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Attorneys for Plaintiff
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UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

WESTERN DIVISION

DYMO B.V.B.A.

Plaintiff,

v.

ASTER GRAPHICS, INC.; ASTER GRAPHICS COMPANY LIMITED; ASTER TECHNOLOGY HOLLAND B.V.; and LINKYO CORPORATION,

Defendants.

Case No. CV 12-10767-SVW (MANx)

COMPLAINT FOR PATENT INFRINGEMENT

JURY TRIAL DEMANDED

Plaintiff Dymo B.V.B.A. sets forth the following Complaint against defendants Aster Graphics, Inc., Aster Graphics Company Limited, Aster Technology Holland B.V., and Linkyo Corporation for patent infringement, as follows:

JURISDICTION AND NATURE OF THE CASE

1. Dymo B.V.B.A. ("Dymo") is a Belgian corporation located at Industriepark-Noord 30, Sint-Niklaas, Belgium, that is the owner of certain patents relating to tape cassettes for use with label printers, as described in more detail hereinafter. Dymo is a wholly-owned subsidiary of Newell Rubbermaid Inc., a Delaware Corporation with its principal place of business at Three Glenlake Parkway, Atlanta, Georgia, a global marketer of consumer and commercial products. In this Complaint, Newell Rubbermaid Inc., and its subsidiaries, including Dymo, are referred to jointly as the "Newell Companies."

2. On information and belief, Aster Graphics, Inc., is a California corporation with its principal place of business at 13955 Valley View Ave., La Mirada, California.

3. On information and belief, Aster Graphics, Inc., is a subsidiary of Aster Graphics Company Limited, a Chinese corporation with a place of business at No. A22-23, Bld. D1, Phase VIII, New Town, Agile Garden, Sanxiang, Zhongshan, Guangdong, China.

4. On information and belief, Aster Technology Holland B.V. is a company related to Aster Graphics, Inc., and Aster Graphics Company Limited, and it participates in the manufacture, marketing, sales and/or distribution of the products accused of infringement in this Complaint. On information and belief, Aster Technology Holland B.V. is a Dutch corporation with principal place of business at Marco Poloweg 6, Venlo, The Netherlands. At the Internet site http://www.goaster.com/about-aster-graphics.html, Aster Technology Holland B.V., Aster Graphics, Inc. and Aster Graphics Company Limited, are described as

"an international network of branches and offices." In this Complaint, Aster Graphics, Inc., Aster Graphics Company Limited, and Aster Technology Holland B.V., are referred to jointly as "Aster."

5. On information and belief, Aster manufactures or has manufactured, imports into the United States, offers for sale in the United States, and/or sells in the United States certain tape cassettes having model number YT-45013, which cassettes infringe claims of patents owned by Dymo.

6. On information and belief, Linkyo Corporation is a California corporation with a place of business at 629 S. Sixth Ave., La Puente, California. Linkyo offers for sale and sells Aster's YT-45013 cassettes in the United States, at least through a wholly-owned entity referred to as "Supermediastore.com."

7. On information and belief, Supermediastore.com operates a retail store at 629 S. 6th Avenue, La Puente, California. As well, Supermediastore.com offers products for sale through the Internet, including the Aster YT-45013 cassette, from the site www.supermediastore.com.

8. Dymo's claims arise under the patent laws of the United States, specifically 35 U.S.C. §§ 154(d), 271, 281, 283, 284 and 285, for infringement of U.S. Patent No. 5,658,083 (the "083 Patent"), U.S. Patent No. 5,826,995 (the "995 Patent"), U.S. Patent No. 6,074,113 (the "113 Patent") and U.S. Patent No. 6,092,946 (the "946 Patent"). Copies of the four identified patents are attached hereto as Exhibits A, B, C and D. Together, the four patents are referred to herein as the "Dymo Patents."

9. This action is authorized by 35 U.S.C. § 281. The federal courts have original and exclusive jurisdiction of this action pursuant to 28 U.S.C. § 1338(a). Venue in this Court is appropriate pursuant to 28 U.S.C. §§ 1391 and 1400(b).

THE ACCUSED PRODUCTS

10. The Newell Companies, with Dymo's permission, sell printers used to create a variety of labels, using the brand name "Dymo." Among those printers are the Dymo LabelManager® series of label printers. By way of example, the Dymo 4500 printer and the Dymo LabelManager® 160 printer are depicted below:

11. The Newell Companies, with Dymo's permission, also manufacture and sell replaceable tape cassettes for use with the previously-identified label printers. The tape cassettes come in a variety of widths and are made of a variety of materials, providing the user with a choice of label size, font color and background color for the user's labels. Typically, a user purchases a Dymo brand label printer, and thereafter replaces the tape cassette when the original cassette is exhausted with another Dymo brand tape cassette of appropriate style. The style name applicable to the tape cassettes that are the subject of this action is "D1," and that style name is prominently featured on all tape cassettes sold by the Newell Companies that are compatible with the identified Dymo brand printers. The black on white label variety in ½ inch width has model number 45013. An example Dymo brand cassette, and its associated packaging, are depicted below:

12. On information and belief, Aster either makes or has made cassettes that are substantially identical to the Dymo brand D1 cassettes, imports those cassettes into the United States, and then offers those cassettes for sale and sells them in the United States. In doing so, Aster utilizes the D1 style name on its packaging in order to signify to purchasers that the cassettes are compatible with the previously identified Dymo brand printers and are to be used only in those Dymo brand printers. A photograph of such an Aster cassette, which was offered for sale and sold in La Puente, California, by Linkyo, and which is marked with the model number YT-45013, containing ½ inch width black on white label tape is shown below. As can be seen, the Aster cassette is substantially identical to the Dymo brand cassette, and the packaging copies many key features of the Dymo brand packaging:

13. On information and belief, Linkyo is a distributor of Aster cassettes such as the cassette depicted above, within the United States, and operates its business in the area of Los Angeles County, California, including through the online site "www.supermediastore.com."

14. Aster utilizes the model number YT-45013 (along with the "D1" designation) to identify those cassettes, and may utilize additional model numbers for other cassettes that differ from the YT-45013 cassette only in the width of the tape and/or in the font color or background color associated with the tape – features which are not relevant to the question of infringement of the Dymo Patents. Together, all such cassettes, by whatever specific model number designated, are referred to hereinafter as the "Accused Products."

15. Both Aster and Linkyo sell and offer for sale the Accused Products in the United States in derogation of the Dymo Patents.

16. On information and belief, neither Aster nor Linkyo make nor offer for sale printers, but rather they rely entirely on prior purchasers of Dymo brand printers as their source of customers for the Accused Products.

17. Aster and Linkyo intend that the Accused Products be combined with Dymo brand printers by their customers, and they instruct them and induce them so to do by their advertising and marketing efforts. As an example, Exhibit E hereto is a brochure believed to have been circulated by Aster to customers of Dymo brand products, and it explains in part that:

> Dymo is one of the most popular brands of label printer. From the information we have, Dymo owns an installed base of over 4 million pcs of label printers in the USA. However, there have been no aftermarket supplies for these printers for a long time. This kind of situation comes to an end when Aster Graphics launches its compatible solutions.
>
> Now the replacement label cassette of Dymo's 45013/S0720530 for use with LMPC II, LM360D, LM350, LP350, LM260, LM450, LM210D, LM120P, LM220P, LM155, LM150, LP250 and LabelWriter DUO is available from Aster USA.

18. In Exhibit E, Aster also claims that its cassettes are "100% compatible. We guarantee that all our products are 100% compatible with OEM machines *[i.e., Dymo brand printers]*."

19. The United States Patent and Trademark Office issued the following patents to Dymo, attached hereto as Exhibits A through D, respectively: U.S. Patent No. 5,658,083 ("Cassette for a thermal printer") on August 19, 1997, issued U.S. Patent No. 5,826,995 ("Cassette for a thermal printer") on October 27, 1998, issued U.S. Patent No. 6,074,113 ("Tape printer having a cutter with a guide mechanism") on June 13, 2000, and issued U.S. Patent No. 6,092,946 ("Tape printing apparatus and tape holding case with a sliding mechanism") on July 25, 2000.

20. Dymo is the assignee and owner of all rights in the Dymo Patents and has not granted any rights in those patents to Aster or Linkyo.

FIRST CLAIM FOR INFRINGEMENT OF THE 083 PATENT

21. The foregoing allegations are realleged and incorporated by reference as though fully set forth herein.

22. Aster and Linkyo each directly infringe claims of the 083 Patent, induce others so to infringe, and/or contribute to the infringement thereof by others, by making, using, selling, importing into the United States, and/or offering for sale the Accused Products, either literally or by virtue of the doctrine of equivalents.

23. Neither Aster nor Linkyo is authorized to practice the inventions of the 083 Patent.

24. If Aster and Linkyo are permitted to continue to make, use, sell or offer for sale the Accused Products, Dymo will suffer irreparable injury from the erosion of its patent rights in the 083 Patent.

25. Dymo has suffered injury from Aster's and Linkyo's infringement and is entitled to be made whole to the extent possible by an award of money damages in its favor, as well as the award of preliminary and permanent injunctive relief.

26. Aster's and Linkyo's present and expected future infringement of the 083 Patent, with knowledge of that Patent, is willful and objectively reckless, entitling Dymo to enhanced damages pursuant to 35 U.S.C. § 284, and to an award of its attorneys' fees and costs in the bringing and maintaining of this action pursuant to 35 U.S.C. § 285.

SECOND CLAIM FOR INFRINGEMENT OF THE 995 PATENT

27. The foregoing allegations are realleged and incorporated by reference as though fully set forth herein.

28. Aster and Linkyo each directly infringe claims of the 995 Patent, induce others so to infringe, and/or contribute to the infringement thereof by others, by making, using, selling, importing into the United States, and/or offering for sale the Accused Products, either literally or by virtue of the doctrine of equivalents.

29. Neither Aster nor Linkyo is authorized to practice the inventions of the 995 Patent.

30. If Aster and Linkyo are permitted to continue to make, use, sell or offer for sale the Accused Products, Dymo will suffer irreparable injury from the erosion of its patent rights in the 995 Patent.

31. Dymo has suffered injury from Aster's and Linkyo's infringement and is entitled to be made whole to the extent possible by an award of money damages in its favor, as well as the award of preliminary and permanent injunctive relief.

32. Aster's and Linkyo's present and expected future infringement of the 995 Patent, with knowledge of that Patent, is willful and objectively reckless, entitling Dymo to enhanced damages pursuant to 35 U.S.C. § 284, and to an award of its attorneys' fees and costs in the bringing and maintaining of this action pursuant to 35 U.S.C. § 285.

THIRD CLAIM FOR INFRINGEMENT OF THE 113 PATENT

33. The foregoing allegations are realleged and incorporated by reference as though fully set forth herein.

34. Aster and Linkyo each directly infringe claims of the 113 Patent, induce others so to infringe, and/or contribute to the infringement thereof by others, by making, using, selling, importing into the United States, and/or offering for sale the Accused Products, either literally or by virtue of the doctrine of equivalents.

35. Neither Aster nor Linkyo is authorized to practice the inventions of the 113 Patent.

36. If Aster and Linkyo are permitted to continue to make, use, sell or offer for sale the Accused Products, Dymo will suffer irreparable injury from the erosion of its patent rights in the 113 Patent.

37. Dymo has suffered injury from Aster's and Linkyo's infringement and is entitled to be made whole to the extent possible by an award of money damages in its favor, as well as the award of preliminary and permanent injunctive relief.

38. Aster's and Linkyo's present and expected future infringement of the 113 Patent, with knowledge of that Patent, is willful and objectively reckless,

entitling Dymo to enhanced damages pursuant to 35 U.S.C. § 284, and to an award of its attorneys' fees and costs in the bringing and maintaining of this action pursuant to 35 U.S.C. § 285.

FOURTH CLAIM FOR INFRINGEMENT OF THE 946 PATENT

39. The foregoing allegations are realleged and incorporated by reference as though fully set forth herein.

40. Aster and Linkyo each directly infringe claims of the 946 Patent, induce others so to infringe, and/or contribute to the infringement thereof by others, by making, using, selling, importing into the United States, and/or offering for sale the Accused Products, either literally or by virtue of the doctrine of equivalents.

41. Neither Aster nor Linkyo is authorized to practice the inventions of the 946 Patent.

42. If Aster and Linkyo are permitted to continue to make, use, sell or offer for sale the Accused Products, Dymo will suffer irreparable injury from the erosion of its patent rights in the 946 Patent.

43. Dymo has suffered injury from Aster's and Linkyo's infringement and is entitled to be made whole to the extent possible by an award of money damages in its favor, as well as the award of preliminary and permanent injunctive relief.

44. Aster's and Linkyo's present and expected future infringement of the 946 Patent, with knowledge of that Patent, is willful and objectively reckless, entitling Dymo to enhanced damages pursuant to 35 U.S.C. § 284, and to an award of its attorneys' fees and costs in the bringing and maintaining of this action pursuant to 35 U.S.C. § 285.

PRAYER FOR RELIEF

WHEREFORE, Dymo demands judgment, jointly and severally, against Aster and Linkyo as follows:

1. For a preliminary and a permanent injunction enjoining Defendants, their successors and assigns, and their officers, directors, agents,

servants, employees, and all entities and individuals acting in concert with them or on their behalf, from continued infringement of the 083, 995, 113 and 946 Patents;

2. For an accounting of all damages and a judgment for general damages against each Defendant, jointly and severally, as compensation for each of their use, exploitation and infringement of the 083, 995, 113 and 946 Patents;

3. For an increase of all such monetary damages described above to three times their amount, pursuant to 35 U.S.C. § 284, for willful infringement of the 083, 995, 113 and 946 Patents;

4. For the cost of this action, together with an assessment of interest and reasonable attorneys' fees pursuant to 35 U.S.C. § 285;

5. For an award of pre-judgment interest; and

6. For such other and further relief as this Court may deem just and proper.

DEMAND FOR JURY TRIAL

Dymo demands a trial by jury as to all issues triable by a jury in this action.

Dated: December 17, 2012

BAKER & HOSTETLER LLP
LISA I. DAMJI
THOMAS H. SHUNK
LAWRENCE M. SUNG
KRISTA L. LYNCH

By:/s/ Lisa I. Damji
Lisa I. Damji

Attorneys for Plaintiff
DYMO B.V.B.A

EXHIBIT A

US005658083A

United States Patent [19]

Day et al.

[11] Patent Number: 5,658,083

[45] Date of Patent: Aug. 19, 1997

[54] **CASSETTE FOR A THERMAL PRINTER**

[75] Inventors: **Robert Charles Lewis Day**, Cambridge; **Richard William Ware**, Welwyn Garden City, both of United Kingdom

[73] Assignee: **Esselte N.V.**, St. Niklaas, Belgium

[21] Appl. No.: **470,657**

[22] Filed: **Jun. 6, 1995**

Related U.S. Application Data

[63] Continuation of Ser. No. 266,828, Jun. 27, 1994, abandoned.

[30] **Foreign Application Priority Data**

Jul. 12, 1993 [GB] United Kingdom 9314386

[51] **Int. Cl.**[6] **B41J 11/70**

[52] **U.S. Cl.** **400/621**; 400/593; 400/586

[58] **Field of Search** 400/593, 621, 400/615.2, 586

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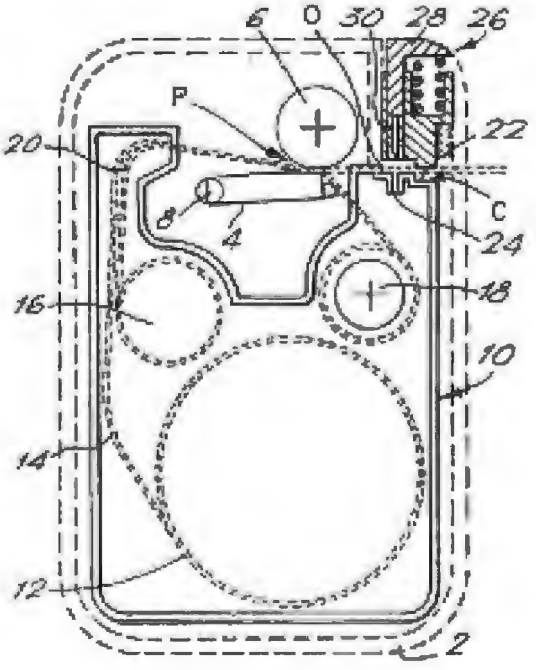
Primary Examiner—John S. Hilten
Attorney, Agent, or Firm—Pennie & Edmonds LLP

[57] **ABSTRACT**

A tape holding case is described for use with a thermal printing device which allows for more efficient cutting and feeding of tape. The cassette has a slot into which a cutting blade can pass which avoids the use of an anvil for cutting. Moreover, the cassette can have a stepped portion for providing a so-called "peel out" at the end of the tape.

20 Claims, 4 Drawing Sheets



COMPLAINT EXHIBIT A

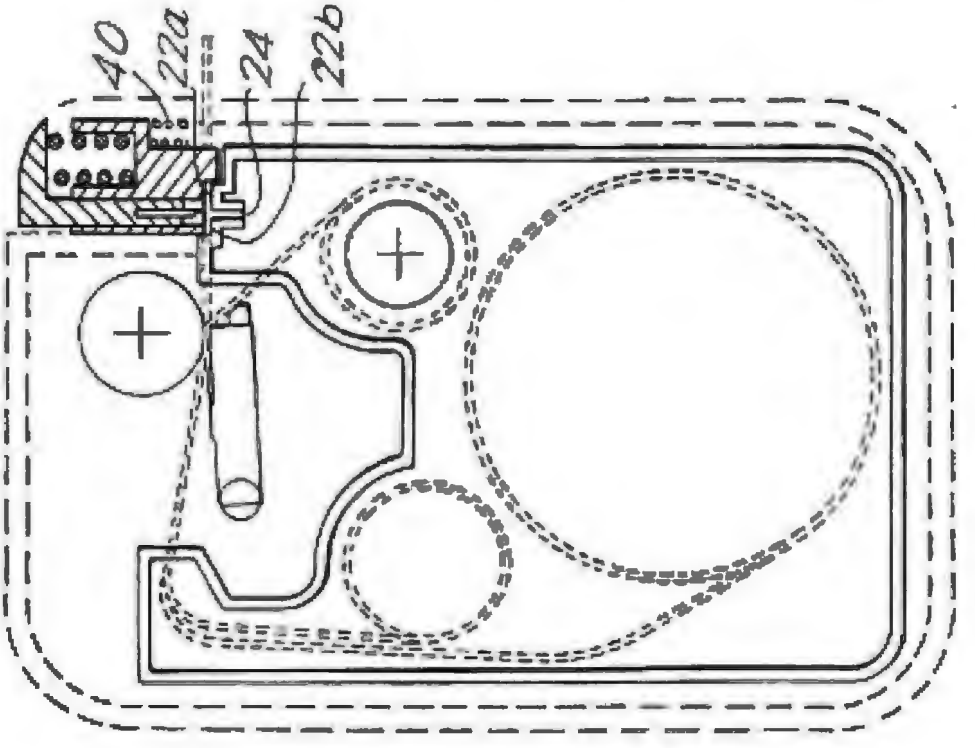


FIG. 2

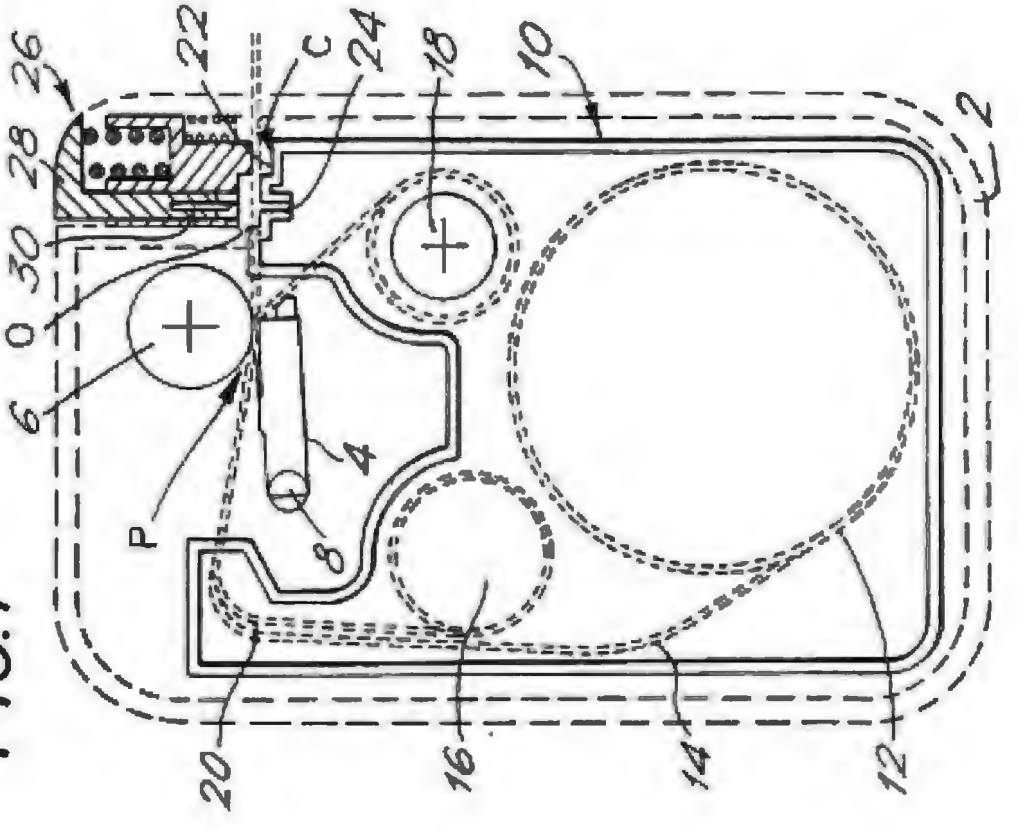


FIG. 1

FIG. 4.

