

PATENT SPECIFICATION

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(54) RIBBON GUIDE FOR TYPEWRITER RIBBON CARTRIDGE

(71) We, SCM CORPORATION, a Corporation of the State of New York, United States of America, of 299 Park Avenue, New York, State of New York, 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:—

10 The present invention relates to apparatus for supplying ribbon from a supply, for use with machines for making a printed record which machines will hereinafter be referred to as typewriters. Such apparatus is removably mounted on a typewriter and will hereinafter be referred to as a ribbon cartridge.

15 The present invention provides a ribbon cartridge including an arm for guiding a ribbon in a direction from a supply position to a utilisation position, and from the utilisation position in a reverse direction to a take-up position, said arm having two edges defined between oppositely facing surfaces and disposed to include a Vee angle between 20 them, said ribbon being adapted to pass over said edges in turn and contacting the oppositely facing surfaces at each edge, whereby the direction of the ribbon is reversed, and comprising a step in one of said surfaces for guiding the ribbon in its movement between 30 said edges.

35 A preferred form of a ribbon cartridge for typewriters assists in the installation of ribbons into such machines and minimizes the soiling of fingers during such process. The cartridge employs a housing for a supply of ribbon and a pivotally mounted ribbon guide carrier arm extending laterally from the housing for guiding the ribbon 40 from the housing to a print point within the typewriter and back to the housing. The carrier arm which is pivotally connectable to the housing is provided with an elongated section having a pair of channels 45 formed therein for guiding the ribbon and a shield plate to assist in said guiding as well as to protect the ribbon from exposure to environmental conditions. Adjacent the

50 elongated section is an aperture for threading the ribbon through the carrier arm and additional guide means which guide the ribbon to an aperture to be positioned adjacent the print point in the typewriter for exposing the ribbon for printing. Following the print point aperture is a V-shaped section for reversing direction of flow of the ribbon. The 55 entrance to the V-shaped section has a step or shoulder extending therearound with channels therein to permit entry of the ribbon. A hollow V-shaped cap is provided to engage the step and shield the ribbon. 60 The cartridge is inserted in the typewriter to a position where the arm is engaged by a lift mechanism in the typewriter. Thus, there is no need for threading of the ribbon 65 nor other manipulations which are time consuming and cause soiling of the fingers. Furthermore, the cartridge is removable by sliding the cartridge from the typewriter thus enabling easy replacement to change 70 the colour or type of ribbon, e.g. carbon ribbon or fabric ribbon.

75 The guide or carrier arm defines a path for the flow of ribbon which offers little resistance to the flow, prevents snagging, and also minimises sagging of the ribbon which could cause the ribbon going to the print point and that coming from it to rub against each other and thus disturb the flow of ribbon as well as reduce its lifespan by removing ink therefrom. In addition, the guide or carrier arm is shielded to protect the 80 ribbon from dirt or moisture and yet still permit easy threading of the ribbon through the carrier arm during manufacture so that the cost of the cartridge is not prohibitive. 85

90 Further features and advantages of the present invention will become apparent from the following description of an embodiment thereof, given by way of example, when taken in conjunction with the accompanying drawings, in which:—

95 Figure 1 is a partial perspective view of a typewriter having a ribbon cartridge in accordance with the present invention;

Figure 2 is a rear perspective view of a

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ribbon guide or carrier arm showing its pivotal connection to the cartridge;

Figure 3 is a front perspective view of the ribbon guide or carrier arm with ribbon shields removed showing how the ribbon is guided along and threaded through the carrier arm; and

Figure 4 is an exploded perspective view of the ribbon guide or carrier arm.

Referring initially to Figure 1, the ribbon guide or carrier arm 10 is shown extending laterally from a typewriter ribbon cartridge 12 which is insertable into the typewriter 14 to a point where a stud 16 on the carrier arm 10 engages a lever 18 of a lift mechanism 20. The carrier arm 10 has an aperture 22 therein which is aligned behind type-bar guide 24 to expose a portion of the ribbon 26 to a typing element. During a typing operation the lift mechanism 20 lifts carrier arm 10 raising ribbon 26 to a point adjacent the print point of the typewriter where the ribbon 26 is struck by a typing element to transfer an inked character to the paper or other record medium.

Referring next to Figures 2-4, the carrier arm 10 is pivotally mounted to the cartridge 12 by stud 28 which rests on fulcrum 30 and biased to a rest position by a spring 32 which has one end retained in an aperture 34 in the fulcrum 30 and its opposite end engaging a hook-like tab 36 on the carrier arm 10. The arm 10 is biased counterclockwise in Figure 3 to a rest position which maintains the carrier arm 10 at the correct orientation to engage lever 18 of the lift mechanism 20 during insertion of the cartridge 12 in the typewriter 14.

