

- [54] **ADJUSTABLE SPROCKET ASSEMBLY**
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[51] Int. Cl. **B41j 15/00**
[58] Field of Search **197/133, 133 P, 144;**
101/57; 226/52, 54, 55, 76, 79, 82, 83, 84,
85, 86, 87

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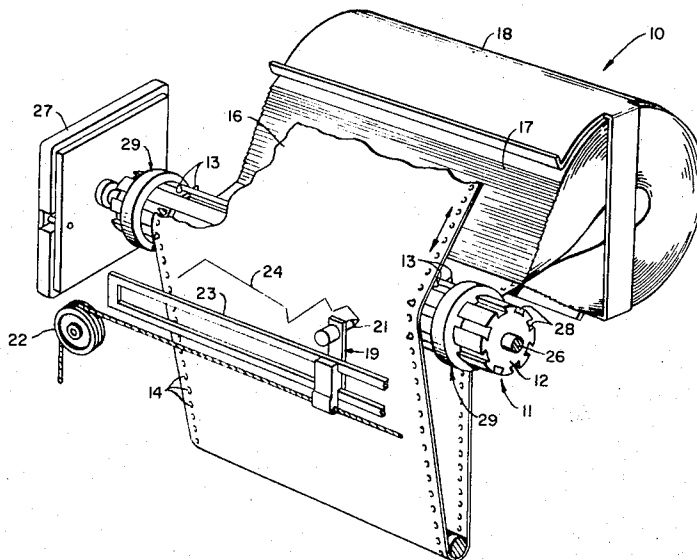
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[57] **ABSTRACT**

A sprocket assembly for a teletypewriter, or other device wherein perforated webs are to be advanced, includes a horizontally stationary, rotatable platen or roller which mounts a plurality of sprocket pins thereon for drivingly engaging marginal apertures in a web. The platen has a plurality of axially extending, equiangularly spaced grooves formed in the outer surface thereof. The sprocket pins are mounted for sliding movement within the grooves and thereby are adaptable for engaging webs of various widths. A keeper ring, which may be formed integrally with the sprocket pins, or as a separate element, aligns the sprocket pins for engagement with the web apertures and can be selectively positioned along the platen to accommodate webs of various widths. A mechanism is provided for releasably locking the sprocket assembly in the desired preset position along the platen.

