United States Patent [19]

Dudley

[11] **3,899,971**

[45] **Aug. 19, 1975**

[54] **LABEL PRINTER**

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[73] Assignee: **Dennison Manufacturing Company**, Framingham, Mass.

[22] Filed: **Mar. 11, 1974**

[21] Appl. No.: **449,926**

Related U.S. Application Data

[63] Continuation of Ser. No. 357,873, May 7, 1973, abandoned, which is a continuation of Ser. No. 187,732, Oct. 8, 1971, abandoned.

[52] **U.S. Cl.** **101/292**; 101/232; 271/52; 226/148

[51] **Int. Cl.** **B41f 1/08**

[58] **Field of Search** 101/232, 228, 288, 292; 226/59, 148, 151; 271/52

[56] **References Cited**

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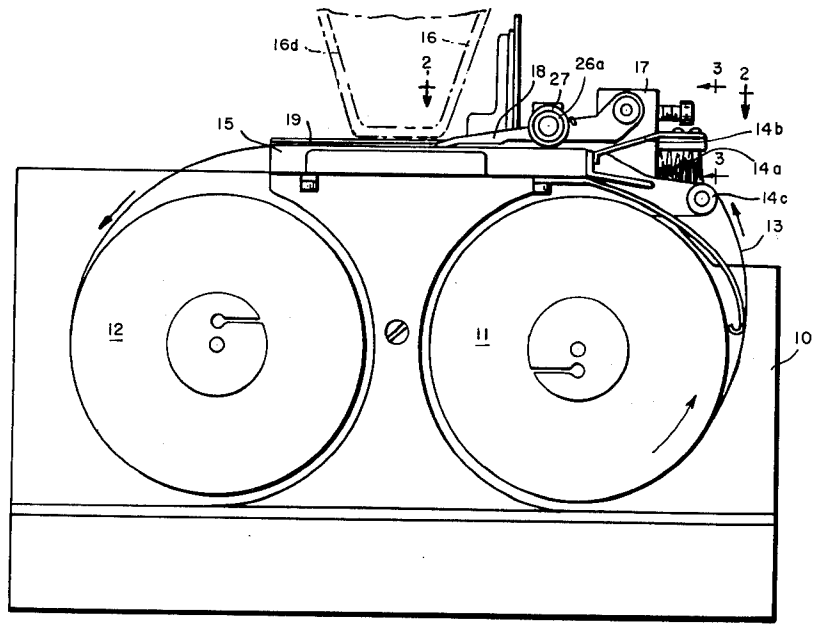
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Assistant Examiner—Edward M. Coven
Attorney, Agent, or Firm—Donald Brown; Dike, Bronstein, Roberts, Cushman & Pfund

[57] **ABSTRACT**

A label printer including a print head, a platen positioned under the print head and over which a strip of stock carrying labels, tags or the like is adapted to be fed, a feeder mechanism for feeding the strip over the platen, and a strip control roller positioned and adapted to hold the strip down against the platen to prevent the strip from moving rearwardly and to force the strip to one side of the platen so that the strip is properly aligned with respect to the print head.

