in a lineal path along the dial to the desired indicia, from whichever position the knob may be. The more often-used setting is the change from "black" to "red" or vice versa, the stencil setting being only infrequently used. However, the inclusion of the stencil-setting position within the range of regular movement of the selecting element, often in the middle position of the series, makes for an occasional wrongful setting at "stencil" when, in fact, one of the color settings is desired. Although this erroneous setting is avoidable with care, the usual tendency is to operate the control element in a carefree manner, as by a flip of the finger.

In view of the foregoing, the present invention is directed to provide an improved control mechanism which virtually eliminates the chance of unintentionally setting the control element for stenciling by having this setting made with a substantially different manipulation than the settings for the often-used bichrome color-band selection.

The invention is further directed to provide a ribbon-control selection which does not require careful manipulation and which so readily distinguishes the different settings, particularly that for stenciling, as to be settable accurately just by feel, or without observing any dial indicia.

Another object is to provide a simple and reliably operative mechanism for selecting and controlling the throw of the ribbon vibrator, and in which the selection of ribbon color bands is determined by variously positioning the control member in the same setting plane and the selection for stenciling is determined by setting the control member out of said plane.

More specifically, the invention provides an improved ribbon-vibrating mechanism and its control device, so organized that the setting element of the control device, in making a color-band selection, may be rotated on its axis to

either of two color-determining positions and requires movement axially, that is, in a substantially different manipulation, for setting to the stenciling position.

Further objects will be apparent as the specification proceeds.

In the drawings:

Figure 1 is a front-elevational view of the selectively controlled ribbon-vibrator mechanism of the invention embodied in a typewriter, the control device being set for "black" with the vibrator mechanism quiescent,

Figure 2 is a side elevation of the mechanism, as viewed on line 2—2 of Figure 1,

Figure 3 is a fragmentary side-elevational view similar to Figure 2 but showing the control device set for "stencil,"

Figure 4 is a front elevation, similar to Figure 1 and with the control device set for "black," but showing the vibrator mechanism actuated incident to a type-key operation,

Figure 5 is a fragmentary front-elevation showing the control mechanism set for "black," as viewed from in front of its setting element or knob partly broken away to facilitate illustration,

Figure 6 is a view similar to Figure 4 but having the control device set for "red," and

Figure 7 is a view similar to Figure 5 but showing the mechanism set for "red."

The ribbon-vibrator mechanism embodying the invention is actuated incident to the operation of any type-key lever in the usual manner, the key lever moving a universal bar which is operatively connected to a vertically reciprocatory ribbon guide or vibrator. Thus, upon the operation of any type-key lever, the ribbon is caused to be raised to the typing line as the type bar approaches the platen, the ribbon then receding to its quiescent position below the typing line as soon as the type impression is made. A control device provides for selecting the various ribbon color bands and is settable to render the vibrating mechanism inactive, for typing stencil or Mimeograph sheets.

As shown in Figures 1 and 2, a key lever 8, typical of all the type-key levers of the typewriter, is fulcrumed on a pivot bar 9 and arranged to engage and actuate a universal bar 10 mounted to rock on trunnions 11. A link 12 operatively connects the universal bar 10 to a lever 13, also pivoted at 9, and flexibly connected to a vertically reciprocatory actuator 14, a spring 15 acting to restore the universal bar and asso-

ciated mechanism to quiescent position. The actuator 14 reaches upwardly from its connection to the lever 13 and has its upper end slidably engaging a control shaft 16, the actuator presenting a slot 17, the sides of which are arranged to ride on the shaft between groove-forming collars 18 thereon.

When the control mechanism is set for one or the other color band, as shown in Figures 1 and 2, the actuator 14 is in position to coact with a driven member or lever 20 which is operatively connected to a ribbon guide or vibrator 21 to actuate same. This operative connection includes a shaft 22 on which the lever 20 is secured, the shaft being journaled in a bearing bracket 23 and having a second lever 24 secured thereon.

The mounting for the ribbon guide 21 includes two equalizing levers 26 and 27 flexibly joined at 28 and pivotally mounted at 30, 31, respectively, on a member 32 of the typewriter main frame, each lever 26, 27 being articulated intermediate its ends to the ribbon guide 21 at points 33, 34. To obtain the equalizing effect, the corresponding portions of each lever 26, 27 are proportional in length; that is, expressed algebraically, length 30—33 is to 33—28 as 31—34 is to 34—28. Thus, as lever 27 is actuated, the point 34 of the ribbon guide is raised and, due to the equalizing effect of the combined levers 26, 27, point 33 of the ribbon guide is raised an equal amount, thus causing the ribbon guide 21 to assume an upward rectilinear movement.

