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3,099,212

VARIABLE LENGTH PRINTER FOR LABELS AND THE LIKE

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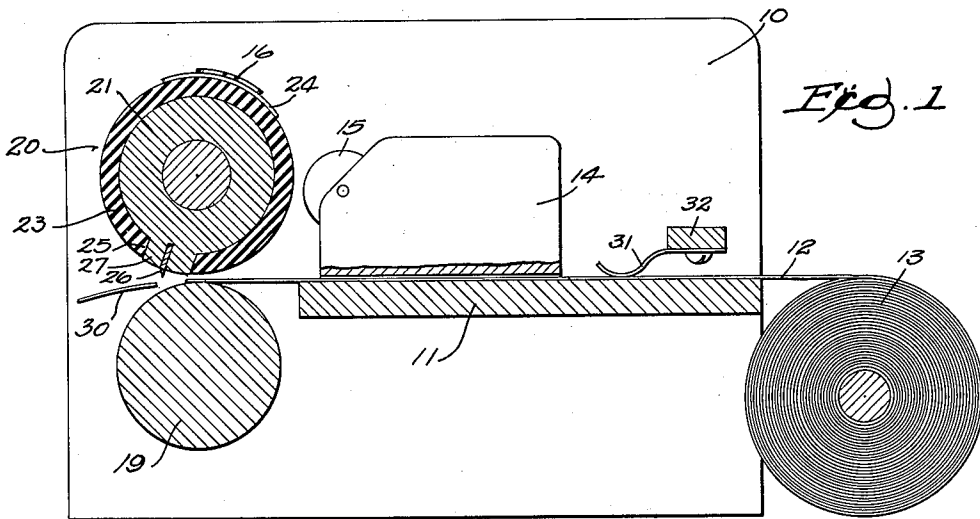


Fig. 1

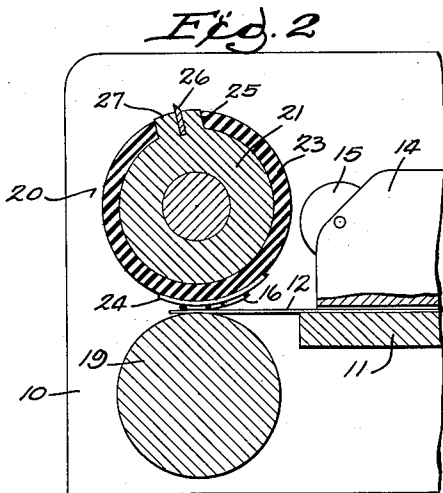


Fig. 2

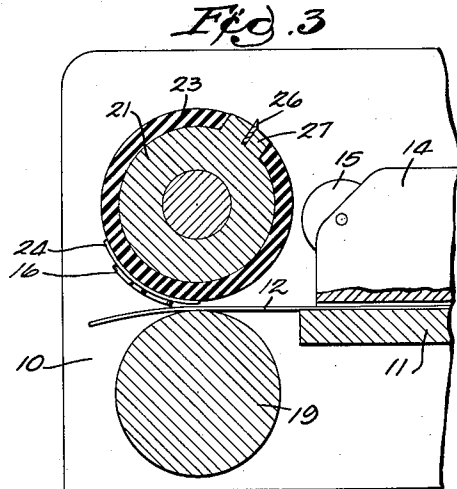


Fig. 3

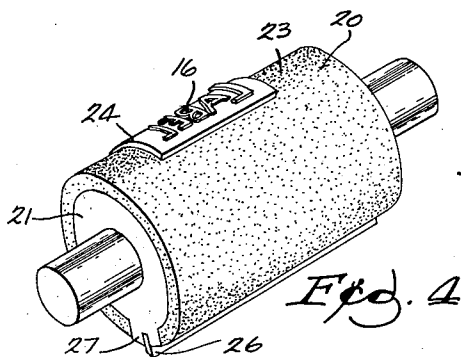


Fig. 4

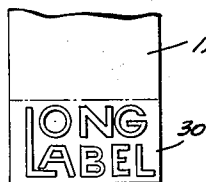


Fig. 5

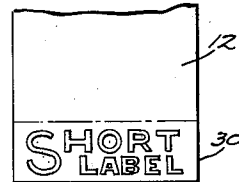


Fig. 6

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VARIABLE LENGTH PRINTER FOR  
LABELS AND THE LIKE

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2 Claims. (Cl. 101—226)

This invention relates to a variable length printer for labels and the like.

