



The Patent Office

The Patent Office
Cardiff Road
Newport
Gwent
NP9 1RH

Ref: 11/04/95

I, the undersigned, being an officer duly authorised in accordance with Section 62(3) of the Patents and Designs Act 1907, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the specification of the granted European Patent identified therein together with a true copy of the entries made to date in the Register of Patents in respect of the patent which is in force in the United Kingdom.

I also certify that subject to the payment of the prescribed renewal fees, the patent will remain in force for a period of twenty years from the date of the filing of the application as shown therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or the inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed

Dated

09 FEB 1995

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

Publication number:

0 297 486 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45)

Date of publication of patent specification: 08.09.93 (51) Int. Cl.⁵: B41J 13/03, B41J 15/16,
B41J 11/36, B41J 11/48

(21)

Application number: 88110230.5

(22)

Date of filing: 27.06.88

(54)

Paper feeding apparatus for printers.

(30)

Priority: 30.06.87 JP 163495/87
30.06.87 JP 163496/87
15.07.87 JP 176404/87
15.07.87 JP 176405/87

(43)

Date of publication of application:
04.01.89 Bulletin 89/01

(45)

Publication of the grant of the patent:
08.09.93 Bulletin 93/36

(84)

Designated Contracting States:
DE FR GB IT

(56)

References cited:
EP-A- 0 150 980
EP-A- 0 195 761
EP-A- 0 202 129
US-A- 4 360 279

(73)

Proprietor: SEIKO EPSON CORPORATION
4-1, Nishishinjuku 2-chome
Shinjuku-ku Tokyo-to(JP)

(72)

Inventor: Fujioka, Satoshi
c/o Seiko Epson Corporation 3-5, Owa
3-chome
Suwa-shi Nagano-ken(JP)
Inventor: Seshimo, Tatsuya
c/o Seiko Epson Corporation 3-5, Owa
3-chome
Suwa-shi Nagano-ken(JP)
Inventor: Yokoyama, Koichiro
c/o Seiko Epson Corporation 3-5, Owa
3-chome
Suwa-shi Nagano-ken(JP)

(74)

Representative: Hoffmann, Eckart Patentan-
walt Blumbach & Partner et al
Bahnhofstrasse 103
D-82166 Gräfelfing (DE)

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid (Art. 99(1) European patent convention).

Description

The present invention relates to a paper feeding apparatus for a printer.

According to a conventional method for paper positioning in a printer utilizing a platen, a roller having a diameter smaller than the platen provided at the upper portion of a printing head and located at the feeding-out side with respect to the printing head is pressed against the platen with said paper therebetween to generate frictional force, whereby the fed-out portion of paper after printing is drawn.

In this method, the paper feeding speed of the supplying side and that of the feeding-out side are both determined by the platen so that no difference is caused between both speeds. There is no trouble in feeding normal paper, however, when a continuous roll of paper having a line of feeding holes with regular intervals therebetween along both edges is fed, the main power is not provided by a platen but by a sprocket or a belt having pins to be inserted into the feeding holes. Therefore, a fine difference of speed between the platen and the sprocket is caused due to changes of the ambient temperature, and paper sagging, tearing of feeding holes and other troubles are caused by repeating paper feeding for a long distance. High positional accuracy of the paper with respect to a printing head and stable paper feeding over a long period of time cannot be achieved in the above method.

The document EP-A-0 195 761 discloses a paper feeding apparatus for a printer, comprising a cylindrical platen, a paper feeding tractor for feeding fan-fold paper, arranged at the upstream side of said platen with respect to the paper feeding direction and a power mechanism for driving said platen and said paper feeding tractor. In this prior art, the platen is driven to advance the paper at a slightly higher speed than is done by the paper feeding tractor. The paper feeding tractor may be used in a push-pull operation to additionally provide a paper feed on the downstream side of the platen.

The document US-A-4,360,279 discloses a paper feeding apparatus for a printer, comprising a flat platen, a paper feeding tractor for feeding fan-fold paper, arranged at the upstream side of said platen with respect to the paper feeding direction, a power mechanism for driving said paper feeding tractor, a roller located at the downstream side of said platen and coupled to said power mechanism to rotate with a higher circumferential speed than that of the paper feeding tractor, and a pressing member for pressing the paper which is fed out from the upper side of the platen after printing, against said roller.