To provide for adjustment of the ribbon guide 21 laterally of the machine so that the guide may be aligned accurately with the printing point as established by the usual type guide, the pivot 31 for lever 27 is adjustable laterally of the machine, being carried on a bracket 35 so secured on the frame member 32 that its position may be varied. To accommodate this adjustment at the other end of the system, lever 26 presents an elongated slot engaging pivot 30.

The operative connection between the driven member or lever 20 and the ribbon guide 21, includes an arm 36 on lever 27, connected by a link 37 to the lever 24. A spring 38 restores the vibrating mechanism to quiescent position in which the guide 21 is receded to reveal the typing line, the mechanism being at rest with a bendable tongue 39 on link 37 engaged against a side member of the machine frame, as shown in Figure 1. Adjustment of the quiescent position of vibrator 21 may be made by bending the tongue 39.

Upon the operation of any type-key lever 8, with the control device set for either color band, the ribbon-vibrating mechanism raises the ribbon guide 21 a certain extent and thus brings the selected color band to the typing line. When the control device is set for "black," the ribbon guide is raised a minor degree and the upper, black band is put at the typing line; whereas, when the device is set for "red," the ribbon guide is projected a major degree to put the lower, red band at the typing line. This variation in the stroke of the ribbon guide 21 is dependent upon the lateral position of the actuator 14 in relation to the lever 20. Lever 20 has two drive pins 40, 41 thereon projecting into the plane of the actuator 14 for coaction selectively with either of two open slots in the actuator. The two driving positions of the actuator 14 are determined by the rotative position of shaft 16 which has an offset portion or crank 42 intermediate its ends on which the aforesaid collars 18 are arranged. The shaft 16 is rotatably and slidably

journaled in bearings, one adjacent the rear end being formed in the bracket 23 and one forwardly being provided in a second bracket 43. This latter bracket also provides a stop plate 44 having an opening 45, shown best in Figures 5 and 7, the sides of which are engaged by the crank portion 42 of the shaft to define the two control positions thereof. An overthrow device coacts with the shaft to yieldably hold same in either of the control positions, this device including an overthrow spring 46 anchored at 47 and acting on a detent member 48 loosely pivoted at 49 on the bracket 43 and having an aperture 50 in which the crank 42 of the shaft is engaged. The spring 46 urges the detent member 48 upwardly, with the effect that, as the shaft is rotated to engage either side of slot 45, Figures 5 and 7, the shaft is yieldably held in that position.

The actuator 14, incident to the operation of any type key, reciprocates down and up a constantly uniform stroke each time the universal bar 10 is actuated. It will be observed, however, that the pin 40 is a greater distance from the axis of shaft 22 than is the pin 41. Therefore, the lever 20 will be swung a lesser degree when the stroke of the actuator is applied to the pin 40 and a greater degree when this stroke is applied to pin 41. In other words, when the actuator 14 is in the leftward position, in cooperation with pin 40, the vibrating mechanism is actuated a minor degree and raises the black band of the ribbon to the typing line, see Figure 4; and when the actuator 14 is in its rightward position, co-operating with pin 41, the vibrating mechanism is actuated the major degree to bring the red color band of the ribbon to the typing line, see Figure 6.

It may be here noted that the lever 20 is angularly adjustable in relation to the lever arm 24 and the associated vibrating mechanism so that the elevated positions of the ribbon guide 21 may be adjustably varied to exactly align the color bands with the typing line. This adjustment is effected by a screw 52 which projects through a slot in lever 20 and threadably engages an arm 53 on shaft 22, clamping the lever 20 to said arm.

The control shaft 16 projects forwardly through a front panel of the typewriter and carries an operating knob 55 having a pointer thereon, see Figures 5 and 7, cooperative with indicia on the front panel indicating the two color-band settings of the control device for either "black" or "red" typing. The knob 55 is rotated either to the left or to the right to set the control device to the desired color-band selection.

To set the control device for "stencil," the knob 55 is pulled forwardly so that the shaft 16 is caused to move axially in its bearings. When the shaft is so moved, as shown in Figure 3, the actuator 14, being carried forward with the shaft by collars 18, is now in position free of the pins 40, 41. Thus, when the control device is set for stenciling, no ribbon impressions being desired, the ribbon-vibrating mechanism is rendered ineffective in that the actuator 14 is clear of the pins 40, 41, reciprocating idly at each type-key operation, without actuating the lever 20 and associated vibrating mechanism.

The detent element 48, under influence of spring 46, also acts to detent the shaft at its rearward axial position, Figure 2, and its forward axial position, Figure 3. The offset portion 42 of the shaft presents two oppositely facing, tapered annular shoulders 56 and 57 with which the detent aperture 50 coacts in such manner

that, under the force of spring 46, the shaft 16 is yieldably held in either axial position. The aperture 50 is amply large to permit the free passage of the shaft in moving from one to the other position. The forward collar 13 engages the detent member 48 when the shaft is shifted forwardly and the rear collar 18 engages lever 20 when the shaft is shifted rearwardly.

