

[54] **MANUAL TYPEWRITER WITH MEANS FOR ERROR CORRECTION**

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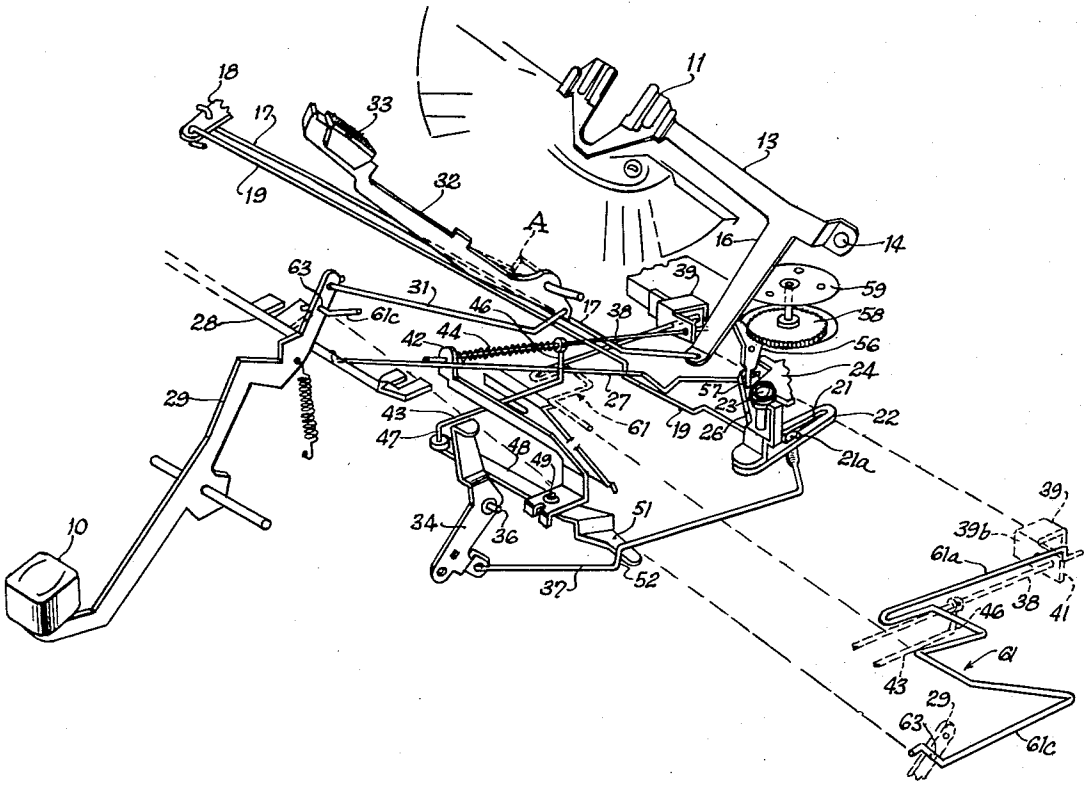
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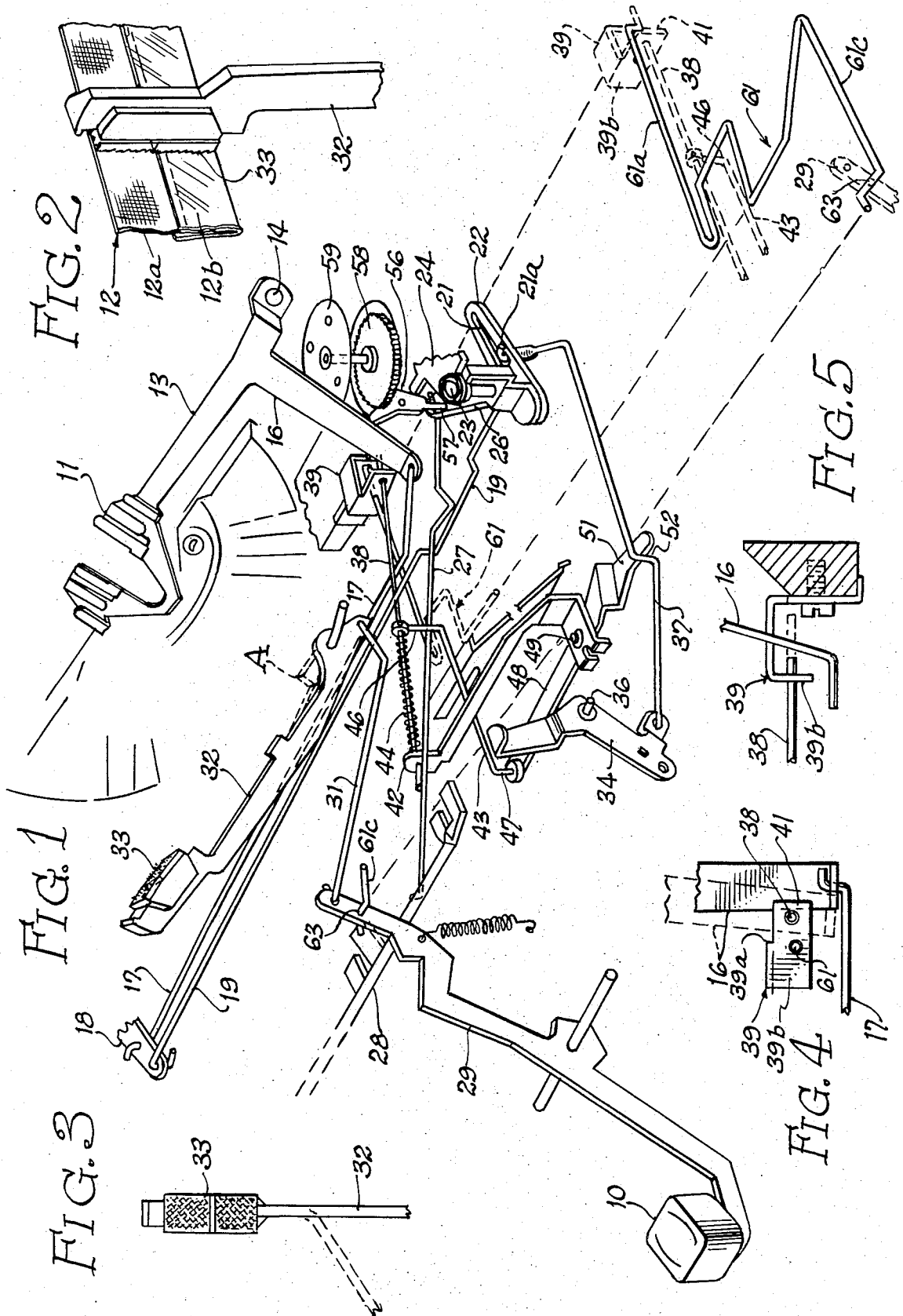
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[57] **ABSTRACT**

