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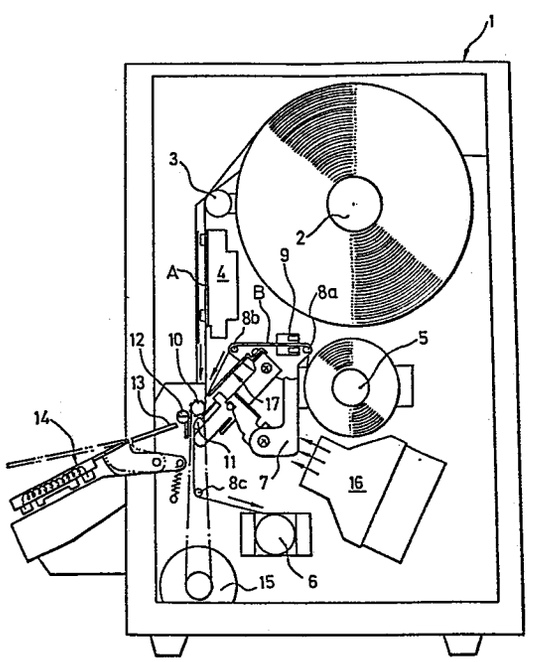
(54) Ribbon meandering preventing device for thermal printers.

(57) Herein disclosed is a ribbon meandering preventing device for use with a thermal printer which has a thermal head at the feed side of a heat-sensitive transfer carbon ribbon. A ribbon correcting plate is disposed to have its free end for supporting elastically and dragging the carbon ribbon before the carbon ribbon is guided to run side by side with a paper web of labels so that it may be heated to have its carbon transferred to print the labels one by one. The remaining base end of the ribbon correcting plate is cantilevered to the thermal printer such that the free end of the same is held to abut against the carbon ribbon for tensing the same to absorb the slackness and/or meandering run of the carbon ribbon. The ribbon correcting plate is stepped to ensure the elasticity and has its free end rounded to allow the carbon ribbon to smoothly run thereon while retaining the dragging action.



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S P E C I F I C A T I O N

TITLE OF THE INVENTION

Ribbon Meandering Preventing Device for Thermal Printers

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a thermal printer in which a heat-sensitive transfer carbon ribbon is heated by a thermal head to have its carbon transferred to print labels in the form of a paper web and, more particularly, to a ribbon meandering preventing device for use with a thermal printer, which prevents the carbon ribbon from meandering due to its slackness and/or swinging motion caused by the vibrations of the thermal head during the printing operation so that the carbon ribbon can be fed in a satisfactory state to the printing unit of the thermal printer.

Description of the Prior Art

Life Styles are diversified in accordance with the development of industry so that labels printed with data such as quality indications or kind controls are applied to all commodities. In accordance with the increase of

demand, a great number of labels are required to make it urgent to develop a printer which is improved to meet that demand.

In the thermal printer of the above-mentioned type according to the prior art, the label web and a heat-sensitive transfer carbon ribbon for thermal transfer of the labels are fed together to a thermal head. As is well known in the art, the carbon ribbon is made so soft that it vibrates while it is intermittently being fed by the action of a step motor. If the carbon ribbon vibrates, it swings into the so-called "meandering run". Then, the abutting state of the carbon ribbon with the thermal head becomes unstable so that it possibly has its portion left unprinted or wrinkled to have a serious defect.

The meandering run is also caused as a result of slight change in the adjustment of the printing speed in view of the progress of the printing operation. In each meandering run, the thermal printer has to be checked and adjusted so that its printing operations become inefficient.

SUMMARY OF THE INVENTION

The present invention has been proposed in view of the background thus far described and has an object

to provide a ribbon meandering preventing device for a thermal printer, which can ensure clear prints without any defficient portion by preventing a heat-sensitive transfer carbon ribbon from vibrating.