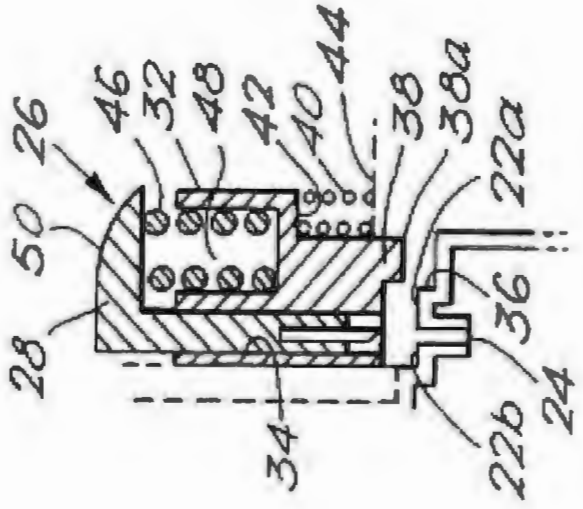


FIG. 3.

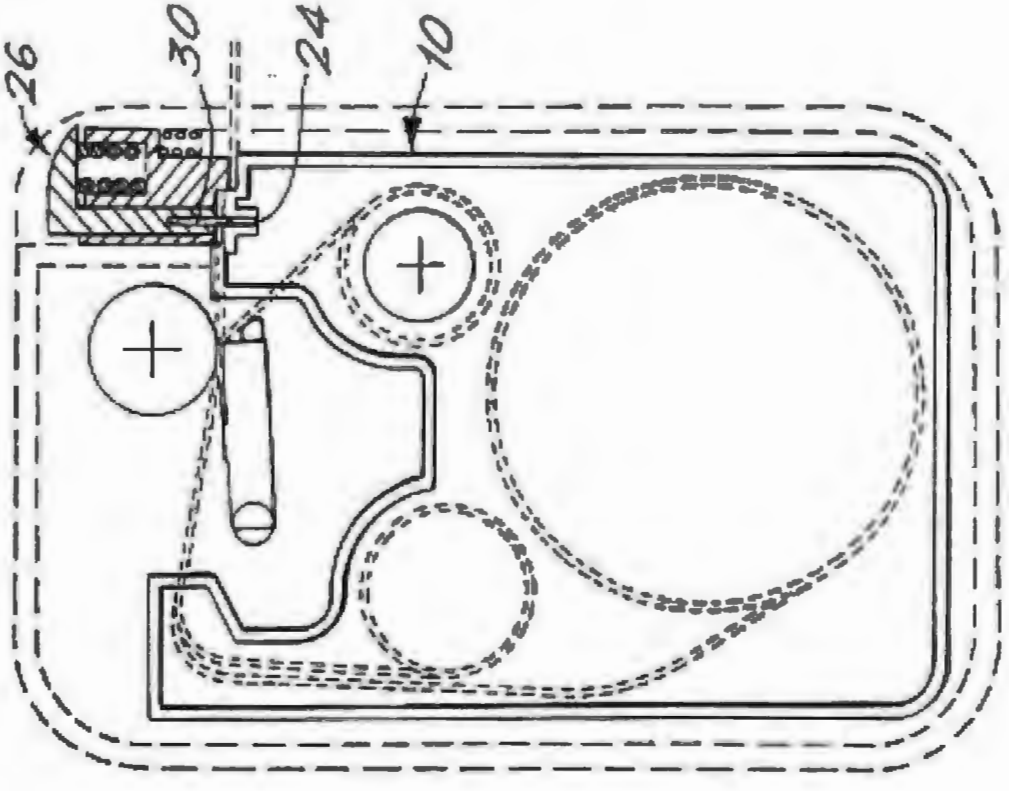


FIG. 4a.

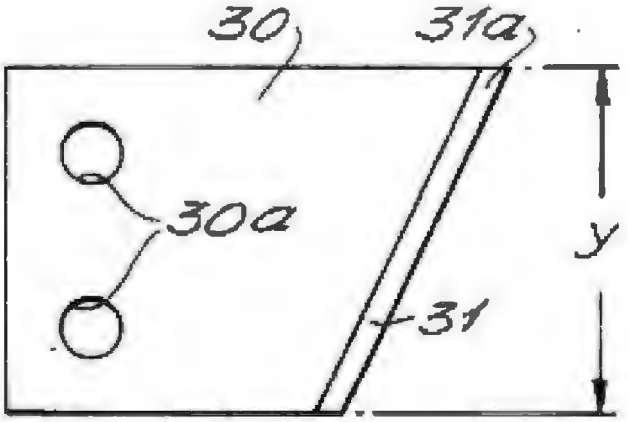


FIG. 4b.

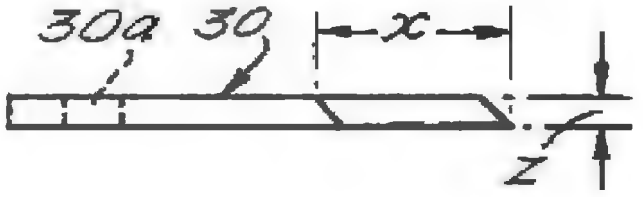


FIG. 5.

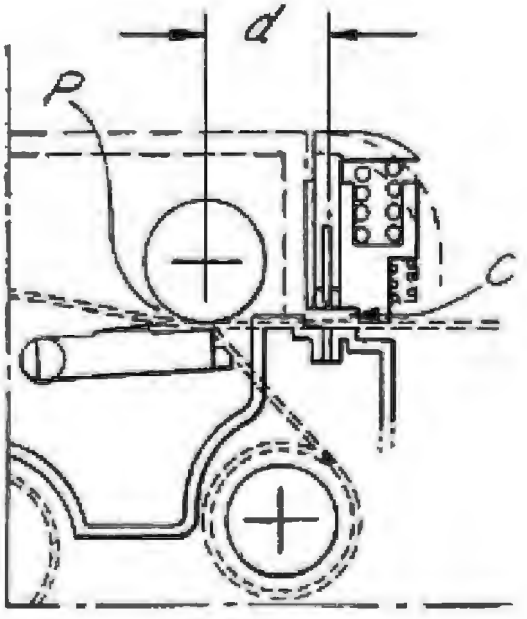


FIG. 8.

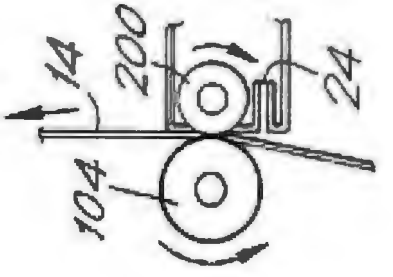


FIG. 7.

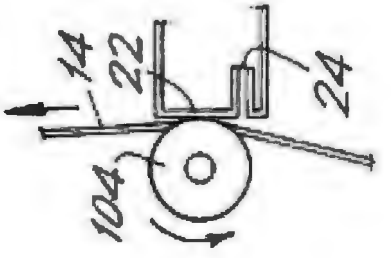
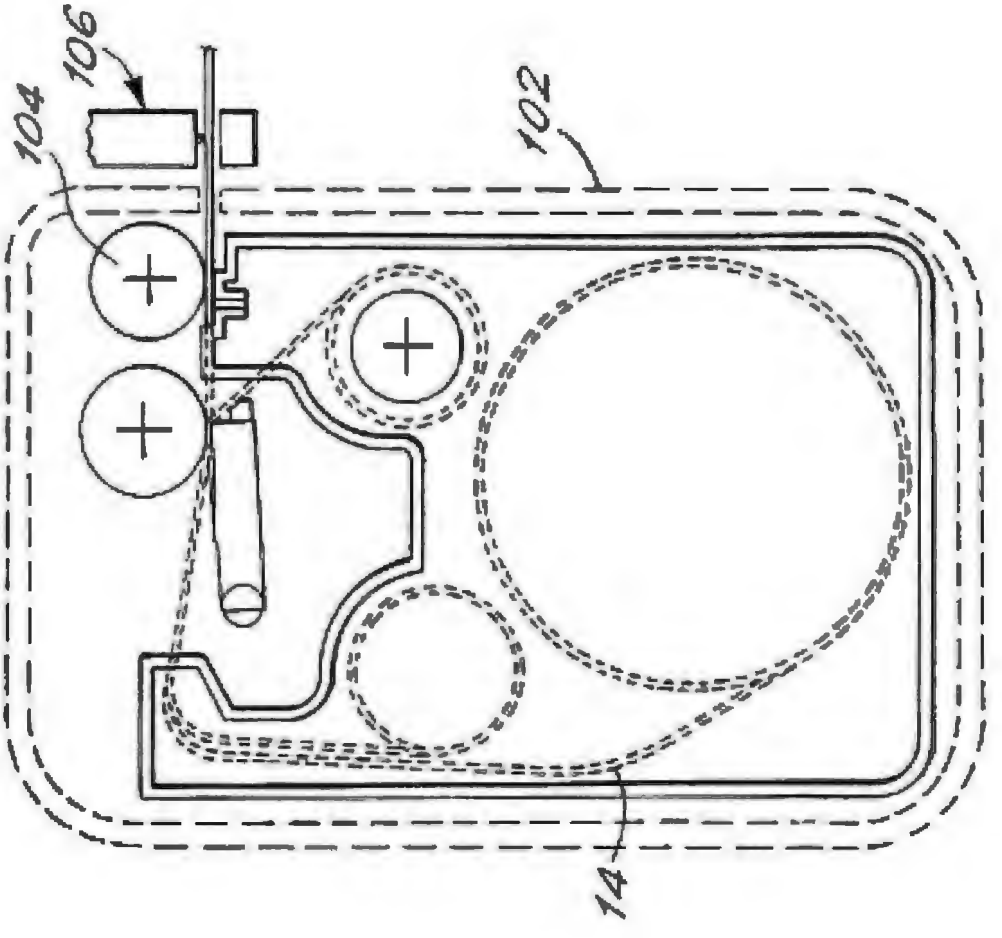


FIG. 6.



CASSETTE FOR A THERMAL PRINTER

This is a continuation of application Ser. No. 08/266,828, filed Jun. 27, 1994, now abandoned.

TITLE OF THE INVENTION

The present invention relates to a cassette for a thermal printer, and to a thermal printer in combination with such a cassette.

BACKGROUND TO THE INVENTION

Thermal printers of the type with which the present invention is concerned are known. They operate with a supply of tape arranged to receive an image and a means for transferring image onto the tape. In one form, a tape holding case or cassette holds a supply of image receiving tape and a supply of an image transfer ribbon, the image receiving tape and transfer ribbon being passed in overlap through a printing zone of the printing device. A printing device operating with a tape holding case of this type is described for example in EP-A-0267890 (Varitronics, Inc.). Other printing devices have been made in which letters are transferred to an image receiving tape by a dry lettering or dry film impression process. In all of these printing devices, the construction of the image receiving tape is substantially the same. That is, it comprises an upper layer for receiving an image which is secured to a releasable backing layer by a layer of adhesive. Once an image or message has been printed on the tape, it is desired to cut off that portion of the tape to enable it to be used as a label. For this purpose, it is necessary to remove the releasable backing layer from the upper layer to enable the upper layer to be secured to a surface by means of the adhesive layer. In EP-A-0267890 scissors are used to cut off the tape.

In another type of printing device described for example in EP-A-0322919 (Brother) a tape holding case holds a supply of image receiving tape, a supply of an image transfer ribbon and a supply of adhesive backing tape. The adhesive backing tape has an adhesive layer for contact with the image receiving tape, a substrate layer and a second adhesive layer covered by a releasable backing layer. The characters are printed onto the image receiving tape, which is transparent, as a mirror image.

In a further printing device, described for example in EP-A-0487313 (Esselte Dymo N.V.), a tape holding case holds a supply of image receiving tape and a supply of image transfer ribbon, the image receiving tape having the same construction as described above with reference to EP-A-0267890. In this device, the cassette includes a feed roller which is rotatably mounted and which cooperates with an output roller of a printing device into which the cassette is inserted to feed the image receiving tape out of the printing device after printing has taken place. After the tape has been fed out of the cassette, the printed portion of the tape is cut off by a cutting mechanism located outside the cassette boundary. A similar arrangement is utilised in EP-A-0322919. EP-B-0364305 describes a cassette which has a portion extending beyond the feed roller to provide an anvil for a cutting blade.

In both of these devices, printing is carried out at a print location defined by a thermal print head and a platen against which the print head presses the image receiving tape and image transfer ribbon during printing. The image receiving tape is then fed past the print location by the feed mechanism comprising the feed roller of the cassette and the output roller of the printing device to a cutting mechanism located outside the cassette boundary. Thus, the distance from the print location to the cutting mechanism can be of the order of 23–25 mm and this defines the blank lead portion of a label. It is desirable to reduce the blank lead portion of a label to avoid wasted blank tape and to improve the appearance of labels. Various methods have been proposed to reduce these leaders, all of which methods have involved the use of software control of the way in which the image receiving tape is printed and fed out. In one aspect, the present invention seeks to provide a reduced length of blank tape on a label without the need for complex software control.

Another disadvantage arising from the printing devices of EP-A-0322919, EP-B-0364305 and EP-A-0487313 is that the tape is cut off using a blade which is brought into contact with the tape while it is supported by an anvil. Not only does the action of a blade against an anvil require a significant amount of cutting force to be applied, but it also results in the wear of cutting blades and a need for their replacement during the life of the printer. Another aspect of the present invention provides a solution to these problems.

Finally, the invention seeks to provide a cassette which can be used in a variety of different types of printing devices.

SUMMARY OF THE INVENTION

According to one aspect of the present invention there is provided a tape holding case or cassette for a thermal printer holding at least a supply of image receiving tape and having an outlet through which the image receiving tape can be fed out, the tape holding case having adjacent the outlet a wall portion arranged to support the image receiving tape during cutting and defining a slot underneath the tape into which a blade can travel during cutting.

This arrangement avoids the use of an anvil for cutting. It has been found that the cutting force required to make a cut is significantly reduced, as is the wear of the blade.

Preferably the cassette has no feed roller, and said wall portion is shaped to cooperate with an output roller of a printing device into which the cassette is inserted to feed tape out of the cassette.

Such a cassette is suited for use in a printing device having an output roller. Such a cassette is also suitable for use in a printing device which has no output roller but which instead has a rotatable platen which not only supports the tape during printing but also is driven to feed the tape out of the cassette. The wall portion can be flat or can provide at least one stepped portion over which the tape can be bent during cutting.

The invention also contemplates a printing device with an afore-defined cassette, which printing device has a cutting mechanism located opposite said slot and which comprises a platen rotatable to feed tape out of the cassette, said platen also cooperating with a print head for printing onto the tape. In such a device, no separate output roller is provided and so the distance between the print location (defined between the platen and the print head) and the cutting location (at the slot) can be minimised, thereby to minimise blank leaders on a label.

Preferably the cassette also holds a supply of image transfer ribbon wound between supply and take-up spools.

According to another aspect of the present invention there is provided a cutting apparatus comprising a cutting blade, a support member defining a wall portion arranged to support a tape during cutting and defining a slot underneath the tape into which the blade can travel during cutting. The

support member can be part of a cassette as discussed above, or can form part of the printing device itself. Alternatively, it can be a separate component altogether. In any one of these cases, the advantage of cutting a tape into a slot is achieved.

According to a further aspect of the present invention there is provided a tape holding case or cassette for a thermal printer holding at least a supply of image receiving tape and having an outlet through which the image receiving tape can be fed out, the tape holding case having adjacent the outlet a wall portion arranged to support the image receiving tape during cutting and defining at least one stepped portion over which the tape can be bent during cutting.

Such a cassette can be provided in association with the cutting apparatus which comprises a cutting blade mounted for movement towards the tape to cut it and a tape bending member cooperable with the at least one stepped portion to bend the tape.

As discussed in our European Application (Page White & Farrer Ref. 73532) when the image receiving tape comprises an image receiving layer secured to a backing layer via adhesive, bending of the tape causes the backing layer to separate from the image receiving layer due to a difference in their resilience. It is particularly advantageous to provide a so-called peel feature as part of the cassette wall. In this case, the cassette wall portion can be shaped to cooperate with an output roller of a printing device to increase its versatility.

For a better understanding of the present invention, and to show how the same may be carried into effect, reference will now be made by way of example to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1, 2 and 3 show a printing device with a cassette inserted therein with the cutting mechanism in various stages of operation;

FIG. 4 is a more detailed view of the cutting mechanism;

FIG. 4a and 4b are a plan view and a side view respectively of a blade;

FIG. 5 illustrates how the blank leader of a label is reduced using a cassette of the present invention;

FIG. 6 is plan view showing the cassette of the invention inserted into an alternative type of printing device;

FIG. 7 is a sketch showing cooperation of an output roller of a printing device with the cassette wall; and

FIG. 8 is a sketch showing cooperation of an output roller of a printing device with an idle roller of the cassette.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 illustrates in plan view a cassette bay of a printing device. The cassette bay is shown by the dotted line 2. The cassette bay includes a thermal print head 4 and a platen 6 which cooperate to define a print location P in a manner which is known in the art. The print head 4 is pivotable about a pivot point 8 so that it can be brought into contact with the platen 6 for printing and moved away from the platen to enable a cassette to be removed and replaced.

A cassette inserted into the cassette bay 2 is denoted generally by reference numeral 10. The cassette holds a supply spool 12 of image receiving tape 14 which comprises an image receiving layer secured to a backing layer by a layer of adhesive. The image receiving tape 14 is guided by a guide mechanism (which is not shown) through the cassette, out of the cassette through an outlet O, past the print location P to a cutting location C. The cassette 10 also has an ink ribbon supply spool 16 and an ink ribbon take up spool 18. The ink ribbon 20 is guided from the ink ribbon supply spool 16 through the print location P and taken up on the ink ribbon take up spool 18. The image receiving tape 14 passes in overlap with the ink ribbon 20 through the print location P with its image receiving layer in contact with the ink ribbon.

In the printing device illustrated in FIG. 1, the platen 6 is driven so that it rotates to drive the image receiving tape 14 past the print location P during printing. In this way, tape is printed and fed out from the print location P to the cutting location C. In contrast to earlier devices, the cutting location C is provided at a location on a portion of the wall of the cassette 10 which is close to the print location P. As the tape is fed out of the cassette by driving the platen 6, there is no need for a further feed mechanism for the tape and this enables the cutting location C to be closer to the print location P. In the described embodiment, as illustrated in FIG. 5, the distance d between the cutting location and the print location can be 9 mm. The portion of the wall of the cassette 10 where the cutting location C is defined is denoted by reference numeral 22. A slot 24 is defined in this wall portion and the image receiving tape 14 is fed past the print location P to the cutting location C where it is supported by facing wall portions 22a, 22b on either side of the slot 24 (see FIG. 2).

