

Sept. 7, 1965

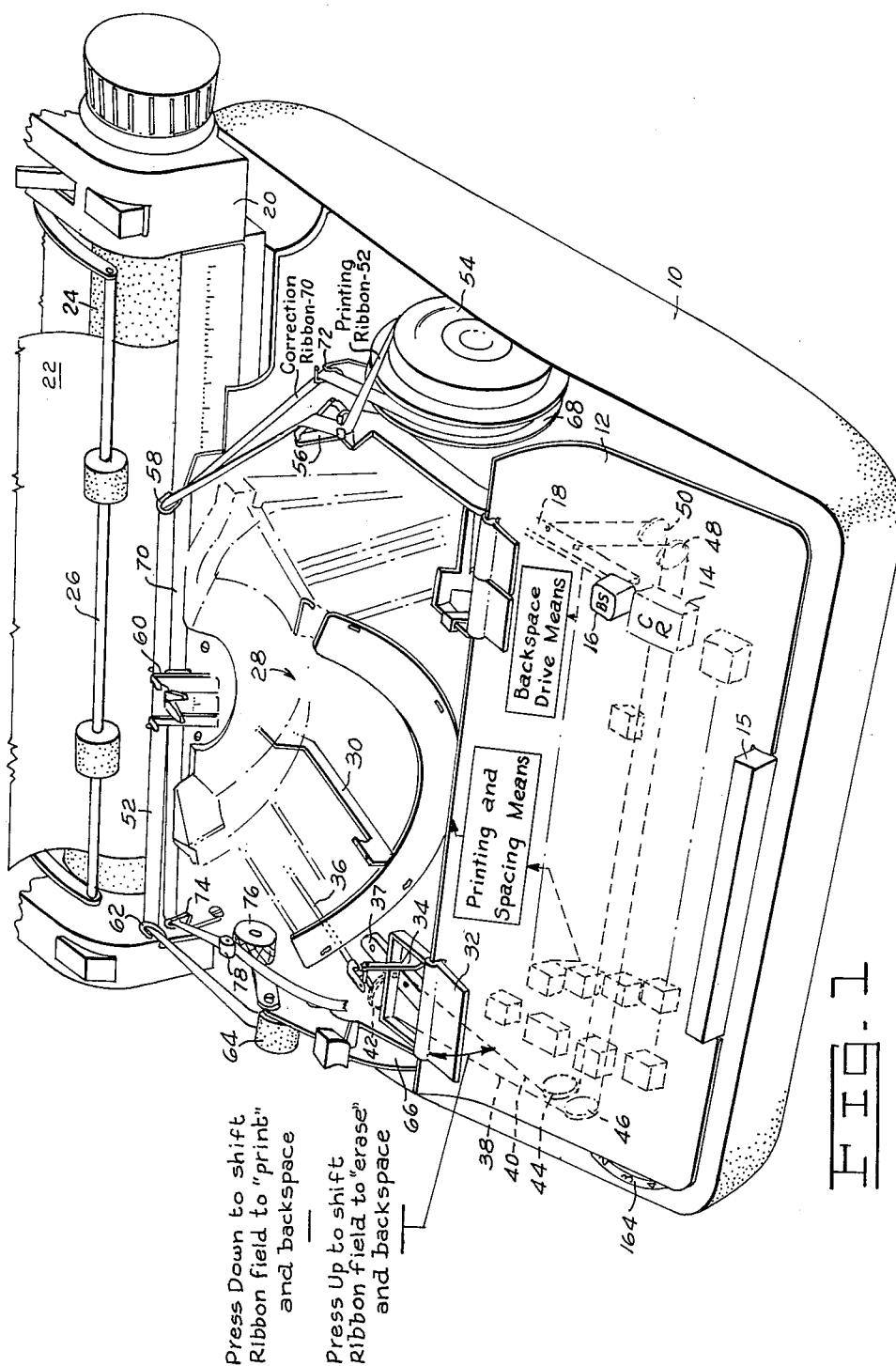
W. H. WOLOWITZ

3,204,746

TYPEWRITER WITH ERROR-CORRECTION FEATURES

Filed Aug. 23, 1963

3 Sheets-Sheet 1



Sept. 7, 1965

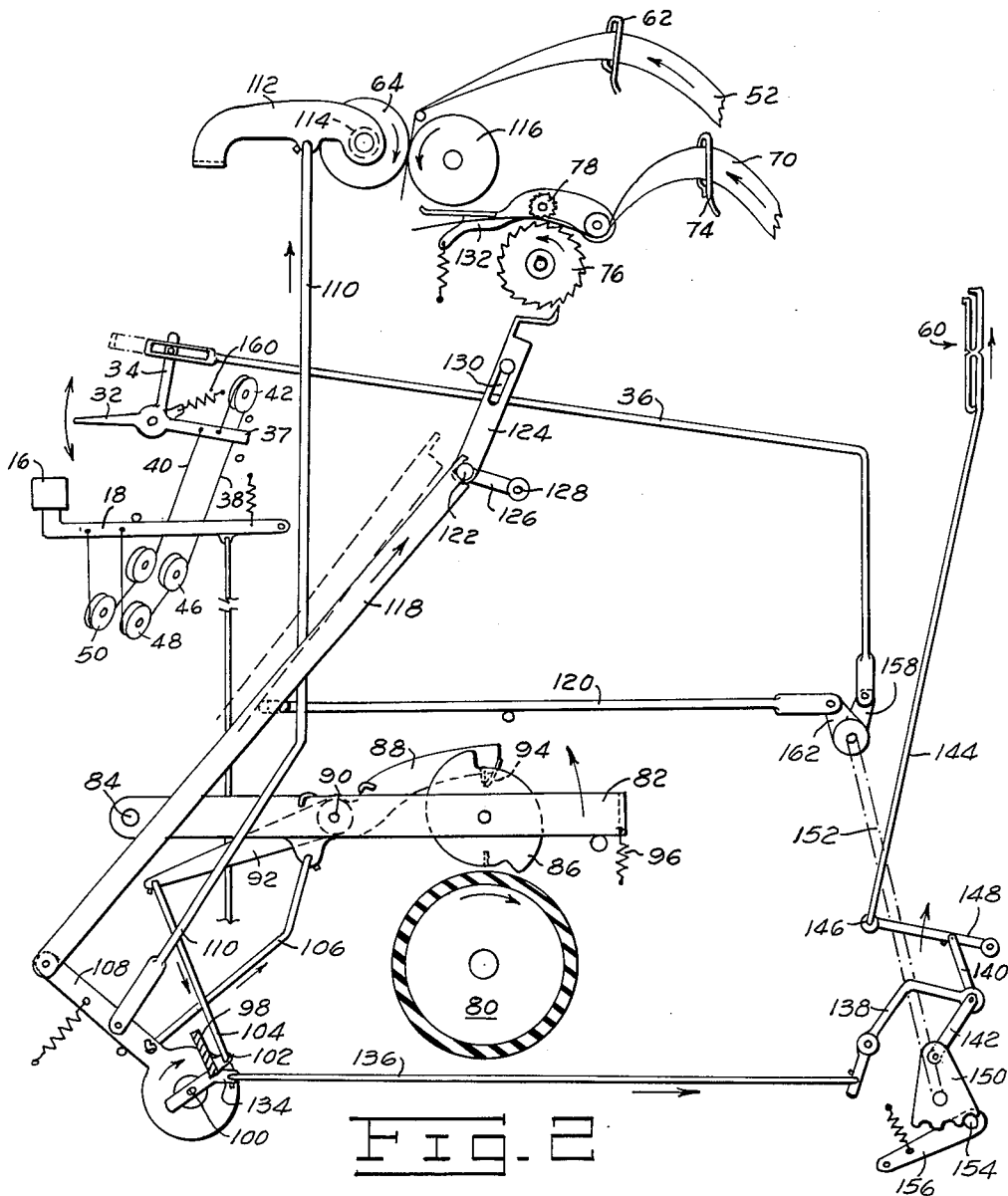
W. H. WOLOWITZ

3,204,746

TYPEWRITER WITH ERROR-CORRECTION FEATURES

Filed Aug. 23, 1963

3 Sheets-Sheet 2



Sept. 7, 1965

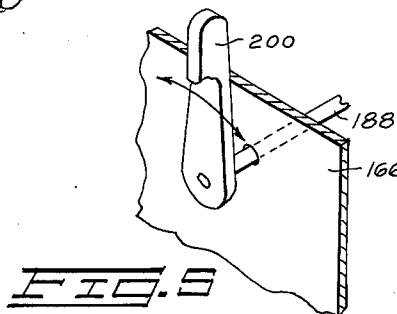
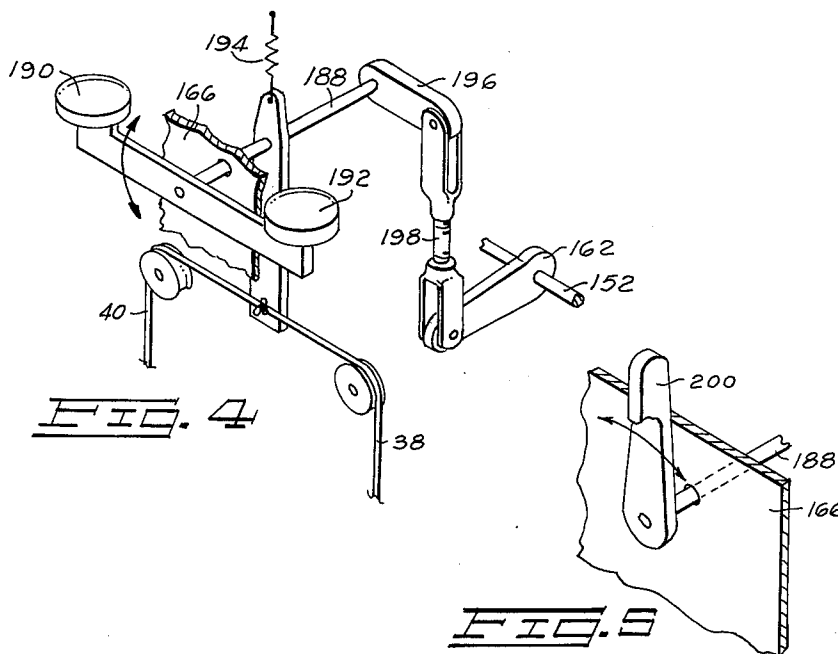
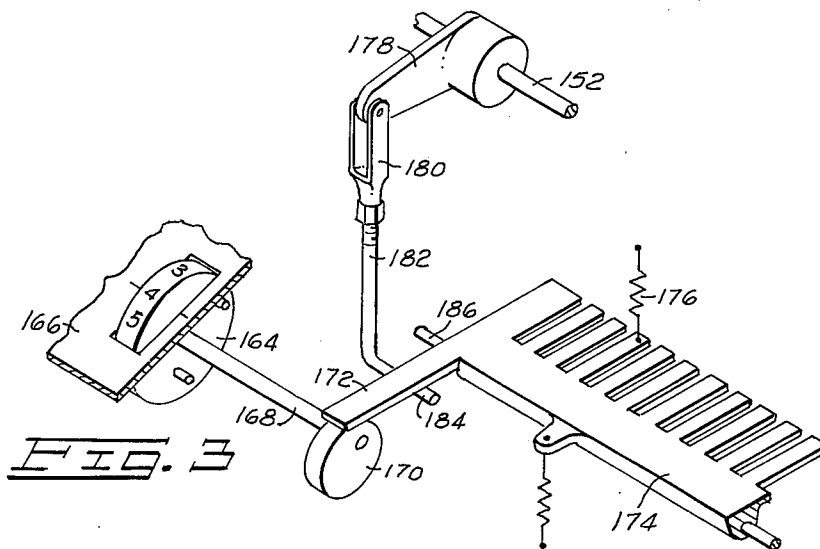
W. H. WOLOWITZ

3,204,746

TYPEWRITER WITH ERROR-CORRECTION FEATURES

Filed Aug. 23, 1963

3 Sheets-Sheet 3



1

2

3,204,746 TYPEWRITER WITH ERROR-CORRECTION FEATURES

William Howard Wolowitz, 1742 Holly St. NW.,
Washington 12, D.C.

Filed Aug. 23, 1963, Ser. No. 304,003

6 Claims. (Cl. 197—91)

This invention pertains to typewriters and similar business machines, and aims to provide improvements in such equipment that will enable the user to correct errors and erroneous imprints, wrong characters and the like, with great speed and facility. In a previously filed application, Serial No. 180,229, filed March 16, 1962, I have described and claimed an improved typewriter intended for facilitating the use of a double-stripe ribbon, of which one longitudinal half is inked to make the character impressions on paper or the like in the usual way, while the other