The label printer shown in my United States Patent No. 2,946,281 will print and die cut labels from a continuous strip. The length of the label is determined by machine components and in the absence of interchange thereof, the length of the label will be the same regardless of the length of the space occupied by the printed matter thereon. In such machines it is usually the printing roll which must be changed to change the length of the labels cut from the strip. For printing a variety of labels of different lengths, a corresponding number of different sized printing rollers must be stocked. This adds to the cost of operating the machine.

The device of the present invention is adapted to conserve label stock by automatically reducing the length of labels when the printed matter thereon is correspondingly short. According to the present invention, label length is automatically measured by the length of the type face so that each label will be no longer than is necessary to appropriately display the printed impression thereon. When type of different face length is interchanged, the length of the labels produced on the machine will be automatically changed to correspond to the length of the new type face, no other adjustment of the machine being required. The type plates of different face lengths are universally mounted on the same printing roller, thus eliminating need to stock different sized rollers.

The novel result of the present invention is achieved by using the type itself as the sole means for feeding the label strip. Accordingly, when the type has completed its impression on the strip, strip feed is discontinued and the strip will remain motionless while the printing roller continues to rotate and the cut-off knife carried on the roller cuts off the strip into a label size portion. Accordingly, labels produced on devices embodying the present invention will not be subject to waste. Each label will be just as long as is appropriate to display the printed impression thereon.

Incidental advantages are achieved in that there will be no smudging between the type and the strip, because the strip is driven by the type itself. Accordingly, perfect synchronism between the strip feed and the type is accomplished and fine and clean printed impressions will be made, regardless of the smallness of the type.

Other objects, advantages and features of the invention will appear from the following disclosure in which:

FIGS. 1 through 3 are fragmentary vertical cross sections taken through a machine embodying the invention and showing successive positions of the printing and die cutting roller in the course of printing and cutting a label from a strip of label stock.

FIG. 4 is a perspective view of a printing and die cutting roller embodying the present invention.

FIGS. 5 and 6 are respectively fragmentary plan views of label strips showing different length labels typical of those which can be produced on the device of the present invention.

Details of the machine embodying the present invention have been omitted from the instant drawing, inasmuch as such details are clearly shown in my United States Patent No. 2,946,281 aforesaid. The machine of the present invention differs from my patented machine only with respect to the structure for feeding the strip of label stock through the machine.

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On a side plate 10 which supports machine components is mounted a feed table 11 over which a strip or web 12 of label stock is fed from a parent roll 13. The strip 12 is desirably fed between the table 11 and an ink reservoir 14 which has an inking roll 15 past which the type face 16 on printing roller 20 wipes in the course of printing upon the web 12.

Side plate 10 also supports corresponding ends of a platen roller 19 and a printing and die cutting roller 20, both being driven by mechanism typified by that shown in my issued patent aforesaid. The printing and die cutting roller 20 desirably comprises a steel core 21 about which a rubber sleeve 23 is wrapped to provide a surface to which is adhered by its pressure sensitive backing a rubber printing plate 24 which carries the type face 16. Accordingly, the rubber printing plate 24 is easily removed from the rubber sleeve 23 for interchangeability with other like printing plates having different type faces, sizes and shapes.

In the circumferential gap 25 between the ends of the sleeve 23 is disposed a cut-off knife 26 mounted in a bar holder 27.

The dimensions of the parts are such that the cutting edge of the knife 26 has a radial extent sufficiently great to coact with platen roller 19 in the course of rotation of the rollers so as to cut off a discrete portion 30 of the strip 12. The exposed surface of rubber sleeve 23 has insufficient radial extent to contact the strip 12. The type face 16, however, projects radially far enough to press the strip 12 against the platen roll 19 so as to concurrently print upon and feed the strip in the course of roll rotation.

The operation of the device is illustrated in FIGS. 1 through 3. In FIG. 1 a label 30 has just been cut from the strip 12 by the cut-off knife 26. Continued rotation of rollers 19, 20 will have no feeding effect upon the strip 12, because no part of the sleeve 23 just following the knife 26 has sufficient radial projection to engage strip 12 against platen roller 19. To insure against inadvertent forward movement of the strip, a spring pressed brake shoe 31 mounted on a cross bar 32 from side wall 10 presses the strip 12 lightly against the table 11.