An error correcting typewriter having a special manual key for operating a type bar carrying a special type font. The type bar is structurally modified so that when actuated it will not advance the carriage. A link connected to the key is adapted to move an inhibitor rod away from the path of movement of a ribbon vibrator allowing maximum movement of the vibrator. Actuation of the key will not result in movement of the carriage but will result in elevation of the lower ribbon portion carrying the obliterating pigment into registration with the type font so that pigment is deposited over a character imprinted in error.

1 Claim, 5 Drawing Figures





MANUAL TYPEWRITER WITH MEANS FOR ERROR CORRECTION

BACKGROUND OF THE INVENTION

The present invention relates to a manual typewriter embodying error correction features adapted for use with a composite double striped ribbon, one longitudinal half of which is inked to make character impressions on paper in the usual manner and the other half of which carries a pressure transferable opaque adherent pigment which when applied over the error renders it substantially invisible so that a correct character may be imprinted thereon.

SUMMARY OF THE INVENTION

The typewriter of the present invention embodies a special key linked to a type bar carrying a universal obliterating type font and having a unique cutout arranged to clear the escapement bale so as not to actuate the escapement system and effect stepwise movement of the carriage. The special key has connected to it a link which is arranged to engage an inhibitor rod and move the same out of the path of travel of a ribbon vibrator arm thus, permitting the arm to travel a greater distance so as to align the pigment carrying portion of the ribbon with the type font. The return of the special key to at rest position restores the printing and escapement systems to normal operating conditions.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view, partly exploded, showing the cooperative relationship of the various parts of the invention in a typewriter.

FIG. 2 is a fragmentary rear perspective view, on an enlarged scale, of a type bar carrying a universal obliterating type font.

FIG. 3 is a front elevational view of the type bar and obliterating font illustrated in FIG. 2.

FIG. 4 is a front elevational view, on an enlarged scale, of a structural detail, and

FIG. 5 is a side elevational view, on an enlarged scale, of the detail shown in FIG. 4.

BRIEF DESCRIPTION OF A PREFERRED EMBODIMENT

Referring to the drawing, the invention is shown as applied to a well known make of commercial typewriter and only those parts of the machine which contribute directly to the essentials of the present invention have been included in the drawing. The typewriter, not shown, generally is provided with the usual bank of keys manually operable for imprinting characters, a space bar, a platen roller and carriage, conventional carriage spacing mechanism, a back space key for producing letter width stepwise movements of the carriage in a rearward direction, a ribbon field control selector and ribbon carrying spools for the ribbon.

Our invention includes the provision of a special key 10 and type font, the key being preferably located on the right hand side of the bank of keys and operatively connected to mechanism performing particular functions, hereinafter to be described.