The printing device includes a cutting mechanism denoted generally by reference numeral 26. This cutting mechanism includes a cutter support member 28 which carries a blade 30. The design of the blade 30 can be seen more clearly in FIG. 4a and 4b. The blade 30 has a sharpened and angled cutting edge 31. In FIG. 4a the dimension x is 6 mm and y is 13 mm. Holes 30a are provided to enable the blade 30 to be mounted in the cutter support member. In FIG. 4b, the dimension z is 0.70 mm. These dimensions are only exemplary—any suitable blade can be used. The blade 30 cuts the image receiving tape 14 and then enters the slot 24 with the leading part 31a of its edge 31 first, rather than bearing against an anvil. The detailed operation of the cutting mechanism is discussed later. However, it is appropriate to point out here that the inventors have found that there are significant advantages to cutting into a slot rather than against an anvil. The amount of force which is required to cut the tape is significantly reduced, and this reduces the cost of the product and the amount of space required for the cutting mechanism. Particularly when considering automated cutting mechanisms, the large amount of force required to cut a tape against an anvil have required complex gearing mechanisms giving a substantial mechanical advantage which has utilised space in the product. Thus, although the cutting mechanism described herein is intended to be manually operated, the concept of cutting into a slot would also have advantages in an automated cutting system.

Furthermore, as the blade cuts into a slot rather than against an anvil, there is no anvil which can wear out and also the life of the blade is increased. This makes it possible to design a cutting mechanism where the blade does not need to be replaced over the life of the printer.

FIG. 4 shows the cutting mechanism 26 in more detail. The cutting mechanism comprises with the cutter support member 28 a tape clamp 32. The cutter support member 28 is mounted for movement within a slot 34 in the tape clamp 32. The portion 22 of the cassette wall 10 defining the cutting location C has adjacent one of the facing surfaces

22a a stepped portion 36 which cooperates with a stepped portion 38 in the tape clamp 32 in a manner which will be described more clearly hereinafter. A relatively weak spring 40 is located between a ledge 42 of the tape clamp 32 and a cooperating ledge 44 of the casing 2. A relatively stiff spring 46 is located in a recess 48 of the tape clamp 32 to act against the cutter support member 28. The cutter support member provides a surface which is preferably formed in the shape of a button 50 or the like and which can be depressed by a user using manual force.

FIG. 1 shows the cutting mechanism in its ready to cut state, that is with the blade 30 spaced from the tape 14 and a lower surface 38a of the tape clamp 32 just clear of the tape 14. This permits the leading edge of the tape to be driven past the lower surface 38a without excessive risk of catching on it or being deflected by it. When the button 50 is depressed, the relatively weak spring 40 is compressed first against the ledge 44 as shown in FIG. 2 and causes the tape clamp 32 to hold the tape 14 against the surfaces 22a, 22b thereby clamping the tape 14 against the cassette on both sides of the slot, ensuring that the tape does not move sideways during subsequent cutting and that the cut edge is square. The stepped portion 36 of the cassette wall cooperates with the stepped portion 38 of the tape clamp 32 to bend the tape against the stepped portion 38 of the tape clamp, the backing layer of the tape being adjacent the stepped portion 38. The blade 30 is simultaneously caused to be lowered until it is just in contact with the tape 14. As the button 50 is further depressed, the relatively stiff spring 46 is compressed to cause the cutter support member 28 to move relative to the tape clamp 32 to cause the blade 30 to cut the tape 14. This then provides a portion of tape with a bent portion just behind the cut trailing edge. When the button 50 is released, the cutting mechanism is in its ready-to-cut position under the action of the springs.

In this arrangement, not only does the cutting mechanism have the advantage of providing a cut through the tape into a slot, but it also leaves the trailing edge of the label with a bent part providing a so-called "easy to peel" feature. This is discussed in more detail in our copending European Application No. (Page White & Farrer Ref. 73532) the contents of which are herein incorporated by reference. Briefly, the bend in the tape causes the backing layer to separate from the image receiving layer as a result of their differences in resilience so as to enable a user to peel the backing layer from the image receiving layer more easily.

FIG. 6 illustrates a further advantage of the cassette described herein. In FIG. 6, reference numeral 102 denotes the casing of a cassette bay of a printing device which is different to the printing device described above with reference to FIG. 1 to 5. The printing device in FIG. 6 is of the type discussed above with reference to EP-A-0487313. In this printing device, feeding of the tape 14 is accomplished not by driving the platen 6 but by an output roller such as that denoted by reference numeral 104 in FIG. 6. Conventionally, this output roller 104 cooperates with a feed roller which is arranged in the cassette to pinch the tape between it and the output roller and thereby to enable the tape to be fed out of the cassette. A cutting mechanism which is indicated diagrammatically only in FIG. 6 and designated by reference numeral 106 is located beyond the output location. The cassette described herein can be used in a printing device as illustrated in FIG. 6 even though it does not have a feed roller. The facing surfaces 22a, 22b cooperate with the output roller 104 to enable tape to be fed out if the output roller 104 is driven. This is possible since the friction between the roller and the tape exceeds the friction between the tape and the facing surface. Thus, the cassette described herein can be used in the printing device described above with reference to FIGS. 1 to 5 or the printing device of FIG. 6, and is thus more versatile than its predecessors.

Furthermore, the cassette provides in its wall a stepped portion 36 which cooperates with a stepped portion 38 in the tape clamp to bend the tape and thus facilitate separation between the backing layer and image receiving layer.

FIG. 7 illustrates more clearly cooperation of the wall portion 22 of the cassette with an output roller 104 of a printing device as shown in FIG. 6.

Aspects of the invention can also be applied where the cassette includes an idler roller which is intended to cooperate with the output roller 104 of a printing device, and this embodiment is shown in FIG. 8 where reference numeral 200 denotes the idler roller of the cassette.

What is claimed is:

1. A printing device adapted for cooperation with a tape holding case holding at least a supply of image receiving tape having an image receiving layer and a backing layer, said tape holding case having an outlet through which the image receiving tape can be fed out in a direction lengthwise of the image receiving tape and, adjacent the outlet, a wall portion having a tape support surface arranged to support the image receiving tape during cutting and at least one stepped portion and defining, at a cutting location, a slot situated beneath the tape and extending across the width of the tape, the printing device comprising:

a print head;

a cutting mechanism including a cutter support member comprising a blade; a tape holding surface positioned and located to hold the tape during cutting and means for moving the blade into the slot through the whole thickness of the tape while the tape is held by the tape holding surface on both sides of the cutting location to cut-off a portion of the tape, said tape holding surface also bending the tape over said stepped portion of said tape support surface while the tape is being cut, such that when the tape is released from the tape holding and tape support surfaces, the image receiving layer and backing layer tend to separate from one another at the cut edge; and

a platen rotatable to feed tape out of the tape holding case, said platen also cooperating with the print head when printing on the image receiving tape.

2. A tape holding case according to claim 1 wherein the wall portion is shaped to cooperate with an output roller of a printing device into which the tape holding case is inserted.

3. A tape holding case according to claim 1 which includes an idler roller for cooperating with an output roller of a printing device into which the tape holding case is inserted.

4. A printing device according to claim 1 wherein said cutting mechanism comprises a tape clamp having a stepped portion for cooperation with the stepped portion of the wall portion of the tape holding case to bend the tape during said cutting step.

5. A printing device according to claim 1 wherein said cutting mechanism comprises a tape clamp adapted to hold the tape on both sides of said slot against the support surface, during the cutting step.

6. A printing device according to claim 1 wherein said cutting mechanism comprises a tape clamp, capable of relative movement with respect to the tape support surface, having a tape bending member with a stepped portion for cooperation with the stepped portion of the wall portion of

the tape holding case to bend the tape during the cutting step, the tape clamp defining the holding surface, wherein the tape, being supported by the tape support surface, is held on one side of the slot by the tape holding surface and on the other side of slot by the tape bending member, during said cutting step.

7. A tape holding case for use in combination with a thermal printer, said tape holding case comprising:

a supply of image receiving tape having an image receiving layer and a backing layer;

an outlet through which the image receiving tape can be fed out;

a wall portion positioned adjacent to the outlet and arranged to support the image receiving tape during cutting; and

a slot defined in the wall portion said slot situated beneath the tape and extending across the width of the tape, said slot being arranged to receive a blade that has cut through the whole thickness of the image receiving layer and the backing layer to cut off a portion of the image receiving tape wherein said wall portion includes at least one stepped portion located on the side of the slot away from the outlet over which the tape can be bent during cutting;

said thermal printer comprising a printhead and a cutting mechanism including a cutter support member carrying a blade; a tape holding surface positioned and located to hold the tape during cutting and means for moving the blade into the slot through the whole thickness of the tape while the tape is held by the tape holding surface on both sides of the cutting location to cut-off a portion of the tape, said tape holding surface also bending the tape over said stepped portion of said tape support surface while the tape is being cut, such that when the tape is released from the tape holding and tape support surfaces, the image receiving layer and backing layer tend to separate from one another at the cut edge.

8. A tape holding case according to claim 7 wherein said wall portion is shaped to cooperate with an output roller of a printing device into which the tape holding case is inserted to feed tape out of the tape holding case.

9. A tape holding case according to claim 8 wherein the wall portion is flat.

10. A tape holding case according to claim 7 which includes an idler roller for cooperating with an output roller of a printing device into which the tape holding case is inserted to feed tape out of the tape holding case.

11. A tape holding case according to claim 7 which also holds a supply of image transfer ribbon wound between supply and take-up spools.

12. A tape cutting apparatus for cutting off a portion of image receiving tape having an image receiving layer and backing layer, comprising:

a cutter support member carrying a blade;

a tape holding surface positioned and located to hold said tape during cutting;

a tape support surface which supports the tape during cutting at both sides of a cutting location, said support surface defining a slot at said cutting location;

means for moving the blade into the slot and through the whole thickness of the tape while the tape is held by the tape holding surface on both sides of said cutting location to cut off a portion of the tape; and a tape bending surface over which the tape is bent while the tape is being cut, such that when the tape is released from the tape holding and tape support surfaces, the image receiving layer and the backing layer tend to separate from one another at the cut edge.

13. A printing device including a cutting apparatus according to claim 12 wherein a support member, defining the tape support surface, is an integral part of the printing device.

14. A tape cutting apparatus according to claim 12 comprising a tape clamp adapted to hold the tape on both sides of said slot, against the support surface, during the cutting step.

15. A tape cutting apparatus according to claim 12 which comprises a tape bending member capable of relative movement with respect to the tape bending surface to cause the tape to bend before it is cut.

16. A tape cutting apparatus according to claim 15 which comprises a tape clamp capable of relative movement with respect to the tape support surface, the tape clamp incorporating the tape bending member and defining the tape holding surface, is held on one side of the slot by the tape holding surface and on the other side of the slot by the tape bending member, during said cutting step.

17. A tape cutting apparatus according to claim 12 wherein said tape support surface has a stepped portion over which the tape passes and which provides said tape bending surface.

18. A tape cutting apparatus according to claim 17 which comprises a tape clamp capable of relative movement with respect to the tape bending surface, the tape clamp incorporating a tape bending member with a stepped portion for cooperating with the stepped portion of the tape support surface to bend the tape during said cutting step.

19. A tape cutting apparatus according to claim 17 which comprises a tape clamp capable of relative movement with respect to the tape bending surface, the tape clamp incorporating a tape bending member with a stepped portion provided for cooperation with the stepped portion of the tape support surface to bend the tape during said cutting step, and defining the tape holding surface, wherein the tape, being supported by the tape support surface, is held on one side of the slot by the tape holding surface and on the other side of the slot by the tape bending member, during said cutting step.

20. A tape cutting apparatus as claimed in claim 12 wherein the tape bending surface is located on the far side of the cutting location relative to the direction of movement of the tape.

* * * * *

EXHIBIT B

US005826995A

United States Patent [19]

Day et al.

[11] Patent Number: 5,826,995

[45] Date of Patent: Oct. 27, 1998

[54] **CASSETTE FOR A THERMAL PRINTER**

[75] Inventors: **Robert Charles Lewis Day**, Cambridge; **Richard William Ware**, Welwyn Garden City, both of United Kingdom

[73] Assignee: **Esselte N.V.**, St. Niklaas, Belgium

[21] Appl. No.: **810,789**

[22] Filed: **Mar. 5, 1997**

Related U.S. Application Data

[62] Division of Ser. No. 470,657, Jun. 6, 1995, Pat. No. 5,658,083, which is a continuation of Ser. No. 266,828, Jun. 27, 1994.

[30] **Foreign Application Priority Data**

Jul. 12, 1993 [GB] United Kingdom 9314386

[51] **Int. Cl.**[6] **B41J 15/04**

[52] **U.S. Cl.** **400/615.2**; 400/586; 400/611; 400/634

[58] **Field of Search** 400/586, 615.2, 400/621, 634, 611

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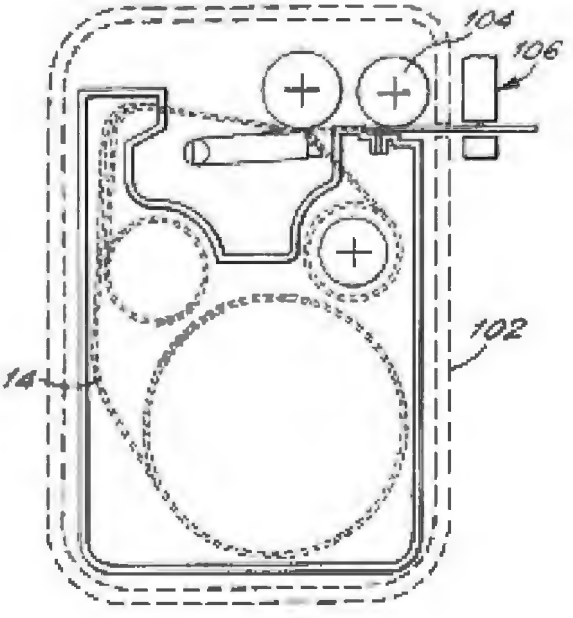
Primary Examiner—John S. Hilten
Attorney, Agent, or Firm—Pennie & Edmonds LLP

[57] **ABSTRACT**

A tape holding case is described for use with a thermal printing device which allows for more efficient cutting and feeding of tape. The cassette has a slot into which a cutting blade can pass which avoids the use of an anvil for cutting. Moreover, the cassette can have a stepped portion for providing a so-called "peel cut" at the end of the tape.

7 Claims, 4 Drawing Sheets



COMPLAINT EXHIBIT B

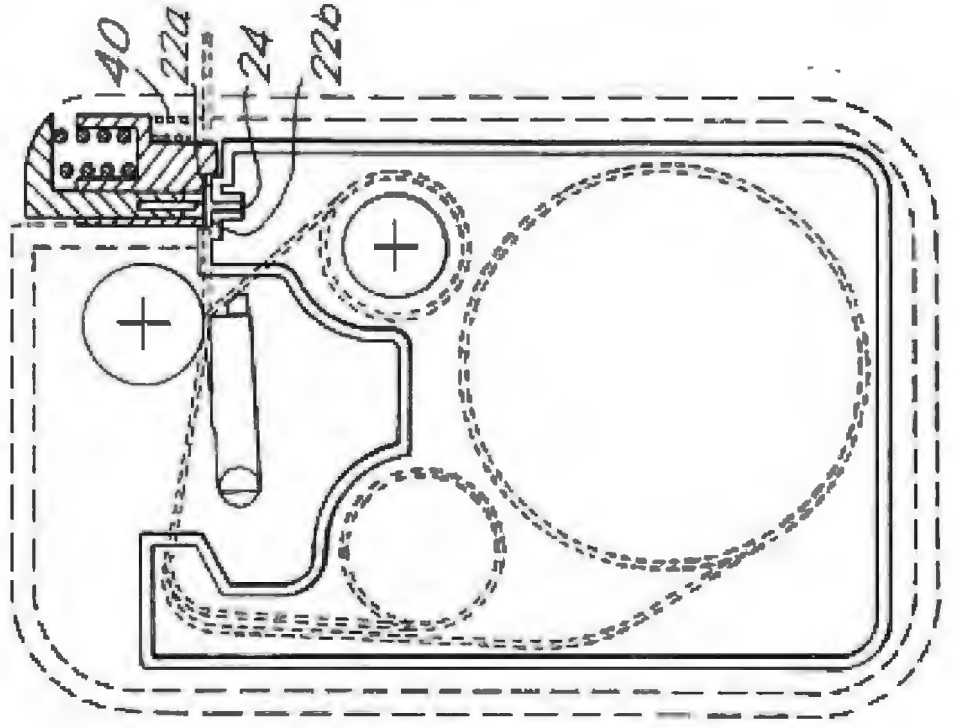


FIG. 2

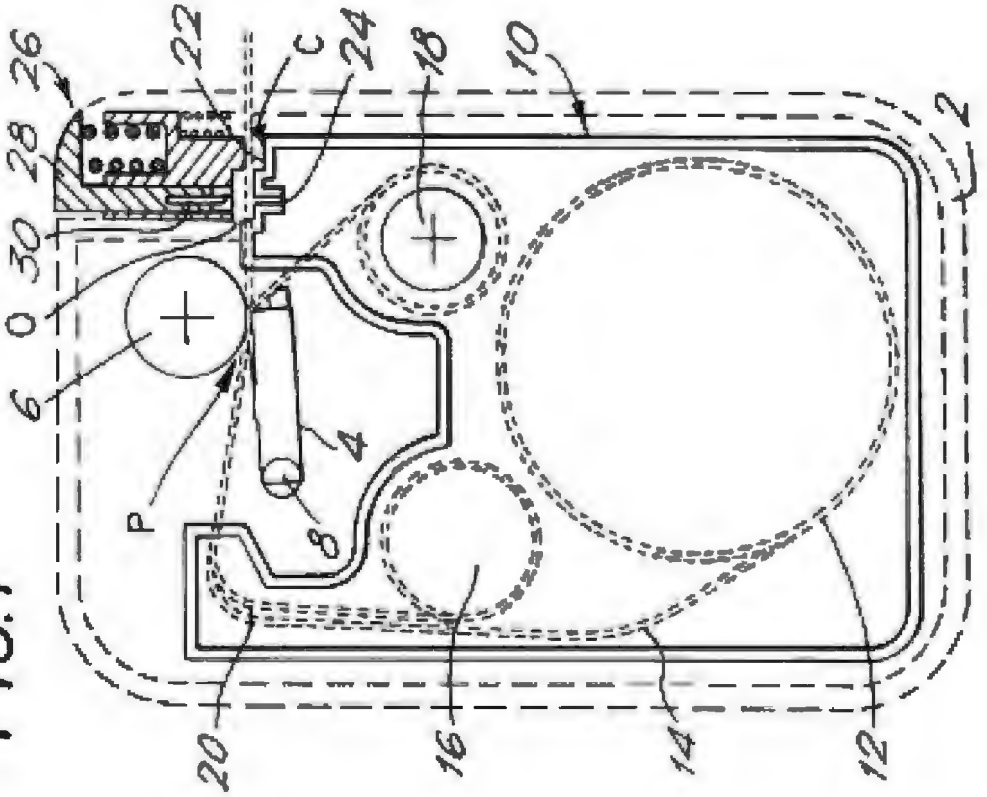


FIG. 1

FIG. 4.

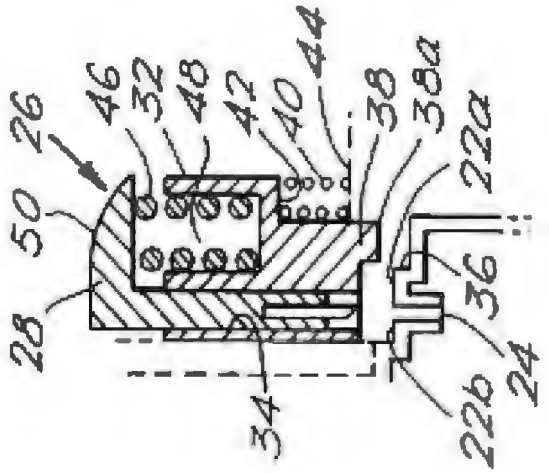


FIG. 3.