The carrier arm 10 has an elongated body 38 having flanges 40 and 42 extending over a portion of the length of the arm. Situated between flanges 40 and 42 and parallel thereto is partition 44 which is shorter than the portions of flanges 40 and 42 directly opposite it. Flanges 40 and 42 and partition 44 thus provide channels 44a and 44b for the flow of ribbon 26. Aperture 46 is provided permitting ribbon 26 to pass to the rear face of carrier arm 10 as shown in Figure 3.

The rear face of carrier arm 10 is provided with flanges 48 and 50 and partition 52; see Figure 2. In addition, a guide and retaining finger 54 is provided behind a window 53. Flanges 48 and 50, partition 52 and guide finger 54 guide the ribbon 26 to and from print point aperture 22.

The end of carrier arm 10 is V-shaped and has a teat-like projection 55 on the end thereof. At the opening to the V-shaped section of the carrier arm 10 is a step or shoulder 56 which extends around the carrier arm 10 and has channels therethrough at 56a and 56b. The channels 56a and 56b

define paths for the ribbon 26 entering and leaving the V-shaped section of the carrier arm.

A first shield in the form of a cover plate 58, see Figure 4, is provided for shielding the ribbon 26 along the carrier arm 10 as well as retaining the ribbon 26 in the channels 44a and 44b. Cover plate 58 has an aperture therein at 60 and partition 44 has a hook-like finger 62 thereon. In addition, a shoulder or abutment 64, Figure 3, is provided on the carrier arm 10 facing the opening of the hook-like finger 62. Thus, the cover plate 58 is secured to the carrier arm 10 by placing it over the hook-like finger 62 to have the latter extend through the aperture 60 and sliding the cover plate to the right until its end falls behind and abuts abutment 64 which prevents its accidental removal.

A second shield, in the form of a hollow V-shaped cap 66, is mounted upon the step or shoulder 56 to permit the entry and departure of the ribbon 26 to and from the V-shaped section of the carrier arm 10 without adding to the friction on the ribbon 26. An aperture 67 is provided in cap 66 to receive teat-like projection 55 to align the cap 66 on the carrier arm 10 and prevent ribbon 26 from snagging or riding over the end of the carrier arm. Finger 54 and cap 66 cooperate to retain the upper portion of ribbon 26 against movement perpendicular to the plane of the carrier arm 10 as well as against movement transverse to the flow of ribbon in order to ensure uniform smudgefree typing.

Since the shields are easily placed on the carrier arm after threading of the ribbon, they do not interfere with the threading operation.

In the preferred embodiment all of the parts of the carrier arm are plastic with the exception of the V-shaped cap 66 which is preferably metal so that it may be pinched onto the end of the carrier arm. In addition, the cover plate 58 may be made transparent if desired to make the ribbon visible whereby indicia such as end of ribbon may be seen on the ribbon.

WHAT WE CLAIM IS:—

1. A ribbon cartridge including an arm for guiding a ribbon in a direction from a supply position to a utilisation position, and from the utilisation position in a reverse direction to a take-up position, said arm having two edges defined between oppositely facing surfaces and disposed to include a Vee angle between them, said ribbon being adapted to pass over said edges in turn and contacting the oppositely facing surfaces at each edge, whereby the direction of the ribbon is reversed, and comprising a step in one of said surfaces for guiding the

ribbon guide or carrier arm showing its pivotal connection to the cartridge;

Figure 3 is a front perspective view of the ribbon guide or carrier arm with ribbon shields removed showing how the ribbon is guided along and threaded through the carrier arm; and

Figure 4 is an exploded perspective view of the ribbon guide or carrier arm.

Referring initially to Figure 1, the ribbon guide or carrier arm 10 is shown extending laterally from a typewriter ribbon cartridge 12 which is insertable into the typewriter 14 to a point where a stud 16 on the carrier arm 10 engages a lever 18 of a lift mechanism 20. The carrier arm 10 has an aperture 22 therein which is aligned behind type-bar guide 24 to expose a portion of the ribbon 26 to a typing element. During a typing operation the lift mechanism 20 lifts carrier arm 10 raising ribbon 26 to a point adjacent the print point of the typewriter where the ribbon 26 is struck by a typing element to transfer an inked character to the paper or other record medium.

Referring next to Figures 2-4, the carrier arm 10 is pivotally mounted to the cartridge 12 by stud 28 which rests on fulcrum 30 and biased to a rest position by a spring 32 which has one end retained in an aperture 34 in the fulcrum 30 and its opposite end engaging a hook-like tab 36 on the carrier arm 10. The arm 10 is biased counterclockwise in Figure 3 to a rest position which maintains the carrier arm 10 at the correct orientation to engage lever 18 of the lift mechanism 20 during insertion of the cartridge 12 in the typewriter 14.