2 Claims, 5 Drawing Figures



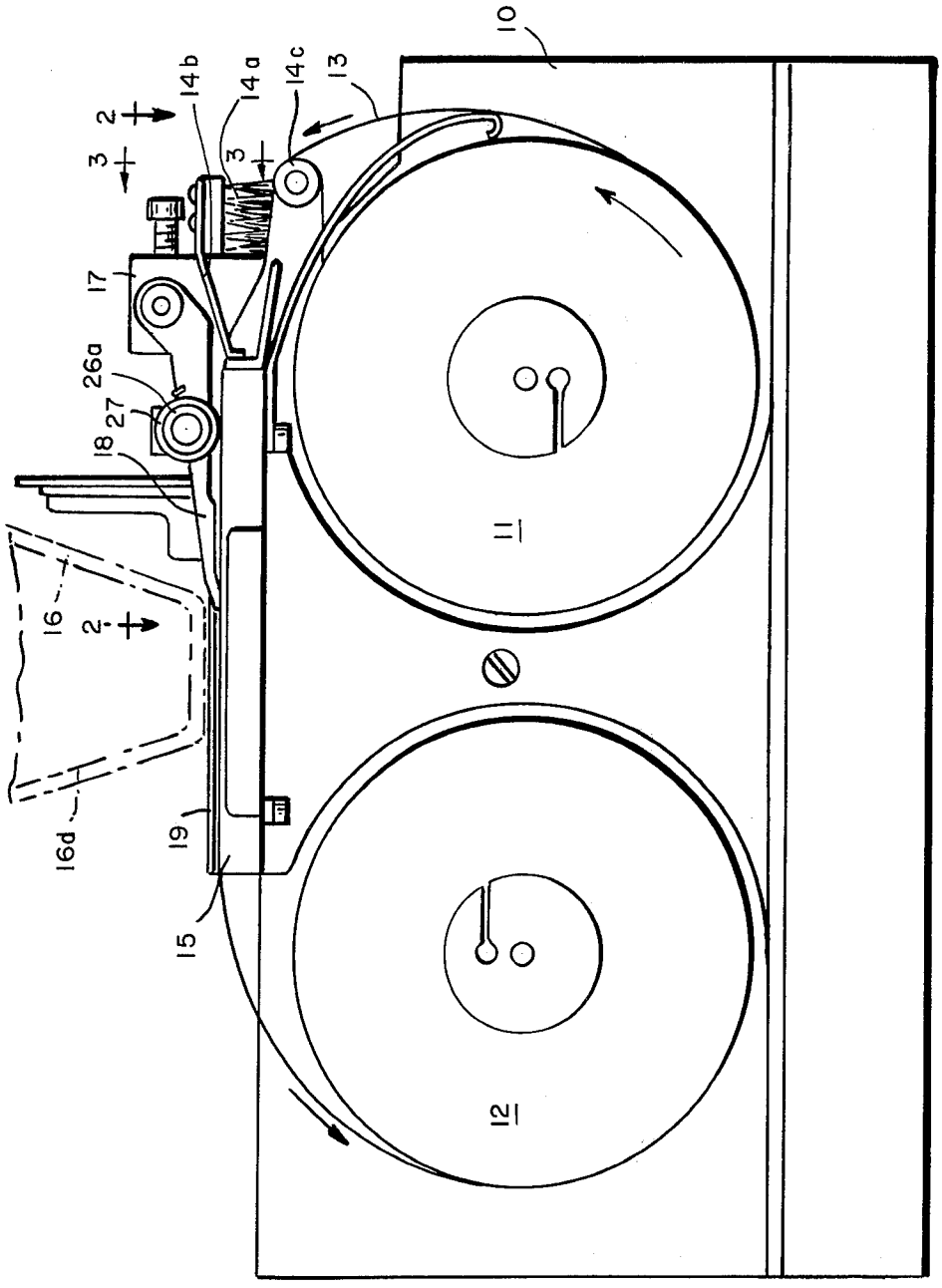


FIG. 1

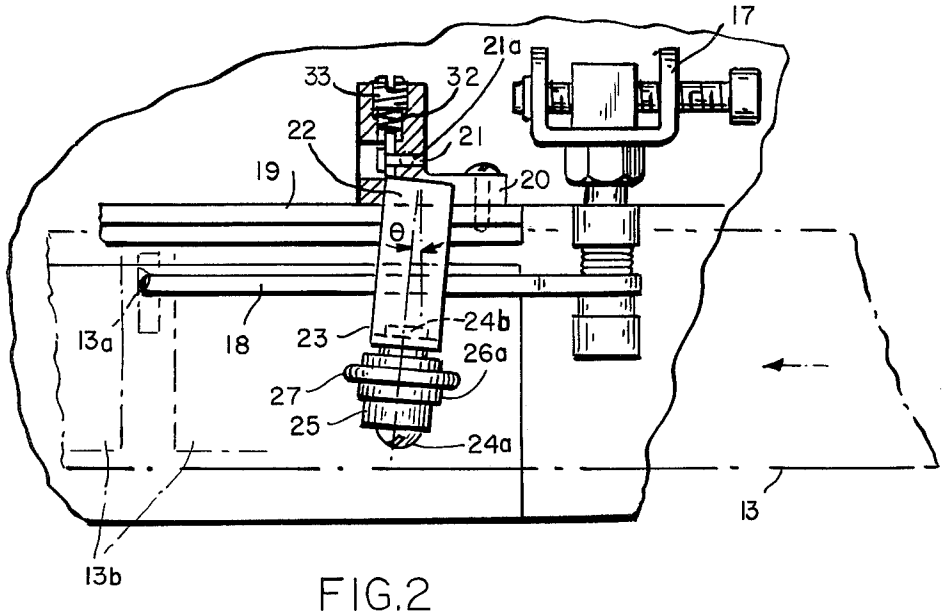


FIG. 2

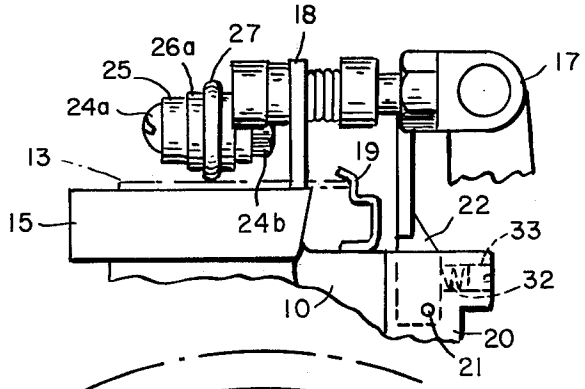


FIG. 3

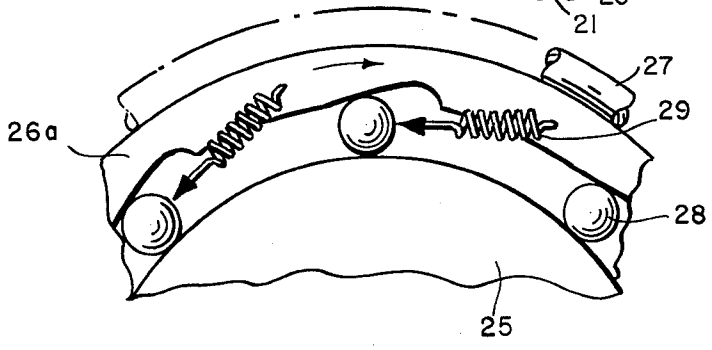


FIG. 4

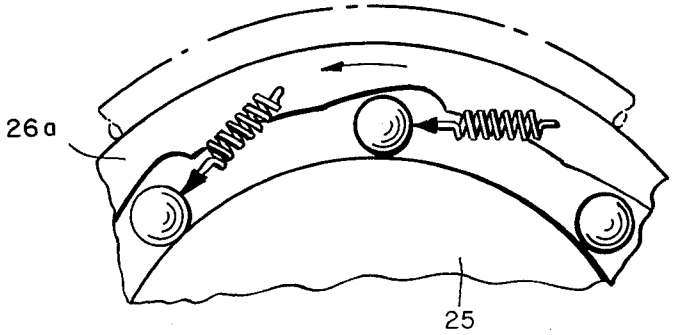


FIG. 5

LABEL PRINTER

This is a continuation, of application Ser. No. 357,873, filed on May 7, 1973, now abandoned, which is a continuation of Ser. No. 187,732, filed on Oct. 8, 1971, now abandoned.

BACKGROUND OF THE INVENTION

This invention relates to printers of the type having a platen and a print head movable back and forth towards a label positioned on the platen to print information thereon. Printing devices of this type are disclosed in U.S. Pat. Nos. 3,366,050 and 3,379,128.

In such printing devices as disclosed in the aforementioned patents, tags or label stock in roll or strip form is fed over the platen by means of a feed pawl or fingers which reciprocates back and forth to push the stock across the platen and under the print head.

The feed finger engages notches formed in the strip of tag stock in order to push the stock over the platen. In the past, in order to prevent the stock from backing up as the feed pawl moves on its return stroke, pressure plates have been provided.

Although machines of this type have proven quite acceptable there has developed a need for machines that require less parts and less adjustment to set up for each run of labels to be printed. Also in the past such machines have also included a movable and adjustable guide member which too must be set depending upon the size of the stock used.

