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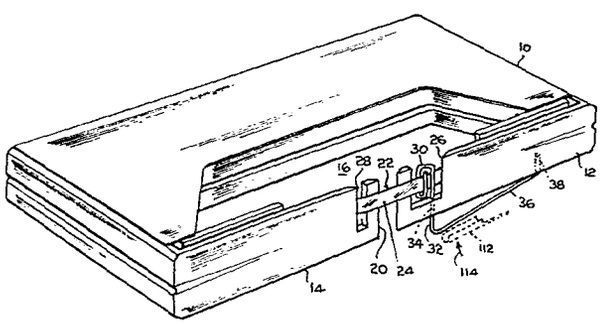
(54) Ribbon cassette.

(57) A ribbon cassette for use with a printer or typewriter for housing an inked or carbon ribbon or the like in which a ribbon guide, normally mounted on the typewriter or printer, is formed as an integral but movable part of the cassette with the ribbon permanently threaded therethrough.

In a preferred embodiment the ribbon guide comprises a loop (30) at the end of the wire arm (36, 32), the remote end of which is embedded at (38) in the cassette.

Another aspect of the invention concerns the provision of a daisy wheel petal guide (22) between opposed ends (20 and 18) of two arms (12 and 14) of the cassette which in part define a ribbon path with the ribbon stretched across the gap.

The invention also includes a typewriter which is adapted to receive a cassette having the above characteristics and which includes an actuator 112 in the typewriter for engaging the arm 36 to move the ribbon guide as required.



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Title: Improvements in and relating to typewriters

DESCRIPTION

Field of invention

This invention concerns typewriters and in particular, cartridges containing inked ribbons or so-called carbon ribbons for use in typewriters.

Background to the invention

It is known to encase ribbons of the type referred to in flat cassettes similar to the type of cassette in which a magnetic recording tape is encased. This enables the user to load and unload the ribbon with minimal handling of the ribbon.

Although the bulk of the ribbon can be contained in the cassette all the time, it has hitherto been necessary to pull out a part of the ribbon to allow it to be inserted through a ribbon guide between the platen and the typing element such as a rotary spherical typing element or a so-called daisy wheel typing element.

It is an object of the present invention to provide a cassette for a ribbon of the type referred to, which permits loading and unloading without handling of the ribbon.

Summary of the invention

According to one aspect of the present invention there is provided a cassette containing an inked or carbon ribbon or the like for use in a typewriter or printer which includes an integral and movable ribbon guide through which the ribbon is permanently threaded and which is movable transversely relative to the ribbon path length to produce lateral displacement of the ribbon so that in use different regions across the width of the ribbon can be aligned with a typing or printing element.

Preferably the integral ribbon guide comprises a frame slidable in a slot guide in the cassette housing wall.

Alternatively, the guide, a ring at the end of a movable arm, the other end of which is anchored to the cassette.

Preferably the arm is resiliently displaceable relative to its point of anchorage.

In a preferred embodiment, the ribbon guide is a loop formed in the end of a spring steel wire, remote from a point at which the wire is anchored to the cassette.

The invention also lies in a typewriter or printer when fitted with a ribbon cassette of the type described, which typewriter or printer includes an actuator which is adapted to move the ribbon guide in a direction transverse to the length direction of the ribbon, to align different regions of the ribbon with the typing element of the typewriter or printer.

According to another aspect of the present invention, the cassette for housing an inked or carbon ribbon or the like, for use in a typewriter or printer, includes two arms which at least in part define a ribbon path between ribbon exits, a cutaway region to the rear of the arms to accommodate a daisy wheel printing element and a gap in the two arms forming a daisy wheel petal guide.

This second aspect of the invention may be combined to advantage with an integral movable ribbon guide associated with the

cassette and located at one point along the ribbon path, which guide is movable in a direction transverse to the ribbon path for presenting different regions of a ribbon to a daisy wheel petal.

