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H. BETZ
RIBBON VIBRATING MECHANISM FOR
TYPEWRITING AND LIKE MACHINES

2,541,191

Filed April 16, 1948

2 Sheets-Sheet 1

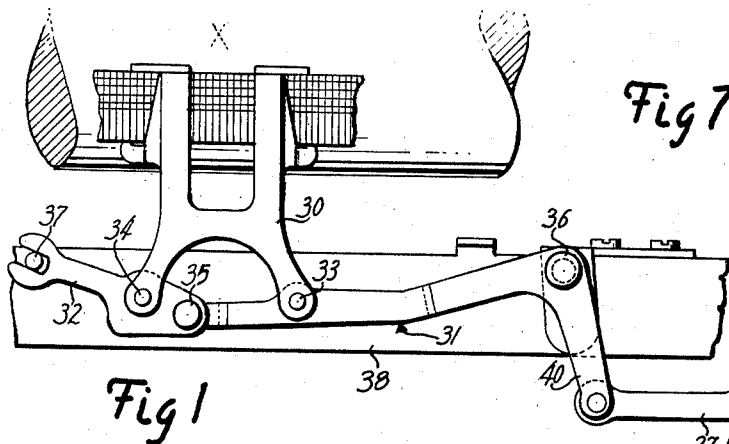


Fig 7

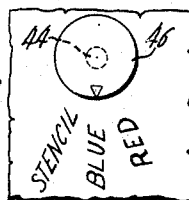


Fig 3

(BLUE)

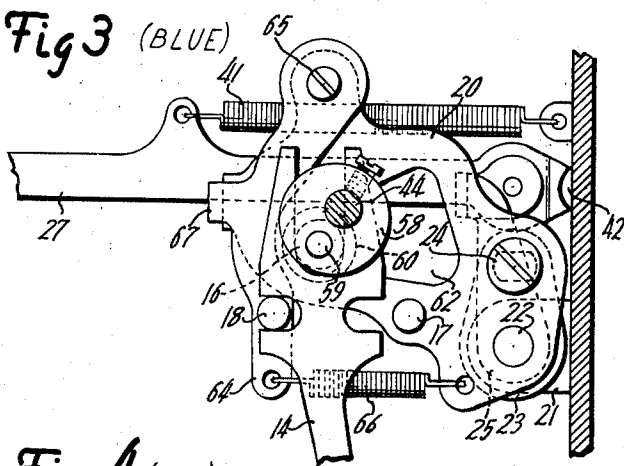
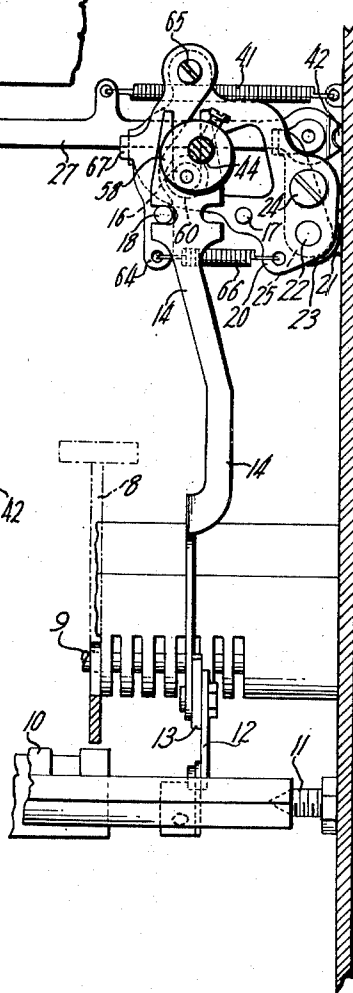
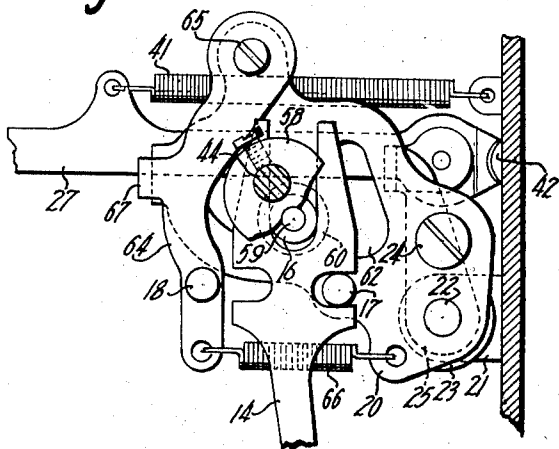