1 Claim, 8 Drawing Figures



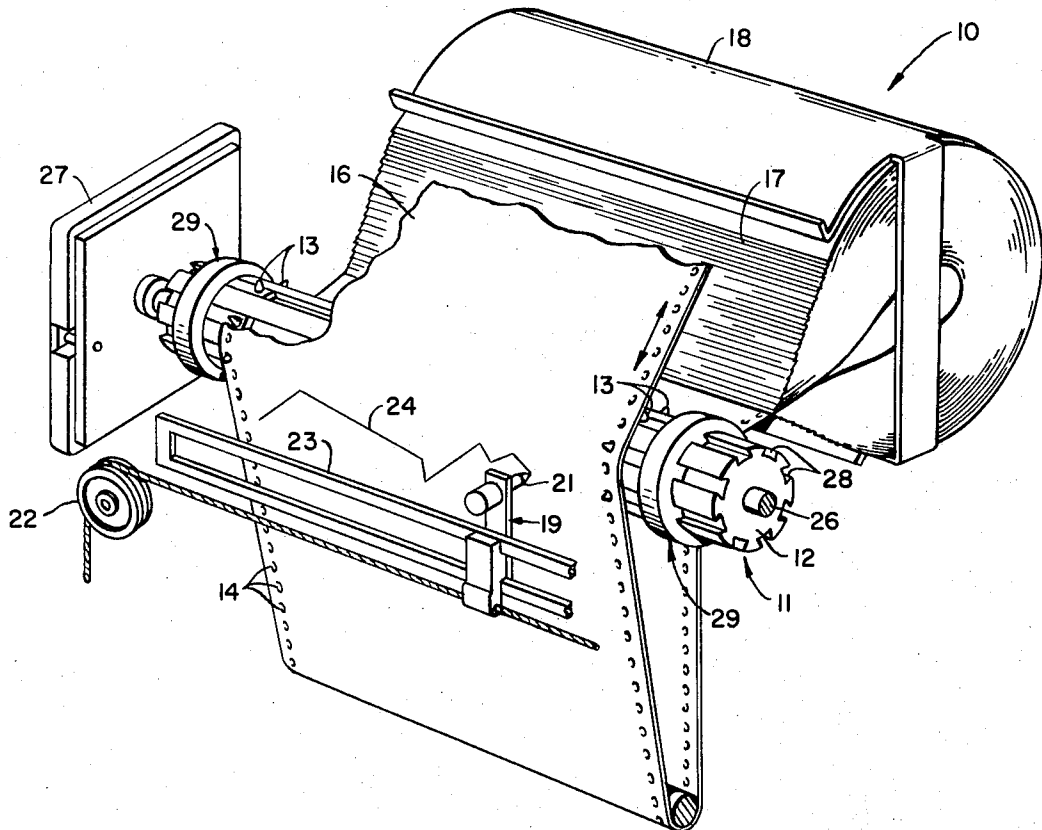
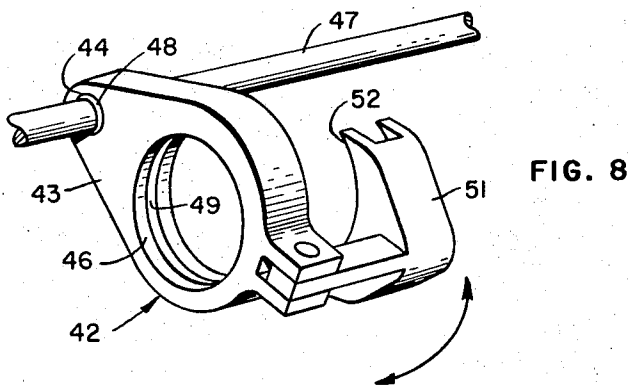
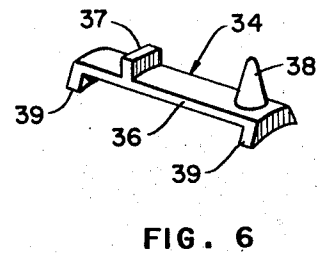
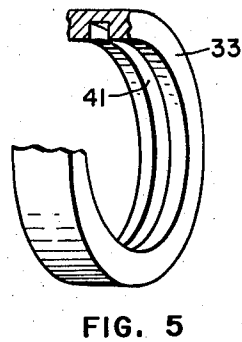
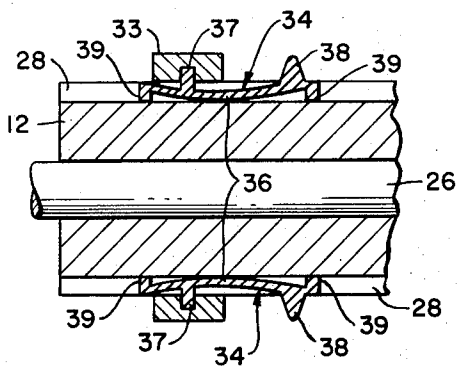
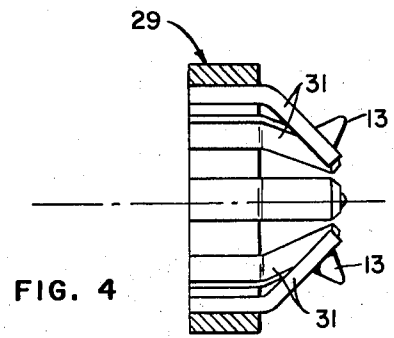
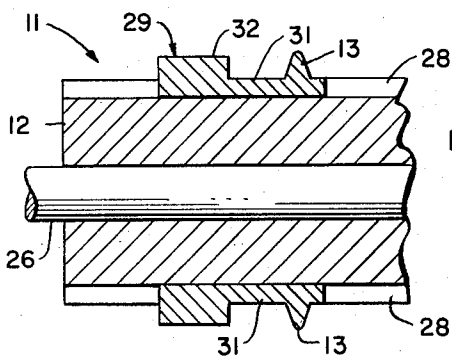
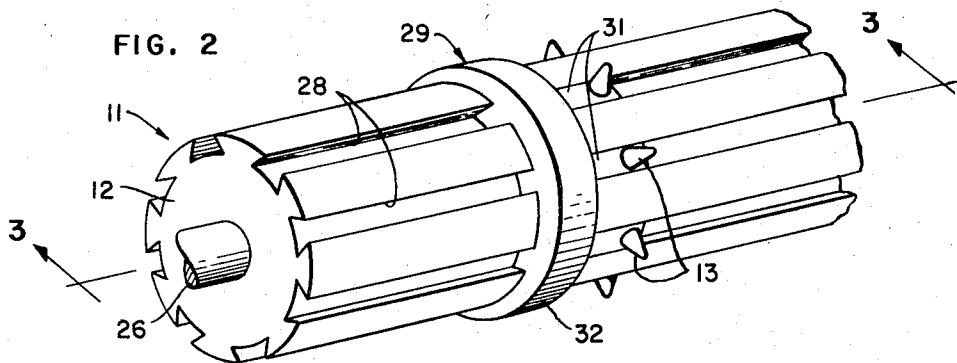


FIG. 1



ADJUSTABLE SPROCKET ASSEMBLY

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to adjustable sprocket assemblies and, more particularly, to a cylindrical platen which adjustably mounts sets of sprocket pins thereon for advancing webs of various widths, for example past a printing station.

