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(54) IMPROVEMENTS IN OR RELATING TO TYPEWRITER RIBBON CARTRIDGES

(71) We, SCM CORPORATION, a corporation of the State of New York, United States of America, of 299 Park Avenue, New York, N.Y. 10017, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates generally to insertable and removable typewriter ribbon cartridges.

The term "cartridge" as used hereinafter is defined to include any form of ribbon holder or container irrespective of configuration and the manner of insertion into the typewriter. The ribbon cartridge of the present invention may include an error correction ribbon disposed therein whereby the correction ribbon is guided from a ribbon supply chamber along an integral ribbon guide arm that extends from the supply chamber to the typewriter print station.

The present invention provide a ribbon cartridge for a typewriter, which typewriter includes means for receiving said cartridge and operational means to perform a typewriter function for causing the alignment of a selected platen impact point relative to the typewriter print point, the cartridge comprising:

actuating means disposed thereon arranged to actuate said typewriter operational means upon insertion of the cartridge to thereby perform the typewriter function.

The term "typewriter function" is defined to include any typewriter operation which provides for the alignment of a selected platen impact point relative to the typewriter print station.

One of the many useful applications of the present invention resides in the provision of an error correction ribbon within the cartridge. The correction of errors in previously known typewriters requires a series of sequential manually manipulative operations so that the carriage of the type-

writer may be backspaced a plurality of times to correct the error. For example, when an operator typed an erroneous character, it first became necessary to manually depress the backspace key, thereby actuating the backspace mechanism to reposition the typewriter carriage to the proper print station for making the correction. After the erroneous typed character is removed by striking over the character through a correction sheet, the backspace key was again manually depressed to actuate the backspace mechanism a second time. The typewriter carriage is repositioned to the proper printing station a second time and then the correct character is typed. The end result is that typing speed is significantly reduced, total typing time is increased and the possibility of compounding the error by inadvertent multiple backspacing is increased.

A preferred embodiment of the present invention is used for error correction and overcomes the obvious disadvantages of the prior art in that the manual manipulation required to actuate the backspace mechanism and reposition the typewriter carriage to the proper print station is accomplished automatically by inserting the ribbon cartridge.

A preferred embodiment of the present invention comprises a ribbon cartridge provided with a correction ribbon and which includes a pair of abutments that project from opposite vertical walls of the ribbon cartridge. One abutment engages a typewriter responsive lever that is coupled to the backspace mechanism while the other abutment engages a typewriter responsive lever that is coupled to the escapement mechanism within the typewriter. The abutments are disposed on the ribbon cartridge walls in such a manner that they abut and actuate the levers of the typewriter as the ribbon cartridge is inserted into the typewriter for error correction. Upon abutment engagement, the levers are urged to pivot down-

ward and the one coupled to the backspace mechanism actuates the backspace mechanism to reposition the typewriter carriage to the proper print station for correction of an erroneously typed character. The other lever actuates an escapement disabling mechanism to prevent movement of the typewriter carriage from the proper print station. Upon removal of the ribbon cartridge the escapement mechanism returns to its operational mode.

Although the preferred embodiment of the invention is directed to one application, namely, backspacing and escapement disabling for error correction, the cartridge could actuate a variety of typewriter function as hereinbefore defined, either singly, in combination or sequentially. Such functions may include carriage return, shift, and margin release.

An existing ribbon cartridge can be provided with a simple and inexpensive means for automatically actuating a typewriter function as hereinbefore defined such as the backspace mechanism and/or an escapement disabling mechanism.

Features and advantages of the invention will become more apparent from the following description of an embodiment thereof, given by way of example, with reference to the accompanying drawings, in which:—

Figure 1 is a perspective view of a portion of a typewriter provided with a cartridge according to the present invention;

Figure 2 is a perspective view of the cartridge shown in Figure 1;

Figure 3 is an enlarged perspective view of a portion of the cartridge shown in Figure 2 illustrating its relation to the backspace actuating mechanism of the typewriter as the cartridge is being inserted into the typewriter;

Figure 4 is a view similar to that shown in Figure 3 with the cartridge at its fully inserted position;

Figure 5 is a rear perspective view of the cartridge shown in Figure 2 showing escapement disabling actuating means;

Figure 6 is an enlarged rear perspective view of a portion of the ribbon cartridge shown in Figure 5 illustrating its relation to the escapement disabling mechanism of the typewriter as the ribbon cartridge is being inserted; and

Figure 7 is a view as shown in Figure 6 with the ribbon cartridge at its fully inserted position.