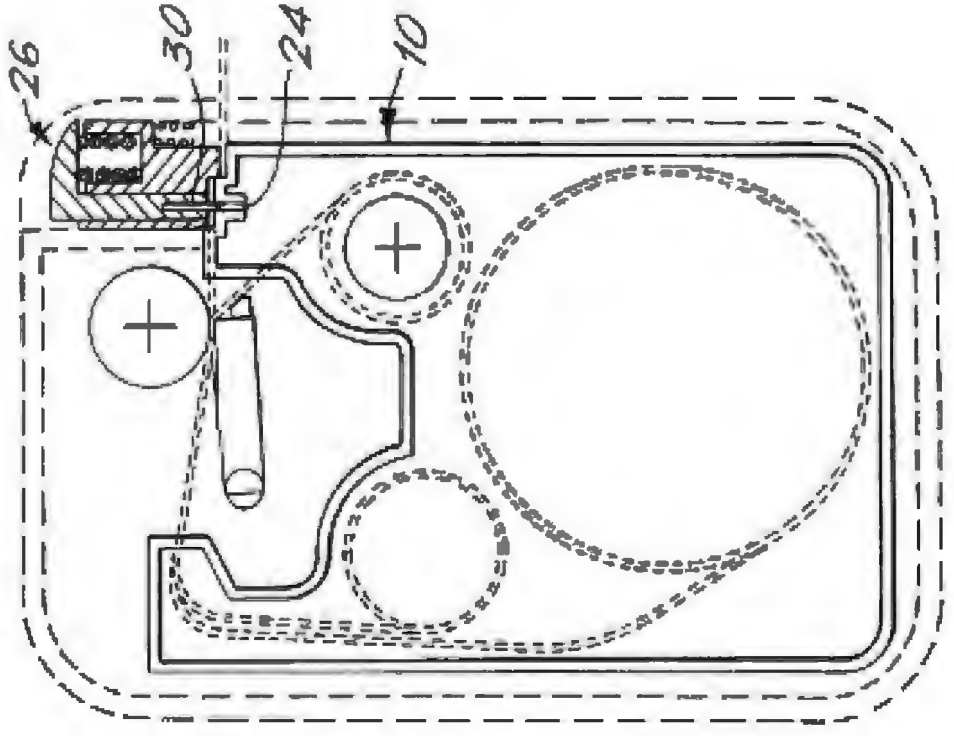


FIG. 4a.

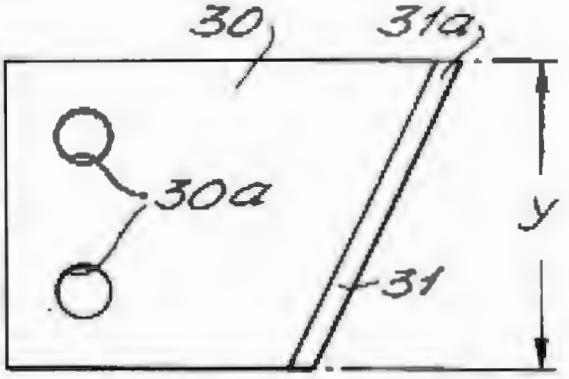


FIG. 4b.

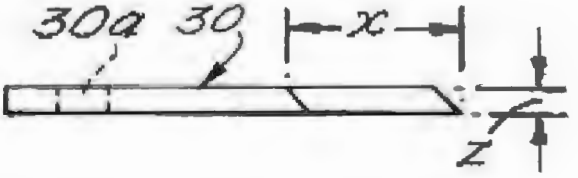


FIG. 5.

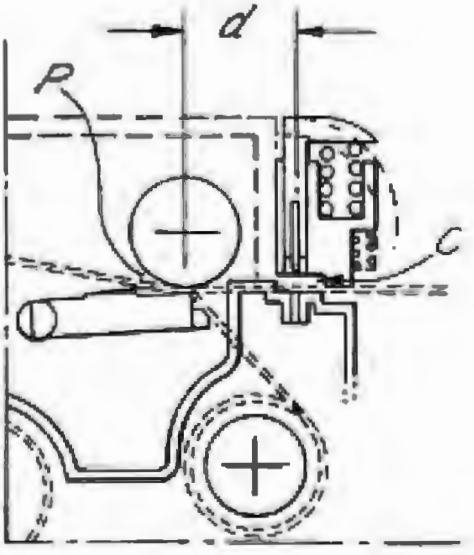


FIG.8.

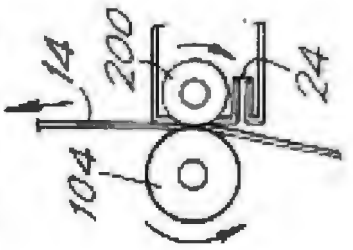


FIG.7.

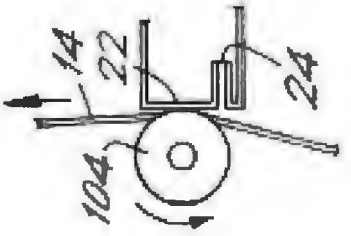
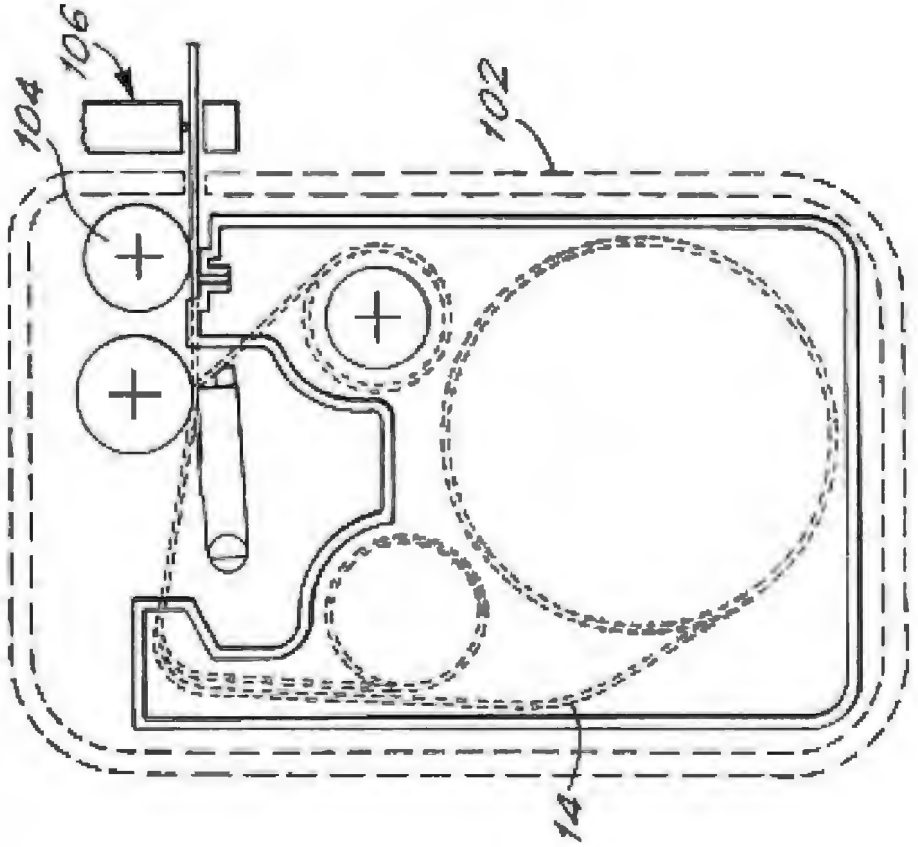


FIG.6.



CASSETTE FOR A THERMAL PRINTER

This is a division of application No. 08/470,657, filed Jun. 6, 1995, now U.S. Pat. No. 5,658,083, which is a continuation of 08/266,828, filed Jun. 27, 1994.

TITLE OF THE INVENTION

The present invention relates to a cassette for a thermal printer, and to a thermal printer in combination with such a cassette.

BACKGROUND OF THE INVENTION

Thermal printers of the type with which the present invention is concerned are known. They operate with a supply of tape arranged to receive an image and a means for transferring image onto the tape. In one form, a tape holding case or cassette holds a supply of image receiving tape and a supply of an image transfer ribbon, the image receiving tape and transfer ribbon being passed in overlap through a printing zone of the printing device. A printing device operating with a tape holding case of this type is described for example in EP-A-0267890 (Varitronics, Inc.). Other printing devices have been made in which letters are transferred to an image receiving tape by a dry lettering or dry film impression process. In all of these printing devices, the construction of the image receiving tape is substantially the same. That is, it comprises an upper layer for receiving an image which is secured to a releasable backing layer by a layer of adhesive. Once an image or message has been printed on the tape, it is desired to cut off that portion of the tape to enable it to be used as a label. For this purpose, it is necessary to remove the releasable backing layer from the upper layer to enable the upper layer to be secured to a surface by means of the adhesive layer. In EP-A-0267890 scissors are used to cut off the tape.

In another type of printing device described for example in EP-A-0322919 (Brother) a tape holding case holds a supply of image receiving tape, a supply of an image transfer ribbon and a supply of adhesive backing tape. The adhesive backing tape has an adhesive layer for contact with the image receiving tape, a substrate layer and a second adhesive layer covered by a releasable backing layer. The characters are printed onto the image receiving tape, which is transparent, as a mirror image.

In a further printing device, described for example in EP-A-0487313 (Esselte Dymo N. V.), a tape holding case holds a supply of image receiving tape and a supply of image transfer ribbon, the image receiving tape having the same construction as described above with reference to EP-A-0267890. In this device, the cassette includes a feed roller which is rotatably mounted and which cooperates with an output roller of a printing device into which the cassette is inserted to feed the image receiving tape out of the printing device after printing has taken place. After the tape has been fed out of the cassette, the printed portion of the tape is cut off by a cutting mechanism located outside the cassette boundary. A similar arrangement is utilised in EP-A-0322919. EP-B-0364305 describes a cassette which has a portion extending beyond the feed roller to provide an anvil for a cutting blade.

In both of these devices, printing is carried out at a print location defined by a thermal print head and a platen against which the print head presses the image receiving tape and image transfer ribbon during printing. The image receiving tape is then fed past the print location by the feed mechanism comprising the feed roller of the cassette and the output roller of the printing device to a cutting mechanism located outside the cassette boundary. Thus, the distance from the print location to the cutting mechanism can be of the order of 23–25 mm and this defines the blank lead portion of a label. It is desirable to reduce the blank lead portion of a label to avoid wasted blank tape and to improve the appearance of labels. Various methods have been proposed to reduce these leaders, all of which methods have involved the use of software control of the way in which the image receiving tape is printed and fed out. In one aspect, the present invention seeks to provide a reduced length of blank tape on a label without the need for complex software control.

Another disadvantage arising from the printing devices of EP-A-0322919, EP-B-0364305 and EP-A-0487313 is that the tape is cut off using a blade which is brought into contact with the tape while it is supported by an anvil. Not only does the action of a blade against an anvil require a significant amount of cutting force to be applied, but it also results in the wear of cutting blades and a need for their replacement during the life of the printer. Another aspect of the present invention provides a solution to these problems.

Finally, the invention seeks to provide a cassette which can be used in a variety of different types of printing devices.

SUMMARY OF THE INVENTION

According to one aspect of the present invention there is provided a tape holding case or cassette for a thermal printer holding at least a supply of image receiving tape and having an outlet through which the image receiving tape can be fed out, the tape holding case having adjacent the outlet a wall portion arranged to support the image receiving tape during cutting and defining a slot underneath the tape into which a blade can travel during cutting.

This arrangement avoids the use of an anvil for cutting. It has been found that the cutting force required to make a cut is significantly reduced, as is the wear of the blade.

Preferably the cassette has no feed roller, and said wall portion is shaped to cooperate with an output roller of a printing device into which the cassette is inserted to feed tape out of the cassette.

Such a cassette is suited for use in a printing device having an output roller. Such a cassette is also suitable for use in a printing device which has no output roller but which instead has a rotatable platen which not only supports the tape during printing but also is driven to feed the tape out of the cassette. The wall portion can be flat or can provide at least one stepped portion over which the tape can be bent during cutting.

The invention also contemplates a printing device with an afore-defined cassette, which printing device has a cutting mechanism located opposite said slot and which comprises a platen rotatable to feed tape out of the cassette, said platen also cooperating with a print head for printing onto the tape. In such a device, no separate output roller is provided and so the distance between the print location (defined between the platen and the print head) and the cutting location (at the slot) can be minimised, thereby to minimise blank leaders on a label.

Preferably the cassette also holds a supply of image transfer ribbon wound between supply and take-up spools.

According to another aspect of the present invention there is provided a cutting apparatus comprising a cutting blade, a support member defining a wall portion arranged to support a tape during cutting and defining a slot underneath

the tape into which the blade can travel during cutting. The support member can be part of a cassette as discussed above, or can form part of the printing device itself. Alternatively, it can be a separate component altogether. In any one of these cases, the advantage of cutting a tape into a slot is achieved.

According to a further aspect of the present invention there is provided a tape holding case or cassette for a thermal printer holding at least a supply of image receiving tape and having an outlet through which the image receiving tape can be fed out, the tape holding case having adjacent the outlet a wall portion arranged to support the image receiving tape during cutting and defining at least one stepped portion over which the tape can be bent during cutting.

Such a cassette can be provided in association with the cutting apparatus which comprises a cutting blade mounted for movement towards the tape to cut it and a tape bending member cooperable with the at least one stepped portion to bend the tape.

As discussed in our European Application No. (Page White & Farrer Ref. 73532) when the image receiving tape comprises an image receiving layer secured to a backing layer via adhesive, bending of the tape causes the backing layer to separate from the image receiving layer due to a difference in their resilience. It is particularly advantageous to provide a so-called post feature as part of the cassette wall. In this case, the cassette wall portion can be shaped to cooperate with an output roller of a printing device to increase its versatility.

For a better understanding of the present invention, and to show how the same may be carried into effect, reference will now be made by way of example to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. **1** to **3** show a printing device with a cassette inserted therein with the cutting mechanism in various stages of operation;

FIG. **4** is a more detailed view of the cutting mechanism;

FIGS. **4***a* and **4***b* are a plan view and a side view respectively of a blade;

FIG. **5** illustrates how the blank leader of a label is reduced using a cassette of the present invention;

FIG. **6** is a plan view showing the cassette of the invention inserted into an alternative type of printing device;

FIG. **7** is a sketch showing cooperation of an output roller of a printing device with the cassette wall; and

FIG. **8** is a sketch showing cooperation of an output roller of a printing device with an idle roller of the cassette.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. **1** illustrates in plan view a cassette bay of a printing device. The cassette bay is shown by the dotted line **2**. The cassette bay includes a thermal print head **4** and a platen **6** which cooperate to define a print location P in a manner which is known in the art. The print head **4** is pivotable about a pivot point **8** so that it can be brought into contact with the platen **6** for printing and moved away from the platen to enable a cassette to be removed and replaced.

A cassette inserted into the cassette bay **2** is denoted generally by reference numeral **10**. The cassette holds a supply spool **12** of image receiving tape **14** which comprises an image receiving layer secured to a backing layer by a layer of adhesive. The image receiving tape **14** is guided by a guide mechanism (which is not shown) through the cassette, out of the cassette through an outlet O, past the print location P to a cutting location C. The cassette **10** also has an ink ribbon supply spool **16** and an ink ribbon take up spool **18**. The ink ribbon **20** is guided from the ink ribbon supply spool **16** through the print location P and taken up on the ink ribbon take up spool **18**. The image receiving tape **14** passes in overlap with the ink ribbon **20** through the print location P with its image receiving layer in contact with the ink ribbon.

In the printing device illustrated in FIG. **1**, the platen **6** is driven so that it rotates to drive the image receiving tape **14** past the print location P during printing. In this way, tape is printed and fed out from the print location P to the cutting location C. In contrast to earlier devices, the cutting location C is provided at a location on a portion of the wall of the cassette **10** which is close to the print location P. As the tape is fed out of the cassette by driving the platen **6**, there is no need for a further feed mechanism for the tape and this enables the cutting location C to be closer to the print location P. In the described embodiment, as illustrated in FIG. **5**, the distance d between the cutting location and the print location can be 9 mm. The portion of the wall of the cassette **10** where the cutting location C is defined is denoted by reference numeral **22**. A slot **24** is defined in this wall portion and the image receiving tape **14** is fed past the print location P to the cutting location C where it is supported by facing wall portions **22***a*, **22***b* on either side of the slot **24** (see FIG. **2**).

The printing device includes a cutting mechanism denoted generally by reference numeral **26**. This cutting mechanism includes a cutter support member **28** which carries a blade **30**. The design of the blade **30** can be seen more clearly in FIG. **4***a* and **4***b*. The blade **30** has a sharpened and angled cutting edge **31**. In FIG. **4***a* the dimension x is 6 mm and y is 13 mm. Holes **30***a* are provided to enable the blade **30** to be mounted in the cutter support member. In FIG. **4***b*, the dimension z is 0.70 mm. These dimensions are only exemplary—any suitable blade can be used. The blade **30** cuts the image receiving tape **14** and then enters the slot **24** with the leading part **31***a* of its edge **31** first, rather than bearing against an anvil. The detailed operation of the cutting mechanism is discussed later. However, it is appropriate to point out here that the inventors have found that there are significant advantages to cutting into a slot rather than against an anvil. The amount of force which is required to cut the tape is significantly reduced, and this reduces the cost of the product and the amount of space required for the cutting mechanism. Particularly when considering automated cutting mechanisms, the large amount of force required to cut a tape against an anvil have required complex gearing mechanisms giving a substantial mechanical advantage which has utilised space in the product. Thus, although the cutting mechanism described herein is intended to be manually operated, the concept of cutting into a slot would also have advantages in an automated cutting system.

Furthermore, as the blade cuts into a slot rather than against an anvil, there is no anvil which can wear out and also the life of the blade is increased. This makes it possible to design a cutting mechanism where the blade does not need to be replaced over the life of the printer.

FIG. **4** shows the cutting mechanism **26** in more detail. The cutting mechanism comprises with the cutter support member **28** a tape clamp **32**. The cutter support member **28** is mounted for movement within a slot **34** in the tape clamp **32**. The portion **22** of the cassette wall **10** defining the

cutting location C has adjacent one of the facing surfaces 22a a stepped portion 36 which cooperates with a stepped portion 38 in the tape clamp 32 in a manner which will be described more clearly hereinafter. A relatively weak spring 40 is located between a ledge 42 of the tape clamp 32 and a cooperating ledge 44 of the casing 2. A relatively stiff spring 46 is located in a recess 48 of the tape clamp 32 to act against the cutter support member 28. The cutter support member provides a surface which is preferably formed in the shape of a button 50 or the like and which can be depressed by a user using manual force.

FIG. 1 shows the cutting mechanism in its ready to cut state, that is with the blade 30 spaced from the tape 14 and a lower surface 38a of the tape clamp 32 just clear of the tape 14. This permits the leading edge of the tape to be driven past the lower surface 38a without excessive risk of catching on it or being deflected by it. When the button 50 is depressed, the relatively weak spring 40 is compressed first against the ledge 44 as shown in FIG. 2 and causes the tape clamp 32 to hold the tape 14 against the surfaces 22a, 22b thereby clamping the tape 14 against the cassette on both sides of the slot, ensuring that the tape does not move sideways during subsequent cutting and that the cut edge is square. The stepped portion 36 of the cassette wall cooperates with the stepped portion 38 of the tape clamp 32 to bend the tape against the stepped portion 38 of the tape clamp, the backing layer of the tape being adjacent the stepped portion 38. The blade 30 is simultaneously caused to be lowered until it is just in contact with the tape 14. As the button 50 is further depressed, the relatively stiff spring 46 is compressed to cause the cutter support member 28 to move relative to the tape clamp 32 to cause the blade 30 to cut the tape 14. This then provides a portion of tape with a bent portion just behind the cut trailing edge. When the button 50 is released, the cutting mechanism is in its ready-to-cut position under the action of the springs.

In this arrangement, not only does the cutting mechanism have the advantage of providing a cut through the tape into a slot, but it also leaves the trailing edge of the label with a bent part providing a so-called "easy to peel" feature. This is discussed in more detail in our copending European Application No. (Page White & Farrer Ref. 73532) the contents of which are herein incorporated by reference. Briefly, the bend in the tape causes the backing layer to separate from the image receiving layer as a result of their differences in resilience so as to enable a user to peel the backing layer from the image receiving layer more easily.