2. Description of the Prior Art

Teletypewriters and other printers often must be adaptable to webs of various widths. Where the webs are easily advanced and alignment is not critical, it may be possible to simply use platens of sufficient width to accommodate the widest web utilized. Where the webs must be precisely aligned and/or advanced without slipping, pin type platens are frequently used in conjunction with marginally perforated webs. In this latter case, there may be no difficulty in accommodating webs of various widths, if the web is driven and/or aligned via a single set of marginally located apertures. Usually, however, the axial position of the sprocket teeth or pins along the platen will have to be changed to accommodate webs of different widths.

Many printing devices use pin type platens in which the pins are integral parts thereof. Changing web widths thus requires changing the platen itself.

Still other printing devices utilize tractor assemblies, that is, chains mounted on spaced sprocket wheels and which have pins spaced thereon for engaging apertures in the webs. Adapting the chains to webs of different widths requires moving the various sprocket wheels along the shafts on which they are mounted.

It may be thus appreciated that there exists a need for a sprocket-type platen in which the sprocket pins may be selectively positioned along the platen for driving and aligning webs of various widths.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an improved adjustable sprocket assembly which is adaptable for drivingly engaging marginal apertures in webs of various widths, particularly where the sprocket assembly may be releasably locked in a preset position.

In view of the aforementioned need for a pin-type platen or roller in which the pins may be selectively positioned along the length thereof, it is an additional object of this invention to provide a sprocket feed assembly including sprocket pins carried by a keeper ring which aligns the sprocket pins circumferentially about a platen and may be selectively positioned thereon.

A sprocket feed assembly illustrating certain principles of the present invention may include a roller or platen which is rotatably mounted for supporting a perforated web and has a plurality of longitudinal grooves or channels, preferably of dovetail cross-section, formed in the outer surface thereof. Sprocket pins are slidably carried within the grooves, so that the pins may be adjustably positioned along the grooves for engaging marginal apertures in printing webs at a desired point. Preferably, the sprocket assembly includes a mechanism for releasably locking the sprocket assembly in the preset position.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of a printing device which utilizes the sprocket feed assembly of the present invention;

FIG. 2 is a perspective view showing one embodiment of the sprocket feed assembly;

FIG. 3 is a sectional view, taken along the line 3—3 in FIG. 2 in the direction of the arrows, particularly illustrating the mounting of a sprocket assembly on a platen;

FIG. 4 is a side view of the sprocket assembly shown in FIGS. 2 and 3, particularly illustrating the configuration of the sprocket pins prior to the mounting of the assembly on the platen;

FIGS. 5 and 6 are perspective views of a keeper ring and a pin carrier, respectively which form an alternate embodiment of the sprocket assembly;

FIG. 7 is a sectional view illustrating the mounting on the platen of the assembled elements shown in FIGS. 5 and 6; and

FIG. 8 is a perspective view of an alternate embodiment of the keeper ring illustrated in FIG. 5, including a gate for retaining a web of printing material against the platen.

DETAILED DESCRIPTION
GENERAL ARRANGEMENT

Referring to FIG. 1, there is shown one example of a printing device 10, which utilizes a web feed assembly 11 constructed in accordance with the principles of the invention. The illustrated printing device 10 is a non-contact, X-Y plotter of the general type disclosed in R. W. Nordin U.S. Pat. No. 3,609,422. The web feed assembly 11 includes a generally cylindrical roller or platen 12 and at least one set of sprocket teeth or pins 13—13 which are aligned circumferentially about the platen 12. (Two sets of sprocket pins 13—13 are shown in FIG. 1.)

The sprocket pins 13—13 project from the platen 12 into marginal apertures 14—14 formed in a paper or web 16 for advancing the web 16 in generally conventional fashion into a printing operation from a fan-folded inventory 17 stored in a magazine 18. A non-impact inscriber, designated generally by the numeral 19, may comprise an ink jet nozzle 21 having conventional ink supply means (not shown) and associated with the web 16 for marking thereon in any known manner. Suitable means, only a pulley system 22 of which is shown herein, is arranged for driving the inscriber 19 horizontally along a track 23 to mark a transverse line 24 on the web 16.

