

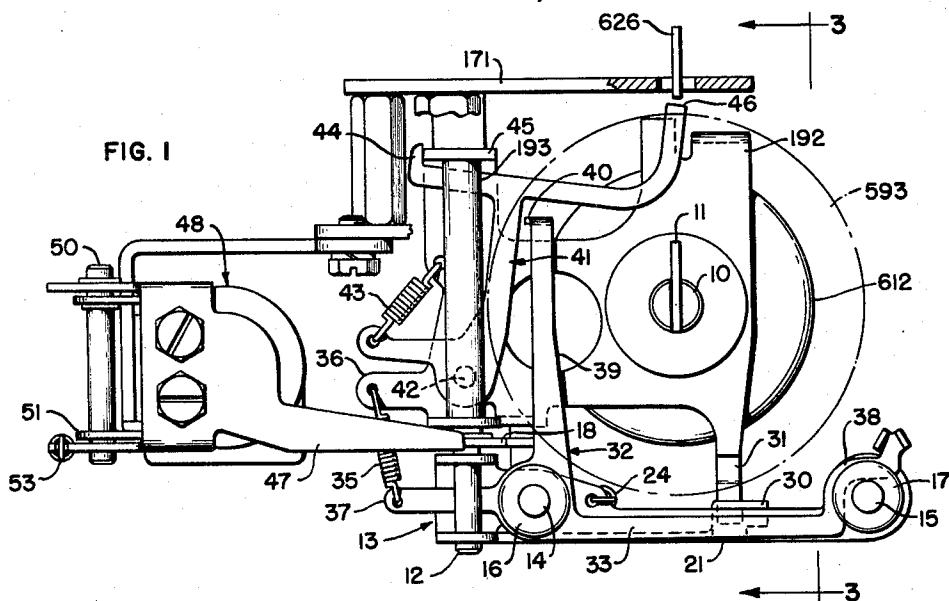
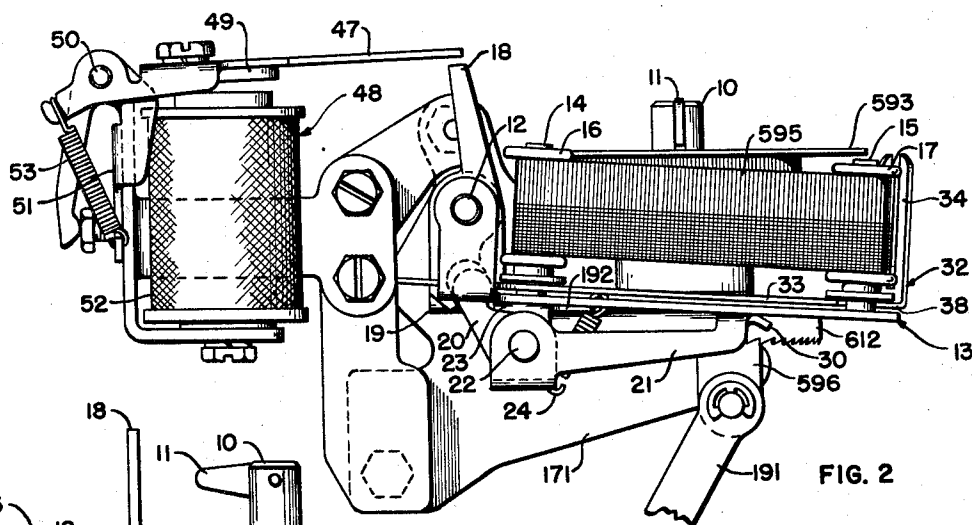
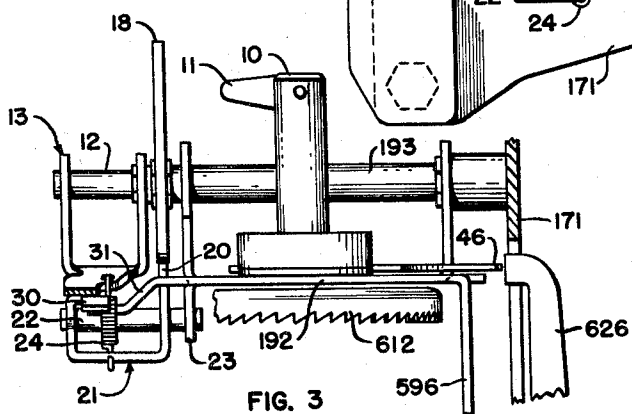
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INKING RIBBON GUIDE MECHANISM