The carrier arm 10 has an elongated body 38 having flanges 40 and 42 extending over a portion of the length of the arm. Situated between flanges 40 and 42 and parallel thereto is partition 44 which is shorter than the portions of flanges 40 and 42 directly opposite it. Flanges 40 and 42 and partition 44 thus provide channels 44a and 44b for the flow of ribbon 26. Aperture 46 is provided permitting ribbon 26 to pass to the rear face of carrier arm 10 as shown in Figure 3.

The rear face of carrier arm 10 is provided with flanges 48 and 50 and partition 52, see Figure 2. In addition, a guide and retaining finger 54 is provided behind a window 53. Flanges 48 and 50, partition 52 and guide finger 54 guide the ribbon 26 to and from print point aperture 22.

The end of carrier arm 10 is V-shaped and has a teat-like projection 55 on the end thereof. At the opening to the V-shaped section of the carrier arm 10 is a step or shoulder 56 which extends around the carrier arm 10 and has channels therethrough at 56a and 56b. The channels 56a and 56b

define paths for the ribbon 26 entering and leaving the V-shaped section of the carrier arm.

A first shield in the form of a cover plate 58, see Figure 4, is provided for shielding the ribbon 26 along the carrier arm 10 as well as retaining the ribbon 26 in the channels 44a and 44b. Cover plate 58 has an aperture therein at 60 and partition 44 has a hook-like finger 62 thereon. In addition, a shoulder or abutment 64, Figure 3, is provided on the carrier arm 10 facing the opening of the hook-like finger 62. Thus, the cover plate 58 is secured to the carrier arm 10 by placing it over the hook-like finger 62 to have the latter extend through the aperture 60 and sliding the cover plate to the right until its end falls behind and abuts abutment 64 which prevents its accidental removal.

A second shield, in the form of a hollow V-shaped cap 66, is mounted upon the step or shoulder 56 to permit the entry and departure of the ribbon 26 to and from the V-shaped section of the carrier arm 10 without adding to the friction on the ribbon 26. An aperture 67 is provided in cap 66 to receive teat-like projection 55 to align the cap 66 on the carrier arm 10 and prevent ribbon 26 from snagging or riding over the end of the carrier arm. Finger 54 and cap 66 cooperate to retain the upper portion of ribbon 26 against movement perpendicular to the plane of the carrier arm 10 as well as against movement transverse to the flow of ribbon in order to ensure uniform smudgefree typing.

Since the shields are easily placed on the carrier arm after threading of the ribbon, they do not interfere with the threading operation.

In the preferred embodiment all of the parts of the carrier arm are plastic with the exception of the V-shaped cap 66 which is preferably metal so that it may be pinched onto the end of the carrier arm. In addition, the cover plate 58 may be made transparent if desired to make the ribbon visible whereby indicia such as end of ribbon may be seen on the ribbon.

WHAT WE CLAIM IS:—

1. A ribbon cartridge including an arm for guiding a ribbon in a direction from a supply position to a utilisation position, and from the utilisation position in a reverse direction to a take-up position, said arm having two edges defined between oppositely facing surfaces and disposed to include a Vee angle between them, said ribbon being adapted to pass over said edges in turn and contacting the oppositely facing surfaces at each edge, whereby the direction of the ribbon is reversed, and comprising a step in one of said surfaces for guiding the



- ribbon in its movement between said edges.
2. A cartridge according to claim 1, wherein both said surfaces include a step, the step on the other of said surfaces having a groove therethrough for guiding ribbon to and from said edges.
3. A cartridge according to claim 2, wherein said groove is provided with a partition to form two substantially parallel channels, one for guiding ribbon to one of said edges and the other for guiding ribbon from the other of said edges.
4. A cartridge according to claim 1, 2 or 3 further comprising a hollow flattened cone-shaped cap mounted on said step to provide a clearance between said edges and said cap for movement of the ribbon.
5. A cartridge according to claim 4, wherein said edges are set at a point and there is provided a projection on said point, an aperture in the point of the flattened cone-shaped cap being adapted to receive said projection.
6. A cartridge according to any one of claims 2 to 5, wherein a further groove is provided in a portion of the arm intermediate its ends on the opposite surface of said arm from said first mentioned groove but in alignment therewith, an aperture through the arm providing a communication between said grooves.
7. A cartridge according to claim 6, wherein a partition is provided in said further groove for dividing said groove into two substantially parallel channels aligned with the channels in the first-mentioned groove.
8. A cartridge according to claim 7, wherein a shield is attached to said intermediate portion of said arm by the latching engagement of an aperture in the shield and a hook-shaped projection on the portion in said further groove.
9. A cartridge according to claim 8, wherein said shield is composed of a transparent material to permit viewing of the tape.
10. A ribbon cartridge as claimed in claim 1 substantially as hereinbefore described with reference to the accompanying drawings.
11. A typewriter having a ribbon cartridge as claimed in any preceding claim.
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