It will be observed that the lever 20 actually comprises two levers or arms: a lower arm carrying the two pins 40, 41 and an upper arm 58, the two being connected at their outer ends to reinforce each other. The control shaft 16 is disposed between these arms, extending through the aperture bounded thereby, the upper arm straddling the shaft and cooperating therewith to accomplish several functions.

One of these functions is that of arresting the movement of lever 20, and the associated vibrating mechanism extending to the ribbon vibrator, at the desired limit of stroke for putting the black ribbon band at the typing line. This stroke, being of a lesser degree than that for the red band, can be limited best only by arresting means that is effective only when the mechanism is set for the black band selection and is, therefore, rendered ineffective when the mechanism is set for the red band selection.

As seen more clearly in Figure 1, the upper arm 58 provides a stop shoulder 60 so arranged, in relation to the axis of swing 22 of said arm, that said shoulder engages the crank 42 of shaft 16 when the latter is positioned for black band selection. Shoulder 60 thus arrests the vibrating mechanism when the black ribbon band is at the typing line, Figure 4, preventing overthrow of the ribbon guide 21 and thus avoiding type imprints that are partly red. When the control shaft 16 is set for the red band, its crank 42 is out of the path of shoulder 60 and this arresting means is therefore ineffective, see Figure 6.

The maximum stroke of the vibrating mechanism, had in raising the red band of the ribbon to the typing line, is arrested by the engagement of lever 27 with a stop 61 secured to the member 32.

Another function of arm 58, in cooperation with the control shaft 16, is that of locking the ribbon vibrator 21 down in its quiescent position when the control mechanism is set for stenciling. While making this setting, the mentioned parts will also cause the vibrator 21 to be brought to quiescent position, should said vibrator have remained in any raised position instead of fully returning to its inactive position, due to faulty operation. As shown in Figures 2 and 3, the portion of the control shaft 16 between the crank 42 and the back end of shaft 16, forms an offset or cam 62. When the control shaft 16 is shifted axially, forwardly, in setting for stenciling, said cam 62 cooperates with the arm 58 of lever 20 in such manner as to wedge the ribbon vibrator 21 into its retracted or quiescent position. As shown in Figure 3, when shaft 16 is shifted to the stenciling position, lever 20 is engaged by the concentric shaft portion so that said lever is locked at its uppermost position, corresponding to the quiescent position of the ribbon vibrator 21. The lever arm 58 is so shaped that this wedging action is had whether the control shaft 16 is in one angular position or the other for either color-band selection. When positioned for selection of the black band, the cam 62 coacts with the stop shoulder 60; and when the control shaft is set for the red band selection, the cam 62 coacts with that portion of arm 58 nearer the axis 22.

From the foregoing, it will be seen that the invention provides a selectively settable ribbon-vibrating mechanism, the control device of which may be operated in a carefree manner, merely by feel or without observing any dial indicia. In that a substantially different manipulation of the control element is required to set the device for stenciling than is necessary to select either color band, unintentional setting at "stencil" is obviated. The more frequently used setting to either color band may be made instantaneously by a quick twist of the control knob, and when stenciling is desired this knob may be so set, from either color-band position, by merely pulling the knob forwardly. The color-band selection previously used can be quickly restored merely by a momentary push of the knob in that the detent mechanism of the control device maintains the same color selection whether the mechanism is set for color typing or stenciling.

What is claimed is:

1. In a ribbon-vibrating mechanism for typewriters, a ribbon vibrator, variable actuating means therefor including a control device having a settable member, said actuating means having provision for moving the vibrator different extents to present different ribbon color bands for the type impression upon setting the control member to selective color-band-determining positions all in a plane transverse of the typewriter, and said actuating means having further provision for being disabled upon moving said control member in a direction fore and aft of the typewriter to a position out of said plane.

2. In a ribbon-vibrating mechanism for typewriters, a ribbon vibrator, variable actuating means therefor including a control device having a rotatable and axially shiftable member, said actuating means having provision for moving the vibrator different extents to present different ribbon color bands for the type impression upon rotating the control member to selective color-band-determining positions, and said actuating means having further provision for being disabled upon shifting said control member axially.

3. In a ribbon-vibrating mechanism for typewriters, a ribbon vibrator, an operating lever therefor, an actuator operable by the typing instrumentalities, said operating lever having actuator-engageable points at different distances from the lever axis, and said actuator being shiftable in a plane to engage selectively one or another of said points and being movable in a direction transverse to said plane to a position out of engagement with said points.