FIG. 6 illustrates a further advantage of the cassette described herein. In FIG. 6, reference numeral 102 denotes the casing of a cassette bay of a printing device which is different to the printing device described above with reference to FIG. 1 to 5. The printing device in FIG. 6 is of the type discussed above with reference to EP-A-0487313. In this printing device, feeding of the tape 14 is accomplished not by driving the platen 6 but by an output roller such as that denoted by reference numeral 104 in FIG. 6. Conventionally, this output roller 104 cooperates with a feed roller which is arranged in the cassette to pinch the tape between it and the output roller and thereby to enable the tape to be fed out of the cassette. A cutting mechanism which is indicated diagrammatically only in FIG. 6 and designated by reference numeral 106 is located beyond the output location. The cassette described herein can be used in a printing device as illustrated in FIG. 6 even though it does not have a feed roller. The facing surfaces 22a, 22b cooperate with the output roller 104 to enable tape to be fed out if the output roller 104 is driven. This is possible since the friction between the roller and the tape exceeds the friction between the tape and the facing surface. Thus, the cassette described herein can be used in the printing device described above with reference to FIGS. 1 to 5 or the printing device of FIG. 6, and is thus more versatile than its predecessors.

Furthermore, the cassette provides in its wall a stepped portion 36 which cooperates with a stepped portion 38 in the tape clamp to bend the tape and thus facilitate separation between the backing layer and image receiving layer.

FIG. 7 illustrates more clearly cooperation of the wall portion 22 of the cassette with an output roller 104 of a printing device as shown in FIG. 6.

Aspects of the invention can also be applied where the cassette includes an idler roller which is intended to cooperate with the output roller 104 of a printing device, and this embodiment is shown in FIG. 8 where reference numeral 200 denotes the idler roller of the cassette.

What is claimed is:

1. A tape holding case for a thermal printer, said tape holding case holding at least a supply of image receiving tape and having an outlet through which the image receiving tape can be fed out, the tape holding case having a wall portion adjacent the outlet, wherein the wall portion is configured and dimensioned to cooperate with an output roller of a printing device into which the tape holding case is inserted, with the wall portion and roller both contacting the tape so that rotation of the roller slides the tape against the wall portion to feed the tape out of the tape holding case.

2. A tape holding case according to claim 1, wherein the wall portion is flat.

3. A tape holding case according to claim 1, wherein said wall portion includes at least one stepped portion over which the tape can be bent during cutting.

4. A tape holding case according to claim 1, which also holds a supply of image transfer ribbon wound between supply and take-up spools.

5. A printing device adapted for cooperation with a tape holding case holding at least a supply of image receiving tape, said tape holding case having an outlet through which the image receiving tape can be fed out and, adjacent the outlet, a wall portion, the printing device comprising:

a cutting mechanism for cutting off a portion of tape;

a cooperating platen and print head for printing onto the tape; and

an output roller, wherein the wall portion and the output roller both contact the tape so that rotation of the roller slides the tape against the wall portion to feed the tape out of the tape holding case.

6. A tape holding case for a thermal printer, said tape holding case holding at least a supply of image receiving tape and having an outlet through which the image receiving tape can be fed out, the tape holding case having a wall portion adjacent the outlet, wherein the wall portion is arranged to support the image receiving tape during cutting is configured and dimensioned to cooperate with an output roller of a printing device into which the tape holding case is inserted, with the wall portion and the output roller both contacting the tape so that rotation of the output roller slides the tape against the wall portion to feed the tape out of the tape holding case.

7. A tape holding case for use in combination with a thermal printer, said tape holding case comprising:

a supply of image receiving tape having an image receiving layer and a backing layer,

an outlet through which the image receiving tape can be fed out;

a wall portion positioned adjacent to the outlet;

said thermal printer comprising a print head, a cutting mechanism for cutting off a portion of tape, and an output roller, wherein the wall portion of the tape holding case and the output roller of the printing device both contact the tape so that rotation of the output roller slides the tape against the wall portion to feed the tape out of the tape holding case.

* * * * *

EXHIBIT C

US006074113A

United States Patent [19]

Cockerill et al.

[11] Patent Number: 6,074,113

[45] Date of Patent: Jun. 13, 2000

[54] **TAPE PRINTER HAVING A CUTTER WITH A GUIDE MECHANISM**

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[73] Assignee: **Esselte N.V.**, Sint-Niklaas, Belgium

[21] Appl. No.: **09/158,893**

[22] Filed: **Sep. 23, 1998**

[51] **Int. Cl.**[7] **B41J 3/24**

[52] **U.S. Cl.** **400/621**; 83/162; 83/401; 83/404; 400/208

[58] **Field of Search** 400/621, 621.1, 400/208; 83/162, 401, 404; 101/224, 226, 229

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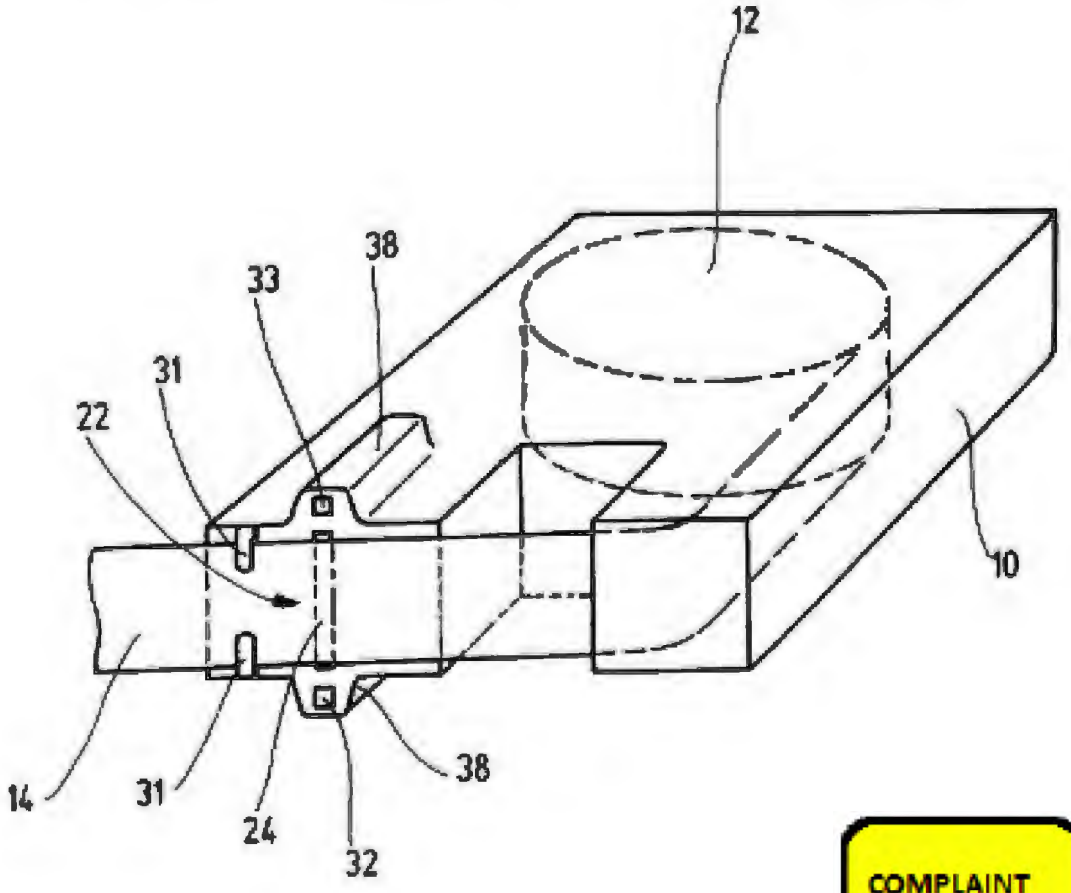
Primary Examiner—Eugene Eickholt
Attorney, Agent, or Firm—Pennie & Edmonds LLP

[57] **ABSTRACT**

A tape printing device which receives a tape cassette that accommodates a printable tape. The tape cassette includes a housing having a wall portion which is arranged to support the tape during a cutting operation which is performed with a cutting mechanism of the tape printing device. To align the cutting mechanism with the cassette during cutting, the wall portion of the cassette housing is arranged for interacting with a guide mechanism that connects the cutting mechanism and the wall portion during cutting and aligns the cutting mechanism with the wall portion.

18 Claims, 3 Drawing Sheets



COMPLAINT EXHIBIT C

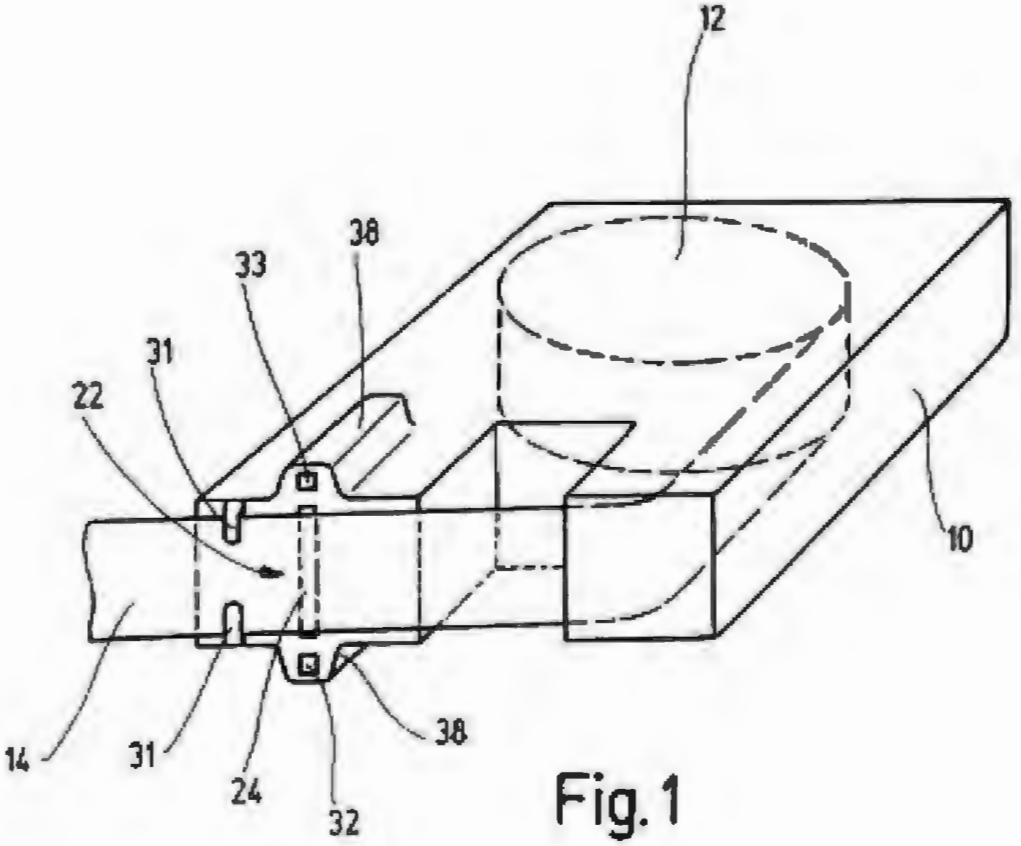


Fig. 1

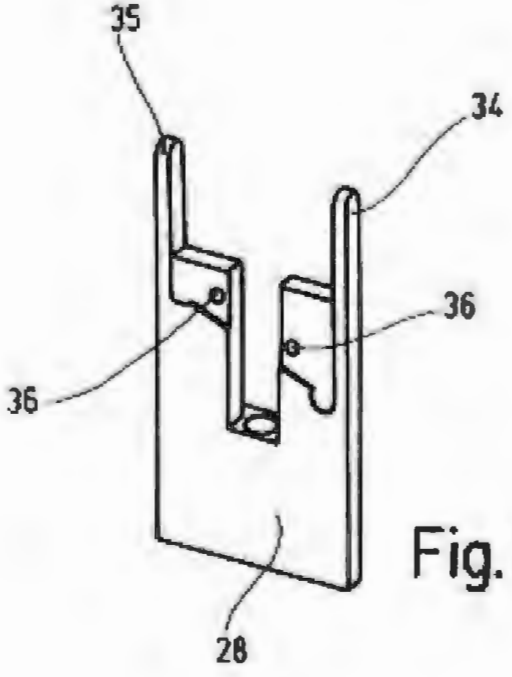


Fig. 2

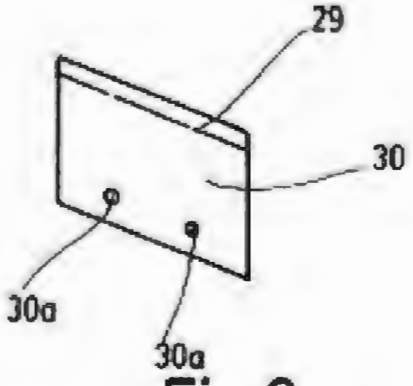


Fig. 3

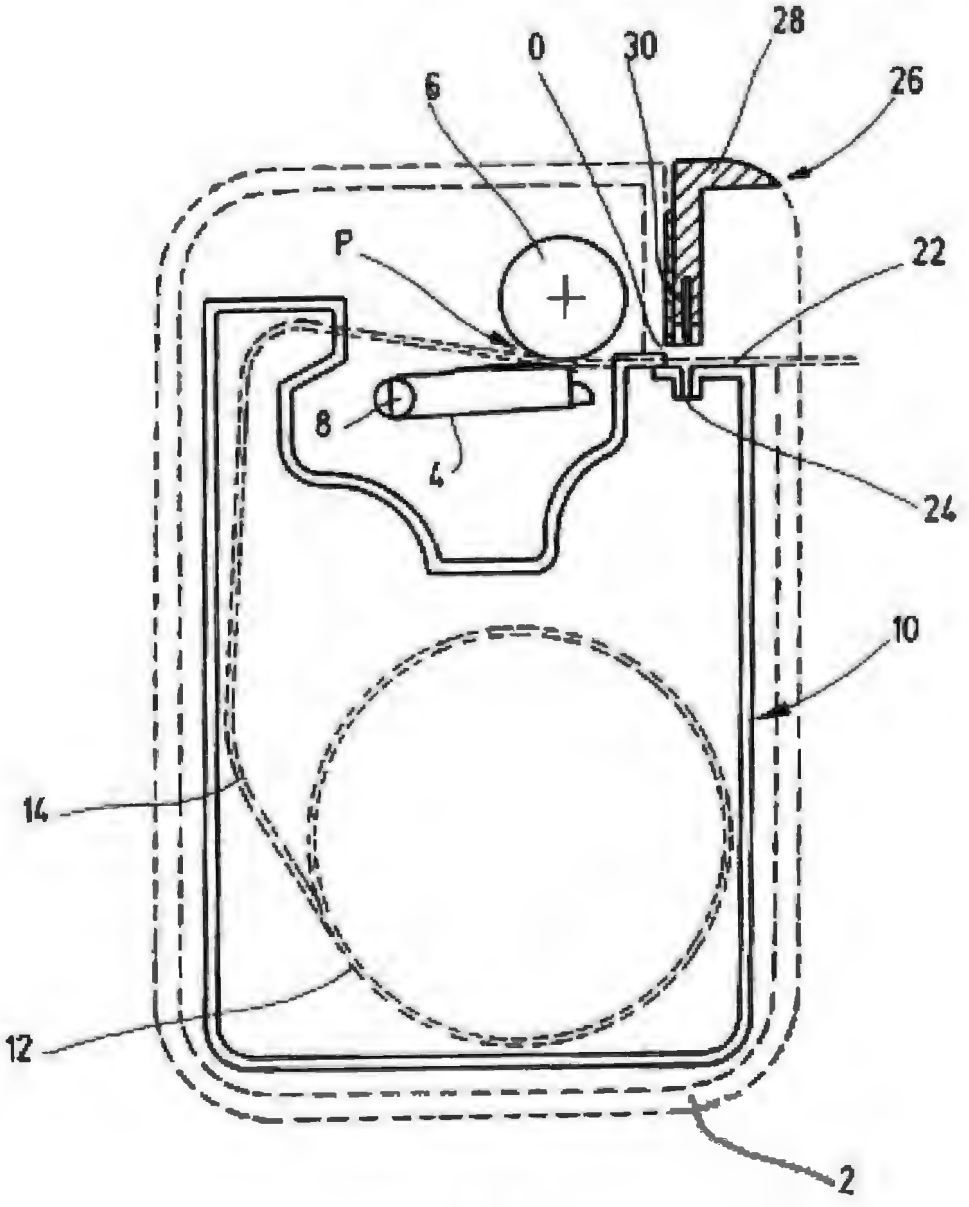


Fig. 4

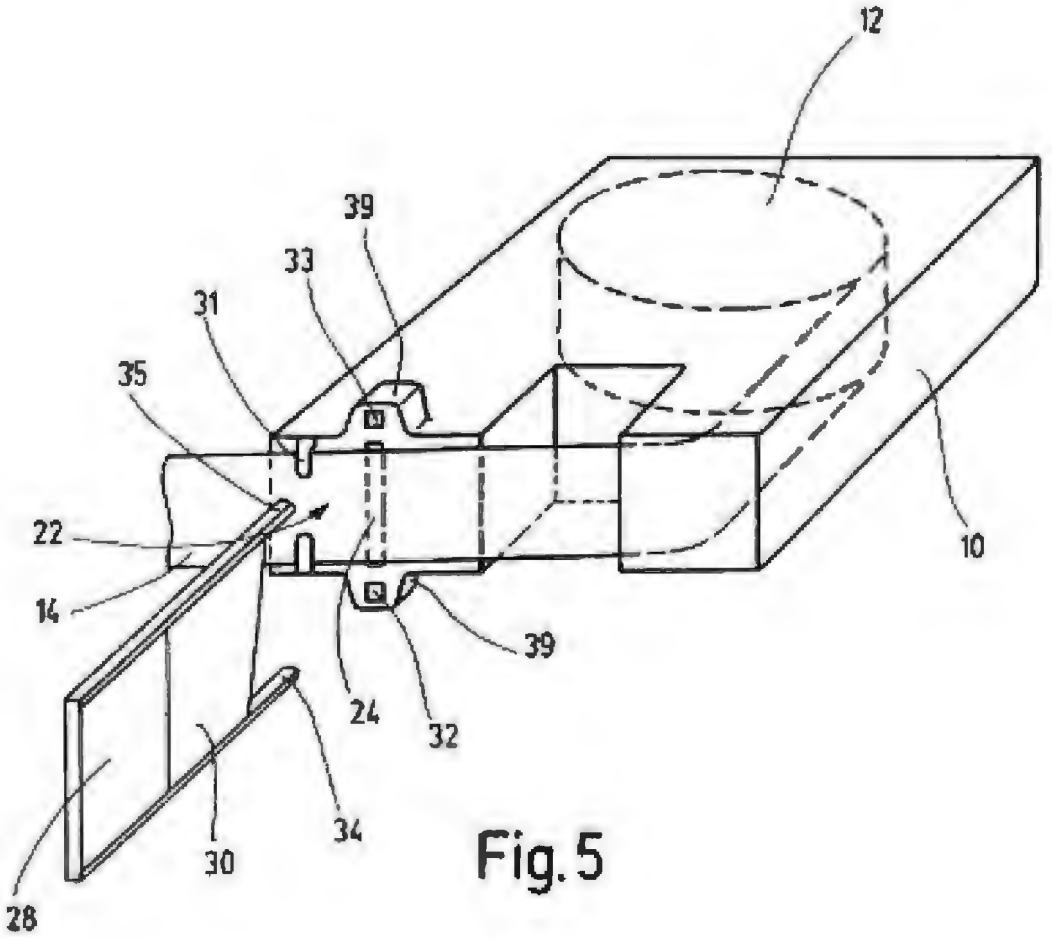


Fig. 5

TAPE PRINTER HAVING A CUTTER WITH A GUIDE MECHANISM

BACKGROUND OF THE INVENTION

The present invention relates to a tape printing device which utilizes a tape cassette that accommodates a printable tape. In particular, the invention relates to the mechanism for cutting the tape after printing.

Known tape printing devices of the type with which the present invention is generally concerned are disclosed in EP-A-0 322 918 and EP-A-0 322 919 (Brother KK) and EP-A-0 267 890 (Varitronic). Each of these printers includes a printing device having a cassette receiving bay for receiving a cassette or tape holding case. In EP-A-0 322 918, the tape holding case houses an ink ribbon, a transparent image receiving tape and a double-sided adhesive tape which is secured at one of its adhesive coated sides to the image tape after printing and which has a backing paper peelable from its other adhesive side. In each of these devices, the image transfer medium (ink ribbon) and an image receiving tape (substrate) are in the same cassette.

A different type of tape printing apparatus is described in EP-A-0 578 372. In this printing apparatus, the substrate tape is similar to that described in EP-A-0 267 890 but is housed in its own tape holding case while the ink ribbon is similarly housed in its own tape holding case.

