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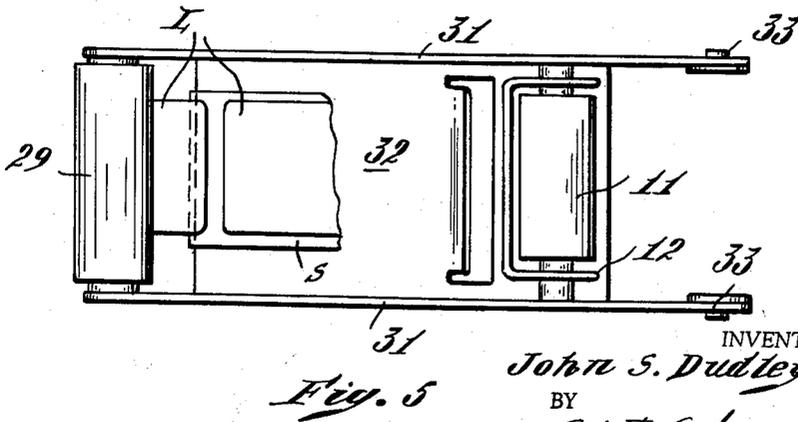
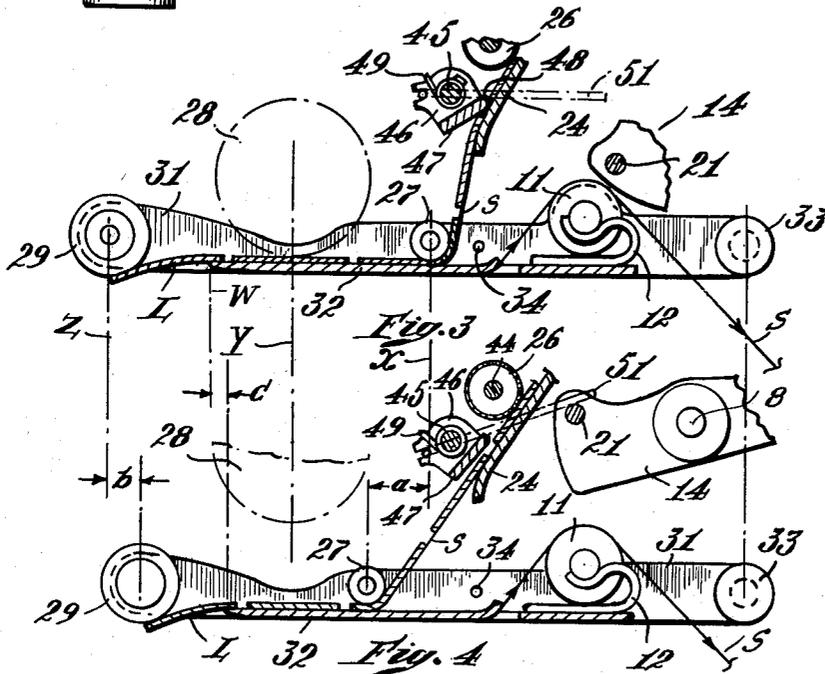
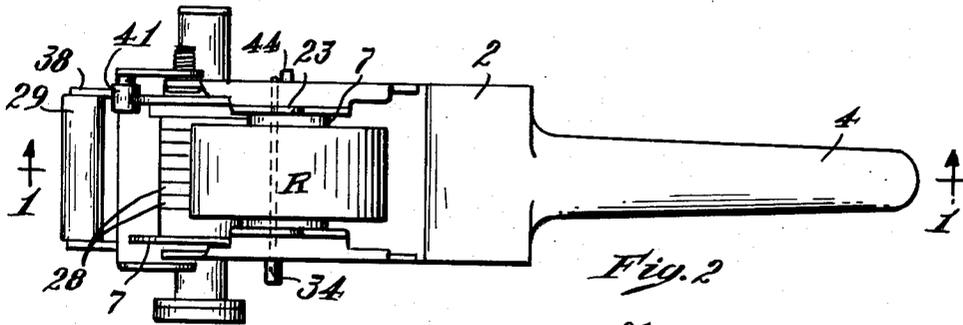
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DEVICE FOR PRINTING LABELS

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2 Sheets-Sheet 2



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DEVICE FOR PRINTING LABELS

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1 Claim. (Cl. 101-97)

This invention relates particularly to a device for printing and dispensing peelable labels mounted in succession on a ribbon at spaced intervals, the labels being mounted on the ribbon with pressure-sensitive adhesive so that they may be peeled off the ribbon and applied to an article by means of the pressure-sensitive adhesive. Such devices involve the problem of registering each label with the printing means so that the printing is located in the same position on each label. Owing to slippage of the feeding means, shrinking and expansion of the ribbon, etc. it has not been possible to register the label with printing means continuously throughout any substantial length of ribbon.

