

[54] **RIBBON GUIDE FOR TYPEWRITER  
RIBBON CARTRIDGE**

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[51] Int. Cl. .... **B41j 33/14**

[58] Field of Search ..... **197/151, 153 R, 153 A,  
197/157, 158, 159, 170, 162, 168; 101/336**

[56] **References Cited**

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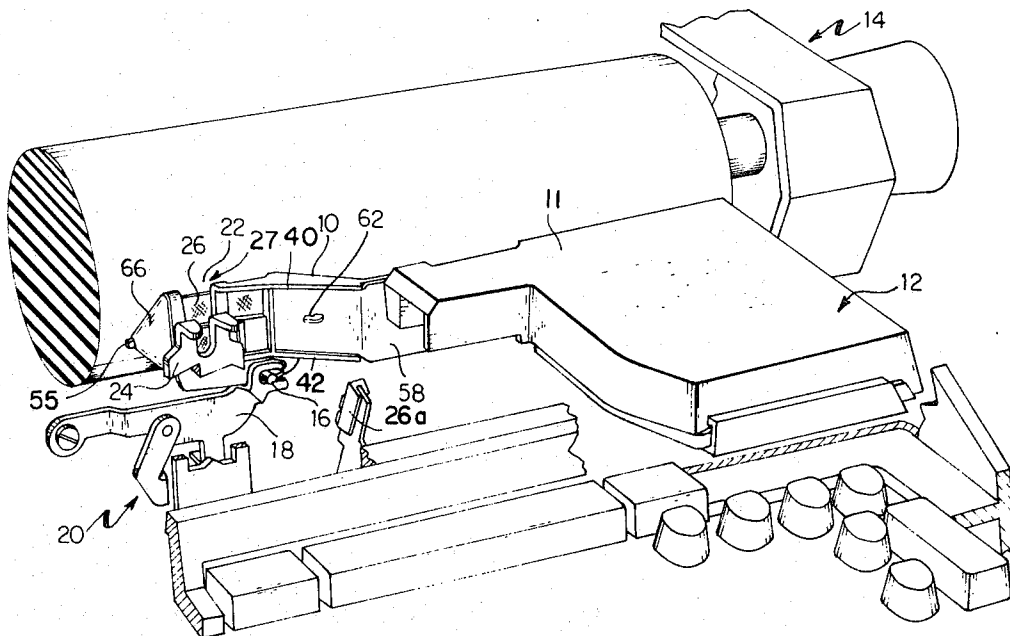
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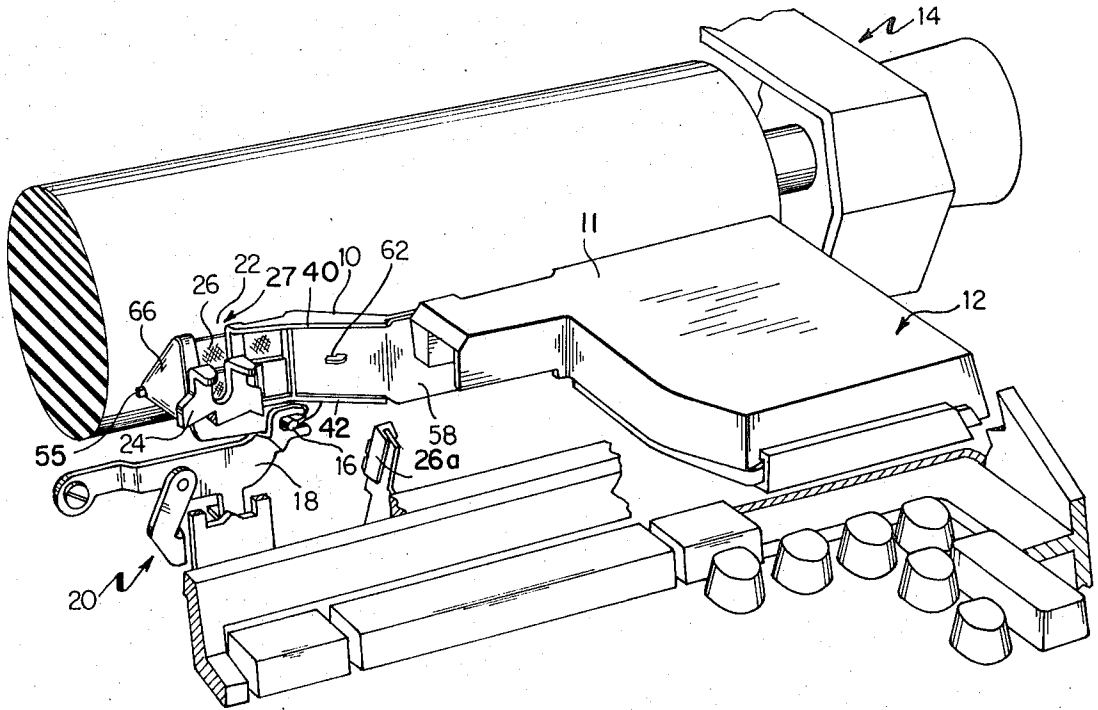
*Primary Examiner*—Ernest T. Wright, Jr.  
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[57] **ABSTRACT**