In all of these devices, the image receiving tape overlaps with the ink ribbon while passing to a print zone where a fixed print head and a platen, against which the print head is pressed, transfer an image from the ink ribbon to the image receiving tape. There are many ways of accomplishing this transfer, including dry lettering or dry film impression. The most usual way at present is by thermal printing, where the print head is heated and the heat causes ink from the ink ribbon to be transferred to the ink receiving tape. Alternatively, the print head may be in direct contact with a thermally sensitive image receiving tape to generate an image on the image receiving tape when the print head is heated.

When the desired image has been printed onto the image receiving tape, the user must cut off the printed portion of tape from the supply in order to use it as a label. In order to perform this cutting, there exists a variety of cutting mechanisms known in the art, including scissors (EP-A-0 267 890, EP-A-0 327 075, DE-A-4 410 931), blades acting against an anvil (EP-A-0 364 305, EP-A-0 450 779, EP-A-0 719 620), and cooperating cutting blades (EP-A-0 636 502, EP-A-0-734 818).

EP-A-0 634 275 describes a guillotine cutter which protrudes during the cutting operation into a slot of the tape cassette, while the walls of the cassette adjacent to the slot support the tape. In this arrangement, it is necessary to manufacture the cutting mechanism and the cassette within small tolerances, in order to ensure that the cutting blade travels into the cutting slot and does not contact the side walls of the slot or even the portion of the wall of the cassette which supports the tape during cutting. Small tolerances are further required to obtain a cut having an angle of exactly 90 degrees with respect to the longitudinal axis of the tape. A disadvantage of the prior art is thus the necessity to have such small tolerances, which increases productions costs.

SUMMARY OF THE INVENTION

The present invention provides a tape printing device that includes a tape cutting mechanism which is insensitive to mechanical tolerances both of the cutting apparatus and of the tape cassette.

According to a first aspect of the invention, there is provided a tape cassette that accommodates a printable tape and is suitable for being detachably received in a tape printing device having a tape cassette receiving member therein. The tape cassette comprises a housing having a wall portion which is arranged to support a length of the tape in face to face contact while the length of tape is cut in a central area during a cutting operation performed with a cutting mechanism of the tape printing device, with the wall portion supporting the tape on both sides of the cut central area. The tape cassette further comprises at least one guideway provided in the wall portion of the cassette beyond where the tape is supported by the wall portion, with the guideway being arranged for receiving a pin that is connected to the cutting mechanism to align and connect the cutting mechanism and cassette.

The invention proposes to connect the portion of the wall of the tape cassette against which the cutting mechanism acts with the cutting mechanism. This connection is present at least during the cutting operation, and is advantageously released when the user intends to withdraw the cassette from the tape printing device. The connection provides guidance for the cutting mechanism with respect to the tape cassette, such that the cutting zone is at the appropriate location. The cut through the tape will thus be at the desired place and will extend generally orthogonally to the feed direction of the tape. The guide mechanism aligns the cutting mechanism with respect to the tape cassette (which is the preferred embodiment, since it allows the cassette to be fixed with respect to the printing mechanism of the tape printer, hence yielding the best possible printing quality). However, it is also possible to allow the guide mechanism to align the tape cassette with respect to said cutting mechanism.

The guide mechanism comprises a pin fixed to the cutting mechanism which is arranged to protrude into the guideway of the tape cassette during cutting. The guideway can have the form of a hole or a channel. Preferably, the pin and/or the guideway have a rectangular rather than a round section in order to maximize the stiffness and simplify molding.

According to a second aspect of the invention, there is provided a tape cassette that accommodates a printable tape and is suitable for being detachably received in a tape printing device having a tape cassette receiving member therein. The tape cassette comprises a housing having a wall portion which is arranged to support a length of the tape in face to face contact while the length of tape is cut in a central area during a cutting operation performed with a cutting mechanism of the tape printing device, with the wall portion supporting the tape on both sides of the cut central area, wherein the wall portion is configured, positioned and dimensioned for interacting with a guide mechanism which connects the cutting mechanism and the wall portion during cutting such that the cutting mechanism is aligned with respect to the wall portion.

The guideway is advantageously provided within said wall portion of said cassette while the pin is connected to the cutting mechanism. It is also possible to have the guideway mounted to the cutting mechanism and the pin fixed to the wall of the cassette.

A part of the wall portion is arranged to support a length of the tape in face to face contact while the length of tape is cut in a central area during a cutting operation performed with a cutting mechanism of the tape printing device. During the cutting operation, the wall portion supports the tape on

both sides of the cut central area. The cutting mechanism can cut against the wall of the cassette which acts as an anvil, as disclosed in EP-A-0 364 305. In another embodiment, the wall portion of the tape cassette further includes a slot arranged to receive a blade of said cutting mechanism during cutting of the tape. This avoids the need of an anvil for cutting. With such an arrangement, it has been found that the cutting force required is significantly reduced, as is the wear of the blade.

Further, the guideway and the pin may be provided adjacent a first lateral end of a blade of said cutting mechanism. The pin is thus located at the end of the blade, such that it does not interfere with the tape during cutting. It should be mentioned that it is preferred to have two pins and guideways, located at opposite sides of the tape, and hence situated at both ends of the cutting blade.

In order to "catch" the pin with the guideway, even when the tape cassette is not exactly aligned with respect to the cutting mechanism, it is proposed that the guideway has a generally conical shape, with the widest opening of the shape facing the pin. Thus, the shape of the guideway, which is in the form of a channel or a deep boring, becomes more narrow the deeper the pin protrudes. Thus, an exact alignment of the cutting mechanism towards the tape cassette is obtained. Alternatively or additionally, the pin can have a conical tip, with its smallest dimensions facing the guideway.

According to another aspect of the invention, there is provided a tape printing device comprising:

a tape cassette receiving member in which a tape cassette can be detachably attached;

a tape cassette comprising a housing having a wall portion which is arranged to support a length of tape in face to face contact relation while the length of tape is cut in a central area, with the wall portion supporting the tape on both sides of the central area;

a tape provided in said tape cassette;

printing means for printing an image on the tape;

a cutting mechanism for cutting off a portion of printed tape; and

a guide mechanism arranged for connecting the cutting mechanism and the wall portion of the cassette and for aligning the cutting mechanism with respect to said wall portion during cutting.

DETAILED DESCRIPTION OF THE INVENTION

For a better understanding of the present invention and as to show how the same may be carried into effect, reference will now be made to the accompanying drawings in which:

FIG. 1 shows a tape cassette of the invention;

FIG. 2 is a view of a cutter;

FIG. 3 is a view of a cutting blade;

FIG. 4 is a section of a cassette inserted into a tape printing device; and

FIG. 5 shows a perspective view of another cassette together with a cutting mechanism of a tape printer.

FIG. 1 illustrates a tape cassette 10 according to the present invention. It comprises a housing in which a supply spool 12 with printing tape 14 is accommodated. The printing tape 14 comprises an image receiving layer to which a releasable backing layer is adhered. The user can peel the releasable backing layer from a printed portion of tape 14 and stick the self adhesive tape as a label against surfaces. The cassette of FIG. 1 contains a direct thermal tape. Thus, no ink ribbon is present in the cassette 10. The tape 14 extends from the supply spool 12 through an outlet of the housing of the cassette 10 to a portion 22 of the wall of the housing on which a cutting location is defined. At the cutting location, a slot 24 is defined in the wall portion 22. The tape is guided by means of hooks 31 downstream the slot 24. On both sides of the slot 24, reinforcements 38 are provided on the housing of the tape cassette 10, in which guideways 32, 33, in the form of elongated channels, are situated. The guideways 32, 33 extend orthogonally to the feeding direction of the tape 14 and orthogonally to the length extension of the slot 24. The cross section of the guideways 32, 33 is rectangular.

A cutting mechanism for use with the tape cassette 10 of FIG. 1 is shown in FIG. 2. It comprises a blade holder 28 with pins 36 for holding a blade 30 as shown in FIG. 3. The blade 30 comprises holes 30a for mounting the blade to the blade holder 28, whereby the pins 36 extend through the holes 30a. The blade 30 can alternatively be fixed by heatstake, ultrasonic weld or screws in the blade holder 28. The blade 30 has an angled cutting edge 29. Adjacent both sides of the space for accommodating the blade 30, the blade holder is provided with pins 34, 35, which fit into the guideways 32, 33 of the tape cassette 10 of FIG. 1. The cross section of the pins 34, 35 is rectangular.

FIG. 4 illustrates a horizontal section of a cassette receiving member of a printing device. The cassette receiving member is shown by the dotted line 2. The cassette receiving member 2 includes a thermal print head 4 and a platen 6 which cooperate to define a print location P in a manner which is known in the art. The print head 4 is pivotable about a pivot point 8 so that it can be brought into contact with the platen 6 for printing and moved away from the platen to enable a cassette 10 to be removed and replaced.

The cassette inserted into the cassette receiving member 2 is denoted generally by reference numeral 10. The cassette holds the supply 12 of image receiving tape 14. The image receiving tape 14 is guided by a guide mechanism (which is not shown) through the cassette, out of the cassette, past the print location P to the cutting location. In the printing device illustrated in FIG. 4, the platen 6 is driven so that it rotates to drive the image receiving tape 14 past the print location P during printing. In this way, tape is printed and fed out from the print location P during printing. The cutting location is provided at a location on a portion of the wall of the cassette which is close to the print location P. The portion of the wall of the cassette 10 where the cutting location is defined is denoted by reference numeral 22. The slot 24 is defined in this wall portion and the image receiving tape 14 is fed past the print location P to the cutting location where it is supported by facing wall portions on either side of the slot 24.

The printing device includes a cutting mechanism denoted generally by reference numeral 26. This cutting mechanism includes the blade holder 28 which carries the blade 30. The blade 30 cuts the image receiving tape 14 and then enters the slot 24 with the leading part of its edge 29 first. It should be appreciated that the pins 34, 35 of the blade holder 28 enter the guideways 32, 33 of the tape cassette 10 simultaneously, such that the cutting mechanism is aligned with respect to the tape cassette 10 (or vice versa). Thus, the angle and position of the blade with respect to the slot 24 is always accurately determined, and the cut is performed at an angle of exactly 90 degrees with regard to the feeding direction of the tape. Further, this arrangement does not allow the blade 30 to interfere with the side walls of the slot 24, which could

otherwise be possible as a result of manufacturing tolerances in the current state of the art.

This functionality is additionally illustrated in FIG. 5, which shows a tape cassette 10 together with a blade holder 28 in its ready-to-operate state. During cutting, pin 34 enters guideway 32, and pin 35 enters guideway 33. In FIG. 5, the guideways 32,33 are somewhat shorter than in FIG. 1. Thus, the guideways in FIG. 5 are holes rather than channels, thereby requiring less material to construct the housing of the cassette 10.

What is claimed is:

1. A tape cassette that accommodates a printable tape and is suitable for being detachably received in a tape printing device having a tape cassette receiving member therein, said tape cassette comprising:

a housing having a wall portion which is arranged to support a length of the tape in face to face contact while the length of tape is cut in a central area during a cutting operation performed with a cutting mechanism of said tape printing device, with the wall portion supporting the tape on both sides of the cut central area, and

at least one guideway provided in said wall portion of said cassette beyond where the tape is supported by the wall portion, with the guideway being arranged for receiving a pin that is connected to the cutting mechanism to align and connect the cutting mechanism and cassette.

2. A tape cassette according to claim 1, wherein said guideway is a channel having a rectangular cross section.

3. A tape cassette according to claim 1, wherein said guideway is of generally conical shape, with the widest opening of the shape facing the pin.

4. A tape cassette according to claim 1, wherein said wall portion includes a slot arranged to receive a blade of said cutting mechanism during cutting of the tape.

5. A tape cassette according to claim 1, wherein first and second guideways are provided in the wall portion to receive corresponding first and second pins of the cutting mechanism during cutting, with one guideway positioned above the length of tape and the other positioned below the length of tape.

6. A tape cassette that accommodates a printable tape and is suitable for being detachably received in a tape printing device having a tape cassette receiving member therein, said tape cassette comprising:

a housing having a wall portion which is arranged to support a length of the tape in face to face contact while the length of tape is cut in a central area during a cutting operation performed with a cutting mechanism of said tape printing device, with the wall portion supporting the tape on both sides of the cut central area, wherein said wall portion is configured, positioned and dimensioned for interacting with a guide mechanism which connects the cutting mechanism and said wall portion during cutting such that the cutting mechanism is aligned with respect to said wall portion.

7. A tape cassette according to claim 6, wherein the guide mechanism comprises a pin which is arranged to protrude into a guideway during cutting.

8. A tape cassette according to claim 7, wherein the guideway is provided within said wall portion of said cassette and has the form of a rectangular channel.

9. A tape cassette according to claim 6, wherein said wall portion further includes a slot arranged to receive a blade of said cutting mechanism during cutting of the tape.

10. A tape cassette according to claim 6, wherein the guide mechanism comprises first and second guideways, a first pin located adjacent a first lateral end of a blade of said cutting mechanism and a second pin located adjacent a second lateral end of said blade, wherein the first and second pins are arranged to protrude into corresponding first and second guideways during cutting.

11. A tape cassette according to claim 7, wherein the guideway is of generally conical shape, with the widest opening of the shape facing the pin.

12. A tape printing device comprising:

a tape cassette receiving member in which a tape cassette can be detachably attached;

a tape cassette comprising a housing having a wall portion which is arranged to support a length of tape in face to face contact relation while the length of tape is cut in a central area, with the wall portion supporting the tape on both sides of the central area;

a tape provided in said tape cassette,

printing means for printing an image on the tape;

a cutting mechanism for cutting off a portion of printed tape; and

a guide mechanism arranged for connecting the cutting mechanism and the wall portion of the cassette and for aligning the cutting mechanism with respect to said wall portion during cutting.

13. A tape printing device according to claim 12, wherein the guide mechanism comprises a guideway and a pin which is arranged to protrude into the guideway during cutting.

14. A tape printing device according to claim 13, wherein the guideway is provided in the wall portion of the cassette and the pin is provided on the cutting mechanism.

15. A tape printing device according to claim 13, wherein the pin has a conical tip, with its smallest dimensions facing the guideway.

16. A tape printing device according to claim 13, wherein the pin has a rectangular cross section.

17. A tape printing device according to claim 12, wherein said wall portion includes a slot arranged to receive a blade of said cutting mechanism during cutting of the tape.

18. A tape printing device according to claim 12, wherein the guide mechanism comprises first and second guideways, a first pin located adjacent a first lateral end of a blade of said cutting mechanism and a second pin located adjacent a second lateral end of said blade, wherein the first and second pins are arranged to protrude into corresponding first and second guideways during cutting.

* * * * *

EXHIBIT D

US006092946A

United States Patent [19]

Cockerill et al.

[11] Patent Number: 6,092,946

[45] Date of Patent: Jul. 25, 2000

[54] **TAPE PRINTING APPARATUS AND TAPE HOLDING CASE WITH A SLIDING SWITCH**

[75] Inventors: **Samuel Edward Cockerill, Anthony Roy Dunn**, both of Cambridge, United Kingdom

[73] Assignee: **Esselte NV**, Sint-Niklaas, Belgium

[21] Appl. No.: **09/281,210**

[22] Filed: **Mar. 30, 1999**

[30] **Foreign Application Priority Data**

Apr. 23, 1998 [EP] European Pat. Off. 98107375

[51] **Int. Cl.**[7] **B41J 2/325**

[52] **U.S. Cl.** **400/613**, 400/208, 400/703, 400/708

[58] **Field of Search** 400/207, 208, 400/613, 594, 903, 708

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,815,875	3/1989	Richardson et al.	400/208.1
5,078,523	1/1992	McCourty et al.	400/613
5,374,132	12/1994	Kimura	400/58h
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FOREIGN PATENT DOCUMENTS

0 234 304	9/1987	European Pat. Off. .
0 267 890	5/1988	European Pat. Off. .
0 322 918	7/1989	European Pat. Off. .
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0 512 168	11/1992	European Pat. Off. .
0 526 078	2/1993	European Pat. Off. .
0 555 888	8/1993	European Pat. Off. .
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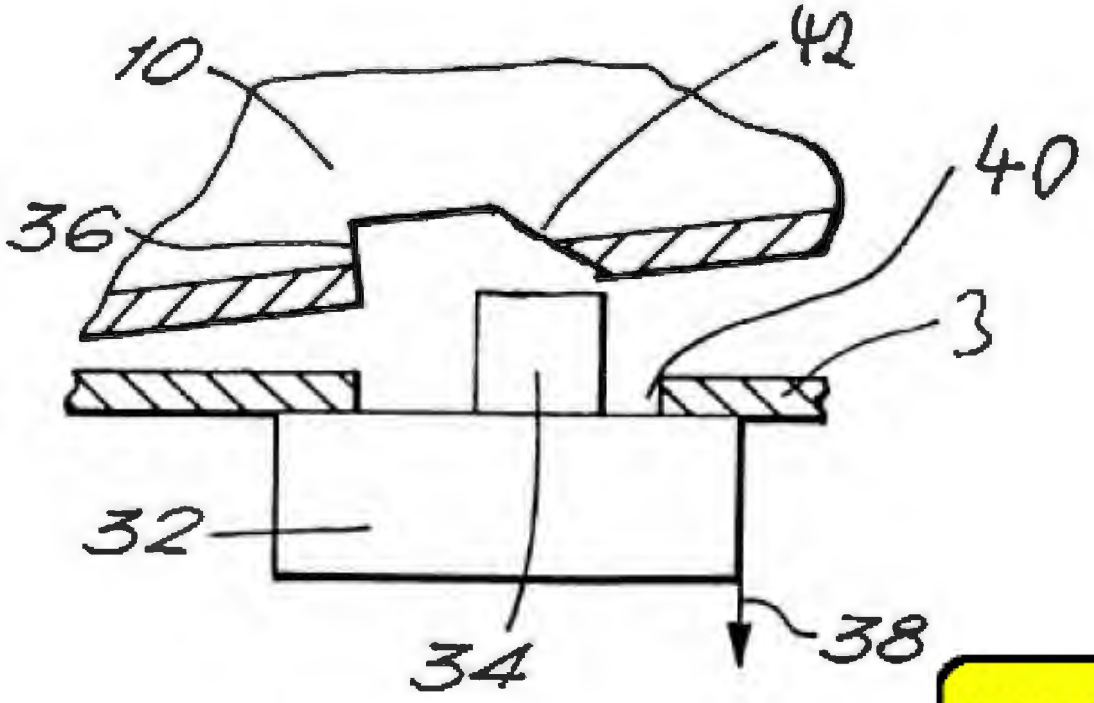
0 627 317	12/1994	European Pat. Off. .
0 634 274	1/1995	European Pat. Off. .
0 773 110	5/1997	European Pat. Off.
2306917	5/1997	United Kingdom
2309938	8/1997	United Kingdom

Primary Examiner—John S. Hilten
Assistant Examiner—Daniel J. Colilla
Attorney, Agent, or Firm—Pennie & Edmonds LLP

[57] **ABSTRACT**

The invention relates to a combination of a printing device and a tape holding case (**10**). The printing device comprises a zone for receiving the tape holding case (**10**) and a slide switch (**32**) in said zone. The slide switch (**32**) is movable between at least first and second positions corresponding to a first resp. second type of tape. In order to make the insertion of the tape holding case (**10**) easier, it is proposed that a tape holding case of the first type is provided with a ramp configured such that the switch (**32**) is moved into the first position during insertion of the tape holding case (**10**) into the zone when the switch (**32**) is originally in the second position. When a tape holding case of a second type is provided, its ramp can move the switch (**32**) automatically into the second position.