Objects of the present invention are to provide a device which produces accurate registry of each label with the printing means notwithstanding slippage, etc., which is simple and economical to produce and which is durable and reliable in use.

The present invention involves a cyclic device comprising drive means for frictionally pulling the ribbon along a predetermined path during the early part of recurrent cycles with pauses during the latter part of each cycle, means adjacent the path for printing successive labels during the aforesaid pauses respectively, means for actuating the aforesaid means conjointly in synchronism, a stop riding on the labels for holding the labels in printing position successively, the stop having a shoulder engageable with the leading edge of each label to cause the drive means to slip on the ribbon when a label reaches printing position, and means to lift the stop from the ribbon at the end of each cycle so that the ribbon is free to advance again during the next cycle. Preferably the pulling means includes an oscillator which pulls the ribbon when moving in one direction and lifts the stop when moving in the opposite direction. While the stop may be moved into operative position by gravity it is preferably actuated by a spring. In the preferred embodiment the stop has a rounded shoulder and engages the ribbon obliquely at an angle of approximately 30°.

For the purpose of illustration a typical embodiment of the invention is shown in the accompanying drawings in which

FIG. 1 is a section on line 1-1 of FIG. 2 showing the device in printing position;

FIG. 2 is a plan view;

FIG. 3 is a view like FIG. 1 with various parts omitted;

FIG. 4 is a view like FIG. 3 showing the base plate replaced by a plate for labels of different lengths and with the parts in idle position;

FIG. 5 is a top plan view of the base plate of FIG. 4 removed; and

FIG. 6 is a plan view of a label strip.

The particular embodiment of the invention chosen for the purpose of illustration comprises a frame consisting of side plates 1 interconnected by a top 2 which is secured to the side plates by means of screws 3. Fast to the top 2 is the stationary part 4 of a handle including the part 6 movable from the broken-line position to the full-line position in FIG. 1. The movable handle 6 is fast to a U-shaped yoke comprising sides 7 which extend along the inner faces of the side plates 1 and are pivoted thereto by means of a shaft 10. Pivoted on a shaft 8 is a feed roll 9 for feeding a tag strip S which is pressed against the roll by means of an idler roll 11 actuated by

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spring 12 at each end of the idler roll, the ends of the shaft 8 being journaled in the side plates 1. Fast to one end of the feed roll 9 is a ratchet wheel 13. Pivotally mounted on the shaft 8 is an arm 14 carrying a pawl 16 which is pressed against the ratchet wheel by means of a spring 17. Fast to the upper end of the arm 14 is a pin 18 extending through a slot 19 in one of the sides 7 of the movable handle 6. As the handle is moved from the broken-line to the full-line position in FIG. 1 the feed roll is advanced one step by the pawl 16, the pawl sliding back over the ratchet wheel on the return stroke of the handle. Also mounted on the lower end of the arm 14 is a pin 21 for the purpose hereinafter described.

The side plates 1 have upward extensions 22 to serve as bearings for the pinions 23 of a roll R of tag strip such as shown in FIG. 6, comprising pressure-sensitive labels L mounted on a strip S of release material from which the labels may be peeled easily. The strip feeds from the roll L downwardly over a guide plate 24 which is mounted on the sides 1 by means of flanges 25 and thence under a knurled roll 26 which serves to hold the strip against the guide plate 24. Thence the strip feeds under an idler roll 27, printing wheels 28 and an applicator roll 29, the rolls 27 and 29 being pivotally mounted between the side flanges 31 of a base plate 32 which serves as a platen for the printer 28. The strip S then feeds over a peeling edge 35, thence along the bottom of base plate 32, thence between the feed roll 9 and the backing roll 11 and thence out of the device. At the rear ends of the side flanges 31 are outwardly extending lugs 33 which snap into openings in the sides 1. Intermediate the ends of the base a pin 34 extends through the sides 1 and the side flanges 31. To remove the base it is necessary merely to remove pin 34 and snap the lugs 33 out of the openings in the sides 1.