longitudinal half carries a layer of pressure-transferrable opaque adherent pigment, of color to match the color of the impression paper (usually white) so that errors can be "covered up" with the correction material to render them substantially invisible. Correct or substituted characters can then be imprinted on top of the opaque correction material deposited over the error or errors. In that earlier application, the typewriter was provided with a pair of "backspace" keys, both operating to backspace the carriage or printing mechanism, and operative respectively to shift the ribbon-field control of the typewriter between the positions usually devoted to "black" and "red" printing. Used with the composite inking-and-obliterating ribbon, such a typewriter enabled the typist to perform the necessary ribbon-field selection, as between printing and erasing, as an automatic corollary to the selection of which of the two backspace keys was employed.

In another earlier-filed application, Serial No. 302,390, filed August 15, 1963, now Patent No. 3,149,711, I disclosed and claimed a variation of the general concept of the invention, in which the typewriter is provided with a solid-color, usually black, full width printing ribbon, such as a fabric ribbon saturated with ink for repeated use, and is also provided with a reel or supply of separate correction tape, having a width of substantially half that of the full-width printing ribbon. This tape comprised a support, such as paper, again coated with an impact-transferrable layer of opaque pigment matching in color the impression paper. The ribbon guide or vibrator of the typewriter was designed so as to hold the correction strip in a position preferably between the lower half of the printing ribbon and the impact point on the impression paper. When the ribbon field selection control was set for "printing," the vibrator would operate to present the inked printing ribbon, in particular its exposed upper half, between the impacting type face and the impression point. When the ribbon field selection control was set for "erasing," the vibrator would operate to present the correction tape, overlying the lower half of the printing ribbon, between the impacting type face and the impression point. The typewriter described in this previous application also had a pair of backspace keys, and they were connected so as to shift the ribbon field selection control between its two positions as just described; also, in order to avoid waste of the correction tape, the intermittent feeding mechanism for such tape was arranged to be automatically disengaged except when the "correction" backspace key had last been operated.