Roll 20 will rotate idly until the leading edges of the type face 16 come opposite the platen roller 19, whereupon the strip 12 will be pressed against the platen roller 19 to concurrently feed the strip 12 forwardly (the pressure brake 31 being insufficient to restrain such movement) and print upon the strip. Because the type face is the sole means to feed the strip, the strip will feed forwardly only until the trailing edges of type face 16 leave contact with the strip 12, as is shown in FIG. 3, whereupon the strip will be relieved of feeding pressure and will remain stationary until knife plate 26 again comes opposite the platen roller 19 to cut off the label into a discrete label portion 30, as is shown in FIG. 1. Accordingly, it is clear that the circumferential length of the type face automatically measures the length of the label 30 and that no other adjustment of the machine is required to produce labels of the appropriate length for the printed matter impressed thereon. When a different printing plate 24 having a type face 16 of different circumferential length is attached to the roll 20, the label produced by the machine will have a length corresponding substantially to that of the new type face.

FIG. 5 illustrates how a type face having a relatively long printed portion will produce relatively long labels 30, whereas FIG. 6 shows that for short type faces, the labels will be correspondingly shorter. The only precaution that must be taken is that the type must be continuous along the length of the type face in order that the feed of the strip be continuous throughout the length of label to be cut from the strip. Note the capital L and S in the type faces shown in FIGS. 5 and 6. Where the

literary content of the type face is longitudinally discontinuous, label borders or the like may be added to the type face in order to provide continuous contact of the type face with the label stock throughout the length of the label to be cut from the strip.

The cut-off knife 26 shown herein has a continuous edge. This edge may optionally be notched at spaced intervals to score or perforate the label stock. Label stock processed on a machine embodying the invention and having such a knife will remain continuous and may be rewound. The scored or perforated label portions may then be torn off into discrete labels along the perforated lines at the user's convenience. Accordingly, the term "cut-off knife" as used herein means both a knife having a continuous edge and one having a discontinuous edge.

As shown in FIG. 1, knife 26 completely severs label portions 30 from the strip 12. However, the label stock may be provided with a backing strip to which the label stock is laminated by a releasable pressure sensitive adhesive. The knife would ordinarily be set to sever only the label stock, leaving the backing web continuous, as is shown in my copending application Serial No. 802,385, filed March 27, 1959.

Rubber sleeve 23 has a diameter such that the type face 16 will project radially beyond the edge of knife blade 26 by about .01 inch. Accordingly, the type face will pick up ink from ink roll 15, but the knife will not. The rubber sleeve 23 is sufficiently resilient to permit radial retraction of the type while printing, notwithstanding its slight normal projection radially beyond the edge of knife 26 and the spacing of the rollers 19, 21 pursuant to which the knife 26 will cut into or score the label strip 12.

Knife 26 will inherently feed the strip 12 for the short distances indicated in FIGS. 5 and 6 between the type imprint and fore and aft edges of the label. These distances are the same for each label, regardless of the longitudinal extent of the type imprint. Accordingly, the length of the discrete strip portions cut off by the knife is automatically measured by the length of the type.

I claim:

1. An apparatus for producing printed labels from a continuous strip of label stock, said apparatus comprising a printing roll, a platen roll spaced radially from said printing roll at a distance permitting free passage of the strip between said rolls, a cut off knife on the printing roll extending transversely thereof and having sufficient radial extent to coact with the platen roll to cut the strip into discrete portions, and means removably mounted on the printing roll for simultaneously feeding said strip through lengths independent of the length of peripheral travel of said printing roll and for printing on said strip, said printing and feeding means being separate from said knife and comprising a continuous type face having a predetermined length extending circumferentially of said printing roll for a distance less than the entire circumference and a predetermined radial extent projecting beyond said printing roll from one end of said length to the other to press the strip against the platen roll to concurrently feed the strip and print thereon, said type face being the sole means for feeding said strip other than said knife whereby the length of the cut portions of said strip is automatically measured by said length of said type face independently of the length of peripheral travel of said printing roll, and corresponds substantially to the length of the printed impression made by said type face on the strip plus any advance caused by coaction of the knife with the strip.

2. The device of claim 1 in further combination with a brake which holds the strip against movement except when the strip is fed by the knife or the type face.

References Cited in the file of this patent

#### UNITED STATES PATENTS

35	970,768	Vaughan	Sept. 20, 1910
	994,081	Lipes	May 30, 1911
	1,664,768	Bull	Apr. 3, 1928
	2,121,309	Wale	June 21, 1938
	2,287,690	Loverch et al.	June 23, 1942
40	2,469,526	Sloat	May 10, 1949
	2,695,560	Parfett	Nov. 30, 1954
	2,946,281	Sohn	July 26, 1960