Vertical movement of the web 16 and the corresponding deflection of the line 24 is achieved by selectively rocking the platen 12 about its longitudinal axis. For such selective rocking, the platen 12 is mounted on a shaft 26 which is coupled to suitable rocking means 27. An exemplary rocking means is disclosed in the Nordin patent previously mentioned.

The roller or platen 12 is formed with longitudinal peripheral grooves 28—28 for slidably mounting one or a pair of adjustable sprocket assemblies 29 in accordance with the principles of this invention. In the example illustrated in FIG. 1, two adjustable sprocket assemblies 29 are used, either or both of which may be moved longitudinally of the platen 12 so as to preset the positions of the two sets of sprocket pins 13—13

along the length of the platen 12. In this manner, perforated webs 16 of various widths can readily be accommodated, and the position of the entire web 16 with respect to the platen 12 can be adjusted. After positioning, the sprocket assemblies 29—29 are releasably locked on the platen 12 in the preset positions for as long as required. Obviously, only one of the sprocket assemblies 29 could be adjustable if desired, and the sprocket assembly 29 could be used for advancing or feeding any type of perforated web 16 for any purpose, as is generally well known in the art. As with any other sprocket drive, the web feed may be continuous, step-by-step as for printing one line at a time, or oscillatory as in the example of FIG. 1.

FIRST EMBODIMENT

Referring now to FIGS. 2—4, there is shown a first embodiment of the web feed assembly 11, including one form of sprocket assembly 29. In this embodiment, the longitudinal grooves 28—28 in the cylindrical platen 12 are formed as a plurality of equiangularly spaced, axially extending, bevel-sided grooves 28—28 of dovetail cross-sectional configuration formed in the periphery of the platen 12. The sprocket assembly 29 includes a plurality of base elements or fingers 31—31, which dovetail with and are slidably retained in corresponding grooves 28—28 and from which the sprocket pins 13—13 extend radially outward. As is perhaps shown more clearly in FIG. 3, the sprocket assembly 29 also includes a keeper ring 32, which in this example, is formed integrally with the fingers 31—31 to align the pins 13—13 circumferentially about the platen 12 for engagement with the web apertures 14—14 (FIG. 1).

To provide the releasable locking mechanism in this example the fingers 31—31 are formed of a resilient material such as spring steel. In this example, as shown in FIG. 4, the fingers 31—31 are initially bent inwardly toward the central axis before the sprocket assembly 29 is mounted on the platen 12 (FIG. 3). Then, when the sprocket assembly 29 is positioned on the platen 12, as shown in FIG. 3, the fingers 31—31 are distorted or forced outward, but exert an inwardly directed spring force to frictionally engage the platen grooves 28—28. This action maintains the position of the sprocket assembly 29 axially along the platen 12 and provides the releasable locking mechanism previously described, for holding the sprocket assemblies 29 in their preset positions. At the same time, the frictional engagement between the fingers 31—31 and the platen grooves 28—28 may be overcome with sufficient ease to permit selective manual positioning of the sprocket assembly 29 along the platen 12. This selective positioning of the sprocket assembly 29, combined with the circumferential alignment of the sprocket pins 13—13 by the keeper ring 32, permits adjustment of the sprocket feed assembly 11 for drivingly engaging marginal apertures 14—14 in webs 16—16 of various widths and for aligning the driven webs 16.

SECOND EMBODIMENT

Referring now to FIGS. 5—7, there are shown a keeper ring 33 and a plurality of separate pin carriers, designated generally by the numeral 34, which together form a second embodiment of a sprocket assembly in accordance with the invention. A body or finger 36 of each carrier 34 has a boss 37 and a pin 38 which extend

upwardly from opposite ends thereof and a pair of feet 39—39 which extend downwardly from opposite ends thereof and dovetail with the platen grooves 28—28 (FIG. 7). The keeper ring 33 has a channel 41 formed about the inner circumference thereof for receiving the bosses 37—37 of a plurality of carriers 34 and enabling circumferential adjustment thereof and thereby aligning the pins 38—38 with the web apertures 14—14.