The present invention is similar in principle to the earlier forms of the invention, insofar as concerns the sequence of operations involved in the making of corrections; that is, first backspacing with automatic shifting of the ribbon field selection control to prepare the ma-

chine to present an error-correcting or obliterative tape into impact or impression position, then the retyping, with deposit of the covering pigment, over the erroneous imprints, then again backspacing with automatic restoration of the ribbon field selector into condition preparatory to present the inking ribbon in impression position, and finally the typing of any desired correct characters over the obliterated errors.

However, the typewriter features that distinguish the present invention from the earlier forms, offer substantial advantages from the standpoint of "human engineering," the ease with which the typist learns or becomes acclimated to the use of the machine, and the like. In general, the machine of the present invention differs in not providing two significant backspace keys, one for use prior to erasing and the other for use prior to reprinting or for normal backspace requirements such as for underlining.

On the contrary, a known form of ribbon-field control key or lever is provided in convenient position for use, and arranged to change the ribbon field selection between "print" and "erase" by momentary depression or movement of this control in respectively different directions. This same field selecting control is also linked to the normal backspace key or key-lever of the typewriter, so that movement of the field selector in either of its two directions will also initiate a backspace motion of the carriage or printing mechanism.

Thus, one or more movements of the ribbon field control in one direction (from a centered or idle position) will both prepare the machine for presenting the erasing tape to the impression point, and will cause the desired number of backspace movements, all in preparation for the typing out (obliterating) of any errors. After such typing out, one or more motions of the field selector in the other direction will condition the machine to present the printing ribbon to the impression point, and will also cause the desired number of backspace motions, in preparation for the retyping of correct characters. Since backspacing for either purpose can now be obtained with the single control, it is optional whether or not the normal "backspace" key of the typewriter is retained or is omitted. The invention also provides for the disengagement of the feed for the correction tape when it is not in use, as was mentioned above.

According to a further feature of the invention, a typewriter whose printing mechanism includes an "impression" control or adjustment, to allow the typist to select the degree of force with which the type faces are impacted against the ribbons and the impression sheet, may have its "impression" control also connected to the ribbon-field control key or lever, in such a way that the impression force may be given a specifically different value when the machine has been conditioned for obliterating errors, and the previously selected impression force for printing purposes automatically restored when the field control lever is again operated to restore the machine to printing condition.

The invention will now be described in detail in connection with certain preferred embodiments thereof which are illustrated in the accompanying drawings, in which:

FIG. 1 is a perspective view of a preferred form of the invention, applied to a form of typewriter that is generally known in the art.

FIG. 2 is a schematic view, generally in side elevation, of the interconnections between various components of this form of the invention.

FIG. 3 is a schematic view of parts of the invention related to the automatic alteration of the type face impression force.

FIG. 4 is a fragmentary front elevation showing a

modification of the ribbon field selecting control lever.

FIG. 5 is a further fragmentary view showing a different form of ribbon field selecting control lever.

Referring first to FIG. 1 of the drawings, there is illustrated an electric typewriter of a kind well known in the art, known as Model C manufactured by the International Business Machines Corporation; the upper front cover for this machine is omitted from the drawing, to reveal the underlying parts. Many of the conventional parts of such typewriter have been omitted also, where not essential to an understanding of the invention, and some parts have been indicated by chain lines or dashed lines for the same reason.

In general, the typewriter shown includes the lower cover or tray 10 within which is mounted the main mechanism framework supporting the key plate 12 through which project the various operating and control keys of the usual keyboard. Among these are of course the usual character keys, the case shift and shift lock keys, a carriage return key 14 (which also produces an accompanying line feed), a space bar 15, and the conventional backspace key 16. A portion of the backspace key lever 18 is indicated in dash lines.

The machine illustrated is of the type having a moving paper carriage 20 which carries the impression paper 22 wrapped about the usual roller platen 24, and the associated paper bail 26 and other appurtenances not necessary to describe. The type basket is indicated generally as 28, and a single typical type bar 30 is shown. The type action of this make of typewriter is entirely familiar to those skilled in the art, and is accordingly also to be understood without further description thereof. Operation of the character keys produces the printing impacts of the selected type faces in the known way, accompanied by stepwise feeding of the carriage 20 in the direction from right to left; the space bar 15 produces carriage steps without any type impact, and the backspace key 16 produces stepwise character-width movements of the carriage in the reverse, backward, or left-to-right sense.