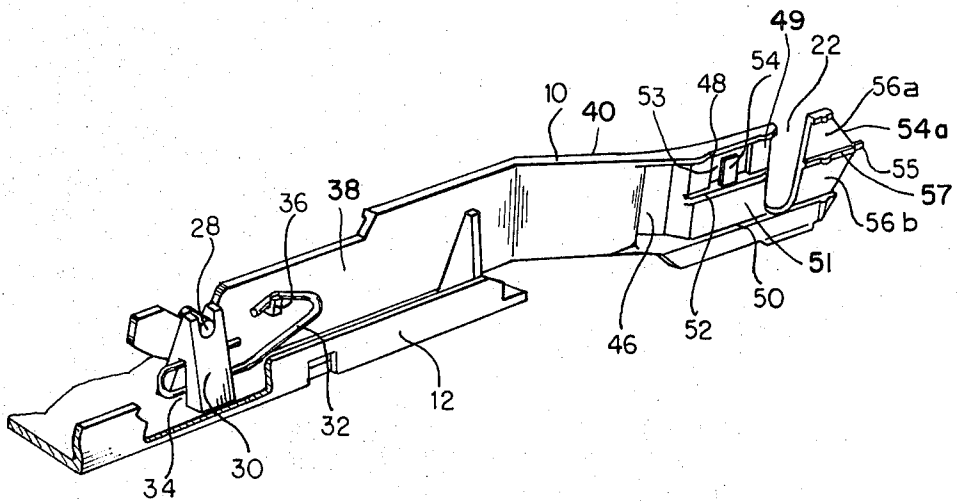
A ribbon guide or carrier arm for a typewriter ribbon cartridge is disclosed. The carrier arm which is pivotally connectable to the cartridge housing to laterally extend therefrom, has means for guiding a ribbon from the housing to a print point and back to the housing. An aperture is provided adjacent the end of the arm for exposing a portion of the ribbon to a type element at the print point. A retaining finger is provided adjacent the aperture to retain the ribbon for uniform smudge free typing. A cap on the end of the arm cooperates with the retaining finger in retaining the ribbon.