According to a feature of the present invention, there is provided a ribbon meandering preventing device for a thermal printer, comprising: a ribbon correcting plate for elastically supporting a heat-sensitive transfer carbon ribbon while dragging the same, immediately before said carbon ribbon is guided to run side by side with a paper web of labels for a transfer-printing operation; and cantilever means for cantilevering said ribbon correcting plate such that the remaining free end of said ribbon correcting plate is held to abut against said carbon ribbon for tensing the same to absorb the slackness and/or meandering run, if nay, of said carbon ribbon.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects, features and advantages of the present invention will become apparent from the following description taken with reference to the accompanying drawings, in which:

Fig. 1 is a sectional side elevation showing the overall construction of a thermal printer which is provided with a ribbon meandering preventing device according to

the present invention; and

Fig. 2 is a perspective view showing a ribbon correcting plate of the ribbon meandering preventing device of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in Fig. 1, a paper web of labels A is let off from a label let-off roll 2 and is guided by a guide roller 3 to run via a label detector 4 to a platen 10 and a thermal head 11.

On the other hand, a heat-sensitive transfer carbon ribbon B is let off from a ribbon let-off roll 5 and is guided by a guide roller 8a, a ribbon detector 9 and a guide roller 8b. The two guide rollers 8a and 8b are pivotted on a supporting frame 7. The carbon ribbon B thus guided is pulled out to accompany, i.e., to run side by side with the aforementioned label web A at a ribbon correcting plate 17 of the ribbon meandering preventing device, in other words, immediately upstream of the aforementioned platen 10 and thermal head 11. As a result, the united tape of the label web A and the carbon ribbon B is fed to the plate 10 and the thermal head 11 so that carbon may be transferred to print the labels A one by one by the heat of the thermal head 11 in accordance with indicia which are selected and stored in advance. After

this transfer-printing operation, the carbon ribbon B is guided by a guide roller 8c until it is taken up by means of a ribbon take-up roll 6.

In this meanwhile, the label web A printed in the carbon having the aforementioned desired indicia is cut by a rotary cutter 12, which is connected with the label detector 4, into the printed labels A of a predetermined size. These labels A are fed through a chute 13 to a label applicator 14 so that they may be applied to commodities or the like.

Here, a prime mover for running the label web A and the carbon ribbon B is a step motor 15 for intermittently revolving the platen 10. The revolutions of the step motor 15 are transmitted, too, to the rotary cutter 12 and the ribbon take-up roll 6 which has a slip structure.

Incidentally, reference numeral 16 appearing in Fig. 1 indicates a cooling fan for dissipating the heat during the heat transfer print by the thermal head 11.

Turning to Fig. 2, the ribbon correcting plate 17 of the ribbon meandering preventing device of the present invention is made of a thin plate having an elasticity and is cantilevered at 19, i.e., supported at its base end. More specifically, the ribbon correcting plate 17 has its base end fixed to the thermal printer 1 by fastening means 20 such as bolts or screws and its leading free end

18 rounded to allow the carbon ribbon B to smoothly run thereon while dragging the same.

Thus, the carbon ribbon B is guided to come into abutment against the free end edge 18 of the ribbon correcting plate 17 in the vicinity of the feed side of the thermal head 11 so that it is tensed and guided to run side by side with the label web A. As a result, the slackness and/or meandering run of the carbon ribbon B, which are caused by the vibrations of the platen 10 being intermittently revolved, can be absorbed by that free end edge 18 of the ribbon correcting plate 17, which applies the tension and drag to the carbon ribbon B.

As has been described hereinbefore, according to the present invention, the ribbon correcting plate holding the elasticity is cantilevered in the vicinity of the feed side of the thermal head for supporting elastically and dragging the carbon ribbon immediately before the carbon ribbon is guided to run side by side with the label web. As a result, the device of the present invention can absorb the slackness and/or meandering run of the carbon ribbon to have an advantage that it can ensure the clear prints without any defficiency.