It is an object of the invention to provide a paper feeding apparatus avoiding the drawbacks of the conventional apparatus. This object is achieved

with a paper feeding apparatus as claimed.

According to the construction of the present invention, a roller made of rubber or similar material is provided at the upper portion of the platen, which corresponds to the slip stream side in the paper-feeding direction with respect to the printing head, and the roller is rotated at the same or a higher peripheral speed as the peripheral speed of the platen, whereby printed paper is fed out to contact the periphery of the roller and is drawn by frictional force thereof. Therefore, paper is fed accurately and steadily in any ambient condition or with any kind of paper, without tear of paper, jamming, inferiority of the paper feeding accuracy caused by a deflection of paper.

Ways of carrying out the invention will be described in detail below with reference to the drawings which illustrate only specific embodiments and in which:

Fig. 1(a) is a schematic partial plan view of an apparatus constructed in accordance with an embodiment of the present invention utilizing paper bail 12;

Fig. 1(b) is a schematic cross sectional view of Fig. 1(a);

Fig. 2(a) is a schematic partial plan view of an apparatus constructed in accordance with an embodiment of the present invention utilizing paper guide 20;

Fig. 2(b) is a schematic cross sectional view of Fig. 2(a)

Fig. 3(a) is a schematic partial plan view of an apparatus constructed in accordance with an embodiment of the present invention wherein an auxiliary paper feeding roller is pressed directly against paper feed roller 1; and

Fig. 3(b) is a schematic cross sectional view of Fig. 3(a)

The embodiments described below are used in a serial type impact dot printer as an example. The embodiment of Fig. 1 is a printer wherein paper is guided to the feeding-out roller in use of a paper bail provided with a movable shaft. In the embodiment of Fig. 2 a fixed paper-path for guiding the paper is provided. The embodiment of Fig. 3 has a paper bail such as in Fig. 1 and a roller to press the feeding-out roller with the paper therebetween.

Fig. 1(a) is a plan view and Fig. 1(b) is a sectional view of a first embodiment. For wrapping printing paper 13 around platen 5 made of rubber or a similar material, and positioning and feeding it toward printing head 7, platen 5 is arranged such that a space is defined between platen 5 and printing head 7 during reciprocating movement of

the latter in the direction of arrow a. At an upstream position of printing head 7 with respect to the paper feeding direction d (Fig. 1(b)), paper feeding rollers 8 and 9 are arranged below the platen, and a paper guide plate 10 for guiding the leading edge of paper 13 toward the front of printing head 7 is arranged so as to partly wrap around the peripheral surface of platen 5 with a space therebetween from the vicinity of a tractor 11 (described later) to the vicinity of the lower portion of printing head 7. Further, at the upstream side of paper guide plate 10, tractor 11 utilizing a belt with pins having the same diameter and pitch as those of feeding holes of fanfold paper is arranged. At the paper feeding-out side after printing, a rod movable in the direction of arrow e as a paper bail 12 for guiding the leading edge of printing paper 13 toward the gap between a paper feeding-out roller 1 and an auxiliary paper feeding-out roller 2 is disposed above printing head 7. Above paper bail 12, at the downstream side in the paper feeding direction, paper feeding-out rollers 1 having the same friction coefficient as rubber or the like and being driven in the direction of arrow c to draw printing paper 13, and auxiliary paper feeding-out rollers 2 are disposed. As shown in the cross sectional view of Fig. 1(b), the outer circumference of auxiliary rollers 2 overlaps by h with that of feeding-out rollers 1, and there is a space in between each side of a feeding-out roller 1 and the adjacent auxiliary roller 2. Feeding-out rollers are fixed to feeding-out roller shaft 3 by press fitting or the like for preventing idle running, so that it rotates with the feeding-out roller shaft. Auxiliary feeding-out rollers 2 are rotatably supported on auxiliary feeding-out roller shaft 4, so that friction load with respect to the movement of paper is not caused at the contact portion of feeding-out roller 2 with the printing paper and paper feeding-out rollers 2 can perform idle running. Auxiliary feeding-out roller shaft 4 is fixed at frame 19 in order not to allow an idle running. Feeding-out roller shaft 3 and platen 5 pass through and engage with frame 19 and are positioned so as to be smoothly rotatable. The portion of shaft 3 and that of the shaft of the platen 5, projecting from frame 19 are fixed to gears 16 and 18, respectively so as not to cause idle running. Paper feeding motor 6, platen 5 and paper feeding-out roller shaft 3 are mechanically coupled by a gear train consisting of gears 14 to 18.