While the machine illustrated is of the moving paper carriage type, it will be appreciated that the paper support mechanism may be stationary with respect to the main machine frame, and the type basket may be stepped in both directions for progressive printing or backspacing. Also, the relative motion may be provided by a moving printer box or other selective printing mechanism such as employed in teletypewriters, in the machines known to the art as "golf ball" printers, print-wheel machines such as the "Varityper" machines, and the like.

FIG. 1 also indicates at 32 the ribbon-field selecting control lever of the Model C typewriter, which operates to select the desired ribbon field (normally, as between "red" and "black" printing stripes) by means to be described below. In connection with the present invention, this lever 32 is pivoted on a horizontal axis for limited motion either upward or downward from a centered "rest" position. Rearwardly of the upwardly curved rear margin of key plate 12, the lever 32 carries a projecting arm 34 which has a lost-motion connection with the rod or wire 36 that operates the field-selecting control. Lever 32 also has connected thereto an arm 37 connected by flexible cords 38, 40 which pass around pulleys 42, 44, 46, 48 and 50 and terminate at connections with the backspace key lever 18. This connection provides that each motion of lever 32, either upward or downward from its rest position, produces one backspace increment of motion, as well as operating the ribbon field selecting control in a respective direction, as will appear.

The typewriter shown is equipped with a so-called carbon ribbon feature for printing, to enable the use of expendable or one-use material such as the ribbon 52 of paper or plastic (e.g., "Mylar") film coated with a waxy printing ink. A supply of this ribbon is stored on a side reel or spool 54 at the right side of the machine frame, whence it feeds about a guide 56, a wire loop guide 58, thence

through the upper half of a ribbon vibrator 60, through a second wire loop guide 62, and between ratchet-operated feed rolls of which one is shown at 64, and is wound up on a take-up reel 66 constantly urged in the take-up direction by the motor drive of the machine.

Mounted coaxially with supply reel 54, and preferably inwardly of that reel, is a loose spool or reel 68 of the correction tape or ribbon which carries the impact-transferrable opaque pigment as described above. This tape 70 is shown as feeding from its reel in the opposite rotational direction with respect to ribbon 52, thence through wire loop guide 72, the wire loop guide 58 mentioned above, the lower half of the ribbon vibrator 60 (being substantially coplanar with ribbon 52 at that point), thence through wire loop guide 74, and between feed rolls 76, 78. No take-up reel for the used tape 70 is provided, since only a modest amount of it is used in comparison with the ribbon 52; the used material is preferably allowed merely to issue through a slot or opening in the front cover of the machine, to be torn off and disposed of by the typist as convenient.

The special features and arrangements of the invention are shown schematically in FIG. 2 of the drawings, along with such old parts of the known typewriter as are necessary to an understanding of the new operation. Parts which are the same as those already described are given the same reference numerals; for example, the arrangement of backspace key 16, and the cords 38 and 40 which connect its keylever 18 for operation by movement of lever 32 in either the up or down direction, via extension 37. Since the power drive and type action for the character and function keys of the machine are well known, only the operating connections for the power ribbon feed function are shown in the drawing.

A frictional surfaced power roll 80 extends beneath the assembly of keylevers, and is constantly rotated by a drive motor when the machine is in operation. The roll cooperates with the operating cams for the type bars and function bars to throw them into action when the corresponding cam trips are actuated by the keylevers. In the case of the ribbon feed function, for example, and as shown, the cam assembly includes the cam frame 82 pivoted at 84 on the machine frame and on which is rotatably mounted the double eccentric power cam 86, held against rotation, and out of contact with power roll 80, by a trip latch 88 also pivoted in the cam frame as at 90 and urged by a spring into the position shown. When the trip latch is rotated slightly counter-clockwise, as by a downward motion of its tail portion 92, its latching end 94 moves out of engagement with a holding lug of the eccentric cam 86 and also gives the cam a sufficient rotation as to cause its knurled surface to engage the power roll, which rapidly rotates the eccentric cam, and thereby lifts the cam frame 82 against the tension of restoring spring 96. It is this upward movement of the cam frame that furnishes the force necessary to operate the ribbon feed mechanism.

Ribbon feed, of course, is desired whenever any of the printing keys of the machine is operated. As usual, therefore, a universal bar is provided, arranged to be operated when any of the printing keys is operated. This bar is indicated in sectional view at numeral 98, pivoted on an axis 100 extending horizontally beneath all of the printing key operating cam assemblies, so that whenever such a key is operated, a portion of the operator will engage and momentarily depress the bar 98. A connecting lug 102 at one end of the bar (at the left side of the machine as viewed in FIG. 1) thereupon exerts a downward pull on the tail portion 92 of the trip lever 88 as already described, via rod 104, causing the cam assembly 82 to be raised by the power roll 80.