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WHAT IS CLAIMED IS:

1. A ribbon meandering preventing device for a thermal printer, comprising: a ribbon correcting plate for elastically supporting a heat-sensitive transfer carbon ribbon while dragging the same, ~~immediately~~ before said carbon ribbon is guided to run side by side with a paper web of labels for a transfer-printing operation; and cantilever means for cantilevering said ribbon correcting plate such that the remaining free end of said ribbon correcting plate is held to abut against said carbon ribbon for tensing the same to absorb the slackness and/or meandering run, if any, of said carbon ribbon.

2. A ribbon meandering preventing device according to Claim 1, wherein said ribbon correcting plate is stepped to ensure the elasticity and has its free end rounded to allow said carbon ribbon to smoothly run thereon while retaining the dragging action.

3. A ribbon meandering preventing device according to Claim 1, wherein said cantilever means includes a plurality of screws fastening said ribbon correcting plate in position to said thermal printer.

4. A ribbon meandering preventing device for use with a thermal printer having a thermal head at the feed side of a heat-sensitive transfer carbon ribbon, comprising:

a ribbon correcting plate disposed to have its free end positioned in the vicinity of the feed side of said thermal head for supporting elastically and dragging said carbon ribbon ~~immediately~~ before said carbon ribbon is guided to run side by side with a paper web of labels so that it may be heated to have its carbon transferred to print the labels one by one; and

cantilever means for cantilevering the remaining base end of said ribbon correcting plate to said thermal printer such that the free end of said ribbon correcting plate is held to abut against said carbon ribbon for tensing the same to absorb the slackness and/or meandering run, if any, of said carbon ribbon.

5. A ribbon meandering preventing device according to Claim 4, wherein said ribbon correcting plate is stepped to ensure the elasticity and has its free end rounded to allow said carbon ribbon to smoothly run thereon while retaining the dragging action.

6. A ribbon meandering preventing device according to Claim 4, wherein said cantilever means includes a

plurality of screws fastening said ribbon correcting plate to the vicinity of said thermal head.