Next, the operation of the above embodiment will be described.

For a cut sheet printing, tractor 11 is not utilized and printing paper is directly inserted between paper guide plate 10 and platen 5. A cut sheet is pressed against platen 5 with high load by paper feeding rollers 8 and 9 (shown by imaginary lines in Fig. 1(b)) and the cut sheet is positioned

and moved in accordance with the rotation of platen 5 by frictional force. Accordingly, since printing paper is fed by the peripheral surface of platen 5 which is the area where printing is actually effected, the positional accuracy with respect to printing is high.

On the other hand, for a fanfold paper printing, paper feeding rollers 8 and 9 are separated from platen 5 as shown in Fig. 1(b), and printing paper 13 is hooked by pins of tractor 11 and is inserted into an opening between paper guide plate 1 and the periphery of platen 5. At the upper portion of platen 5 corresponding to the downstream side in the direction of paper feeding with respect to printing head 7, both cut sheet and fanfold paper are fed toward paper bail 12, wrapping around the periphery of platen 5 through the front of printing head 7. Paper bail 12 is located at the position apart from platen 5 shown by a broken line in Fig. 1(b) till the leading edge of the paper is fed to approximately the intermediate point between paper bail 12 and feeding-out roller 1, so that when the leading edge of the paper is fed to a position above printing head 7, it does not contact with paper bail and jamming is avoided. Then, when the leading edge of the paper reaches the intermediate point, paper bail 12 moves to the position indicated by a solid line in the direction of arrow e and guides the leading edge so that it is drawn automatically into the opening between feeding-out roller 1 and auxiliary feeding-out roller 2. The power for the series of paper feeding operations is obtained by the rotational force of paper feed motor 6. Pinion gear 14 fixed to the tip portion of the motor axis is rotated by the rotation of motor 6, and the rotational power is transmitted to platen gear 16 which is fixed to the shaft of platen 5 to rotate platen 5 through reduction gear 15. Further, platen gear 16 rotates several feeding-out rollers 1 fixed to feeding-out roller shaft 3 in the column direction by rotating feeding-out roller gear 18 fixed to shaft 3 through transmission gear 17. Since the outer diameter of platen 5 is approximately the same as the diameter of the pitch circle of platen gear 16 and the outer diameter of the feeding-out rollers 1 is the same as or a little greater than the diameter of the pitch circle of feeding-out roller gear 18, the peripheral speed V_b of platen 5 is the same as or lower than the peripheral speed V_c of feeding-out rollers 1 by several percents ($V_c > V_b$). Likewise, tractor 11 is so arranged that the peripheral speed V_a of the tractor and the peripheral speed V_b of the platen have the relation $V_b \geq V_a$. By setting the downstream feeding speed higher than or the same as the upstream feeding speed, the paper is not sagged between these paper feeding portions.

In accordance with the construction for paper feeding at the feeding-out portion, feeding-out roll-

ers 1 and auxiliary feeding-out rollers 2 are so arranged that they overlap each other by an amount h (as shown in the cross sectional view of Fig. 1(b)) and are arranged with a gap i therebetween (as shown in the plan view of Fig. 1(a)). Therefore, the paper inserted between these rollers is sagged and is pressed against each roller by the restoring force of the paper, and the paper is fed out in accordance with the rotation of these rollers by the frictional force generated between the paper and the rollers. The restoring force of the paper due to the sagging differs depending on the kind of paper, so that thicker paper has a stronger restoring force. Accordingly, for thick paper being apt to generate sagging by its weight on the way from tractor 11 to feeding-out rollers 1, such sagging is prevented by strong feeding-out force. On the contrary, for thin paper having small restoring force and being easily broken when strong stress is concentrated on the pins of tractor 11 with too large a tensile force, the tensile force is reduced to prevent tearing of the feeding holes. In such a manner, the feeding-out force is self-controlled automatically in accordance with the thickness of the paper.