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INKING RIBBON GUIDE MECHANISM

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This invention relates to inking ribbon guide mechanisms and more particularly to ribbon shifting mechanisms to provide for two-color printing in printing telegraph page printers.

In page printers used in printing telegraphy it is highly desirable that the last line received and printed on a page will be visible since the printing telegraph signals received by the page printer may be interrupted for relatively long intervals and if the receiving instrumentalities happens to be one of the type which receives messages but does not transmit them, no experienced operator would be available to operate the machine and make the last printed line visible. In the previously known machines the inking ribbon used in the machine is usually fed from one ribbon spool to another and at the completion of the printing operation, for every character printed, the ribbon spools with their associated guide mechanism are rocked to a position where the ribbon no longer conceals the last printed character or line. This operation is quite simple and a form of it is clearly illustrated in the patent to W. J. Zenner No. 2,505,729, issued April 25, 1950.

It is an object of this invention to provide a simple mechanism for selectively positioning a two-color inking ribbon to permit printing in either of the two colors and providing for moving the ribbon out of blocking relation to the last character printed by a printing telegraph page printer.

Another object of the invention is the provision of a simple mechanism for adapting a telegraph printer for two-color printing without sacrificing any of the desirable features it had before such adaptation is made.

In accordance with one embodiment of the invention as applied to a page printer of the type illustrated in the aforementioned patent to W. J. Zenner, the ribbon spool of the printer is operated in the same manner as disclosed in said patent and the ribbon guides are mounted on a plate which normally follows the movement of the ribbon spools and which may be moved an additional amount through the instrumentality of a linkage mechanism which, upon having one portion of it blocked, will move the ribbon guide members with respect to the ribbon spool on each oscillatory movement of the ribbon spool to raise the lower half of the ribbon up to operative association with the platen of the printer.

A more complete understanding of the invention may be had by reference to the accompanying drawing wherein:

FIG. 1 is a plan view of one of the ribbon spool supporting and oscillating mechanisms of a printing telegraph page printer with the ribbon spool shown in dot and dash lines;

FIG. 2 is a side elevational view of the apparatus shown in FIG. 1 with the spool in place on its support, and

FIG. 3 is an end elevational view taken substantially along the line 3-3 of FIG. 1 in the direction of the arrows with the spool removed, more clearly to show the other parts.

In the drawings wherein like reference numerals designate the same parts throughout the several views there is shown an embodiment of the invention which is particularly applicable to a ribbon guiding mechanism of the type disclosed in the patent to W. J. Zenner referred to hereinbefore. This patent to W. J. Zenner is incorporated herein by reference as though completely described herein for an understanding of those portions of the disclosure

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of that patent which cooperate with the mechanism constituting the present invention.

As described in the aforementioned patent a pair of ribbon spools are provided for winding a ribbon from one spool to another and for automatically reversing the movement of the inking ribbon when the ribbon is almost completely unwound from one of the ribbon spools. In the present drawings only one ribbon spool and its cooperating parts are shown since the other ribbon spool would be the exact reverse of the one disclosed in the drawing. Furthermore, those parts of the apparatus which are more completely described and shown in the patent to W. J. Zenner have been designated with the same reference numerals as used in that application. As clearly disclosed in the patent, one of the ribbon spools 593 for winding an inking ribbon 595 from one spool to another is mounted on a ribbon spool platform 192. The platform 192 is supported pivotally on a stud shaft 193 which is in turn secured to a side plate 171 and the platform 192 is provided with a depending projection 596 that is in turn pivotally connected to a link 191. In the operation of the apparatus the link 191 is reciprocated to rock the platform 192 and spool 593 upwardly thereby to move the ribbon 595 into printing position prior to the actuation of the type of the page printer and is then lowered at the end of the cycle of operation of the printer. In addition the ribbon spool 593 may be driven by a ratchet 612, in the manner described in said patent, to drive a spindle 10 which is similar to the spindle 599 of said patent except that the spindle 10 has a spool latch 11 mounted on it for engagement with the spool 593 for imparting rotation to the spool 593 when the ratchet 612 is driven.