Referring to FIG. 1, the typewriter is provided with the usual ribbon vibrator 11 carrying a special ribbon 12, the upper longitudinal one-half of which comprises an inking portion 12a while the lower longitudinal one-half 12b carries a pressure transferable opaque adher-

ent pigment. The vibrator 11 is carried on one end of a crank arm 13 pivoted as at 14 to the frame, with the other arm 16 extending downwardly in depending relation to the arm 13. The lower end of the arm 16 is connected to one end of the link 17, the other end of which is connected to an arm 18 pivoted on the frame. A link 19 is connected at one end to the arm 18, the other end of said link being hooked into an elongated slot 21 provided in the feed arm 22 pivotally supported as at 23 below a bracket 24 mounted on the frame. The feed arm 22 includes an integral lateral arm 26 to the distal end of which is connected a link 27, the other end of said link being connected to a universal bar 28 which is adapted to be engaged by each of the conventional key bars, not shown. Each such key bar is connected by a respective link, not shown, to a type bar, each type bar carrying a type font. Normally, when a key is depressed the conventional type bar, will engage the escapement arch, not shown, so as to actuate the escapement system and effect stepwise movement of the carriage, not shown.

A conventional ribbon field control selector lever 34 is pivoted on the frame as at 36 and has its lower end connected as by link 37 to the end of link 19 which is engaged in the slot 21. It will be apparent that rocking of the lever 34 in a clockwise direction, as viewed in FIG. 1, will shift the hook end 21a of link 19 within the slot 21, substantially to the position illustrated in FIG. 1. Rocking of the field selector lever 34 in a counterclockwise direction will shift the hook end 21a to the opposite end of slot 21. It will be understood that the hook end 21a may be shifted to an intermediate position in slot 21. It also will be apparent that when the hook end 21a is disposed in the slot 21 in the position as illustrated in FIG. 1, in relative close proximity to the pivotal axis 23 of the feed arm 22, and the universal bar 28 is caused to be actuated by the depression of a key, the movement transmitted through links 19 and 17 to the arm 16 of the ribbon vibrator 11 is merely sufficient to shift the ribbon 12 to a position where the inking portion 12a of the ribbon is in registration with the type font. When the hook portion 21a is caused to be moved to the opposite end of the slot 21, remote from the pivotal axis 23, the effective length of arm 22 is substantially increased with the result that when the feed arm 22 is rocked by the actuation of a key the movement imparted to the crank arm 13 is at a maximum and, accordingly, the ribbon 12 is caused to be shifted so as to present the lower or obliterating portion 12b to register with the type font.

The degree of shifting of the ribbon 12 by the vibrator 11 is in part controlled by an inhibitor rod 38 which extends through an opening in a lug 39 mounted on the frame and shaped substantially as shown. As seen clearly in FIGS. 4 and 5, the lug 39 is provided with a lateral extension 41 which is pierced to receive one end of the inhibitor rod 38. The opposite end of the rod is supported by a bracket 42 supported on the frame. Fixed to the rod 38 is a wire member 43, shaped substantially as shown, and circumsposed about rod 38 is a compression spring 44 which is confined between the bracket 42 and the vertical portion 46 of the member 43. The spring 44 normally tends to urge the rod 38 to the position illustrated by the broken lines in FIG. 5 wherein the end portion of rod 38 is disposed directly in the path of travel of the arm 16 thereby limiting the pivotal movement of the crank arm 13. The member 43

is provided with a depending leg 47 which engages in an aperture provided in a horizontal lever 48 pivoted intermediately thereof on the frame, as at 49. The lever 38 includes an extension 51 which is adapted to be engaged by a shoulder portion 52 provided in the link 37. Thus, manual movement of the ribbon field selector lever 34 will control the positioning of the inhibitor rod 38 placing the same either in the retracted position illustrated by the solid lines, or the extended position, illustrated by the broken lines in FIG. 5. It will be apparent that when the rod 38 is in its normal extended position, as illustrated by the broken lines in FIG. 5, the arm 16 is limited in its movement to the left, as viewed in FIG. 4, by contact with the inhibitor rod 38. Accordingly, arm 16 can move only to the position illustrated by the solid lines in FIG. 4, thereby moving the vibrator 11 so that the upper inking portion 12a of the ribbon is positioned to register with the type fonts thereby to imprint characters. When the rod 38 is in retracted position, as illustrated by the solid lines in FIG. 5, the end of the rod is moved out of the path of travel of arm 16. Thus, the arm 16 may pivot in a clockwise direction until it engages against the shoulder 39a of lug 38. This additional movement of the crank arm 13 disposes the lower portion 12b of the ribbon to register with a type font when a key is stuck.

the ribbon 12 is incrementally advanced by means of a pivotally supported pawl 56 provided with a depending finger 57 received in an aperture in the arm 26. The pawl 56 engages with a ratchet wheel 58 on which is fixed a ribbon spool supporting disk 59.