The feeding force generated by platen 5 located at an intermediate position in the paper feeding mechanism is not utilized since paper bail 12 is not pressed directly against platen 5 with the paper therebetween but is used only for guiding the paper being apart from platen 5, so that it depends on the contact angle of paper with respect to platen 5 and the feeding-out force generated by feeding-out roller 1. Therefore, the feeding force has the same relation as that of the feeding-out force and is self-controlled in accordance with the thickness of paper. Further, if the amount of sagging, tear, friction coefficient of feeding-out rollers 1 and that of platen 5 are changed due to a change in the ambient temperature or the ambient humidity, a change in rigidity of the paper itself is caused, whereby the feeding-out force from feeding-out rollers 1 and the feeding force from platen 5 are changed. For instance, even if the friction coefficient is decreased at low ambient temperatures and paper is made to sag more easily, the feeding-out force is increased with a rise of paper rigidity to prevent sagging. Further, if the friction coefficient is increased at high ambient temperatures and paper is made to sag less easily, the feeding-out force is decreased with a lowering of paper rigidity to prevent tear of the paper.

Reference is next made to Fig. 2 showing a second embodiment of the invention wherein a guide cover 20 which is integrally formed from transparent resin is utilized in place of a paper bail and auxiliary feeding-out rollers. In paper guide cover 20, a rib portion 20a is integrally formed with

a plate portion 20b extending in the column direction. Paper is guided by the ridgeline portion of rib portion 20a. Both ends of paper guide cover 20 are fixed to frame 19 by screws 21. Further, being different from the above embodiment, a sprocket wheel 22 and sprocket cover 23 for preventing the paper from rising up are arranged in place of a tractor utilizing a belt when fanfold paper with holes for feeding is utilized. The operation and the effect are almost the same as that of the above embodiment. The leading edge of the paper is guided from the front of printing head 7 to feeding-out rollers 1 along rib portions 20a of paper guide cover 20, in place of utilizing the opening/closing movement of paper bail 12. In this embodiment, in place of auxiliary feeding-out rollers, rib portions 20a of paper guide cover 20 are arranged on both sides of a feeding-out roller 1 at a distance i from the roller and overlapping by amount h , so that the control of the feeding-out force in accordance with the paper sagging is the same as in the above embodiment. In place of sprocket wheel 22 of this embodiment, tractor 11 utilized in the above embodiment can be also utilized.

Reference is next made to Fig. 3 showing a third embodiment wherein auxiliary feeding-out rollers 2a are arranged so as to be directly pressed against feeding-out rollers 1, instead of being arranged at both ends of feeding-out rollers 1. The pressing load is produced by a tension spring 31 attached between the end portion of auxiliary feeding-out roller shaft 4 and a spring peg 25 projecting through feeding-out roller frame 30. Feeding-out roller shaft 3, feeding-out roller gear 18 and transmission gear 17 are fixed to a feeding-out roller frame 30 and form a removable unit which is separate from frame 19. Paper bail 12 is fixed to a paper bail lever 24 pivoting on a shaft 28 projecting through frame 19 and is rotatable in the direction of arrow e . Printing paper 13 is pressed by a pressure force produced by a tension spring 32 connecting shaft 29 projecting through frame 19, and shaft 27 projecting through paper bail lever 24. Further, when the above unit is mounted, paper bail lever 24 is adjusted by stopper pin 26 projecting through feeding-out roller frame 30, whereby paper bail 12 is kept away from platen 5 as shown in Fig. 3. On the other hand, when the unit is not mounted, paper bail 12 is utilized as in a conventional printer, i.e. paper bail 12 is pressed against the periphery of platen 5 by tension spring 31, and another unit such as a cut sheet feeder can be mounted. The other arrangement is the same as with the first embodiment shown in Fig. 1. In this third embodiment, in place of contacting printing paper with feeding-out roller 1 by the restoring force produced by paper sagging due to an overlapping of feeding-out roller 1 with auxiliary