Typically, the movable ribbon guide is located to one side of the gap forming the daisy wheel petal guide.

The invention therefore also lies in a daisy wheel typewriter or printer when fitted with a ribbon cassette of the type described which includes a daisy wheel printing element which protrudes through a cutaway region in the cassette to the rear of a ribbon path defined in part by two arms protruding from the cassette, and actuator means for advancing selected petals of the daisy wheel in turn towards the rear of the ribbon, to produce in use an impression of the petal printing element, wherein an advancing petal is aligned between a gap in the two arms constituting a petal guide and is thereby guided into its printing position.

The invention thus allows a ribbon cassette to the inserted into a typewriter or printer, or after use to be replaced, without any need to handle the ribbon or insert the ribbon into a ribbon guide or around members forming a petal guide.

A further advantage of the invention is that since the ribbon guide is an integral part of the cassette and the only free section of the ribbon is that required to be impacted by the typing element, such as a daisy wheel petal, so the ribbon can be more fully protected within the cassette and there is less chance of the free section of the ribbon becoming accidentally damaged or hooked up on protruding components during loading or the like.

The invention is thus a distinct advantage over previous arrangements in which ribbon guides and petal guides have been mounted separately from a cassette and it has been necessary to thread a loop of ribbon from the cassette through such guides before the typewriter or printer could be used.

By using a spring steel or like arm for the ribbon guide support, and by moving the arm against the resilience of the spring steel forming the arm, so return movement in the opposite direction is simply effected by the restoring force within the spring arm.

Detailed description of drawing

In the drawing a ribbon cassette is shown as comprising a generally flat, slim housing 10 of conventional form within which wired-on and wired-off reels (not shown) are housed for the ribbon. The latter extends from one reel to the other via guides in the housing in two extension arms 12 and 14 which extend across the cutaway region 16 and almost meet at the centre where the two ends 18 and 20 define a gap 22.

The opposed ends 18, 20 are chamfered and by careful choice of the gap size and chamfer angle, so the two ends 18 and 20 can serve as a petal guide for the petals of a daisy wheel (not shown) over which the cassette fits when located in a typewriter.

The only exposed part of the ribbon is that shown at 24 and during assembly of the cassette the ribbon is threaded across from one arm 12 to the other 14, externally of the ends 18 and 20. To this end slots 26 and 28 are formed in the arms 12 and 14 just in advance of the ends 18 and 20, so that the latter are in the form of upstanding fingers, as shown.

The slot 26 is made larger than the slot 28 to allow a loop of wire 30 to be located therein. The loop is formed at the end of a bent wire element a first secion 32 of which passes through a guide bore 34 in the arm 12.

A second section 36 of the wire element extends generally at right angles to the first section 32 and a third section 38 bent at right angles to the second section is located in the underside of the cassette 12.

The wire element 32, 36 and 38 constitutes a movable support for the loop 30 which is displaceable upwardly in response to an upward bending movement of the section 36. Movement in the reverse direction is effected by a reverse movement of the section 36.

The invention will now be described by way of example with reference to the accompanying drawings in which

Figure 1 is a perspective view of a ribbon cassette embodying both aspects of the invention, and

Figure 2 is a perspective view of a typewriter showing the cassette in position.

The internal end of the section 38 may be held captive in a cavity (not shown) so that upward or downward translatory motion of the section 36 produces sliding of the sections 32 and 38 in the cavity guide bore 34. In this event, the element 32, 36, 38 is formed from relatively rigid non-springy material.

Alternatively, at least the section 36 may be formed from a springy material (such as spring steel) and the end 38 may be anchored in the cassette, and movement of the loop 30 is obtained by applying a force to push the section 36 upwardly against the spring bias of the material and reverse movement is obtained by removing the upward pushing force and allowing the springiness of the material to return to its undeflected position.