Although the ribbon cartridge may be illustrated in conjunction with actuating a variety of typewriter functions as hereinbefore defined, the following embodiment has, for the purpose of clarity and ease of description, been confined to a common and readily employed function, namely backspacing and error correction.

Referring now to the drawings, Figures 1 and 2 show a ribbon cartridge 10 having an arm 11 extending therefrom, positioned in a typewriter generally indicated by reference numeral 12. An error correction ribbon 16 is disposed in a housing 18 of the ribbon cartridge 10 and is arranged to be guided along the arm 11 to the typewriter print station 20 and then back to the housing 18. The internal construction of ribbon cartridge 10 is not important to the present invention so it will not be described.

The ribbon cartridge housing 18 comprises a top 22 and a base 24 spaced from top 22 by depending walls 26, 28, 30 and 32.

Disposed at the uppermost portion of wall 26 is an abutment 34 which projects outward from wall 26 to an extent such that it will engage means for actuating the backspace mechanism during ribbon cartridge insertion.

The typewriter 12 is provided with means for actuating its backspace function that may be disposed proximate the opening that receives the ribbon cartridge 10 as shown in Figures 3 and 4. The typewriter backspace actuating mechanism is fully disclosed in our copending Patent Application No. 26194/76 Serial No. 1,556,665 of even date.

The means for actuating the backspace mechanism engagable by the abutment 34 includes a lever 38 that is pivotally and slidably supported about a pivot shaft 40 that is carried by a wall 42 of ribbon cartridge platform 44. Ribbon cartridge platform 44 is fixed within the typewriter 12 preferably in a horizontal plane and is arranged to support and guide the ribbon cartridge 10 during insertion and removal from the typewriter 12.

The ribbon cartridge platform 44 includes a flat base 46 having a pair of integral walls 42 and 43 extending upwards therefrom. Walls 42 and 43 are parallel to and spaced from one another to provide precise guiding for the insertion of ribbon cartridge 10. Walls 42 and 43 include opposed overhanging retaining shelves 52 and 54 which overlie cooperating ledges 56 and 58 of the ribbon cartridge 10 to prevent upward movement of the cartridge when it is inserted into the typewriter 12.

An integral upstanding camming abutment 60 is disposed on a top edge 33 of wall 42. As shown in Figures 1, 3 and 4, the abutment 60 is positioned adjacent the lever 38. In its initial position, the lever 38, as best shown in Figure 3, is biased into abutment with a stop 39 by a spring 41. As the error correction ribbon cartridge 10 is inserted into the typewriter 12, the abutment 34 abuts and urges an upper extension 37 of the lever 38 to rotate counterclockwise as seen from Figure 3. A camming surface 62 of abutment 60 translates this counterclockwise movement to an

axial movement of the lever 38 relative to pivot shaft 40.

Counterclockwise movement of lever 38, as shown in Figures 3 and 4, also pivotally displaces an arm 66 by way of a common connecting rod 64 to linearly displace link 68 to which it is attached. Arm 66 is pivotally and slidably supported on a pivot shaft 67 that is carried on the wall 43 of ribbon cartridge platform 44. The length of the pivot shaft 67 is sufficient to allow arm 66 to be displaced either inwardly or outwardly in relation to wall 43 i.e. axially. As extension 37 moves along abutment camming surface 62, lever 38 is displaced outwardly of wall 42 and axially along pivot 40 thereby compressing spring 35 thereon until lever 38 is displaced beyond the outermost portion of abutment 34, at which time lever 38 is urged by spring 41 to return to its original position in abutment with the stop 39. As lever 38 pivots and is displaced outwardly, the connecting rod 64 is linearly displaced commensurately with the outward displacement of the lever 38, and the arm 66, being fixed to the connecting rod 64 is displaced inwardly a commensurate distance. This movement results in displacing the link 68 which in turn actuates the typewriter backspace function.

Disposed at the uppermost portion of an opposite ribbon cartridge wall 30 is a second projecting abutment 70 best shown in Figures 5, 6 and 7. Abutment 70 projects outward from the wall 30 to an extent such that its path of travel during ribbon cartridge insertion will intersect a typewriter escapement disabling actuating mechanism disposed opposite backspace actuating cartridge abutment 34. The details of construction of the escapement disabling actuating mechanism 72 will not be elaborated on herein as much as it is fully disclosed in the simultaneously filed copending patent application mentioned above.