feeding-out roller 2a, an auxiliary feeding-out roller is pressed by tension spring 31 against feeding-out roller 1 with printing paper 13 therebetween, so that the feeding-out force for printing paper 13 is determined by the load of tension spring 31 and the surface friction coefficient of feeding-out roller 1.

Claims

1. A paper feeding apparatus for a printer, comprising:
 - a platen (5),
 - a paper feeding tractor (11) for feeding fan-fold paper (13), arranged at the upstream side of said platen (5) with respect to the paper feeding direction (d),
 - a power mechanism (6, 14 - 18) for driving said platen (5) and said paper feeding tractor (11),
 - a roller (1) located at the downstream side of said platen and coupled to said power mechanism to rotate with the same or a higher circumferential speed than that of the platen (5), and
 - a pressing member (2, 20) for pressing the paper (13) which is fed out from the upper side of the platen (5) after printing, against said roller (1),
 - wherein the roller is positioned on the tractor side of a line tangent to the platen (5) at the print position, and
 - guide means (12, 20) are provided between the print position and the roller (1) for guiding the paper to the roller.
2. An apparatus according to claim 1, wherein said pressing member (2) comprises two pressing member portions arranged at both ends of said roller (1) in the axial direction thereof, overlapping said roller (1) in a direction perpendicular to the axis of the roller (1).
3. An apparatus according to claim 2, wherein each pressing member portion (2) comprises an auxiliary roller.
4. An apparatus according to claim 2, wherein said pressing member comprises a paper guide cover (20) having rib portions (20b) forming said pressing member portions.
5. An apparatus according to any of the preceding claims, wherein said guide means (12) comprises a paper bail which can be switched between a paper-guiding position and a non-paper-guiding position and which is spaced apart from the platen (5) in its paper-guiding position.

6. An apparatus according to any of the preceding claims, wherein the roller (1) and the pressing member (2, 20) are parts of a unit removably mounted to a frame of the printer.
7. An apparatus according to claims 5 and 6, wherein said paper bail (12) contacts the platen (5) in its paper-guiding position when said unit is removed, and wherein means (26) are provided to keep the paper bail in its paper-guiding position spaced apart from the platen (5) when the unit is mounted to the printer.

Patentansprüche

1. Papiertransportvorrichtung für einen Drucker, umfassend:
 - eine Schreibwalze (5),
 - einen Papiertransporttraktor (11) zur Zuführung von Endlospapier (13), der an der Einlaufseite der Schreibwalze (5) in bezug auf die Papiertransportrichtung (d) angeordnet ist,
 - einen Kraftmechanismus (6, 14 - 18) zum Antreiben der Schreibwalze (5) und des Papiertransporttraktors (11),
 - eine an der Auslaufseite der Schreibwalze angeordnete Rolle (1), die mit dem Kraftmechanismus gekoppelt ist, um sich mit der gleichen oder einer höheren Umfangsgeschwindigkeit als die der Schreibwalze (5) zu drehen, und
 - ein Andruckelement (2, 20) zum Andrücken des Papiers (13), das nach dem Bedrucken von der Oberseite der Schreibwalze (5) abgeführt wird, an die Rolle (1),
 - wobei die Rolle auf der Traktorseite einer Tangente an der Schreibwalze (5) an der Druckstelle bildenden Linie liegt, und
 - Führungsmittel (12, 20) zwischen der Druckstelle und der Rolle (1) zur Führung des Papiers zu der Rolle vorgesehen sind.
2. Vorrichtung nach Anspruch 1, bei der das Andruckelement (2) zwei Andruckelementteile umfaßt, die an beiden Enden der Rolle (1) in deren Axialrichtung angeordnet sind und die Rolle (1) in einer Richtung senkrecht zur Achse der Rolle (1) überlappen.
3. Vorrichtung nach Anspruch 2, bei der jedes Andruckelementteil (2) eine Hilfsrolle umfaßt.
4. Vorrichtung nach Anspruch 2, bei der das Andruckelement eine Papierführungsabdeckung (20) umfaßt, die einen Rippenabschnitt (20b) aufweist, der die Andruckelementteile bildet.