**11 Claims, 4 Drawing Figures**



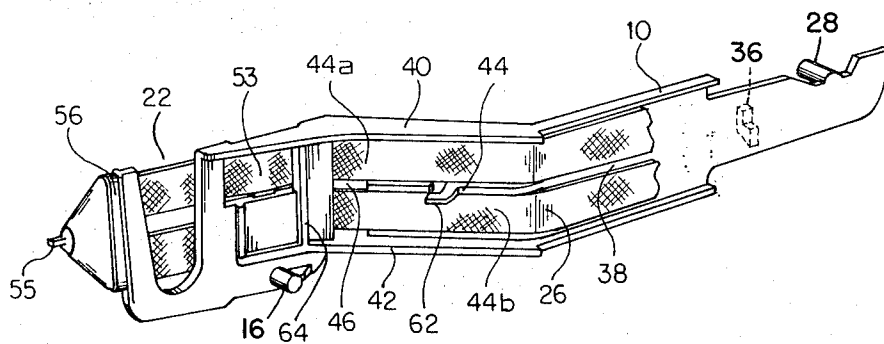


**FIG 1**

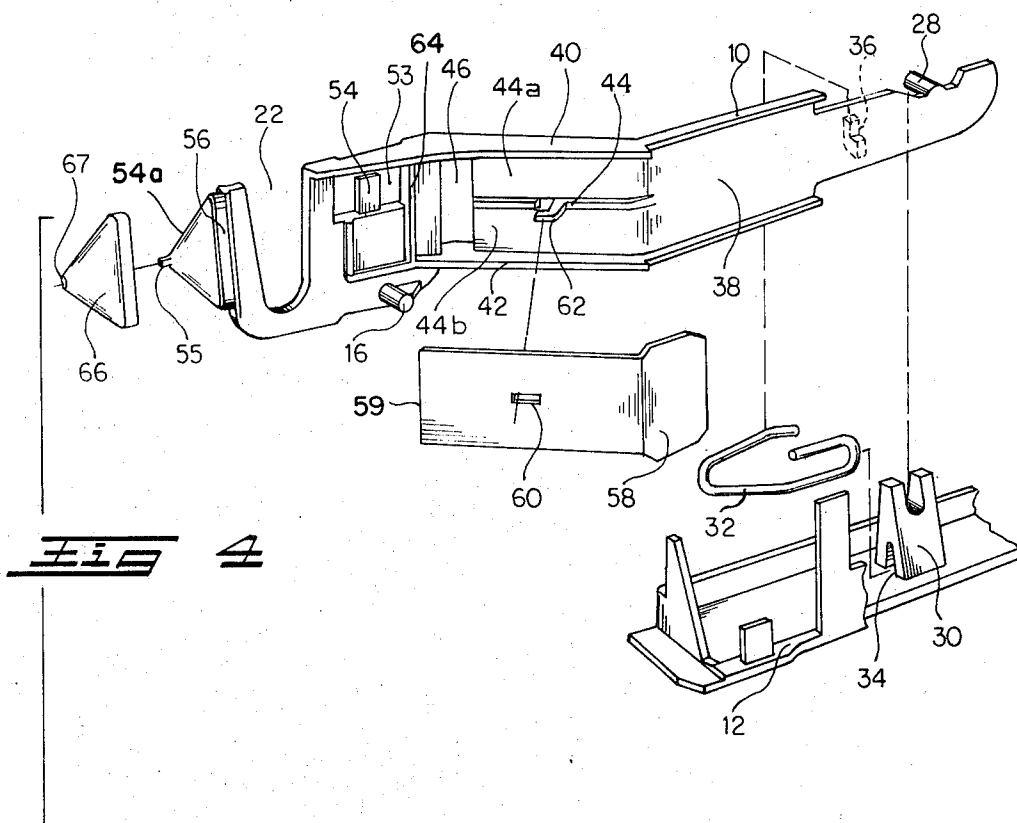


**FIG 2**

SHEET 2 OF 2



**FIG 3**



## RIBBON GUIDE FOR TYPEWRITER RIBBON CARTRIDGE

### BACKGROUND OF THE INVENTION

The present invention relates to ribbon guide or carrier arms for typewriter ribbon cartridges of the type having a housing and a carrier arm laterally extending therefrom to guide a ribbon from the housing to a print point in the typewriter and thereafter return the ribbon to the housing. More specifically, the present invention relates to carrier arms for use in ribbon cartridges of the type disclosed in U.S. Pat. No. 3,643,777 entitled TYPEWRITER RIBBON CARTRIDGE and U.S. Pat. No. 3,643,779 entitled RIBBON MECHANISM FOR CARTRIDGE SUPPORTED RIBBONS both granted Feb. 22, 1972 and U.S. Pat. application Ser. No. 150,946 filed June 9, 1971 entitled TYPEWRITER RIBBON CARTRIDGE all assigned to the assignee of the instant application.