The means for actuating the escapement disabling mechanism is best shown in Figures 1, 6 and 7, and includes a lever 74 that is pivotally supported about a pivot shaft 76 supported on a wall 43 of the ribbon cartridge platform 44.

When the error correction ribbon cartridge 10 is inserted into the typewriter 12, the abutment 70 abuts a projecting pin 77 of the lever 74 and urges the lever 74 to pivot clockwise about the shaft 76 as shown in Figure 7. Clockwise movement of the lever 74 pulls a link 75 which is connected in a manner so as to disable the typewriter escapement mechanism. The typewriter escapement mechanism will remain disabled while abutment 70 holds lever 74 in its actuated mode, i.e. until ribbon cartridge 30 is removed. Under the biasing action of the disabling mechanism, the lever 74 will then

return to its initial position as shown in Figure 6.

When the error correction ribbon cartridge 10 is removed from the typewriter 12, the backspace actuating mechanism and the escapement disabling mechanism return to their original states. As cartridge 10 is withdrawn and the abutment 34 is removed from contact with the lever 38, the lever 38 is urged against spring 35 to move away from the wall 42 until it is no longer contacted by the abutment 34 whereupon it will spring back towards the wall 42 to its initial position. Due to the stop 39 and the inwardly directed sloped surface of the abutment 34, the lever 38 will not be rotated during removal of the cartridge. As the abutment 70 is removed from contact with pin 77, lever 74 is urged to return to its original position where the escapement mechanism is again operative.

It can be seen from the foregoing description that the abutment 34 on the error correction ribbon cartridge 10 engages a backspace actuating mechanism to automatically backspace the typewriter carriage 14 when the error correction ribbon cartridge 10 is inserted into the typewriter 12. It can also be seen that a second abutment 70 on an opposite wall 30 of the error correction ribbon cartridge 10 engages another actuating mechanism to automatically disable the typewriter escapement mechanism thereby preventing further carriage movement from the error correction station. Therefore, the embodiment eliminates the necessity of multiple manual backspace operations that are required in typewriters not equipped with automatic devices to backspace a carriage and disable an escapement mechanism when an erroneously typed character is to be corrected.

The illustrated embodiment has been shown with a pair of abutments to actuate two related typewriter functions as hereinbefore defined but it is clear that they may equally well be employed individually as being disposed along other surfaces of the cartridge.

WHAT WE CLAIM IS:—

1. A ribbon cartridge for a typewriter, which typewriter includes means for receiving said cartridge and operational means to perform a typewriter function for causing the alignment of a selected platent impact point relative to the typewriter print point, the cartridge comprising:
actuating means disposed thereon arranged to actuate said typewriter operational means upon insertion of the cartridge to thereby perform the typewriter function.
2. A cartridge according to claim 1, wherein said actuating means comprises at least one abutment provided on the cartridge.

axial movement of the lever 38 relative to pivot shaft 40.

Counterclockwise movement of lever 38, as shown in Figures 3 and 4, also pivotally displaces an arm 66 by way of a common connecting rod 64 to linearly displace link 68 to which it is attached. Arm 66 is pivotally and slidably supported on a pivot shaft 67 that is carried on the wall 43 of ribbon cartridge platform 44. The length of the pivot shaft 67 is sufficient to allow arm 66 to be displaced either inwardly or outwardly in relation to wall 43 i.e. axially. As extension 37 moves along abutment camming surface 62, lever 38 is displaced outwardly of wall 42 and axially along pivot 40 thereby compressing spring 35 thereon until lever 38 is displaced beyond the outermost portion of abutment 34, at which time lever 38 is urged by spring 41 to return to its original position in abutment with the stop 39. As lever 38 pivots and is displaced outwardly, the connecting rod 64 is linearly displaced commensurately with the outward displacement of the lever 38, and the arm 66, being fixed to the connecting rod 64 is displaced inwardly a commensurate distance. This movement results in displacing the link 68 which in turn actuates the typewriter backspace function.

Disposed at the uppermost portion of an opposite ribbon cartridge wall 30 is a second projecting abutment 70 best shown in Figures 5, 6 and 7. Abutment 70 projects outward from the wall 30 to an extent such that its path of travel during ribbon cartridge insertion will intersect a typewriter escapement disabling actuating mechanism disposed opposite backspace actuating cartridge abutment 34. The details of construction of the escapement disabling actuating mechanism 72 will not be elaborated on herein as much as it is fully disclosed in the simultaneously filed copending patent application mentioned above.