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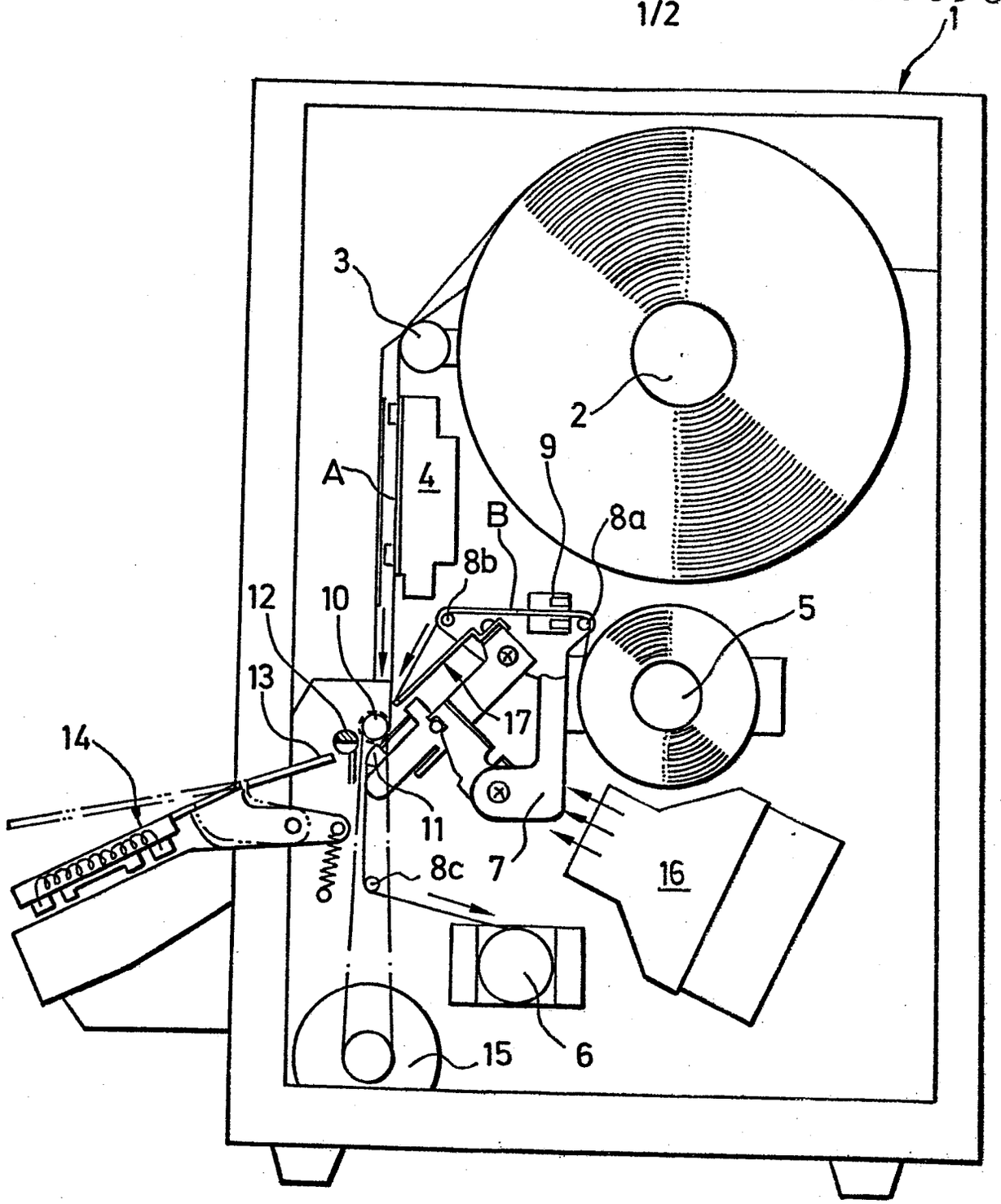

FIG.1

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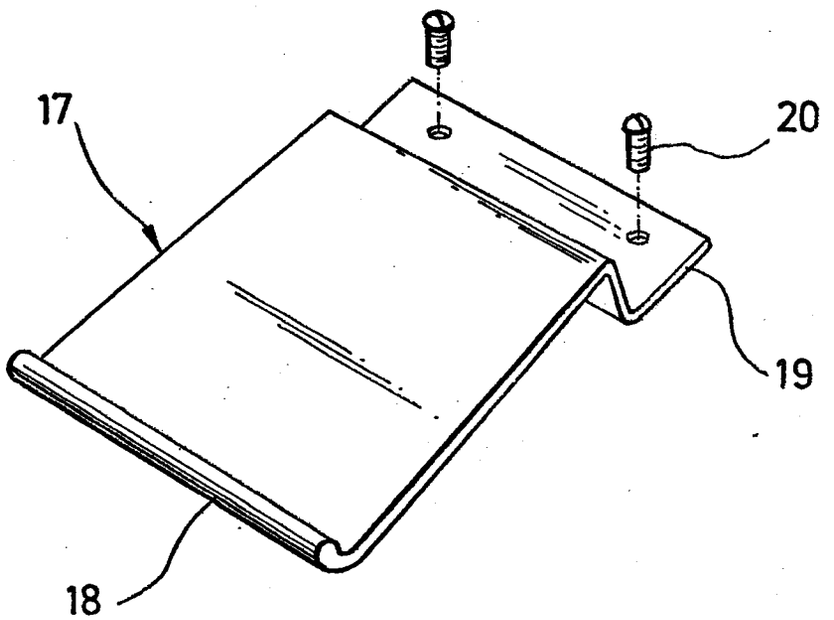

FIG.2