To overcome the above disadvantages, this invention provides a new and improved roller which eliminates the need for a pressure plate that holds the stock on the platen when the feed pawl is on the return stroke. In addition, when this type of roller is positioned at a predetermined angle, an adjustable guide is no longer required to accommodate different size label stock.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front view of the label printer according to this invention;

FIG. 2 is a top view taken along line 2—2 of FIG. 1;

FIG. 3 is an end view taken along line 3—3 of FIG. 1;

FIGS. 4 – 5 are diagrammatic views illustrating the operation of the roller according to the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Reference should now be had to FIGS. 1–3 which disclose the construction of the printing machine according to the invention. At **10** there is shown the machine bed which supports in a conventional manner a feed reel **11** and a take up reel **12.** The feed reel provides a strip **13** of label stock stored on reel **11** in a roll.

The label stock has a plurality of feed slots, one of which is shown at **13***a*, and supports a plurality of labels **13***b* spaced thereon. The labels **13***b* are adapted to be printed on and may be the type of labels which peel off and have an adhesive backing. The label strip **13** is fed between a cleaning brush **14***a* supported by a member **14***b* and a guide roller **14***c* and thence over a platen **15** supported by the bed **10.** The platen is positioned under a print head **16** of the type comprising a plurality of settable type bads **16***d*.

The print head is adapted to move back and forth, (that is towards and away from the platen) to print information on the labels. The construction of means to move the printing head towards and away from the platen is conventional and is shown in the aforementioned patents.