Fig 4

(RED)



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Fig 5 (STENCIL)

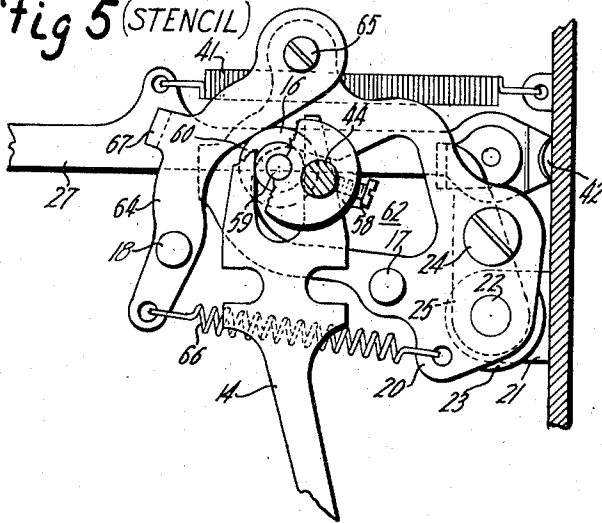


Fig 6

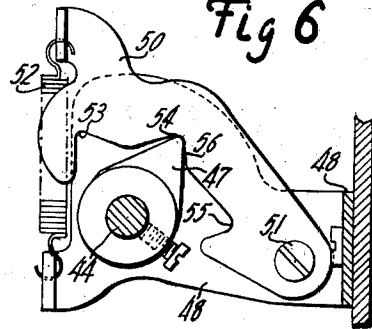
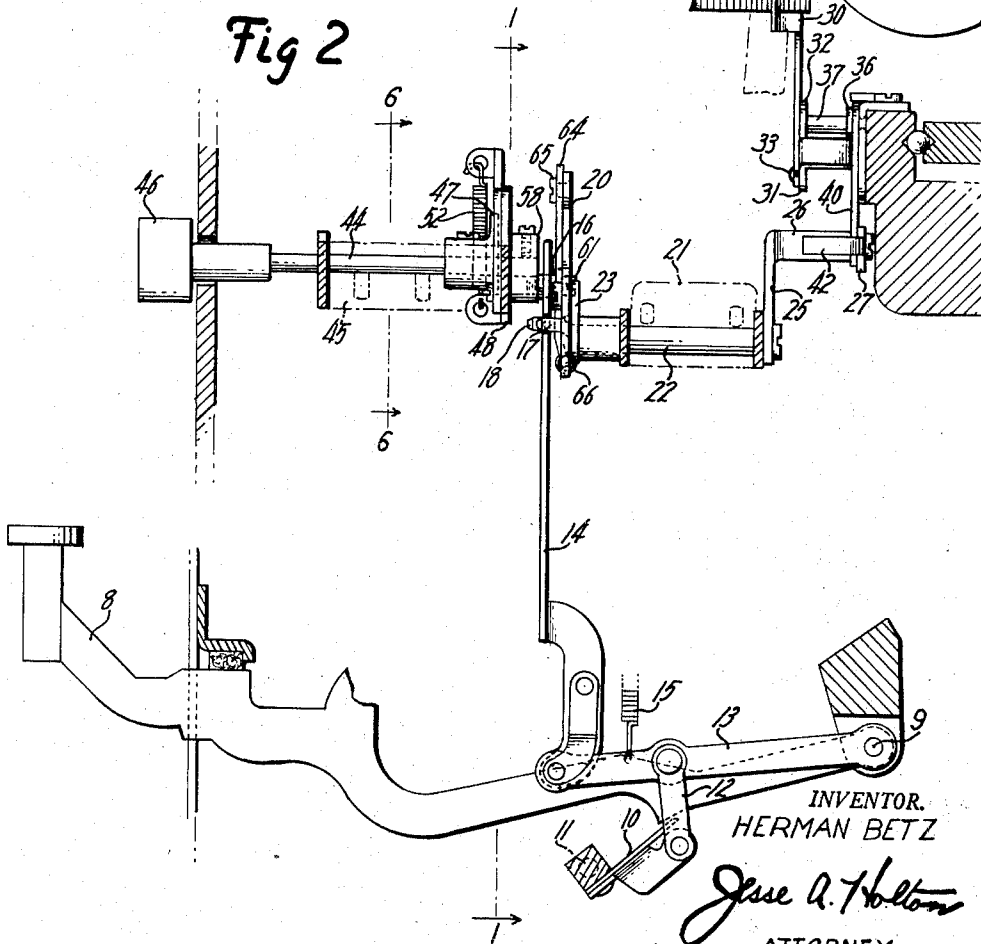