The printing wheels 28 are pivotally mounted between the sides 7 of the movable handle 6 so as to swing from the idle position shown in broken lines in FIG. 4 to the printing position shown in full lines in FIG. 1 and broken lines in FIG. 3. The printing wheels 28 are set by means of a handle 36 projecting from one side of the device. When the printing wheels move to idle position they are inked by a pad 37 mounted on a U-shaped rocker arm 38 pivotally mounted on the sides 1 at 39. When the printing head moves from idle position to printing position the inking pad is swung out of the way by means of a cam follower 41 bearing on the cam-shaped end of one of the sides 7 of the movable handle 6. Inasmuch as this printing mechanism is conventional, further description is unnecessary for the purpose of the present invention.

At its lower end the guide plate 24 has side flanges 42 in which is pivotally mounted the aforesaid knurled roll 26 for pressing the label strip against the guide. The shaft 44 of the roll 26 extends outside the frame (FIG. 2) so that the roll may be turned by hand in threading the device. Immediately in advance of the roll 26 is a stop pivotally mounted on the side flanges 42 by means of a shaft 45. The stop is U-shaped, comprising upturned ends 46 and a crossbar 47 having a rounded shoulder 48 bearing on the label strip throughout the entire width of the strip. The stop is yieldingly pressed against the label strip by means of a coil spring 49. Fast to one end of the shaft 45 is a pin 51 which extends into the path of the aforesaid pin 21 of the arm 14. When the stop bears on the label strip between successive labels with the shoulder 48 abutting the leading edge of the next succeeding label, as shown in FIG. 3, the strip is held against further movement in response to the frictional drive rolls 9 and 11. However when the pin 21 lifts the pin 51 to the

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position shown in FIG. 4 the label strip is free to advance.

To adapt the device to labels of different lengths the distance between the lines X and Y, the distance between the lines Y and Z and the distance between the lines Y and W must be changed (FIG. 3). For this purpose a separate base 32 is provided for each label length, the different bases having the rolls 27 and 29 and the peeling edge 35 in different locations lengthwise of the base. FIG. 3 shows a base for one label length and FIG. 4 shows a base for a shorter length of label. For the shorter labels the roll 27 is offset to the left a distance a , the roll 29 is offset to the right a distance b and the peeling edge is offset to the right a distance c (FIG. 4). By using base plates corresponding to different label lengths the printing wheels always register with the labels and the applicator roll 29 and peeling edge are properly positioned to function as hereinafter described. This means of adjustment to labels of different lengths is claimed in the copending application of Wallace J. Satas filed on even date herewith.

Normally the handle 6 is in the retracted position shown in broken lines in FIG. 1 and both the printing head 28 and the stop 47 are in the retracted positions shown in FIG. 4. When the handle 6 is squeezed from the broken-line to the full-line position in FIG. 1 the label strip S is advanced by the feed roll 9 through the medium of ratchet 13 and pawl 16. During this advance of the feed strip the rounded-shoulder stop 47 rides over the next label on the strip S and snaps into the space between that label and the next succeeding label. When the label under the printing head is registered with the head the stop 47 abuts the leading edge of the next succeeding label and holds the strip against further advance by the friction feed wheel 9. While thus held at the end of the advance of the strip, the printing head 28 prints the label thereunder. When the handle 6 is returned to the idle position shown in broken lines in FIG. 1 the pin 21 on arm 14 engages the pin 51 to lift the stop 47 away from the feed strip. Thus when the handle is again squeezed the feed strip is free to advance again. As the pin 21 leaves

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idle position at the beginning of the next cycle, the stop 47 is returned to operative position by means of the spring 49.

As the strip S is peeled over the edge 35 the foremost label is projected under the applicator roll 29. Thus the foremost label may be applied to an article by pressing against the article with the roller 29 and pulling the device rearwardly to cause the roll 29 to roll over the label after pulling the tail end of the label off the strip S. This can be done either before or after the handle 6 is released but preferably before. To adjust the device to labels of different lengths the base plate 32 is replaced by a plate corresponding to the new label length as above described.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claim.

I claim:

20 For printing labels mounted in succession on a ribbon at spaced intervals, a cyclic device comprising drive means for frictionally pulling the ribbon along a predetermined path during the early part of recurrent cycles with a pause during the latter part of each cycle, means adjacent said path for printing successive labels during said pauses respectively, means for actuating said means conjointly in synchronism, a stop riding on said labels for holding the labels in printing position successively, the stop being inclined toward the ribbon in the direction opposite to the ribbon feed and having a rounded end yieldingly bearing on the ribbon for engagement with the leading edge of each label to cause said drive means to slip on the ribbon when a label reaches printing position, and means to lift the stop from the ribbon at the end of each cycle so that the ribbon is free to advance again during the next cycle.

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