Preferably, the carrier fingers 36 are also made of resilient material, such as spring steel, to facilitate initial assembly of the sprocket assembly 29 with the platen 12, and to provide the releasable locking mechanism. For this purpose, as shown in FIG. 7, the inner diameter of the keeper ring 33 is such that the keeper ring 33 distorts or bows the fingers 36—36 of the pin carriers 34—34 radially inward and into frictional engagement with the bottoms of platen grooves 28—28 upon assembly. The force of engagement between the pin carriers 34—34 and the grooves 28—28 is sufficient to releasably lock the pin carriers 34—34 into position, yet to permit manual adjustment of the pin carriers 34—34 along the length of the platen 12 as described previously.

Alternatively, in the FIG. 7 embodiment, the proportions can be established so that the locking effect is achieved without the bowed fingers 36—36 actually contacting the bases of the grooves 28. In this variation, the feet 39—39 are of such length that, when the fingers 36—36 are bowed slightly, the resultant spring force set up in the fingers 36—36 urges the feet 39—39 into temporary locking engagement with the bases of the grooves 28—28. In all of these embodiments, the salient principle of operation is that a spring-like portion of the sprocket element is distorted upon assembly so that the same or other portions of the sprocket elements frictionally engage a portion of the groove 28 to releasably lock the entire assembly in any preset position.

THIRD EMBODIMENT

Referring now to FIG. 8, there is shown an alternate embodiment of a keeper ring, designated generally by the numeral 42, for positioning the pin carriers 34—34 (FIG. 6) on the platen 12 in generally the same manner as in FIG. 7. The keeper ring 42 is comprised of a generally tear-shaped plate 43 having apertures 44 and 46 formed at opposite ends thereof for slidably mounting the keeper ring 42 on the platen 12 and on a shaft 47 which is itself fixedly mounted to the printing device 10 parallel to the platen 12. The shaft 47 is frictionally engaged by a grommet 48 secured within the aperture 44 such that the keeper ring 42 may be selectively positioned along the shaft 47. The keeper ring 42 also has a circumferential channel 49 formed about the platen-receiving aperture 46 for aligning the carrier bosses 37—37 as described in connection with FIG. 7.

Referring further to FIG. 8, there is shown a gate 51 which is formed with a concave inner surface 52 and is mounted on the keeper ring 42 for pivotal movement relative to the platen 12 (FIG. 1). Thus, the gate 51 may be moved to a position adjacent the periphery of the platen 12 to hold the web 16 (FIG. 1) against the periphery of the platen 12 and thereby insure that the pins 38—38 (FIG. 6) engage the web apertures 14—14 (FIG. 1). Because the shaft 47 prevents the keeper ring 42 from rotating with the platen 12, the platen-receiving aperture 46 is formed of a sufficient diameter

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to retain the pin carriers 34—34 (FIG. 6) in circumferential alignment about the platen 12 and within the platen grooves 28—28 (FIGS. 1 and 2), yet permit the carrier bosses 37—37 (FIG. 6) to rotate freely about the keeper ring channel 49.

While various specific examples, embodiments and uses of the invention have been described in detail above, it will be apparent that various modifications may be made from the specific details described without departing from the spirit of the invention.

What is claimed is:

1. In a printer, a sprocket feed assembly for moving a web having marginal apertures formed therein into position for receiving print information, which comprises:

a rotatable cylindrical platen having a plurality of equiangularly spaced grooves of dovetail cross-sectional configuration formed in the periphery thereof and extending along the length thereof;
an elongated shaft mounted on the printer with the axis of said shaft parallel to the axis of said platen;

a plurality of carriers having a body portion with a boss and a sprocket pin extending upwardly from opposite ends thereof and having a foot extending downwardly from each end thereof to slidably retain one of the plurality of carriers in each dovetail

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groove so that the boss and the sprocket pin extend in radially outward direction from the platen;

a plate having apertures formed at opposite ends thereof through which plate apertures said shaft and said platen extend to slidably mount said plate and to prevent the rotation of said plate, said plate having a channel formed about the inner circumference of the plate aperture through which the platen extends to engage the boss extending from the body portion of each carrier thereby aligning the plurality of carriers so that, upon rotation of the platen, the sprocket pins engage the apertures in the web to move the web into position for receiving print information, the inner circumference of the plate aperture through which the platen extends being such that engagement of the channel with the boss on the body portion of each carrier distorts the body portion in a radially inward direction thereby frictionally engaging the feet on the body portion of each carrier with the platen; and
a gate mounted on the end of said plate adjacent said platen for pivotal movement toward said platen and having a concave inner surface so that, upon said gate being pivoted toward said platen to a position proximate to said platen, said gate holds the web against the periphery of said platen.

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