In order to feed the strip **13** over the platen, there is provided a rocker member **17** adapted to reciprocate back and forth to move a feed pawl or finger **18** back and forth to engage the feed notch **13***a*. In this manner the strip is incremented through the machine to print information on the labels or tags supported by the strip. The mechanism for moving the pawl back and forth is conventional as disclosed in the aforementioned patents and is also disclosed in devices of the prior art.

At **19** there is provided a guide member which is positioned to engage one side of the strip **13** in order to align it with respect to the printing head.

Reference should now be had to FIGS. **1–3** along with FIGS. **4** and **5** in which there is shown a pivot block **20** attached to the machine bed **10** and supporting by way of a pivot pin **21,** a set screw **21***a* and a swing arm **22.** The swing arm extends above the platen **15** and has a flange **23** which supports a roller means which comprises a bolt **24***a*, a nut **24***b*, an outer race **26***a* and an inner race or shaft **25.**

On top of the outer race **26***a*, there is supported a tubular member **27** which moves therewith. The tubular member preferably has a high coefficient of friction so that when it engages the strip **13,** it will rotate with it in one direction (the direction of feed) and will prevent it from moving rearwardly upon the rearward movement of the pawl **18** as it is moved to engage the next feed notched **13***a*. The tube may be constructed of a material such as rubber.

In addition, rollers **28** are provided which are rotatable between the inner and outer races. The rollers are held towards the left of FIGS. **4** and **5** by the provision of springs **29.** In operation, when the race **26***a* begins to move clockwise as shown in FIG. **4** it is prevented from doing so as the rollers **28** wedge themselves between the races **26***a* and **25.** Thus the tube **27** is prevented from making a revolution in one direction as shown by the arrow in FIG. **4.**

On the other hand, when the race **26***a* rotates counterclockwise as shown by the arrow in FIG. **5,** the rollers **28** are free to rotate and do not wedge to prevent rotation of the race **26***a*. A roller mechanism of this type may be purchased from The Torrington Company of Connecticut under the designation "Torrington's Drawn Cup Overrunning Roller Clutch".

At **32** in FIG. **3** there is shown a spring which resiliently urges the arm **22** counterclockwise to force the roller tube **27** against the strip **13.** The amount of spring pressure is adjustable by the provision of a set screw **33.**

In order to maintain the side of the strip **13** against the guide **19,** the axis of the roller tube **27** is positioned at a slight angle with respect to a line at **90°** to the side wall of the guide **19** in order to force the strip against the guide. Thus roller tube **27** is positioned at a small angle with respect to the direction of travel of the strip **13.**

An angle of 2° has been found to be suitable for this purpose, although the exact angle is not critical so long as the strip side is forced against the guide and does not at the same time substantially inhibit the feeding of the strip **13.**

In operation, the strip **13** is fed incrementally into the machine as the pawl **18** reciprocates back and forth. On the forward movement of the pawl **18** (left of FIG. **2**) the roller tube **27** rotates with the strip. On this return of the pawl to the right of FIG. **2**, the roller tube **27** is prevented from rotating as the roller **28** wedges between the races. This action thus prevents the strip from moving towards the right of FIG. **2** with the feed pawl to cause the strip to go out of alignment.

I claim:

1. A label printing apparatus in which label stock in strip form are fed to the apparatus for applying print to the label stock, said label printing apparatus comprising a base, a platen supported by the base, a printing head movable back and forth between a printing position adjacent to the platen and a retracted position, means for intermittently feeding the stock over the platen, means for moving the print head to print on the stock and then retract the head, edge side wall guide means supported by the apparatus for guiding one edge of the stock, and a roller unit supported by an arm supported by the apparatus including a roller means for engaging the stock and rotating with the movement of the stock, the axis of the roller being positioned at an angle with respect to a line at 90° to the side wall of the edge side wall guide means to urge the stock towards said edge side wall guides means, and said roller unit comprises an outer race, and an inner race supported by said arm, said roller being of a high coefficient of friction material and being supported by said outer race, a plurality of wedging rollers positioned between the inner and outer races and in rolling contact with both of said races, a plurality of cut outs formed in the outer race which are of a dimension to permit the roller to freely rotate while positioned therein and a plurality of springs supported by the outer race, each spring urging a different one of said plurality of wedging rollers away from one of said cut outs, said rollers wedging themselves between the races when the outer race is rotated in one direction to prevent the stock from moving away from the edge guiding means and along the platen, spring means supported by the apparatus for urging said roller against said stock, and means for adjusting the pressure applied by said spring.

2. An apparatus according to claim **1** in which said roller includes a rubber member.

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