Fig 2



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RIBBON VIBRATING MECHANISM FOR
TYPEWRITING AND LIKE MACHINES

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5 Claims. (Cl. 197—157)

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This invention relates to ribbon vibrating mechanisms of typewriting and the like machines, and to the control devices thereof for selecting the ribbon color band and for disabling the vibrator to facilitate stencil typing.

An object of the invention is to provide an improved ribbon vibrating mechanism having a control device settable to each of the usual control positions by simple substantially uniform manipulations of the control element and in which the unintentional setting at the "stencil" position is practically eliminated by enabling selection of either color band without the necessity of moving the selector element through a middle or "stencil" position.

The present invention is in the nature of an improvement on the ribbon vibrator mechanism described and claimed in the Newberry Patent No. 2,346,323, issued April 11, 1944. The vibrator mechanism and control device of this patent also provides for selecting either color band without moving the control element through the "stencil" position. This is accomplished in the mechanism of said patent by restricting the rotative or angular positioning of the control element to only the two color-band selections and by requiring movement of the control element axially in order to effect the "stencil" selection.

It is generally preferable to effect selection of any of the three ribbon-control settings by moving the control element in either lineal or arcuate direction for all selections.

Accordingly, a further object of this invention is to provide a ribbon vibrator mechanism of the kind shown in said Newberry patent which, however, enables the selection of any of the three control settings by a substantially similar movement of the control element to and from the three positions required.

In its more specific aspect, the invention provides an improved selectively settable ribbon vibrator mechanism in which the control element thereof may be moved from one to another adjacent angular position to select either color band and may be moved to a third angular position, beyond the range of control movement for the color bands, to effect disabling of the vibrator mechanism for stencil typing.

With the above and other objects in view, the invention will now be described with reference to the accompanying drawings wherein a preferred embodiment which the invention may assume in practice is shown for the purposes of illustration.

In the drawings,

Figure 1 is a front elevational view of the ribbon vibrator mechanism of the invention embodied in a typewriter, the view being taken on the plane I—I of Figure 2,

Figure 2 is a side elevational view of the mecha-

nism, the same being taken on a fore-and-aft plane of the typewriter just to the right of said mechanism,

Figures 3, 4 and 5 are enlarged, fragmentary views of a portion of the ribbon vibrator mechanism in the different conditions of the mechanism determined by the three settings of the control device thereof, being respectively for "blue," "red" and "stencil," in the order given,

Figure 6 is an enlarged elevational view of the detent device forming part of the control means, the same being a view as taken on line 6—6 of Figure 2, and,

Figure 7 is a fragmentary front elevational view of the control element and associated indicia for selecting the three settings of the vibrator mechanism.

The ribbon vibrating mechanism of this invention is actuated by the usual means including a universal bar engageable by each type keylever and having an operative connection to an actuator by which, through the medium of a variably settable control means and associated operating mechanism, the ribbon guide at the typing point is raised one or another extent for either red or blue typing or remains inactive for stenciling.