Ribbon cartridges and other devices for typewriters or like printing machines have been provided to assist in the installation of ribbons into such machines and to minimize the soiling of fingers during such process. In addition, such cartridges and devices have been found helpful in increasing the lifespan of the ribbons and the uniformity of printing by shielding the ribbon from exposure to environmental elements. In this connection, a recent advance in the art of typewriter ribbon cartridges has been the development of typewriter ribbon cartridges of the type disclosed in the above referred to patent applications assigned to the present assignee. These cartridges employ a housing for a supply of ribbon and a ribbon guide carrier arm laterally extending from the housing for guiding the ribbon from the housing to a print point within the typewriter and back to the housing. These cartridges are insertable 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 nor other manipulations which are time consuming and cause soiling of the fingers. Furthermore, the cartridges are removable by sliding the cartridge from the typewriter thus enabling easy replacement or variation in color or type of ribbon, e.g. carbon ribbon or fabric ribbon.

In cartridges of the above type, the guide or carrier arm must define a path for the flow of ribbon which offers little resistance to the flow and which insures against snagging. The guide must also minimize sagging as well as transverse bulging of the ribbon which could cause the ribbon going to the print point and that coming from it to rub against each other or parts of the typewriter or record receiving medium and thus disturb the flow of ribbon and cause smudging or unreliability.

It is therefore an object of the instant invention to achieve a ribbon guide or carrier arm of the type laterally extending from a typewriter ribbon cartridge wherein the carrier arm provides means for guiding the ribbon with minimum possibility of snagging, sagging or bulging.

### SUMMARY OF THE INVENTION

The present invention consists of a ribbon guide or carrier arm for a typewriter ribbon cartridge of the type having a housing for a supply of ribbon and a ribbon guide or carrier arm laterally extending therefrom to

guide the ribbon from the housing to the print point and back to the housing. The carrier arm which is pivotally connectable to the housing is provided with an elongated section having shielded channels formed therein for guiding the ribbon. Adjacent the elongated section is an aperture for threading the ribbon through the carrier arm and finger retaining means preventing the ribbon from sagging and bulging in the vicinity of a second subsequent 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 entrance to the V-shaped section has channel means to permit entry of the ribbon and a hollow V-shaped cap is provided which assists in preventing said sagging and bulging.

### BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a partial perspective view of a typewriter having a cartridge thereon employing the ribbon guide or carrier arm of the instant invention;

FIG. 2 is a rear perspective view of the ribbon guide or carrier arm showing its pivotal connection to the cartridge;

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

FIG. 4 is an exploded perspective view of the ribbon guide or carrier arm of the instant invention.

### DETAILED DESCRIPTION OF THE INVENTION

Having generally described the instant invention a more detailed description will now be given of a preferred embodiment thereof with specific reference to FIGS. 1-4.

Referring initially to FIG. 1, the ribbon guide or carrier arm 10 is shown laterally extending from a housing 11 of a typewriter ribbon cartridge 12 of the type described in the above referred to patent applications assigned to the present assignee. The cartridge 12 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 a window or aperture 22 therein which is aligned behind typebar guide 24 to expose a portion of the ribbon 26 to a typing element 26a. During a typing operation the lift mechanism 20 lifts carrier arm 10 raising ribbon 26 to a point indicated generally at 27 adjacent the print point of the typewriter 14 where the ribbon 26 is struck by a typing element 26a to transfer an inked character to the paper or other record medium.

Referring next to FIGS. 2-4, the carrier arm 10 is pivotally mounted on the cartridge 12 by a stud 28 which rests on fulcrum 30. A spring 32 has one end thereof extending through aperture 34 in the fulcrum 30 to remain secure to the cartridge 12 and its opposite end engages the hook-like tab 36 on the carrier arm 10 to retain the carrier arm 10 in position biased counterclockwise in the view of FIG. 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 therealong. Situated between flanges 40 and 42 parallel thereto is partition 44. Partition 44 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 side of carrier arm 10. The rear side of carrier arm 10 is provided with flanges 48 and 50 and partition 52 between these flanges 48 and 50 to form proximal channels 49 and 51. In addition, retaining finger 54 is provided integral with partition 52 having a thickness partially extending into a recess or window 53. Flanges 48 and 50, partition 52 and retaining finger 54 guide the ribbon 26 to and from print point aperture 22.

The end of carrier arm 10 has a V-shaped end or section 54a and has a teat-like projection 55 on the vertex thereof. At the mouth of the V-shaped section 54a of the carrier arm 10 is a flange, step, or shoulder 56 which extends around the carrier arm 10 and has distal channels therethrough at 56a and 56b separated by a partition 57. The channels 56a and 56b define a path for the ribbon 26 which enters the V-shaped section 54a of the carrier arm 10, goes around the legs of the V-shaped section 54a and leaves the V-shaped section 54a.