13 Claims, 3 Drawing Sheets



COMPLAINT EXHIBIT D

FIG. 1

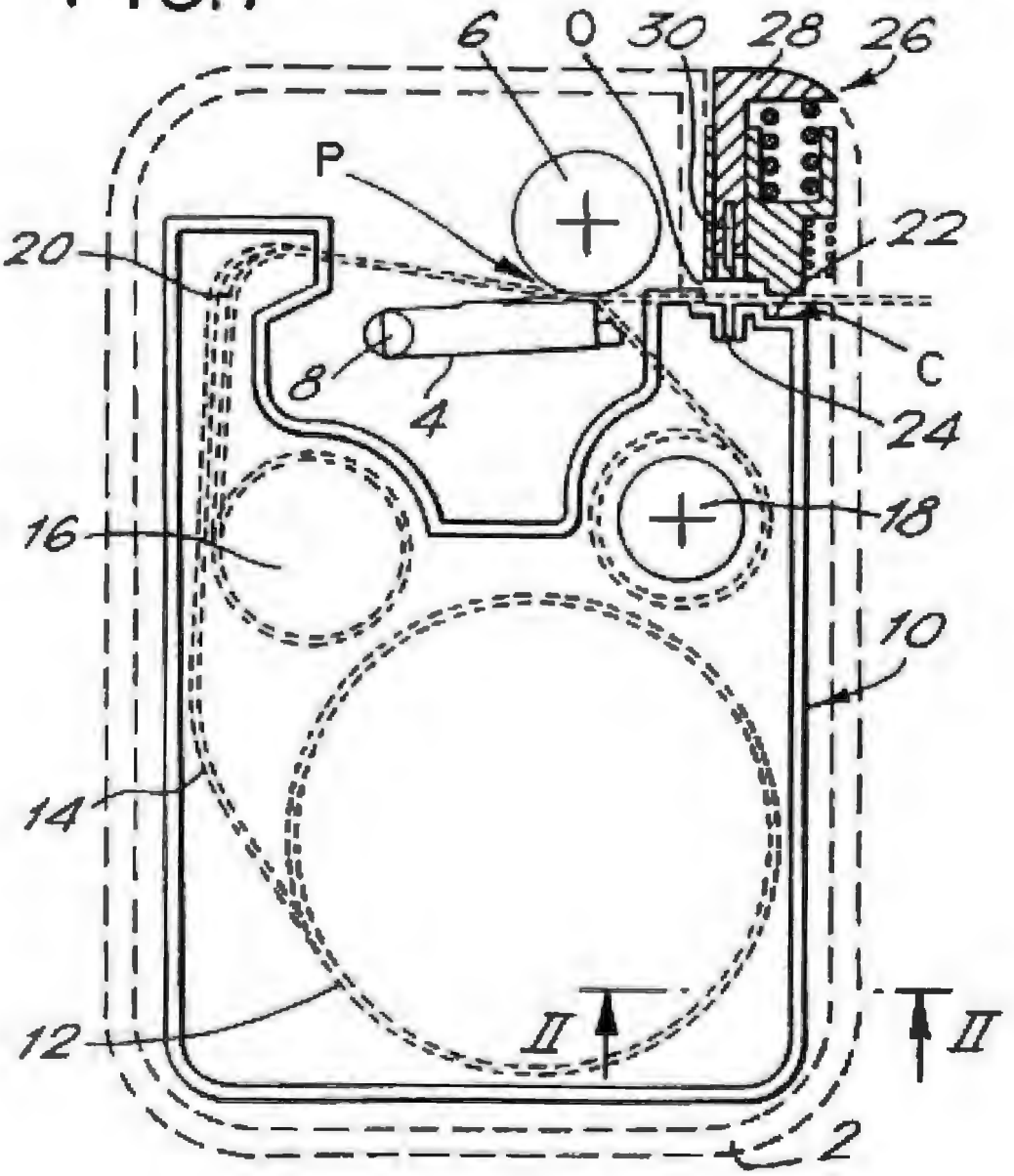


FIG. 2

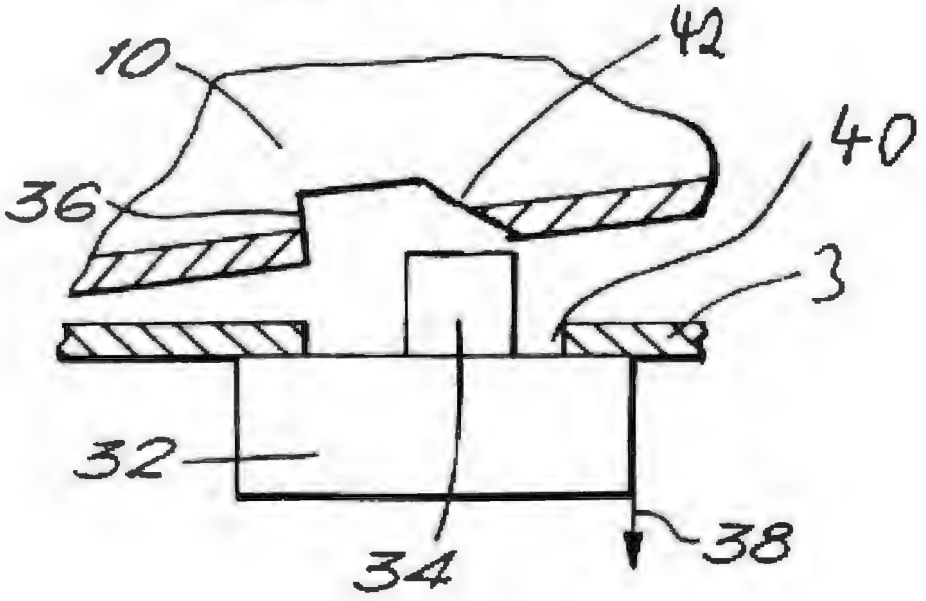


FIG. 3

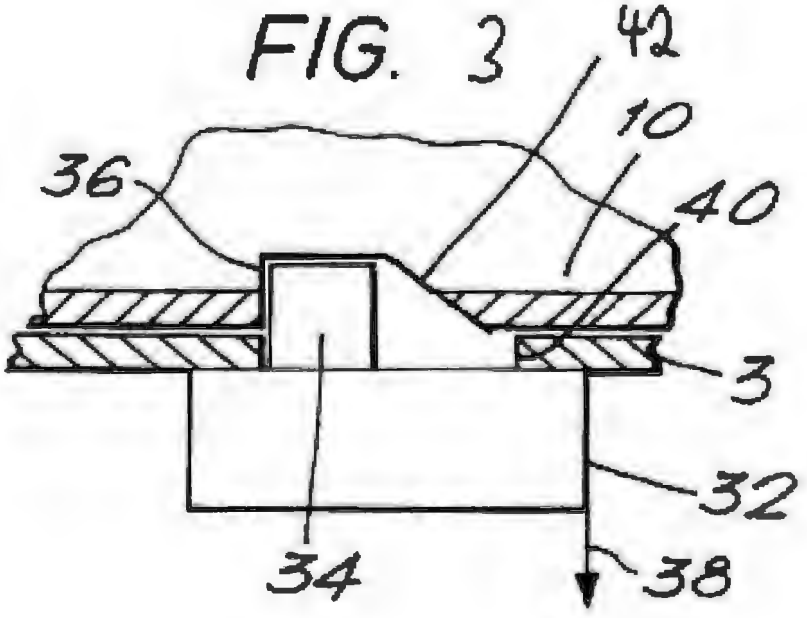
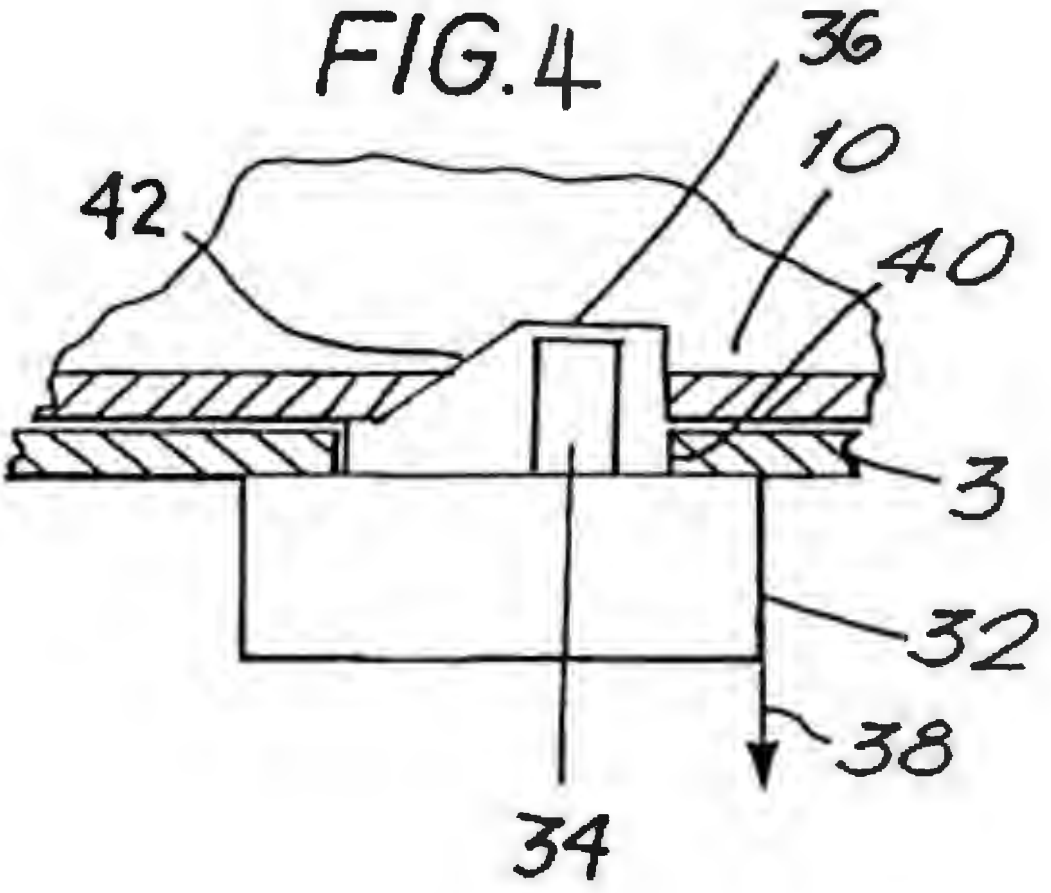


FIG. 4



TAPE PRINTING APPARATUS AND TAPE HOLDING CASE WITH A SLIDING SWITCH

FIELD OF THE INVENTION

The present invention relates to tape printing apparatus and, in particular, is concerned with a tape cassette for use therewith.

DESCRIPTION OF THE RELATED ART

Printing apparatus of the type with which the present invention is generally concerned are known. They operate with a supply of tape arranged to receive an image and a means for transferring the image onto the tape. In one known device, there is a tape holding case which holds a supply of image receiving tape and a supply of an image transfer ribbon, the image receiving tape and the transfer ribbon being passed in overlap through a printing zone of the printing device. At the print zone, a thermal print head cooperates with a platen to transfer an image form the transfer ribbon to the tape. A printing device operating with a tape holding case of this type is described in EP-A-267 890. Other printing devices have been made in which letters are transferred to an image receiving tape by a dry lettering or dry film impression process. In all of these printing devices, the construction of the image receiving tape is substantially the same. That is, it comprises an upper layer for receiving an image which is secured to a releasable backing layer by a layer of adhesive.

The upper layer can either receive an image on its top surface, its lower surface being secured to the releasable backing layer by a layer of adhesive or alternatively the upper layer can be transparent and can receive an image on one of its faces printed as a mirror image so that it is viewed the correct way round through the other surface of the tape. In this case, a double sided adhesive layer has a releasable backing layer. This latter arrangement is described for example in EPA-0322918.

In another type of printing device described in EP-A-0573187 there are two separate tape holding cases, one holding image receiving tape and the other holding an image transfer ribbon.

With all such printing devices it is desirable that they are able to cooperate with image receiving tape of different widths. For this, the apparatus should include a way of identifying the width of tape within the tape holding case so that printing can be correctly carried out or inhibited where an incorrect tape is inserted. For example, if tape of a narrower width is used, printing should be confined to the area of the narrower width tape and should not extend to a width suitable for a wider tape.

There have been various proposals made to identify the width of tape within a tape holding case. In U.S. Pat. No. 5,078,523 an electrical sensing arrangement is used responsive to different resistive values. Each tape holding case holds a tape of a predetermined width and has a resistor of a predetermined resistive value associated with that width. On insertion of the tape holding case into the printing apparatus, the resistive value is sensed and the width of tape within the tape holding case is thereby identified.

In EP-A-0497352, tape holding cases having tapes of different widths are arranged to actuate different microswitches when inserted into the printing device. Thus, the width of tape is identified by a variation in the external casing of the tape holding case.

In EP-A-0526078, the shape of a tape holding case interacts with an optical sensor to identify the width of tape therein.

In EP-A-0234304, a discriminating switch is provided for discriminating between different colors of ink ribbon. The discriminating switch is only activated when a multi-color ink ribbon is housed in a cassette.

EP-A-0034274 discloses a tape printing device of the type with which the present invention is concerned. On the bottom of the cassette bay in which the tape holding case is received, a slide switch is located, which informs the controller of the tape printing device on the type of tape holding case received, in particular the width of the image receiving tape. Since the tape holding case can only be inserted when the slide switch is in a position corresponding to (and identifying) the tape holding case, the user must set the slide switch into the appropriate position before he can insert the cassette, because it otherwise does not fit into the cassette bay. A similar arrangement is disclosed in GB-A-2309938, according to which the slide switch can identify whether the tape holding case contains a direct thermal printing tape, or a tape for thermal transfer printing. The controller of the printing device can thus adjust the appropriate settings for the printhead energy.

A disadvantage of the cassettes described in the latter two documents is that the user has to set the slide switch manually into the appropriate position before he can insert the tape holding case. Thus, improvements in such devices are needed.

SUMMARY OF INVENTION

The present invention now simplifies the operation of tape printing devices of the type having a slide switch for identifying the type of the tape holding case at the respective receiving portion.

According to the present invention, there is provided in combination, a printing device and a tape holding case which houses a tape for printing, wherein said printing device comprises a zone for receiving the tape holding case and a slide switch in said zone, the slide switch is movable between at least first and second positions, and the holding case is of a first type and provided with a recess configured such that the tape holding case may be received in the zone without interference from the switch if the switch is in the first position, characterized in that the tape holding case of the first type is provided with a means configured such that the switch is moved into the first position during insertion of the tape holding case into the zone when the switch is originally in the second position.

The tape holding case of the first type is thus provided with a means which-during insertion of the case into the receiving zone of the tape printing device-shifts the slide switch into the first position when necessary, i.e. when the switch is not yet in the first position. Should the contrary be the case, i.e. the switch is already in the first position, the means and the switch do not need to interact at all; thus the switch is accommodated in a recess of the tape holding case as known in the state of the art.

The advantage of the invention is thus that the user does not need to set the slide switch manually into the correct position, since this is performed automatically during insertion of the tape holding case. The invention can be used in tape cassettes for use in printing devices which are already in the marketplace.

Further, a tape holding case of a second type housing a tape of a second type different from the type of the first tape is proposed. The tape holding case of the second type is provided with a recess configured such that the tape holding case of the second type may be received in the zone without

interference from the switch if the switch is in the second position, and the tape holding case of the second type is provided with a means configured such that the switch is moved into the second position during insertion of the tape holding case of the second type into the zone when the switch is originally in the first position.

Thus, the tape holding case of the second type is similar to the tape holding case of the first type, but symmetric in that it moves the switch from the first to the second position when necessary.

The types of the respective tapes in the tape holding case of the first and second type can have different tape width. Alternatively or additionally, they can have different tape materials (direct thermal material or thermal transfer material, as mentioned in GB-A-2309938) requiring different printhead energies. Alternatively the first type of tape can be material for lamination which is printed upside down (inverse or mirrored), and the second type of tape is directly printed. A distinction between these two types of tape is described in EP-A-0555868, the contents of which is incorporated herein by reference.

According to a second aspect of the invention, there is provided a tape holding case which houses a tape for printing, for use with a printing device, wherein said printing device comprises a zone for receiving the tape holding case and a slide switch in said zone, the slide switch is movable between at least first and second positions, and the holding case is of a first type and provided with a recess configured such that the tape holding case may be received in the zone without interference from the switch if the switch is in the first position, characterized in that the tape holding case of the first type is provided with a means configured such that the switch is moved into the first position during insertion of the tape holding case into the zone when the switch is originally in the second position.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present invention and as to show how the same may be carried into effect, reference will now be made to the accompanying drawings in which:

FIG. 1 shows in diagrammatic plan view a printing device with a cassette inserted therein; and

FIG. 2 and 3 are partial sections along line II—II illustrating a tape width selection switch.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 illustrates in plan view a cassette bay of a printing device. The cassette bay is shown by the dotted line 2. The cassette bay includes a thermal print head 4 and a platen 6 which cooperate to define a print location P in a manner which is known in the art. The print head 4 is pivotable around a pivot point 8 so that it can be brought into contact with the platen 6 for printing and moved away from the platen to enable a cassette to be removed and replaced. A cassette inserted into the cassette bay 2 is denoted generally by reference numeral 10. The cassette 10 holds a supply spool 12 of image receiving tape 14 which comprises an image receiving layer secured to a backing layer by a layer of adhesive. The image receiving tape 14 is guided by a guide mechanism (which is not shown) through the cassette 10, out of the cassette through an outlet O, past the print location P to a cutting location C. The cassette 10 also has an ink ribbon supply spool 16 and ink ribbon take up spool 18. The ink ribbon 20 is guided from the ink ribbon supply spool 16 through the print location P and taken up on the ink ribbon take up spool 18. The image receiving tape 14 passes in overlap with the ink ribbon 20 through the print location P with its image receiving layer in contact with the ink ribbon.

In the printing device illustrated in FIG. 1, the platen 6 is driven so that it rotates to drive the image receiving tape 14 past the print location during printing. In this way, tape is printed and fed out from the print location P to the cutting location C. The portion of the wall of the cassette 10 where the cutting location C is defined is denoted by reference numeral 22. A slot 24 is defined in this wall portion and the image receiving tape 14 is fed past the print location P to the cutting location C.

The printing device includes a cutting mechanism denoted generally by reference numeral 26. This cutting mechanism includes a cutter support member 28 which carries a blade 30. The blade 30 cuts the image receiving tape 14 and then enters the slot 24 with the leading part of its edge 31 first, rather than bearing against an anvil. The detailed operation of the cutting mechanism is described in EP-A0627317.

FIG. 2 shows a partial diagrammatic section along the line II—II in FIG. 1. In FIG. 2, reference numeral 3 denotes the floor of the cassette bay 2. Reference numeral 10 again denotes a cassette of a first type, for example holding an image receiving tape 14 having a first width of 12 mm. Reference numeral 32 denotes a slide switch and reference numeral 34 denotes an actuating part of the switch. The switch 32 can be a low cost two (or more) position slide switch, conveniently mounted beneath the cassette bay floor 3 through a slot 40. The actuating part 34 of the switch 32 can be slid between a first position (shown in FIG. 3) and a second position, indicating a first state and second state, respectively, as shown in FIG. 2. The cassette 10 of the first type holding a 12 mm width tape has a recess 36 in its underside which is located to accommodate the actuating part 34 of the switch when it is in a first position (this is the position shown in FIG. 3). The switch is connected to an electronic circuit, such as a microprocessor (not shown), via a connection 38 which carries a signal to the microprocessor identifying the position, i.e., position of the actuating member 34 of the switch. The microprocessor then uses this information to determine the type of the tape which, for example, relates to the width of tape which has been selected.

The actuating part 34 of the switch 32 is movable between the second position shown in FIG. 2 and the first position which is shown in FIG. 3. In the first position, it is intended to identify that the first tape width of 12 mm is being used. In the second position, it is intended to identify that a second tape width of, e.g. 6 mm, is being used. Thus, a cassette 10 of the first type (as shown in FIGS. 2 and 3) corresponds to the first position of the switch 32, and a cassette of a second type corresponds to the second position of the switch 32.

In order to avoid that the user has to bring the switch 32 manually into its correct position identifying the width of the tape, the recess 36 in the underside of the cassette 10 of the first type is on its right end shaped in the form of a ramp 42, such that it interacts with the switch 32 and moves the actuating part 34 of the switch 32 into the first position, when the switch is in the second position. This happens while the cassette 10 is being inserted into the cassette bay. The left side of the recess 36 of the cassette 10 of the first type is shaped not to interfere with the actuating part 34 of the switch 32 when the latter is in the first position. The cassette 10 of the first type is thus provided with a recess 36

having a ramp 42 on one side which is formed to move the slide switch 32 into the first position, automatically during insertion of the cassette 10 into the cassette bay 2. This is indicated in FIGS. 2 and 3; due to the interaction of the ramp 42 and the actuating part 34 the switch 32 is moved into the first position while the cassette is inserted.

A cassette 10 of the second type (as shown on FIG. 4) would thus have a recess 36 with a rectangular part on the right end, such that it fits over the actuating part 34 of the slide switch 32 when the latter is in the second position, and a ramp 42 for moving the actuating part 34 of the slide switch 32 into the second position, when the switch 32 is in the first position.