Referring to Figures 1 and 2 a keylever 8 typical of all the type keylevers of the typewriter, is fulcrumed on a pivot bar 9 and is adapted to engage and actuate a universal bar 10 mounted to rock on trunnions 11. A link 12 transmits the rocking motion of the universal bar to a lever 13, also pivoted on the bar 9, lever 13 being articulated to a vertically reciprocatory actuator 14. After being depressed, the keylever 8 and the associated type action is restored by the usual spring means not shown. A spring 15 serves to restore the universal bar and the train of mechanism including the actuator 14 to its quiescent position. From its connection to lever 13, the actuator 14 extends upwardly, its upper end being forked for sliding engagement with an element 16 forming part of a selective control mechanism hereinafter described.

When the control mechanism is set for one or the other color band as shown respectively in Figures 3 and 4, the actuator 14 is positioned to engage one or the other of two pins 17 and 18 mounted on an actuating lever 20. The actuator 14 has two slots which engage one or the other of the pins 17 or 18 depending on the lateral position of the actuator as determined by the control mechanism, later described. The lever 20 is rockably mounted in a bracket 21 by means including a shaft 22 journaled in the bracket. An arm 23 is secured near the left end to shaft 22, an end portion of which fits into an opening in lever 20. A screw 24 extends through a slot in lever 20 and is threaded into said arm to clamp the lever in adjusted position to arm 23, see Figure 3. To the

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other end of shaft 22 and arm 25 is secured, which at its free end has a lateral extension 26, Figure 2, providing an ear to which a link 27 is flexibly connected.

Link 27 transmits the rocking motion of lever 20 to a ribbon carrier or ribbon guide 30, Figure 1, adapted to be shifted upwardly to present one or the other ribbon color band to the typing line. The mechanism for vertically shifting ribbon guide 30 includes two equalizing levers 31 and 32, each articulated intermediate its ends to the ribbon guide at pivots 33 and 34. Levers 31, 32 are flexibly joined at 35 and are pivotally mounted at 36, 37, respectively, on a member 38 of the typewriter mainframe. The lengths of the corresponding portions of the two levers 31, 32 are proportional to each other so that as the lever 31 is actuated to raise the pivot 33 of the ribbon guide, lever 32 causes pivot 34 to be raised an equal amount, thus causing the ribbon guide 30 to move upwardly in a parallel or rectilinear motion.

Lever 31 takes the form of a bell crank, and has an arm 40 flexibly joined to link 27. A spring 41 tends to pull link 27 rightwardly as limited by a stop 42 on the link engaging the typewriter mainframe. Stop 42 limits the return movement of levers 31, 32 and thus determines the quiescent or lower position of the ribbon guide 30. The pivot 36 for lever 31 may be made position-adjustable horizontally on member 38 as shown to vary the quiescent position of the ribbon guide.

The mechanism thus far described, for vibrating the ribbon guide 30 to present one or the other of the ribbon color bands to the typing point upon operating any type keylever 8, is substantially as shown and described in said Newberry Patent No. 2,345,323. The present invention resides in the combination with the aforescribed ribbon vibrating mechanism, of the improved means now to be described for controlling or regulating the throw of the ribbon vibrator mechanism, to effect ribbon color-band selection, and for disabling said mechanism so that no movement of the ribbon guide is had, as required in stencil typing.

The selective control mechanism comprises a rockable shaft 44, Figure 2, journaled in a bracket 45, projecting through a front panel of the typewriter casing and having a selector knob 46 secured thereto. As shown in Figure 7, this knob has a pointer cooperative with suitable indicia on the casing to guide the typist in setting the control mechanism for the desired color band or for stenciling. The selective control shaft 44 may be rocked to any one of three positions for determining the color band or stencil operations. It will be noted that the two color-band positions are adjacent each other and that the third position for stenciling is outside the range of angular movement required to select either color band.