A link 106 connects the cam frame assembly to an arm 108 that is pivoted on the same axis 100 as that of the universal bar 98, although it is not otherwise connected therewith. When the cam frame rises, link 106

5

swings arm 108 clockwise. Connected to this arm is a clevis link 110 which is thus given an upward motion as indicated by the arrow alongside it, causing a slight clockwise rotation of a feed arm 112 mounted concentric with the ribbon feed roller 64 already mentioned and shown in FIG. 1. The connection between the feed arm and the feed roller is via a ratchet 114, so that roller 64 is rotated the desired amount to feed the necessary length of ribbon 52 for each printed character. The backing or pressure roller 116 is geared to roller 64 in a conventional way, and provisions well known to those familiar with this form of machine are included to allow roller 64 to be retracted for threading purposes and the like.

In order to adapt the mechanism for power feed also of the correction tape 70, arm 108 also has pivotally connected thereto a push rod or arm 118 which rests upon, and can slide along, a guide provided by the bent end of a positioning bar 120. In the position shown in full lines in FIG. 2, the position of bar 120 is such that the upper end of arm 118 is adjacent the extended pivot pin 122 that connects a feed pawl 124 and a rocker 126 whose other end is pivoted at 128 at a fixed point on the machine frame. The pawl 124 is mounted for sliding motion as by a screw and slot connection 130 on the machine frame. Upon each upward stroke of arm 118, therefore, the pawl 124 is raised, and its toothed upper end engages and feeds the ratchet wheel 76, whose teeth also feed the correction tape 70 the desired amount. The backup or pressure roll 78 is preferably carried on a spring-urged arm 132 to allow convenient threading of the tape or ribbon.

It is desirable to disengage the feed for tape 70 except when the machine has been conditioned for "erasing"; namely, except when the ribbon field selecting control 32 was last pressed upwards. An understanding of how this is accomplished involves the operation of the ribbon-field selection and vibrator control operations, now to be described.

It was said above that the universal bar 98 is pressed down upon each operation of a printing key. This motion of the universal bar also acts to lift the ribbon vibrator 60 at the proper time to interpose the selected ribbon in impression position, as well known. In the present machine, the action results from a second connection to the universal bar 98, indicated by a lug 134. Whenever the universal bar is depressed, this lug 134 moves a slight amount downward, and urges to the right a link 136 which is connected at its right hand end to a bell crank 138 pivoted at a fixed point on the frame. The other end of the crank is connected to the pivot pin between a pair of toggle links 140, 142. The operating slide 144 of the ribbon vibrator 60 is hinged at 146 to a lever 148 whose other end is pivoted on the machine frame, and to this lever 148 is connected the toggle link 140.

The lower end of toggle link 142 is pivoted on a detent plate 150 mounted for rotation on a shaft 152, so that the detented position of the plate determines the location of the pivot point at this end of toggle link 142. The detent plate has the usual peripheral notches which co-operate with the detent roller 154 on a spring-urged arm 156 to hold it in the selected position. The action of crank 138, in turning counter-clockwise, is to straighten the links 140, 142 of the toggle, thus raising the ribbon vibrator. The amount of this lifting action on the vibrator depends upon the angular relation of those links, and hence is controlled by the position of the detent plate 150 as described. The usual arrangement provides a maximum lift of the vibrator for "red" printing (or "erasing," in this invention), a smaller lift for normal black printing, and zero lift for the "stencil" condition.

To adjust the position of the detent plate 150, and hence to control the ribbon field that is selected, shaft 152 has secured thereto a crank arm 158 in turn connected to the ribbon-field selecting rod 36 already mentioned in connection with FIG. 1. In the full-line po-

6

sition shown, rod 36 has last been moved to the right by the lost-motion connection between its upper end and the arm 34 of the ribbon control lever 32. That is, lever 32 was last operated in the upward direction, and has now returned to its rest position under the control of centering spring 160. This rotated shaft 152 to place detent plate 150 in the proper position to give the ribbon vibrator its maximum lift, and hence to place the correction tape 70 in impression position when any character keys are operated.

Similarly, if ribbon field control 32 is now pressed down, the arm 34 will engage and move rod 36 to the left, rotating detent plate 150 in the necessary direction to provide a smaller rise for the ribbon vibrator, for making inked imprints with ribbon 52. In the position shown, which is the erasing position, the feed pawl 124 for the correction tape will be operated as above described, by engagement of the pawl's extended pivot pin 122 with the end of arm 118. However, when the ribbon field control is adjusted for printing, with ribbon 52, the rotation of shaft 152 counter-clockwise will also rotate a crank arm 162 secured thereto, and which is connected to the control rod 120. Rod 120 will move to the left, and its bent end upon which rests arm 118 will move the latter into the dash line position, so that the feed pawl 124 for the correction tape will remain stationary even though arm 108 continues to swing back and forth with each movement of the universal bar 98.

The permanent connection of arm 108 to the feed rod 110 of the printing ribbon feed is unobjectionable, since the continued feeding of ribbon 52 during the relatively rare correction operations will waste only a small amount of the ribbon 52. However, disconnection of the printing ribbon feed when the correction tape is being fed, can readily be accomplished if it is considered desirable to do so.