The foregoing generally is of conventional construction and our invention is related to modification of such construction in order to accomplish the desired function and results. In carrying out our invention a conventional type bar operatively connected to a selected key 10 is modified so as to remove the portion illustrated by the broken lines and indicated by the letter A. This portion A in the case of the remaining conventional type bars normally is arranged to engage the escapement arch, not shown, to actuate the escapement system to effect stepwise movement of the carriage. Thus, in this instance when the novel type bar 32 is actuated by depressing key 10, the type bar 32 is caused to rock free from contact with the escapement arch thereby avoiding actuation of the escapement system, with corresponding lack of movement of the carriage. A special link, generally indicated by the numeral 61 and shaped substantially as illustrated by the solid lines in FIG. 1, includes a straight portion 61a, one end of which is received in an aperture provided in the vertical leg 39b of lug 39. The link 61 is provided with an intermediate U-shaped portion 61b, the bight portion of which is adapted to engage against the vertical leg 46 of the member 43. The link 61 includes a portion 61c, the end of which is connected to the key bar 29 as at 63. Thus, with the ribbon field selector lever 34 disposed in normal printing position, when the special key 10 is depressed, so as to rock the key bar 29 in a counter-clockwise direction, as viewed in FIG. 1, the link 61 is drawn to the left so that the bight portion 61b engages the leg 46 and against the force of compression spring 44 draws the inhibitor rod 38 to the left to assume the position substantially as illustrated by the solid lines in FIG. 5. The end portion of rod 38 now is disposed out of the path of travel of arm 16. Accordingly, the arm 16 now may move to its extreme left position, as here-

inbefore described, thereby causing the lower portion of the ribbon 12b to move into position for impact by the obliterating font 33, substantially as illustrated in FIG. 2.

- 5 The type font 33 includes a generally rectangular impinging surface of sufficient area to cover the largest of the characters printed by the typewriter. Preferably, the surface may include a plurality of minute but closely spaced embossings of any suitable shape which
10 when impinged on the lower ribbon portion 12b will efficiently transfer the opaque pigment over an imprinted error character and thereby obliterate the same.

OPERATION

- 15 The operation of the above described embodiment of our invention briefly, is as follows:

Assuming that a character has been imprinted in error, in order to effect a correction, the conventional backspace key, not shown, is depressed thereby to backspace the carriage, not shown, and locate the error character in position to be operated upon by the obliterating font 33. Upon depression of the special key 10 the type bar 32 is caused to accelerate towards the carriage to cause the type font 33 to impinge on the ribbon 12. simultaneously, link 61 draws the end of the inhibitor rod 38 out of the path of travel of the arm 16 so that the crank arm 13 may effect maximum movement and elevate the lower ribbon portion 12b into position so that type font 33 may impinge on the portion 12b and deposit the opaque material carried on the ribbon portion 12b over the error character thereby obliterating the same. It will be noted that the carriage has not moved, since the escapement system has not been actuated. Accordingly, the carriage remains in the same position for the next printing of a correct character according to conventional practice.

It will be apparent that when the key 10 is released the spring 44 causes the inhibitor rod 38 to return to its normal position, as indicated by the broken lines in FIG. 5, wherein the end of the rod is again disposed in the path of travel of the arm 16 thereby limiting the movement of the arm 16 so that the ribbon portion 12a only is caused to be moved to normal printing position.

Various changes coming within the spirit of my invention may suggest themselves to those skilled in the art; hence I do not wish to be limited to the specific embodiment shown and described or uses mentioned, but intend the same to be merely exemplary the scope of my invention being limited only by the appended claims.

We claim:

1. In an error correcting typewriter comprising character printing mechanism including printing control keys operatively connected to type bars, paper support mechanism, spacing means including an escapement arch operatively engageable by said type bars for stepwise moving said paper support mechanism in a forward direction to accomplish printing a line of characters, a ribbon providing a printing field and a print obliterating field, a pivotally mounted ribbon vibrator having a depending arm and actuated by the printing control keys to guide said ribbon to bring a ribbon field momentarily in impressing position, inhibiting means comprising a slidable member disposed in the path of travel of said arm to limit the movement of said ribbon vibrator, back space drive means for stepwise moving said paper support mechanism in a backward direction

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in letter width increments, the improvement which comprises a manually operable key connected to a special type bar carrying a universal obliterating type font, said special type bar being free of any engagement with said escapement arch whereby upon actuation of said manual key the paper support mechanism is not moved, a link operatively connected to said manual key

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for moving said slidable member out of the path of travel of said arm whereby upon actuation of said manual key the ribbon vibrator is caused to elevate the print obliterating field into impressing position to be impinged upon by said type font to obliterate a character imprinted in error.

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