4. In a ribbon-vibrating mechanism for typewriters, a ribbon vibrator, an operating lever therefor, an actuator operable by the typing instrumentalities, said operating lever having actuator-engageable points at different distances from the lever axis, said actuator being shiftable in a plane to engage selectively one or another of said points and being movable in a direction transverse to said plane to a position out of engagement with said points, and a single means for so shifting and so moving said actuator.

5. In a ribbon-vibrating mechanism for typewriters, a ribbon vibrator, an operating lever therefor, an actuator operable by the typing instrumentalities, said operating lever having actuator-engageable points at different distances from the lever axis, said actuator being shiftable in a plane to engage selectively one or another of said points and being movable in a direction transverse to said plane to a position out of en-

gement with said points, and means manipulatable at the outside of the typewriter for so shifting and so moving said actuator.

6. In a ribbon-vibrating mechanism for typewriters, a ribbon vibrator, an operating lever therefor, an actuator operable by the typing instrumentalities, said operating lever having actuator-engageable points at different distances from the lever axis, said actuator being shiftable in a plane to engage selectively one or another of said points, and a control member having a crank articulated to said actuator, said control member being rotatable to shift the actuator for engagement selectively with the lever points, and said crank being axially movable to move said actuator to a position out of engagement with the lever points.

7. In a ribbon-vibrating mechanism for typewriters, a ribbon vibrator, an operating lever therefor, an actuator operable by the typing instrumentalities, said operating lever having actuator-engageable points at different distances from the lever axis, said actuator being shiftable in a plane to engage selectively one or the other of said points, a control member having a crank articulated to said actuator, said control member being rotatable between two positions to shift the actuator for engagement selectively with the lever points, and said crank being axially movable to move said actuator to a position out of engagement with the lever points, and a single detent means cooperating with said control member to yieldably hold said member in the two rotative positions and against axial movement.

8. In a ribbon-vibrating mechanism for typewriters, a ribbon vibrator, actuating means therefor including a pivoted lever arm and having points thereon at different distances from the arm pivot, an actuator operable by the typing instrumentalities, in a plane parallel to said lever arm and shiftable in said plane for cooperation selectively with one or another of said arm points, said actuator being positionable in a direction substantially at right angles to said plane, in which position said actuator is clear of said arm points and renders the vibrating mechanism inactive.

9. In a ribbon-vibrating mechanism for typewriters, a ribbon vibrator, an actuating lever therefor, an actuator operable by the typing instrumentalities, said lever having actuator-engageable points at different distances from the lever axis, said actuator being shiftable in a plane to cooperate selectively with one or another of said lever points, a control member engaging said actuator and shiftable to different positions to move said actuator for cooperation selectively with the lever points, said control member being

movable in a direction transverse to the plane of shift of said actuator, to move said actuator to a position out of engagement with the lever points, and means on said control member, effective when the said control member is moved to position to disengage the actuator and lever, to lock said actuating lever against movement.

10. In a ribbon-vibrating mechanism for typewriters, a ribbon vibrator, an actuating lever therefor, an actuator operable by the typing instrumentalities, said lever having actuator-engageable points at different distances from the lever axis, said actuator being shiftable in a plane to cooperate selectively with any of said lever points, a rotatable control member having an offset portion engaging said actuator, rotation of said member effecting the shift of the actuator for cooperation selectively with the lever points, said control member being movable axially to operatively engage or disengage said actuator and lever, and cam means on said control member, engageable with said lever and effective during the movement of said member to disengage the actuator and lever, to cam said lever into quiescent position.

11. In a bichrome ribbon-vibrating mechanism for typewriters, a ribbon vibrator, an actuating lever operatively connected to said vibrator, selectively controllable means to swing said lever different extents to put one or the other ribbon color at the typing line, including an actuator operable by the typing instrumentalities, two actuator-engageable points on said lever, said actuator being shiftable in a plane to cooperate selectively with one or the other of said lever points, and a control member engaging said actuator and shiftable in a plane substantially at right angles to the plane of shift of said actuator to position said actuator for cooperation selectively with the lever points, said actuating lever presenting a shoulder engageable with said control member, in at least one shifted position of said member, to limit the swing of said lever.

12. In a ribbon-vibrating mechanism for typewriters, a ribbon vibrator, a pivoted lever arm operatively connected to said vibrator, an actuator operable by the typing instrumentalities, said lever arm having points at different distances from the arm pivot, said actuator being shiftable in a plane substantially parallel to said lever arm to establish alternate driving connections with said arm in cooperation selectively with one or the other of said arm points, and said actuator and lever arm being relatively adjustable to positions in engagement with or disengaged from each other to establish or disable the driving connections at said points.

MEIGS W. NEWBERRY.