A first shield in the form of a cover plate 58 (see FIG. 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 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 58 to the right until its end 59 falls behind and abuts abutment 64 which prevents its accidental removal.

A second shield is provided in the form of a hollow V-shaped cap 66 which 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 54a 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 10.

Finger 54 and cap 66 cooperate to retain the upper portion of ribbon 26 adjacent the plane of the carrier arm 10 against movement transverse or perpendicular to that plane as well as against movement transverse to the flow of ribbon 26. Thus, the ribbon 26 is prevented from sagging or bulging in the vicinity of the print point where such occurrence would cause smudging as well as undesirable rubbing of the ribbon 26 against the typewriter 14 which could interfere with the line indicator.

In the preferred embodiment of the instant invention all of the parts of the carrier arm 10 are plastic with the exception of the V-shaped cap 66 which is preferably metal so that it may be pinched onto the end 54a of the carrier arm 10. In addition, the cover plate 58 may be made transparent if desired to make the ribbon 26 visible whereby indicia such as indicating of the end of the ribbon 26 may be seen on the ribbon 26. While the instant invention has been described with respect to a preferred embodiment thereof, many modifications thereof will now become apparent to those of ordinary

skill in the art. Thus, it is desired that the scope of the invention not be limited by the foregoing illustrative description but rather by the appended claims.

I claim:

1. An improved cartridge for a ribbon for a typewriter having at least one typing element, the cartridge having a housing and an arm for guiding a loop of the ribbon having upper and lower limbs from the housing to the end of the arm, the arm having a first window for exposing the upper limb of ribbon to the typing element, wherein the improvement comprises the arm having a recess in a rear surface of said arm near the housing side of the first window and a finger projecting upward from the lower portion of the recess and positioned at least partially in the recess to guide the upper limb of ribbon between the finger and the recess so that the upper limb of ribbon will be taut across the first window even during and immediately after impacts of the typing element.

2. The cartridge of claim 1 in which the finger is formed integral with the arm from a plastic.

3. The cartridge of claim 1 in which the recess is a second window.

4. The cartridge of claim 1 in which the arm has a first proximal channel at least as wide as the width of the ribbon in said rear surface in communication with the housing side of the first window, the recess is in a portion of the first proximal channel and substantially spans the first proximal channel, the finger projects upward from the lower portion of the first proximal channel, and the upper portion of the first proximal channel overhangs at least a portion of the top of the finger so that the upper limb of ribbon will be trapped in the first proximal channel between the finger and the recess.

5. The cartridge of claim 4 in which the arm has a V-shaped end with a first distal channel at least as wide as the width of the ribbon in said rear surface in communication with the V-shaped end side of the first window and substantially in line with the first proximal channel to help support the upper limb of ribbon across the first window.

6. The cartridge of claim 5 in which the arm has a hollow V-shaped cap on said V-shaped end to trap the upper limb of ribbon in the first distal channel.

7. The cartridge of claim 4 in which the arm has a second proximal channel at least as wide as the width of the ribbon in said rear surface in communication with the housing side of the first window below the first proximal channel to guide the lower limb of ribbon.

8. The cartridge of claim 7 in which the arm has a V-shaped end with first and second distal channels each at least as wide as the width of the ribbon in said rear surface in communication with the V-shaped end side of the first window and substantially in line with the first and second proximal channels respectively to help support the upper limb of ribbon across the first window and to guide the lower limb of ribbon.

9. The cartridge of claim 8 in which the arm has a hollow V-shaped cap on said V-shaped end to trap the upper and lower limbs of ribbon in the first and second distal channels respectively.

10. The cartridge of claim 9 in which, except across the first and second distal channels, the V-shaped end of the arm has a flange around the mouth of the V to guide the ribbon across the front face of the V-shaped end and to provide a mounting surface for the hollow V-shaped cap.

11. The cartridge of claim 10 in which the V-shaped end of the arm has a projection on the point of the V and the hollow V-shaped cap has an aperture in the point of the V for the projection to help position the cap on the end of the arm and to prevent the ribbon from riding over the end of the arm.

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