Automatic change of impression control

Many commercial typewriters, such as the one illustrated in FIG. 1, have a manually settable impression control such as the adjustable disc 164, to allow the typist to select the impression or impact force that will be applied to the type faces. Depending upon the characteristics of the printing ribbon (such as ribbon 52, and of the obliterating ribbon (such as ribbon 70) which are installed, it may be desirable to have the impression control set for different impact force during printing and during erasing; proper matching of the characteristics of the printing and obliterating ribbons cannot always be relied upon to achieve the optimum result. For example, it would be desirable for perfect obliteration of a printed character to require only one "obliterating" impact, and conversely it is desirable for the "correct" character to be properly over-printed with a single stroke of the type face against the printing ribbon 52.

FIG. 3 of the drawings illustrates schematically one arrangement by which the impression or impact force provided during obliterating is automatically given a different value, either higher or lower, than the impact force which the typist has selected for normal use during printing or typing with the inked ribbon such as 52. In this figure, numeral 164 indicates the disc or drum conventionally provided for impression control, and which is usually provided with graduations visible to the typist through a suitable window in the front cover of the machine, here indicated by numeral 166. In a typical machine, the disc 164 is connected to rotate its mounting shaft 168 which carries a cam 170 which can thereby be adjusted in a range that is defined by stop pins on disc 164. A cam follower lever 172 is secured to the pivoted force-adjusting comb 174, whose fingers constitute the anchors for the coil springs (such as spring 176) that provide the restoring force for the individual type actions. Slight adjustment of the bodily position of comb 174 about its axis at 186 thus alters all of the

type impacts together in the known way, to provide the impact adjustment. The individual impacts of the type actions are, of course, adjusted by individual bending adjustments of the comb fingers, or in any other desired or known manner.

In order to effect a desired alteration of the impact adjustment automatically during erasing or obliterating, the invention provides a connection between the cam follower lever 172 and the shaft 152 which as already described is rotated back and forth when the ribbon field selector 32 is shifted to change from "printing" to "erasing" and back again. In FIG. 3, shaft 152 has secured thereto another crank arm 178 to which is connected the clevis link 180 in which is threaded the rod 182 whose bent lower end 184 lies beneath the cam follower lever 172. In the condition shown, which is that in which the machine is set for typing or printing, the end 184 is in its lowest position, free from contact with lever 172, and the impression impact is controlled by the setting of impression control disc 164 in the usual way.

When the typist operates field selector 32 (FIG. 1) in the upward direction to change to the erasing function, and to backspace as already described, ribbon field selecting shaft 152 will be given a slight clockwise rotation, and rod 182 will be raised so that its end 184 engages and lifts the cam follower 172 a distance determined by the threaded adjustment of rod 182 in clevis link 180. Hence, the impression force will be altered, to a value set by this adjustment, during the "erasing" operation. When the machine is restored to the printing condition, shaft 152 will return to its original position, and rod 182 will be dropped to allow the follower 172 again to engage cam 170 and restore the impact adjustment to that which was selected by the typist.

It will be clear from the foregoing that it is a matter of choice, dictated by the nature of the particular ribbons employed for typing and erasing, whether the impact force is made greater for printing or for erasing. Either direction of change can readily be obtained, for example by causing the bent end 184 of rod 182 to engage beneath lever 172 (as shown) or alternatively beneath the body of comb 174 lying beyond the pivot axis 186 of the comb.

Alternate ribbon-field selector controls

FIGS. 4 and 5 illustrate alternative arrangements for the manually operated ribbon field selector, indicated in FIGS. 1 and 2 by numeral 32 as a lever pivoted on a horizontal right-to-left axis paralleling the length of the keyboard. In FIG. 4, the pivot axis for the control is indicated as a horizontal shaft in the fore-and-aft direction or perpendicular to the axis of lever 32. This shaft, pivoted in the machine frame, carries at its forward end which protrudes through the front cover 166, a lever whose ends are provided with operating buttons 190, 192 to effect the ribbon field selection and perform the backspacing operations as before. Shaft 188 is spring-restored to its centered position by spring 194, and has a crank arm 196 connected by rod 198 to the crank 162 which is the same as the one depicted in FIG. 2. Selective depression of buttons 190 and 192 will thus produce the same actions as already described for selective upward and downward motions of control lever 32.

FIG. 5 illustrates a further minor variation of the control lever, mounted on an axis directed the same as in FIG. 4 as by the same shaft 188. In this case, either leftward or rightward movement of the operating handle 200 will cause the change in ribbon field selection and also produce a backspace motion for each repeated such motion of the handle. The same spring arrangement for restoring the handle 200 to its rest or centered position will be provided, as will be clear from the previously described forms of the control. Other modifications of the control lever, and of the operating connections to

the typewriter, will be obvious to those skilled in the art.