The three rotative positions of control shaft 44 are determined by a detent mechanism shown best in Figure 6. This mechanism includes a detent arm 47 secured to shaft 44 at a point adjacent a rightward member 48 of bracket 45. A notched detent lever 50 is pivoted at 51 on the bracket member 48 and has a spring 52 tending to swing lever 50 counterclockwise or toward detent arm 47, as viewed in Figure 6. Lever 50 provides three notches 53, 54 and 55 corresponding respectively to the three control positions of shaft 44 for the "red," "blue" and "stencil" typing. The notches 53 and 54 are located on the part of lever 50 substantially away from the pivot 51 thereof, so that two adjacent edges between these

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notches impart a relatively light resistance to rotation of shaft 44 between the two color-band-determining positions. The detent edge 56 issuing from notch 54 toward notch 55, being somewhat closer to the pivot 51 and being also of a greater degree of incline than the adjacent edges defining notches 53 and 54, imparts a noticeably greater resistance when moving the shaft 44 to the stenciling position. Thus, the chance of unintentionally setting shaft 44, at "stencil" position when selection of either color band is desired, is minimized. The two extreme edges adjacent notches 53 and 55 form stops to limit the swing of control shaft 44 to within the range of the three control settings.

On the end of control shaft 44 beyond bracket member 48, a crank arm 58 of circular outline is secured. A stud or crank pin 59 providing the mentioned element 16 projects from the crank arm with its axis eccentric to shaft 44. Stud 59 has a collar 60 between which, and the crank arm 58, the forked upper end of actuator 14 slides, being thereby guided against fore-and-aft displacement. As viewed in Figure 2, the collar 60 is in a plane just to the left of lever 20. Rightward of the collar, stud 59 provides a pin 61 which projects through a large opening 62 in lever 20.

The mentioned pin 18 is shiftably mounted on lever 20 by a pin carrier or arm 64 pivoted at 65 on the lever. A spring 66 urges the carrier rightward as limited by a stop lug 67 on the carrier engaging an edge of lever 20. It may be here noted that the collar 60 on the eccentric stud 59 is in the same plane as the pin carrier 64 and cooperates therewith for the purpose later described.

Referring particularly to Figures 3 and 4, the setting of the control mechanism for either color band, and the operation of the ribbon vibrator mechanism under each setting, will now be described. It should be noted that as the control knob 46 is moved to select either the "blue" or "red" color bands, the resultant rocking of shaft 44 swings the stud 59 equidistantly from one to the other side of a vertical centerline through the shaft 44. In the "blue" setting, Figure 3, the stud 59 is leftward of this centerline and in the "red" setting, Figure 4, it is rightward of the centerline. Since the portion 16 of stud 59 slidably fits the slot in the forked end of actuator 14, said actuator will be correspondingly shifted to opposite sides of said centerline and will thus be brought into engagement with either the pin 17, Figure 4, or the pin 18, Figure 3. In considering the operation of the ribbon vibrator mechanism under these two settings, it should be observed that the two pins 17 and 18 with which the actuator 14 is selectively engageable, are at different distances on the lever 20 from the center of oscillation 22 thereof. Therefore, although the actuator 14 is pulled down a substantially uniform extent upon each operation of a type key, the throw imparted to lever 20 is of lesser extent when engaged with pin 18 than with pin 17. With the control device set for "red" and with the actuator 14 therefore engaged with pin 17, the lowering of the actuator will rock lever 20 a degree such as to cause the ribbon guide 30, Figure 1, to be raised to the extent required to bring the upper, red band to the typing line. With the control device set for "blue" and with the actuator 14 therefore engaged with pin 18, the lowering of the actuator will impart a rocking movement to lever 20 such as to cause the ribbon guide 30 to be raised a

greater extent so that the lower, blue color band will be presented at the typing line.

In the operations of the vibrator mechanism under the setting for either color band, the rocking of lever 20 is transmitted to the ribbon guide 30 by the link and leverage mechanism shown in Figure 1, as previously described. Upon release of the then actuated type keylever, spring 15 restores the universal bar and the associated mechanism including actuator 14 to inactive position, and spring 41 restores lever 20 and the associated leverage mechanism 27-32 to its inactive position as determined by stop 42.