It will be seen that the cassette therefore includes

a) a ribbon guide in the form of the loop 30 and the slots 26 and 28;
b) a movable ribbon lifting arm 36, 32, and
c) a daisy wheel petal guide, formed by the chamfered opposed ends 18, 20 of the two arms 12 and 14.

Additionally it will be seen that the section of ribbon which extends between the reels (not shown) is completely housed and protected by the cassette arms 12 and 14 except over the small distance between the slots 26 and 28, and there is no need for the ribbon to be handled during loading or unloading.

The invention is of particular use in the field of toy typewriters where it is obviously desirable that the child is not required to handle the delicate and carbon-loaded ribbon.

The cassette shown in the drawing may be modified for use with a rotary typing element by enlarging the gap between the ends 18, 20, and/or by removing the the upstanding fingers at the ends of the arms 12, 14.

If additional guidance for the ribbon is required, the slot 28 may be enlarged and a second loop (not shown) similar to loop 30 may be located in the enlarged slot 28, the second loop likewise being located at the upper end of a second bent wire element or the like.

As an alternative to the use of reels, an endless loop of ribbon may be employed.

Figure 2 shows a typewriter in which a cassette of the type shown in Figure 1 is adapted to be fitted. The typewriter comprises a housing generally designated 100, a keyboard generally designated 102 and a raised platform 104 which itself is cut away to receive a cassette of the type shown in Figure 1 generally designated 10.

The latter includes two arms 12 and 14 which define the ribbon path and the arms bound a generally cutaway region of the cassette into which a daisy wheel 106 and associated actuator 108 can protrude.

In order to hide and protect the daisy wheel drive and actuator, a coverplate 110 is fitted over the latter and is shaped so as to just occupy the major part of the cutaway region of the cassette.

It will be seen that the arms 12 and 14 protrude beyond the petals of the daisy wheel 106 and the aperture or gap 22 between the opposed ends of the two arms 12 and 14 defines the petal guide through which the individual petal elements are moved by the actuator 108 during a printing operation.

Although not shown, within the typewriter there is provided an actuator (shown in Figure 1 at 112) which is movable in a direction shown by arrow 114 to engage the arm 36 and raise the ribbon guide 30. Movement of the ribbon guide in the opposite downward direction is achieved by releasing the actuator 112 and allowing the ribbon guide to return to its normal position under the natural resilience of the material forming the arm 36.

Although the invention has been shown in relation to a typewriter, it will be evident that the cassette 10 may be fitted into a daisy wheel printer of the type commonly associated with computers and word processing systems and the like.

Claims

1. A cassette containing an inked or carbon ribbon or the like for use with a typewriter or printer, which cassette includes an integral and movable ribbon guide through which the ribbon is permanently threaded and which is movable transversely relative to the ribbon path length to produce lateral displacement of the ribbon so that in use different regions across the width of the ribbon can be aligned with a typing or printing element.

2. A ribbon cassette as claimed in claim 1, wherein the integral ribbon guide comprises a frame slidable in a slot guide in the cassette housing wall.

3. A ribbon cassette as claimed in claim 1 wherein the guide comprises a ring at one end of a movable arm, the other end of which is anchored to the cassette.

4. A ribbon cassette as claimed in claim 3 wherein the arm is resiliently displaceable relative to its point of anchorage.

5. A ribbon cassette as claimed in claim 3 wherein the ring is a loop formed in the end of a spring steel wire, remote from a point at which the wire is anchored to the cassette.

6. A typewriter or printer when fitted with a ribbon cassette as claimed in any of the preceding claims, which includes an actuator which is adapted to move the ribbon guide in a direction transverse to the length direction of the ribbon to align different regions of the ribbon with the typing element of the typewriter or printer.

7. A cassette for housing an inked or carbon ribbon or the like, for use in a typewriter or printer, which includes two arms which at least in part define a ribbon path between ribbon exits, a cutaway region to the rear of the arms to accommodate a daisy wheel printing element or the like and a gap in the two arms forming daisy wheel petal guide.