While various descriptions of the present invention are described above, it should be understood that the various features can be used singly or in any combination thereof. Therefore, this invention is not to be limited to only the specifically preferred embodiments depicted herein.

Further, it should be understood that variations and modifications within the spirit and scope of the invention may occur to those skilled in the art to which the invention pertains. Accordingly, all expedient modifications readily attainable by one versed in the art from the disclosure set forth herein that are within the scope and spirit of the present invention are to be included as further embodiments of the present invention. The scope of the present invention is accordingly defined as set forth in the appended claims.

What is claimed is:

1. A tape printer comprising:

a tape holding case configured to house a printing tape, wherein the printing tape is one of at least first and second types;

a printer device configured to be coupled to the tape holding case, comprising:

a sliding switch configured to be set between at least first and second states, wherein the sliding switch includes an actuating part configured to be moved between at least first and second positions, and wherein the sliding switch is set to the first state when the actuating part is moved to the first position and the sliding switch is set to the second state when the actuating part is moved to the second position; and

an electronic circuit configured to determine the type of the printing tape housed in the tape holding case based on the state of the sliding switch when the tape holding case is placed within the printer device; and

a printer head configured to print images on the printing tape; and

moving means with which to move the actuating part wherein the moving means comprises a recess and an angled ramp configured to move the actuating part to the recess, wherein the location of the recess defines the position of the actuating part.

2. The printer according to claim 1 wherein the electronic circuit is a microprocessor.

3. The printer according to claim 1 wherein the tape of the first type and the tape of the second type differ at least one of tape width, print energy, and printing direction.

4. The printer according to claim 1 wherein the printer device further comprises a tape holding case bay configured to receive the tape holding case.

5. The printer according to claim 4 wherein the sliding switch is located in the bay.

6. A tape holding case comprising:

a printing tape, wherein the printing tape is one of at least first and second types, and

moving means configured to interact with a sliding switch of a printer device, wherein the sliding switch is configured to be set between at least first and second states,

wherein the sliding switch further comprises an actuating part configured to be moved between at least first and second positions and wherein the sliding switch is set to the first state when the actuating part is moved to the first position and the sliding switch is set to the second state when the actuating part is moved to the second position and,

wherein the moving means comprises a recess and an angled ramp configured to move the actuating part to the recess wherein the location of the recess defines the position of the actuating part.

7. The tape holding case according to claim 6 wherein the tape of the first type and the tape of the second type differ at least one of tape width, print energy, and printing direction.

8. A tape printer comprising:

a tape holding case configured to house a printing tape, wherein the printing tape is one of at least first and second types;

a printer device, comprising:

a tape holding case bay configured to receive the tape holding case and having a floor surface;

a sliding switch configured to move laterally by sliding along the floor surface between at least first and second states; and

an electronic circuit configured to determine the type of the printing tape housed in the tape holding case based on the state of the sliding switch when the tape holding case is placed within the printer device; and

a printer head configured to print images on the printing tape.

9. The printer according to claim 8 wherein the electronic circuit is a microprocessor.

10. The printer according to claim 8 wherein the tape of the first type and the tape of the second type differ at least one of tape width, print energy, and printing direction.

11. The printer according to claim 8 wherein the sliding switch further comprises an actuating part configured to be moved between at least first and second positions, wherein the sliding switch is set to the first state when the actuating part is moved to the first position and the sliding switch is set to the second state when the actuating part is moved to the second position.

12. The printer according to claim 11 wherein the tape holding case further comprises moving means with which to move the actuating part.

13. The printer according to claim 12 wherein the moving means comprises a recess and an angled ramp configured to move the actuating part to the recess, wherein the location of the recess defines the position of the actuating part.

* * * * *

EXHIBIT E

Aster
Print with confidence

AsterTechnology USA
Company News & New Product
JULY ISSUE

Compatible label cassettes

for use with **Dymo label printers**

are now available from Aster Graphics.

Call us now. Seize the opportunity to be the first one offering your customers compatible Dymo label cassettes.

▲ Replacement label cassette of Dymo 45013/S0720530

New Products, New Opportunities

Dymo is one of the most popular brands of label printer. From the information we have, Dymo owns an installed base of over 4 million pcs of label printers in the USA. However, there have been no aftermarket supplies for these printers for a long time. This kind of situation comes to an end when Aster Graphics launches its compatible solutions.

Now the replacement label cassette of Dymo's 45013/S0720530 for use with LMPC II, LM360D, LM350, LP350, LM260P, LM450, LM210D, LM120P, LM220P, LM155, LM150, LP250 and LabelWriter DUO is available from Aster USA. Call us now for more details or a quotation.

Specifications:

Aster Code	OEM Code	For Use with	Text Color	Cassette Color	Width	Length
YT-45013	45013/ S0720530	LMPC II, LM360D, LM350, LP350, LM260P, LM450, LM210D, LM120P, LM220P, LM155, LM150, LP250 and LabelWriter DUO	Black	White	12mm	7m

Aster Graphics' Factory Holds Annual Partner Meeting

FRIDAY, 29 JUNE 2012

At the meeting, Yibo reviewed the accomplishments of the last 12 months and discussed strategic plans for the coming year. Partners and local government expressed their continued support.

MORE

Aster Graphics Improves Its Toner Cartridge Packaging

MONDAY, 18 JUNE 2012

Aster Graphics has recently made an improvement on its toner cartridge packaging. The

COMPLAINT EXHIBIT E

Features of Aster Graphics' Label Cassettes:

Our label cassettes are of the highest quality, 100% compatible and risk-free. Print with confidence!

- **Withstand most severe environments.** Our six-layer laminated labels have been proven to stay affixed in the most severe environments without fading or falling off.
- **100% compatible.** We guarantee that all our products are 100% compatible with OEM machines.
- **PET protective laminate matches the base film perfectly**
- **Easy to tear off within 24 hours after labeled, relabel-friendly.**
- **Same color density as OEM's**
- **Anti-rollback system ensures smooth printing**

new packaging significantly increases the products' packing quantity, lowers the logistics cost per item and increases the products' safety during the transport.

MORE

www.aster-usa.com | usassales@goaster.com | Tel: +562-404-9315 | Fax:+562-404-9570

UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

NOTICE OF ASSIGNMENT TO UNITED STATES MAGISTRATE JUDGE FOR DISCOVERY

This case has been assigned to District Judge Stephen V. Wilson and the assigned discovery Magistrate Judge is Margaret A. Nagle.

The case number on all documents filed with the Court should read as follows:

CV12- 10767 SVW (MANx)

Pursuant to General Order 05-07 of the United States District Court for the Central District of California, the Magistrate Judge has been designated to hear discovery related motions.

All discovery related motions should be noticed on the calendar of the Magistrate Judge

---

NOTICE TO COUNSEL

A copy of this notice must be served with the summons and complaint on all defendants (if a removal action is filed, a copy of this notice must be served on all plaintiffs).

Subsequent documents must be filed at the following location:

[X] **Western Division**
312 N. Spring St., Rm. G-8
Los Angeles, CA 90012

[ ] **Southern Division**
411 West Fourth St., Rm. 1-053
Santa Ana, CA 92701-4516

[ ] **Eastern Division**
3470 Twelfth St., Rm. 134
Riverside, CA 92501

Failure to file at the proper location will result in your documents being returned to you.

AO 440 (Rev. 06/12) Summons in a Civil Action

ORIGINAL

UNITED STATES DISTRICT COURT

for the

CENTRAL DISTRICT OF CALIFORNIA, WESTERN DIVISION

DYMO B.V.B.A.

Plaintiff(s)

v.

ASTER GRAPHICS, INC.; ASTER GRAPHICS COMPANY LIMITED; ASTER TECHNOLOGY HOLLAND B.V.; and LINKYO CORPORATION

Defendant(s)

Civil Action No. CV12-10767-SVW (CMANx)

SUMMONS IN A CIVIL ACTION

To: *(Defendant's name and address)*

A lawsuit has been filed against you.

Within 21 days after service of this summons on you (not counting the day you received it) — or 60 days if you are the United States or a United States agency, or an officer or employee of the United States described in Fed. R. Civ. P. 12 (a)(2) or (3) — you must serve on the plaintiff an answer to the attached complaint or a motion under Rule 12 of the Federal Rules of Civil Procedure. The answer or motion must be served on the plaintiff or plaintiff's attorney, whose name and address are:

LISA I. DAMJI
BAKER & HOSTETLER LLP
12100 Wilshire Boulevard, 15th Floor
Los Angeles, CA 90025-7120
Telephone: (310) 820-8800

If you fail to respond, judgment by default will be entered against you for the relief demanded in the complaint. You also must file your answer or motion with the court.

CLERK OF COURT

Date: DEC 17 2012

Marilyn Nunez
Signature of Clerk or Deputy Clerk

Civil Action No.

PROOF OF SERVICE

(This section should not be filed with the court unless required by Fed. R. Civ. P. 4 (l))

This summons for *(name of individual and title, if any)* _____

was received by me on *(date)* _____

☐ I personally served the summons on the individual at *(place)* _____

_____ on *(date)* _____; or

☐ I left the summons at the individual's residence or usual place of abode with *(name)* _____

_____, a person of suitable age and discretion who resides there,

on *(date)* _____, and mailed a copy to the individual's last known address; or

☐ I served the summons on *(name of individual)* _____, who is

designated by law to accept service of process on behalf of *(name of organization)* _____

_____ on *(date)* _____; or

☐ I returned the summons unexecuted because _____; or

☐ Other *(specify)*:

My fees are $ _____ for travel and $ _____ for services, for a total of $ 0.00

I declare under penalty of perjury that this information is true.

Date: _____

_____

Server's signature

_____

Printed name and title

_____

Server's address

Additional information regarding attempted service, etc:

UNITED STATES DISTRICT COURT, CENTRAL DISTRICT OF CALIFORNIA
CIVIL COVER SHEET

COPY

I (a) PLAINTIFFS (Check box if you are representing yourself ☐)	DEFENDANTS
DYMO B.V.B.A.	ASTER GRAPHICS, INC.; ASTER GRAPHICS COMPANY LIMITED; ASTER TECHNOLOGY HOLLAND B.V.; and LINKYO CORPORATION
(b) Attorneys (Firm Name, Address and Telephone Number. If you are representing yourself, provide same.) LISA I. DAMJI, Bar No. 204764 BAKER & HOSTETLER LLP 12100 Wilshire Boulevard, 15th Floor Los Angeles, California 90025-7120 Telephone:(310) 820-8800	Attorneys (If Known)

II. BASIS OF JURISDICTION (Place an X in one box only.)

☐ 1 U.S. Government Plaintiff ☒ 3 Federal Question (U.S. Government Not a Party)

☐ 2 U.S. Government Defendant ☐ 4 Diversity (Indicate Citizenship of Parties in Item III)

III. CITIZENSHIP OF PRINCIPAL PARTIES - For Diversity Cases Only (Place an X in one box for plaintiff and one for defendant.)

	PTF	DEF		PTF	DEF
Citizen of This State	☐ 1	☐ 1	Incorporated or Principal Place of Business in this State	☐ 4	☐ 4
Citizen of Another State	☐ 2	☐ 2	Incorporated and Principal Place of Business in Another State	☐ 5	☐ 5
Citizen or Subject of a Foreign Country	☐ 3	☐ 3	Foreign Nation	☐ 6	☐ 6

IV. ORIGIN (Place an X in one box only.)

☒ 1 Original Proceeding ☐ 2 Removed from State Court ☐ 3 Remanded from Appellate Court ☐ 4 Reinstated or Reopened ☐ 5 Transferred from another district (specify): ☐ 6 Multi-District Litigation ☐ 7 Appeal to District Judge from Magistrate Judge

V. REQUESTED IN COMPLAINT: JURY DEMAND: ☒ Yes ☐ No (Check 'Yes' only if demanded in complaint.)

CLASS ACTION under F.R.C.P. 23: ☐ Yes ☒ No ☐ **MONEY DEMANDED IN COMPLAINT: $** _____

VI. CAUSE OF ACTION (Cite the U. S. Civil Statute under which you are filing and write a brief statement of cause. Do not cite jurisdictional statutes unless diversity.)

Patent infringement 35 USC, Section 154(d)/271 281, 283, 284, 285

VII. NATURE OF SUIT (Place an X in one box only.)

OTHER STATUTES	CONTRACT	TORTS PERSONAL INJURY	TORTS PERSONAL PROPERTY	PRISONER PETITIONS	LABOR
☐ 400 State Reapportionment	☐ 110 Insurance	☐ 310 Airplane	☐ 370 Other Fraud	☐ 510 Motions to Vacate Sentence Habeas Corpus	☐ 710 Fair Labor Standards Act
☐ 410 Antitrust	☐ 120 Marine	☐ 315 Airplane Product Liability	☐ 371 Truth in Lending	☐ 530 General	☐ 720 Labor/Mgmt. Relations
☐ 430 Banks and Banking	☐ 130 Miller Act	☐ 320 Assault, Libel & Slander	☐ 380 Other Personal Property Damage	☐ 535 Death Penalty	☐ 730 Labor/Mgmt. Reporting & Disclosure Act
☐ 450 Commerce/ICC Rates/etc.	☐ 140 Negotiable Instrument	☐ 330 Fed. Employers' Liability	☐ 385 Property Damage Product Liability	☐ 540 Mandamus/ Other	☐ 740 Railway Labor Act
☐ 460 Deportation	☐ 150 Recovery of Overpayment & Enforcement of Judgment	☐ 340 Marine	BANKRUPTCY	☐ 550 Civil Rights	☐ 790 Other Labor Litigation
☐ 470 Racketeer Influenced and Corrupt Organizations	☐ 151 Medicare Act	☐ 345 Marine Product Liability	☐ 22 Appeal 28 USC 158	☐ 555 Prison Condition	☐ 791 Empl. Ret. Inc. Security Act
☐ 480 Consumer Credit	☐ 152 Recovery of Defaulted Student Loan (Excl. Veterans)	☐ 350 Motor Vehicle	☐ 423 Withdrawal 28 USC 157	FORFEITURE/ PENALTY	PROPERTY RIGHTS
☐ 490 Cable/Sat TV	☐ 153 Recovery of Overpayment of Veteran's Benefits	☐ 355 Motor Vehicle Product Liability	CIVIL RIGHTS	☐ 610 Agriculture	☐ 820 Copyrights
☐ 810 Selective Service	☐ 160 Stockholders' Suits	☐ 360 Other Personal Injury	☐ 441 Voting	☐ 620 Other Food & Drug	☒ 830 Patent
☐ 850 Securities/Commodities/ Exchange	☐ 190 Other Contract	☐ 362 Personal Injury-Med Malpractice	☐ 442 Employment	☐ 625 Drug Related Seizure of Property 21 USC 881	☐ 840 Trademark
☐ 875 Customer Challenge 12 USC 3410	☐ 195 Contract Product Liability	☐ 365 Personal Injury-Product Liability	☐ 443 Housing/Acco-mmodations	☐ 630 Liquor Laws	SOCIAL SECURITY
☐ 890 Other Statutory Actions	☐ 196 Franchise	☐ 368 Asbestos Personal Injury Product Liability	☐ 444 Welfare	☐ 640 R.R.& Truck	☐ 61 HIA(1395ff)
☐ 891 Agricultural Act	REAL PROPERTY	IMMIGRATION	☐ 445 American with Disabilities – Employment	☐ 650 Airline Regs	☐ 862 Black Lung (923)
☐ 892 Economic Stabilization Act	☐ 210 Land Condemnation	☐ 462 Naturalization Application	☐ 446 American with Disabilities – Other	☐ 660 Occupational Safety /Health	☐ 863 DIWC/DIWW 405(g))
☐ 893 Environmental Matters	☐ 220 Foreclosure	☐ 463 Habeas Corpus-Alien Detainee	☐ 440 Other Civil Rights	☐ 690 Other	☐ 864 SSID Title XVI
☐ 894 Energy Allocation Act	☐ 230 Rent Lease & Ejectment	☐ 465 Other Immigration Actions			☐ 865 RSI (405(g))
☐ 895 Freedom of Info. Act	☐ 240 Torts to Land				FEDERAL TAX SUITS
☐ 900 Appeal of Fee Determination Under Equal Access to Justice	☐ 245 Tort Product Liability				☐ 870 Taxes (U.S. Plaintiff or Defendant)
☐ 950 Constitutionality of State Statutes	☐ 290 All Other Real Property				☐ 871 IRS-Third Party 26 USC 7609

FOR OFFICE USE ONLY: Case Number: CV12-10767

AFTER COMPLETING THE FRONT SIDE OF FORM CV-71, COMPLETE THE INFORMATION REQUESTED BELOW.

UNITED STATES DISTRICT COURT, CENTRAL DISTRICT OF CALIFORNIA
CIVIL COVER SHEET

VIII(a). IDENTICAL CASES: Has this action been previously filed in this court and dismissed, remanded or closed? ☒ No ☐ Yes

If yes, list case number(s): _____

VIII(b). RELATED CASES: Have any cases been previously filed inthis court that are related to the present case? ☒ No ☐ Yes

If yes, list case number(s): _____

Civil cases are deemed related if a previously filed case and the present case:

(Check all boxes that apply)
- ☐ A. Arise from the same or closely related transactions, happenings, or events; or
- ☐ B. Call for determination of the same or substantially related or similar questions of law and fact; or
- ☐ C. For other reasons would entail substantial duplication of labor if heard by different judges; or
- ☐ D. Involve the same patent, trademark or copyright, and one of the factors identified above in a, b or c also is present.

IX. VENUE: (When completing the following information, use an additional sheet if necessary.)

(a) List the County in this District; California County outside of this District; State if other than California; or Foreign Country, in which **EACH** named plaintiff resides.
☐ Check here if the government, its agencies or employees is a named plaintiff. If this box is checked, go to item (b).

County in this District:*	California County outside of this District; State, if other than California; or Foreign Country
	Belgium

(b) List the County in this District; California County outside of this District; State if other than California; or Foreign Country, in which **EACH** named defendant resides.
☐ Check here if the government, its agencies or employees is a named defendant. If this box is checked, go to item (c).

County in this District:*	California County outside of this District; State, if other than California; or Foreign Country
Los Angeles - Aster Graphics, Inc. and Linkyo Corporation	China - Aster Graphics Company Limited The Netherlands - Aster Technology Holland B.V.

(c) List the County in this District; California County outside of this District; State if other than California; or Foreign Country, in which **EACH** claim arose.
Note: In land condemnation cases, use the location of the tract of land involved.

County in this District:*	California County outside of this District; State, if other than California; or Foreign Country
Los Angeles	

*** Los Angeles, Orange, San Bernardino, Riverside, Ventura, Santa Barbara, or San Luis Obispo Counties**
Note: In land condemnation cases, use the location of the tract of land involved

X. SIGNATURE OF ATTORNEY (OR PRO PER): /s/ Lisa I. Damji **Date** December 17, 2012

Lisa I. Damji

Notice to Counsel/Parties: The CV-71 (JS-44) Civil Cover Sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law. This form, approved by the Judicial Conference of the United States in September 1974, is required pursuant to Local Rule 3 -1 is not filed but is used by the Clerk of the Court for the purpose of statistics, venue and initiating the civil docket sheet. (For more detailed instructions, see separate instructions sheet.)

Key to Statistical codes relating to Social Security Cases:

Nature of Suit Code	Abbreviation	Substantive Statement of Cause of Action
861	HIA	All claims for health insurance benefits (Medicare) under Title 18, Part A, of the Social Security Act, as amended. Also, include claims by hospitals, skilled nursing facilities, etc., for certification as providers of services under the program. (42 U.S.C. 1935FF(b))
862	BL	All claims for "Black Lung" benefits under Title 4, Part B, of the Federal Coal Mine Health and Safety Act of 1969. (30 U.S.C. 923)
863	DIWC	All claims filed by insured workers for disability insurance benefits under Title 2 of the Social Security Act, as amended; plus all claims filed for child's insurance benefits based on disability. (42 U.S.C. 405(g))
863	DIWW	All claims filed for widows or widowers insurance benefits based on disability under Title 2 of the Social Security Act, as amended. (42 U.S.C. 405(g))
864	SSID	All claims for supplemental security income payments based upon disability filed under Title 16 of the Social Security Act, as amended.
865	RSI	All claims for retirement (old age) and survivors benefits under Title 2 of the Social Security Act, as amended. (42 U.S.C. (g))