In accordance with the present invention the stud shaft 193 has a reduced portion 12 extending therefrom on which there is pivotally mounted a bail type lever 13 that serves as a ribbon guide roller support and that carries a pair of posts 14 and 15 on which there are freely rotatably mounted a pair of ribbon guide rollers 16 and 17, respectively. The reduced portion 12 of the stud shaft 193 also pivotally supports a blocking lever 18 that has a rounded slot 19 formed in its lower end to provide a bifurcated arm for receiving the rounded end of an arm 20 of a bail type lever 21. The lever 21 is pivotally mounted on a pivot pin 22 fixed in a downwardly extending projection 23 formed on the platform 192. The cooperating slot 19 and rounded end of the arm 20 in effect form a sliding pivot type of connection between the blocking lever 18 and the lever 21.

The transversely extending portion of the bail type lever 21 has one end of a spring 24 fixed to it and the other end of this spring 24 is attached to the bail type lever 13, as most clearly illustrated in FIG. 2. Adjacent to its right end, FIG. 2, the lever 21 has a curved bearing portion 30 formed on it for engagement with the underside of the rightwardly extending portion of the bail type lever 13. This portion 30 of the lever 21 is thus pressed against the underside of the lever 13 to hold these two parts in engagement while permitting a slight sliding movement between them as they are rocked about their respective pivots in the operation of the apparatus. A laterally extending arm 31 of the platform 192 is bent to a position, as shown most clearly in FIG. 3, to engage the underside of the bearing portion 30 of the lever 21 so that when the ribbon spool 593 is carried to the position shown in FIG. 2, by the movement of the ribbon spool platform 192 under the influence of the link 191, the levers 13 and 21 will move with the platform 192 as a unit. The apparatus as shown in FIG. 2 is in the position where the upper or black portion of the inking ribbon 595 is in alignment with the printing position of the page printer.

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The post 14, in addition to serving as a bearing for the ribbon guide roll 16, also serves as a pivot for an irregularly shaped three-armed lever 32. The lever 32 has an arm 33 that extends in a substantially horizontal plane and carries at its right end an upwardly extending portion 34 that is slotted to serve as a guide for the inking ribbon 595 and also to serve as part of a reversing mechanism. The three-armed lever 32 is normally urged to rock in a clockwise direction (FIG. 1) by a contractile spring 35 which is attached to a protecting lobe 36 formed on the platform 192 and to an arm 37 of the three-armed lever 32. The right end (FIGS. 1 and 2) of the arm 33 has a curved portion 38 which is normally held against the post 15 by the action of the spring 35. A third arm 39 of the three-armed lever 32 has a downwardly extending portion 40 (FIG. 1) for engagement with a reverse lever 41 that is pivoted on the platform 192 at 42. The reverse lever 41 is normally urged to the position shown in FIG. 1 by a contractile spring 43 that has one end attached to the lever 41 and the other end attached to the platform 192. The spring 43 normally holds the reverse lever 41 in the position shown by forcing a projection 44 against a stop member 45 on the platform 192. A trip arm 46 of the lever 41 is aligned with a lever 626 and when the lever 41 is rocked counterclockwise about the pivot point 42 by the portion 40 of lever 32, the pawl for driving the ratchet such as the ratchet 612 will be reversed in the manner described in the aforementioned patent to W. J. Zenner. This operation will occur when a protuberance on the ribbon 595 engages the upwardly extending portion 34 of the lever 32 and rocks the lever 32 counterclockwise.