8. A ribbon cassette as claimed in claim 7 which includes an integral movable ribbon guide at one point along the ribbon path, which guide is movable in a direction transverse to the ribbon path for presenting different regions of a ribbon to a daisy wheel petal.

9. A ribbon cassette as claimed in claim 8 in which the ribbon guide is located to one side of the gap forming the daisy wheel petal guide.

10. A daisy wheel typewriter or printer when fitted with a ribbon cassette as claimed in any of the preceding claims 7 to 9, which includes a daisy wheel printing element which protrudes through the cutaway region in the cassette to the rear of the ribbon path defined in part by the two arms protruding from the cassette and actuator means for advancing selected petals of the daisy wheel in turn towards the rear of the ribbon to produce in use an impression of the petal printing element. wherein an advancing petal is aligned between the gap in the two arms and is guided thereby into its printing position.

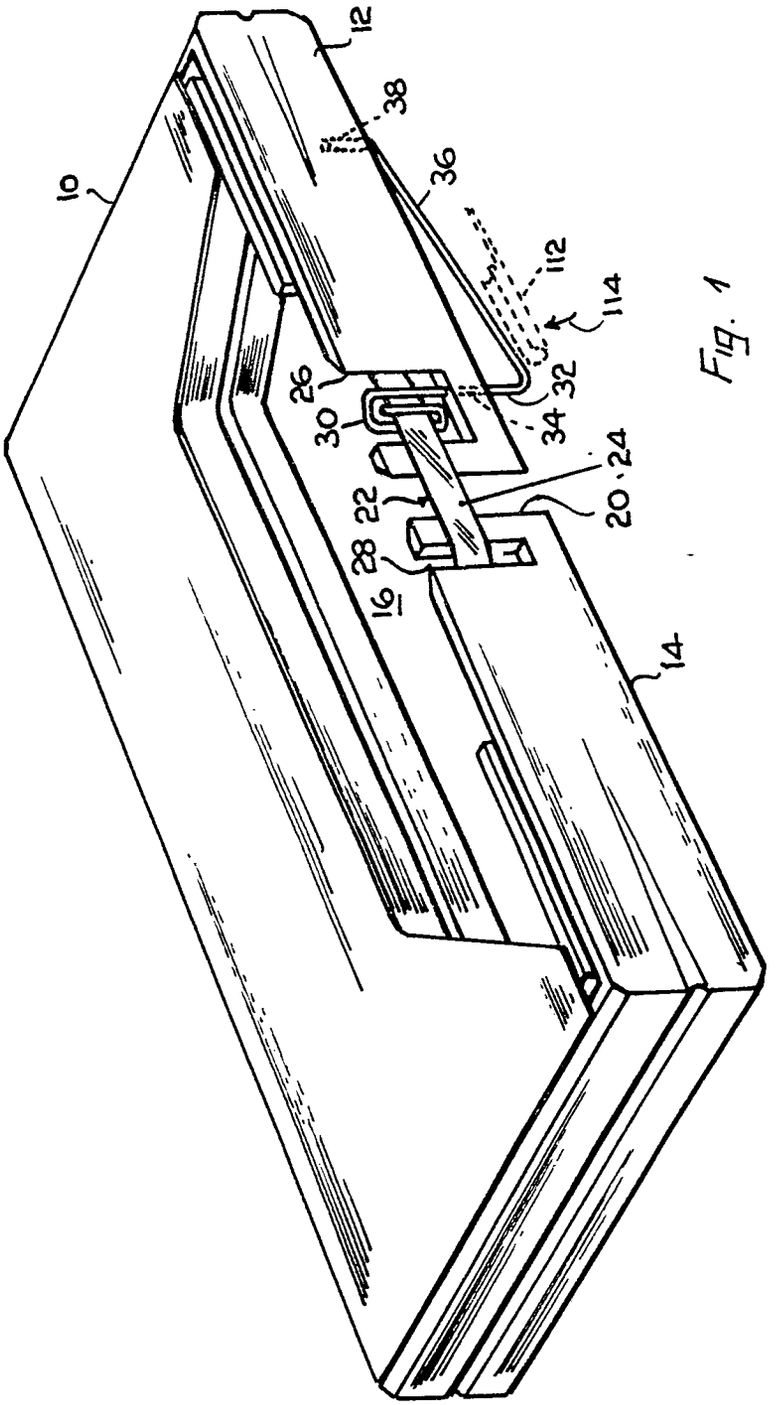

Fig. 1

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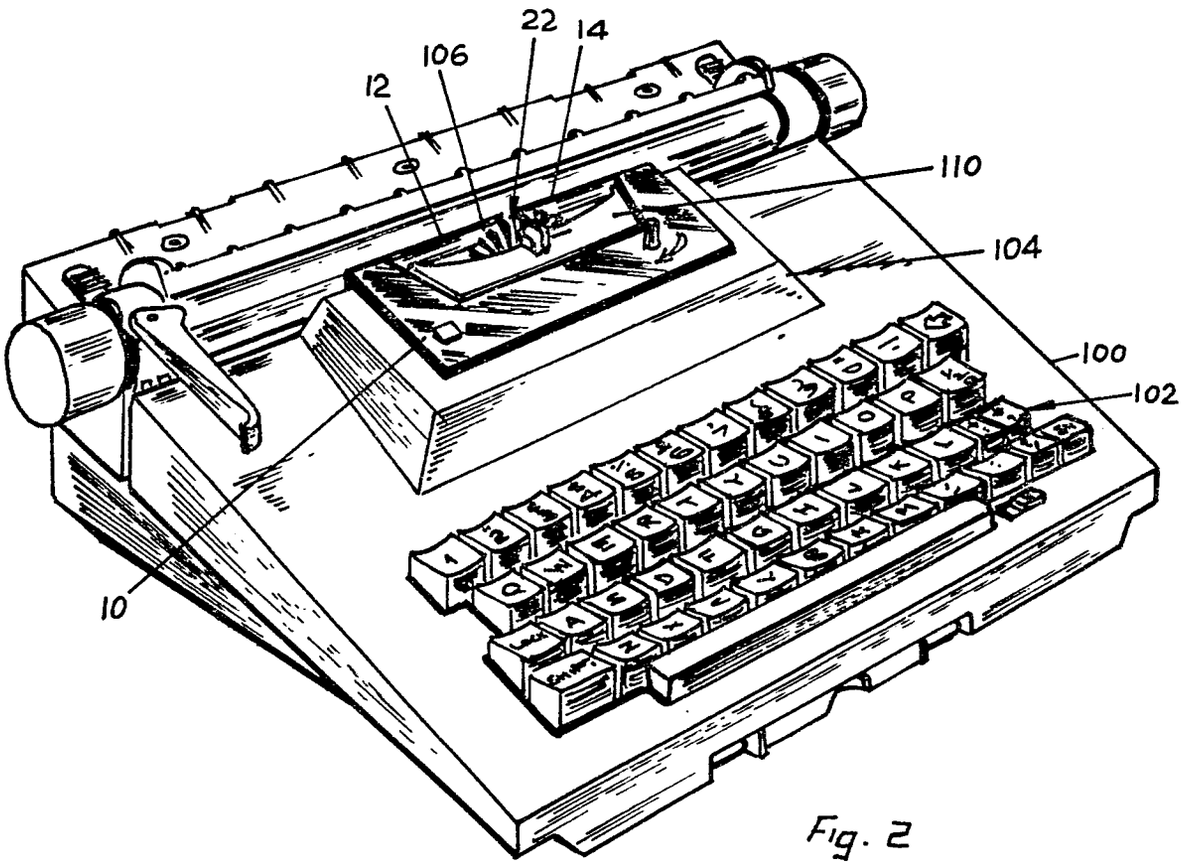

Fig. 2