The means for actuating the escapement disabling mechanism is best shown in Figures 1, 6 and 7, and includes a lever 74 that is pivotally supported about a pivot shaft 76 supported on a wall 43 of the ribbon cartridge platform 44.

When the error correction ribbon cartridge 10 is inserted into the typewriter 12, the abutment 70 abuts a projecting pin 77 of the lever 74 and urges the lever 74 to pivot clockwise about the shaft 76 as shown in Figure 7. Clockwise movement of the lever 74 pulls a link 75 which is connected in a manner so as to disable the typewriter escapement mechanism. The typewriter escapement mechanism will remain disabled while abutment 70 holds lever 74 in its actuated mode, i.e. until ribbon cartridge 30 is removed. Under the biasing action of the disabling mechanism, the lever 74 will then

return to its initial position as shown in Figure 6.

When the error correction ribbon cartridge 10 is removed from the typewriter 12, the backspace actuating mechanism and the escapement disabling mechanism return to their original states. As cartridge 10 is withdrawn and the abutment 34 is removed from contact with the lever 38, the lever 38 is urged against spring 35 to move away from the wall 42 until it is no longer contacted by the abutment 34 whereupon it will spring back towards the wall 42 to its initial position. Due to the stop 39 and the inwardly directed sloped surface of the abutment 34, the lever 38 will not be rotated during removal of the cartridge. As the abutment 70 is removed from contact with pin 77, lever 74 is urged to return to its original position where the escapement mechanism is again operative.

It can be seen from the foregoing description that the abutment 34 on the error correction ribbon cartridge 10 engages a backspace actuating mechanism to automatically backspace the typewriter carriage 14 when the error correction ribbon cartridge 10 is inserted into the typewriter 12. It can also be seen that a second abutment 70 on an opposite wall 30 of the error correction ribbon cartridge 10 engages another actuating mechanism to automatically disable the typewriter escapement mechanism thereby preventing further carriage movement from the error correction station. Therefore, the embodiment eliminates the necessity of multiple manual backspace operations that are required in typewriters not equipped with automatic devices to backspace a carriage and disable an escapement mechanism when an erroneously typed character is to be corrected.

The illustrated embodiment has been shown with a pair of abutments to actuate two related typewriter functions as hereinbefore defined but it is clear that they may equally well be employed individually as being disposed along other surfaces of the cartridge.

WHAT WE CLAIM IS:—

1. A ribbon cartridge for a typewriter, which typewriter includes means for receiving said cartridge and operational means to perform a typewriter function for causing the alignment of a selected platent impact point relative to the typewriter print point, the cartridge comprising:

actuating means disposed thereon arranged to actuate said typewriter operational means upon insertion of the cartridge to thereby perform the typewriter function.

2. A cartridge according to claim 1, wherein said actuating means comprises at least one abutment provided on the cartridge.



3. A cartridge according to claim 2, wherein said abutment projects from the cartridge so that it engages said operational means upon insertion of the ribbon cartridge in the typewriter.

4. A ribbon cartridge for a typewriter having an incrementally traversable carriage controlled by an escapement mechanism, backspacing operational means for backspacing the typewriter carriage, and escapement disabling operational means for disabling the escapement mechanism, the ribbon cartridge comprising means disposed on the ribbon cartridge arranged to actuate the backspacing operational means for actuating the typewriter backspacing means upon insertion of the ribbon cartridge, and means disposed on the ribbon cartridge arranged to actuate the escapement disabling operational means to disable the escapement mechanism upon insertion of the ribbon cartridge.

5. A cartridge according to claim 4, wherein both said actuating means comprises two abutments on the ribbon cartridge.

6. A cartridge according to claim 5,

wherein one of the said abutments projects from the cartridge so that it engages the backspacing operational means for actuating the backspacing mechanism upon insertion of the ribbon cartridge in the typewriter.

7. A cartridge according to claim 6, wherein the other of said abutments projects from the cartridge so that it engages the escapement disabling operational means for disabling the escapement mechanism upon insertion of the ribbon cartridge in the typewriter.

8. A cartridge according to any of claims 4 to 7, wherein both said actuating means are carried on opposite walls of the ribbon cartridge.

9. A ribbon cartridge substantially as hereinbefore described with reference to the accompanying drawings.

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