As pointed out hereinbefore the platform 192, as shown in FIG. 2, is holding the ribbon 595 in a position such that the upper portion or upper half of the ribbon is aligned with the printing position of the page printer so that any characters printed by the printer will be printed in black. The upper end of the lever 18, as illustrated in FIG. 2, is beneath an armature lever 47 which forms a part of an electromagnet assembly 48. The electromagnet assembly 48 includes an armature 49 that is pivoted at 50 on a bracket 51 which also supports a coil 52. The armature 49 and lever 47 are normally held in the position shown in FIG. 2 by a contractile spring 53 which has one end fixed to the left end of the lever 47 and the other end fixed to a portion of the bracket 51. The entire magnet assemblage 48 is suitably mounted on the side plate 171 and upon energization of the coil 52 the armature 49 will be attracted toward the coil and will move the lever 47 in a clockwise direction about the pivot 50. The coil 52 may be energized in any suitable manner and preferably its energization will take place at a time when the link 191 is in its lowermost position in which position the lever 18 will have its upper end disposed a short distance in a clockwise direction from the position shown in FIG. 2 where the end of the lever 47 will clear the lever 18 and move down into blocking relation with it.

In the operation of the apparatus, the platform 192 will be moved upwardly to the position shown in FIG. 2 by the link 191 just prior to the time that the printing occurs and will be moved in a clockwise direction about the stud shaft 193 at the end of a printing operation. When the platform 192 is in the position shown in FIG. 2 the upper portion of the inking ribbon 595 will be in line with the printing position and consequently, since the upper portion of the ribbon 595 is the black portion, the printing effected by the page printer will be black. If it is desired to print in red the coil 52 may be energized under control of either signals received in the printer or under manual control by supplying current to it and thereupon the coil 52 will attract its armature 49 to move the right end (FIG. 2) of the lever 47 into the path of the upper end of the lever 18. With the levers 47 and 18 in the position just described the lower half of the ink-

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ing ribbon 595 will be moved up to printing position upon the actuation of the platform 192 by the link 191. When this occurs the link 191 will rock the platform 192 in a counterclockwise direction (FIG. 2) about the stud shaft 193 and, since the right end of the lever 47 will be in the path of the upper end of the lever 18, the lever 18 will be blocked from rocking with the platform 192. Consequently, the lever 21 will be rocked about its pivot 22 in a counterclockwise direction due to the fact that its left end (FIG. 2) will be blocked from moving in an arcuate path with respect to the axis of the stud shaft 193 or its extension 12 and consequently the lever 21 will be rocked counterclockwise to move the lever 13 upwardly thereby carrying the guide rollers 16 and 17 and the portion 34 of lever 32 upwardly in a counterclockwise direction about the pivot pin 12. This will carry the lower half of the inking ribbon 595 upwardly into the position now occupied by the upper half thereof as shown in the drawing.

Although a particular embodiment of the invention is shown in drawings and described in the foregoing specification it will be understood that the invention is not limited to that specific embodiment, but is capable of modification and rearrangement, and substitution of parts and elements without departing from the scope of the invention.

What is claimed is:

1. In a printing telegraph page printer having a ribbon feeding and guiding mechanism including a ribbon supply spool, a ribbon guide member, and a platform for supporting said spool and said guide member and reciprocable in each cycle of the printer for moving said guide member and said spool, to carry one portion of said ribbon into a printing position, and then to retract them thereby to move the ribbon out of the printing position and make the last character that has been printed visible; the combination of a normally ineffective motion amplifying leverage mechanism for moving said guide member an amount in addition to its normal movement including

- (a) one portion of said leverage mechanism interposed between said platform and said ribbon guide member,
- (b) a second portion of said leverage mechanism normally movable with said platform,
- (c) selectively operable means to block movement of said second portion of the leverage mechanism with the platform, and
- (d) means formed on the two portions of the leverage mechanism for moving the first portion thereof with respect to the platform when the second portion thereof is blocked.

2. A mechanism in accordance with claim 1 wherein the two portions of the leverage mechanism are formed to provide a slidable pivot connection between them.