feeding-out roller 2a, an auxiliary feeding-out roller is pressed by tension spring 31 against feeding-out roller 1 with printing paper 13 therebetween, so that the feeding-out force for printing paper 13 is determined by the load of tension spring 31 and the surface friction coefficient of feeding-out roller 1.

Claims

1. A paper feeding apparatus for a printer, comprising:
 - a platen (5),
 - a paper feeding tractor (11) for feeding fan-fold paper (13), arranged at the upstream side of said platen (5) with respect to the paper feeding direction (d),
 - a power mechanism (6, 14 - 18) for driving said platen (5) and said paper feeding tractor (11),
 - a roller (1) located at the downstream side of said platen and coupled to said power mechanism to rotate with the same or a higher circumferential speed than that of the platen (5), and
 - a pressing member (2, 20) for pressing the paper (13) which is fed out from the upper side of the platen (5) after printing, against said roller (1),
 - wherein the roller is positioned on the tractor side of a line tangent to the platen (5) at the print position, and
 - guide means (12, 20) are provided between the print position and the roller (1) for guiding the paper to the roller.
2. An apparatus according to claim 1, wherein said pressing member (2) comprises two pressing member portions arranged at both ends of said roller (1) in the axial direction thereof, overlapping said roller (1) in a direction perpendicular to the axis of the roller (1).
3. An apparatus according to claim 2, wherein each pressing member portion (2) comprises an auxiliary roller.
4. An apparatus according to claim 2, wherein said pressing member comprises a paper guide cover (20) having rib portions (20b) forming said pressing member portions.
5. An apparatus according to any of the preceding claims, wherein said guide means (12) comprises a paper bail which can be switched between a paper-guiding position and a non-paper-guiding position and which is spaced apart from the platen (5) in its paper-guiding position.

6. An apparatus according to any of the preceding claims, wherein the roller (1) and the pressing member (2, 20) are parts of a unit removably mounted to a frame of the printer.
7. An apparatus according to claims 5 and 6, wherein said paper bail (12) contacts the platen (5) in its paper-guiding position when said unit is removed, and wherein means (26) are provided to keep the paper bail in its paper-guiding position spaced apart from the platen (5) when the unit is mounted to the printer.

Patentansprüche

1. Papiertransportvorrichtung für einen Drucker, umfassend:
 - eine Schreibwalze (5),
 - einen Papiertransporttraktor (11) zur Zuführung von Endlospapier (13), der an der Einlaufseite der Schreibwalze (5) in bezug auf die Papiertransportrichtung (d) angeordnet ist,
 - einen Kraftmechanismus (6, 14 - 18) zum Antreiben der Schreibwalze (5) und des Papiertransporttraktors (11),
 - eine an der Auslaufseite der Schreibwalze angeordnete Rolle (1), die mit dem Kraftmechanismus gekoppelt ist, um sich mit der gleichen oder einer höheren Umfangsgeschwindigkeit als die der Schreibwalze (5) zu drehen, und
 - ein Andruckelement (2, 20) zum Andrücken des Papiers (13), das nach dem Bedrucken von der Oberseite der Schreibwalze (5) abgeführt wird, an die Rolle (1),
 - wobei die Rolle auf der Traktorseite einer Tangente an der Schreibwalze (5) an der Druckstelle bildenden Linie liegt, und
 - Führungsmittel (12, 20) zwischen der Druckstelle und der Rolle (1) zur Führung des Papiers zu der Rolle vorgesehen sind.
2. Vorrichtung nach Anspruch 1, bei der das Andruckelement (2) zwei Andruckelementteile umfaßt, die an beiden Enden der Rolle (1) in deren Axialrichtung angeordnet sind und die Rolle (1) in einer Richtung senkrecht zur Achse der Rolle (1) überlappen.
3. Vorrichtung nach Anspruch 2, bei der jedes Andruckelementteil (2) eine Hilfsrolle umfaßt.
4. Vorrichtung nach Anspruch 2, bei der das Andruckelement eine Papierführungsabdeckung (20) umfaßt, die einen Rippenabschnitt (20b) aufweist, der die Andruckelementteile bildet.