The setting of the control device for stencilling and its effect on the ribbon vibrator mechanism will now be described. In moving the control knob 45 to the "stencil" position, the control shaft 44 is rotated in a clockwise direction to move the stud 59 from either its Figure 4 or its Figure 3 position, and to the Figure 5 position. That is to say, as the control device is moved to the "stencil" position, the eccentric stud 59 is either at or moving from the Figure 3 setting. As the shaft 44 approaches the Figure 5 position, the collar 60 on stud 59, comes into engagement with the rightward edge of pin carrier 64 and thereby cams the pin carrier leftwardly against the tension of spring 66 thus withdrawing pin 18 free of actuator 14. Thus, during type key operations for typing a stencil, the actuator 14 is drawn down and raised in an idle motion without having any effect on the lever 20 or the ribbon guide 30, and the ribbon remains inactive as desired for stencilling.

What is claimed is:

1. In a ribbon vibrating mechanism for typewriters, a ribbon carrier movable to present different ribbon color bands to the typing line, an actuating lever operatively connected to said ribbon carrier, and an actuator operable by the typing instrumentalities, said lever having two elements at different distances from the lever fulcrum, said actuator being alternately positionable to establish driving connections with either of the two elements of said lever, one of said elements being movably mounted on said lever to enable disengagement of that element from the actuator with the actuator in a position out of engagement with the other element of the lever.

2. In a ribbon vibrating mechanism for typewriters, a ribbon carrier movable to present different ribbon color bands to the typing line, an actuating lever operatively connected to said ribbon carrier, an actuator operable by the typing instrumentalities, said lever having two actuator engageable elements at different distances from the lever fulcrum, said actuator being alternately positionable to establish driving engagement with either of the two said lever elements, a control device to alternately position said actuator, one of said lever elements being movable relatively to said lever, and means operable by said control device, in moving beyond its position in which the movable element is actuator engaged, to move said element out of actuator engagement.

3. In a ribbon vibrating mechanism for typewriters, a ribbon carrier movable to present different ribbon color bands to the typing line, an actuating lever operatively connected to said ribbon carrier, an actuator operable by the typing

instrumentalities, said actuating lever having two actuator-engageable elements at different distances from the lever fulcrum, said actuator being shiftable in a plane to engage selectively one or the other of said elements, a control member engaging said actuator and movable between two positions to shift said actuator for engagement alternatively with the lever elements, and means mounting one of said lever elements for movement relatively to said lever, said control member being adapted to coact with said mounting means upon movement of said member to a third position, to move said movable element free of engagement with said actuator.

4. In a ribbon vibrating mechanism for typewriters, a ribbon carrier movable to present either of two ribbon color bands to the typing line, an actuating lever operatively connected to said ribbon carrier, an actuator operable by the typing instrumentalities, said actuating lever having two actuator-engageable elements at different distances from the lever fulcrum, said actuator being shiftable in a plane parallel to said lever to engage selectively one or the other of said elements, a control member having a crank engaging said actuator and being rotatable between two angular positions to shift said actuator for engagement alternatively with the lever elements, and means mounting one of said lever elements for movement relatively to said lever, said control member crank being adapted to coact with said mounting means upon rotating said control member to a third angular position, to move said element free of engagement with said actuator.

5. In a ribbon vibrating mechanism for typewriters, a ribbon carrier movable to present either of two ribbon color bands to the typing line, an actuating lever operatively connected to said ribbon carrier, an actuator operable by the typing instrumentalities, said actuating lever having a first actuator-engageable element at a given distance from the lever fulcrum and a second actuator-engageable element at a greater distance from the lever fulcrum, said actuator being shiftable in a plane parallel to said lever to engage selectively the first or the second lever elements, a control member having a crank engaging said actuator and being rotatable between two angular positions to shift said actuator for engagement alternatively with the two said lever elements, and an arm mounting said second lever element for movement relatively to said lever, said control member crank being adapted to coact with said arm, upon rotating the control member from the position determining the actuator-engagement with the second lever element to a third angular position, to move said second element free of engagement with said actuator.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
946,359	Hess	Jan. 11, 1910
1,820,066	Handley	Aug. 25, 1931
1,834,522	Helmond	Dec. 1, 1931
2,346,323	Newberry	Apr. 11, 1944