It was said above, in connection with the description of FIG. 1, that the supply rolls or spools 54 and 68 for the inked or printing ribbon, and for the obliterating tape, are carried coaxially, but installed so that they rotate in opposite directions when the ribbons are fed out. The reason for this arrangement is that, since the printing ribbon 52 is fed at each operation of a character key, whether the ribbon field selector is set for printing or for erasing, the unwinding of this ribbon will tend to rotate the other supply reel (for erasing tape or correction ribbon 70) in the direction to wind up the latter tape. Since the tape feed rolls 76 and 78 hold the tape 70 positively against backward movement, this tendency operates to hold the tape 70 taut in the guides 56, 58 and 62, and ensures positive movement thereof through the vibrator when a series of erasing operations is performed. Any slack in the obliterating ribbon between the feed rolls 76, 78 and the vibrator would allow more than one type face to strike the same point on the tape, and possibly prevent complete obliteration of one or more characters. Also, of course, keeping the ribbons taut eliminates a possible source of entangling or improper alignment in the vibrator.

It will be understood that other arrangements of the reels or spools at 54 and 68 will occur to those familiar with the typewriter field, and that they need not be mounted coaxially, and may be provided with their own individual ribbon tension controls on separate spools if desired. These and other modifications in the arrangements shown herein are intended to be covered herein, to the extent defined by the scope of the appended claims.

What is claimed is:

1. An error correcting typewriter comprising character-printing mechanism including printing control keys, a paper support mechanism, spacing means for stepwise moving said mechanisms relative to one another in a forward direction in response to operation of said keys to accomplish printing of a line of characters, ribbon vibrator means actuated by the printing control keys to bring a ribbon field momentarily into operative position upon actuation of each of said printing control keys, a printing ribbon and a print-obliterating ribbon carried by said vibrator means for selective presentation in impressing position, backspace drive means for stepwise moving said mechanisms relative to one another in the backward direction in letter-width increments, a ribbon-field selecting control lever connected to said vibrator means and mounted for movement in opposite directions from an intermediate rest position to select the particular ribbon field which will thereafter be presented at the impression position, means biasing said control lever to return to its rest position after each movement thereof, and connections between said control lever and said backspace drive means for operating the latter upon each movement of said lever in either direction away from said rest position.

2. A typewriter in accordance with claim 1, including intermittent feed means for said respective ribbons, and means connected to said control lever for operation thereby in one of said directions of its movement, for disabling the feed means for said print-obliterating ribbon.

3. A typewriter in accordance with claim 1, including means for regulating the impression force of said printing mechanism, and means connected to said control lever for altering the adjustment of said regulating mechanism.

4. An error correcting typewriter comprising character-printing mechanism including printing control keys, a paper support mechanism, spacing means for stepwise moving said mechanisms relative to one another in a forward direction in response to operation of said keys to accomplish printing of a line of characters, ribbon guide means adjustable to bring a selected ribbon field into impression position, a printing ribbon and a print-obliterating ribbon carried by said guide means for selec-

tive presentation in impressing position, backspace drive means for stepwise moving said mechanisms relative to one another in the backward direction in letter-width increments, a control lever connected to adjust said ribbon guide means, said control lever being mounted for movement in opposite directions from an intermediate rest position to select the particular ribbon field which will thereafter be presented at the impression position, means biasing said control lever to return to its rest position after each movement thereof, and connections between said control lever and said backspace drive means for operating the latter upon each movement of said lever in either direction away from said rest position.

5. A typewriter in accordance with claim 4, including means for adjusting the impact force of said character-printing mechanism, and means connected to said control lever for altering the adjustment of said impact-adjusting means to produce a modified impact force in response to the direction of movement of said control lever.

6. An error correcting typewriter comprising printing control keys, printing mechanism, paper support mechanism, means for moving said mechanisms relative to one another in a forward direction in response to operation of said keys to accomplish printing of a line of characters, ribbon guide means adjustable to bring a selected ribbon into impression position, a printing ribbon and a print-

obliterating ribbon carried by said guide means for selective presentation in impressing position, backspace drive means for stepwise moving said mechanisms relative to one another in the backward direction in letter-width increments, a control lever connected to said ribbon guide means, said control lever being mounted for movement in opposite directions to select the particular ribbon to be presented at the impression position, and connections between said control lever and said backspace drive means for operating the latter upon each movement of said lever in either direction.

References Cited by the Examiner

UNITED STATES PATENTS

759,807	5/04	Brooks	197—33
1,983,482	12/34	Myers	197—33
1,987,276	1/35	Thompson	197—17 X
2,369,315	2/45	Sagner	197—17
2,694,481	11/54	Sharp	197—151
2,757,774	8/56	Letterman	197—17
2,861,669	11/58	Letterman	197—17

FOREIGN PATENTS

528,589	11/40	Great Britain.
---------	-------	----------------

ROBERT E. PULFREY, *Primary Examiner.*