3. In a printing telegraph page printer having a ribbon feeding and guiding mechanism including a ribbon supply spool, a ribbon guide member, and a platform for supporting said spool and said guide member and reciprocable in each cycle of the printer for moving said guide member and said spool, to carry one portion of said ribbon into a printing position, and then to retract them thereby to move the ribbon out of the printing position and make the last character that has been printed visible; the combination of a normally ineffective motion amplifying leverage mechanism for moving said guide member away from said platform in addition to its normal movement with the platform thereby to carry a second portion of the ribbon into printing position comprising

- (a) a pair of interconnected levers,
- (b) one of said levers having an arm interposed between said platform and said ribbon guide member,
- (c) a sliding pivot connection formed on cooperating ends of said one lever and the other lever of said pair,

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(d) selectively operable means for blocking one end of said other lever of said leverage mechanism from moving with said platform thereby to render said pivot connection effective.

4. In a printing telegraph page printer having a ribbon feeding and guiding mechanism including a ribbon supply spool, a ribbon guiding member, a platform for supporting said spool and said guide member, and reciprocable means operated in each cycle of the printer for moving said platform, said guide member and said spool, to carry one portion of said ribbon guided by said guide member into a printing position, and then to retract them thereby to move the ribbon out of the printing position and make the last character that has been printed visible; the combination of

(a) a normally ineffective motion amplifying leverage mechanism having one portion thereof interposed between said platform and said ribbon guide member,

(b) means tending to move said leverage mechanism as a unit with said platform including a spring connecting said one portion to said platform, and

(c) selectively operable means for moving said guide means an amount in addition to its normal movement including means for blocking movement of another portion of said leverage mechanism whereby a second portion of said ribbon is carried into printing position.

5. In a ribbon handling mechanism for a printing telegraph page printer having supply and take-up spools for feeding a ribbon between a platen and a typing unit, wherein each spool is mounted on a platform pivoted on a pivot shaft and the platform is oscillatable about its pivot shaft to move the ribbon into a printing position before a printing operation and out of printing position after a printing operation to make the last printed line of characters visible after each printing operation; the combination of

(a) a ribbon guide roller support associated with each platform and pivoted on the pivot shaft for the platform,

(b) resilient means for normally holding said guide roller support against said platform,

(c) a bell crank lever for moving said guide roller support with respect to said platform, said bell crank lever being pivoted on said platform and engaging said guide roller support,

(d) a blocking lever for actuating said bell crank

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lever when said blocking lever is blocked, said blocking lever also being pivoted on said pivot shaft,

(e) an electromagnet having an armature normally positioned out of blocking relation with said blocking lever but movable upon energization of the electromagnet to block movement of the blocking lever and provide a stationary pivot for said bell crank lever, and

(f) ribbon guide rollers on said guide roller support for guiding the ribbon in one path when the electromagnet is energized and in another path when the electromagnet is deenergized.

6. In a ribbon handling mechanism for a printing telegraph page printer having supply and take-up spools for feeding a ribbon between a platen and a typing unit, wherein each spool is mounted on a platform pivoted on a pivot shaft and the platform is oscillatable about its pivot shaft to move the ribbon into a printing position before a printing operation and out of printing position after a printing operation to make the last printed line of characters visible after each printing operation; the combination of

(a) a ribbon guide roller support associated with each platform and pivoted on the pivot shaft for the platform,

(b) resilient means for normally holding said support against said bracket,

(c) a bell crank lever for moving said guide roller support with respect to said platform, said bell crank lever being pivoted on said platform and having a portion engaging said guide roller support,

(d) a blocking lever having a bifurcated arm,

(e) an arm on said bell crank lever extending into the bifurcation of the blocking lever for rocking said bell crank lever about its pivot when the blocking lever is blocked,

(f) normally ineffective and selectively operable means to block movement of said blocking lever, and

(g) ribbon guide rollers on said support for guiding the ribbon in one path when the electromagnet is energized and in another path when the electromagnet is deenergized.

References Cited in the file of this patent

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