5. Vorrichtung nach einem der vorhergehenden Ansprüche, bei der die Führungsmittel (12) einen Papierhalter umfassen, der zwischen einer Papierführungsposition und einer Papiernichtführungsposition umschaltbar ist, und der in seiner Papierführungsposition von der Schreibwalze (5) beabstandet ist.

6. Vorrichtung nach einem der vorhergehenden Ansprüche, bei der die Rolle (1) und das Andruckelement (2, 20) Teile einer abnehmbar an einem Rahmen des Druckers montierten Einheit sind.

7. Vorrichtung nach Anspruch 5 und 6, bei der der Papierhalter (12) die Schreibwalze (5) in seiner Papierführungsposition kontaktiert, wenn die Einheit abgenommen ist, und bei dem Mittel (26) vorgesehen sind, um den Papierhalter in seiner Papierführungsposition von der Schreibwalze (5) beabstandet zu halten, wenn die Einheit an dem Drucker montiert ist.

Revendications

1. Un dispositif d'entraînement de papier pour une imprimante, comprenant :

un rouleau d'impression (5),

un entraîneur de papier à picots (11) pour entraîner du papier à pliage accordéon (13), disposé du côté amont du rouleau d'impression (5), lorsque l'on considère la direction d'entraînement du papier (d),

un mécanisme à moteur (6, 14-18) pour mettre en mouvement le rouleau d'impression (5) et l'entraîneur de papier à picots (11),

un rouleau (1) placé du côté aval du rouleau d'impression et accouplé au mécanisme à moteur pour tourner avec une vitesse périphérique égale ou supérieure à celle du rouleau d'impression (5), et

un organe de pression (2, 20) pour presser contre le rouleau précité (1) le papier (13) qui sort par le côté supérieur du rouleau d'impression (5) après l'impression,

dans lequel le rouleau est placé du côté de l'entraîneur à picots, par rapport à une ligne tangente au rouleau d'impression (5) à la position d'impression; et

des moyens de guidage (12, 20) sont placés entre la position d'impression et le rouleau (1) pour guider le papier vers le rouleau.

2. Un dispositif selon la revendication 1, dans lequel l'organe de pression (2) comprend deux parties d'organe de pression qui sont disposés aux deux extrémités du rouleau (1) dans la direction axiale de ce dernier, et qui chevau-

chent le rouleau (1) dans une direction perpendiculaire à l'axe du rouleau (1).

3. Un dispositif selon la revendication 2, dans lequel chaque partie d'organe de pression (2) consiste en un rouleau auxiliaire.

4. Un dispositif selon la revendication 2, dans lequel l'organe de pression comprend un capot de guidage de papier (20) comportant des nervures (20b) qui forment les parties d'organe de pression précitées.

5. Un dispositif selon l'une quelconque des revendications précédentes, dans lequel les moyens de guidage (12) comprennent une barre presse-papier qui peut être déplacée entre une position de guidage de papier et une position de non-guidage de papier, et qui est écartée du rouleau d'impression (5) dans sa position de guidage de papier.

6. Un dispositif selon l'une quelconque des revendications précédentes, dans lequel le rouleau (1) et l'organe de pression (2, 20) sont des parties d'une structure qui est montée de façon amovible sur un châssis de l'imprimante.

7. Un dispositif selon les revendications 5 et 6, dans lequel la barre presse-papier (12) vient en contact avec le rouleau d'impression (5) dans sa position de guidage de papier lorsque la structure précitée est retirée, et dans lequel des moyens (26) sont incorporés pour maintenir la barre presse-papier dans sa position de guidage de papier, écartée du rouleau d'impression (5), lorsque la structure précitée est montée sur l'imprimante.