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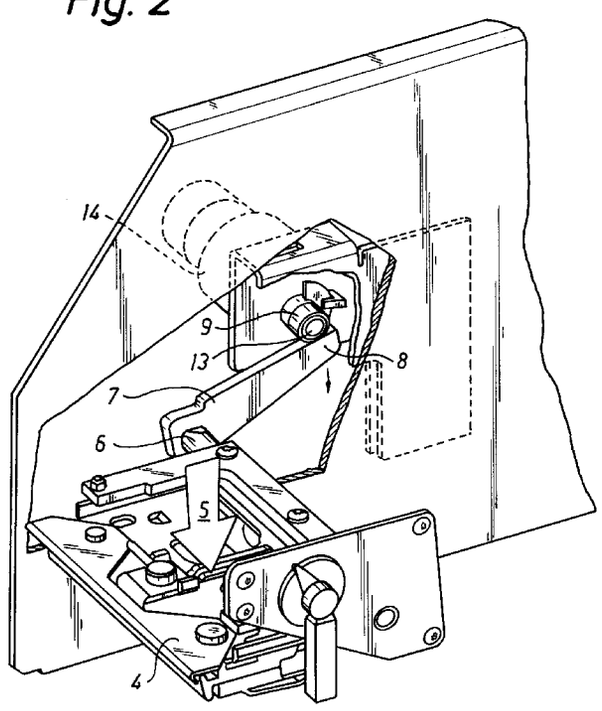
(54) Printing unit with tilting mechanism

(57) The invention concerns a device in printers comprising a printing unit (4). The latter is arranged, by being pressed against a web (2), to apply print on said web (2). The printer includes means arranged to remove said printing unit from its print-application position against the web (2) for the purpose of allowing the web (2) to be advanced to a fresh print-application position. The printing unit (4) is pivotable about a pivot shaft (6) by means of a lever (7) towards or away from its print-application position against the web (2). The lever (7) is in contact with an eccenter member (9) arranged, when turning round, to bring about the pivotal movement of the lever to turn the printing unit (4) away from the web (2).

Fig. 2



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Description

The subject invention concerns a device in printers comprising a printing unit which is arranged, by being pressed against a web, to apply print on said web. The device likewise comprises means arranged to remove said printing unit from its print-application position against the web for the purpose of allowing the web to be advanced to a fresh print-application position.

A printing unit used in this context, i.e. in printers known as thermal-transfer printers, in which print is transferred from a thermal-transfer ink ribbon to a web, is pressed against the web by means of comperatively strong compression springs. As soon as print has been applied on the web the printing unit may be lifted somewhat away from the web to allow the latter to be advanced sufficiently far to allow new print to be applied thereon. In accordance with prior-technology electro-magnets or other mechanical devices are used which, considering the above-mentioned strong counteracting compression springs, also have to be very powerful and thus expensive, heavy, and bulky.

The subject invention provides a device which has a simple construction and therefore is inexpensive. At the same time the function of the device is extremely reliable. The features characterising this device appear from the appended claims.

The invention will be described in closer detail in the following with reference to the accompanying drawings, wherein

Fig. 1 is a perspective view of a printer with a lateral wall removed,

Fig. 2 illustrates the device in accordance with the invention in a perspective view on a larger scale, and

Fig. 3 illustrates on an even larger scale an eccenter member incorporated in the device.

Fig. 1 illustrates a printer 1 including a printing web 2, an ink ribbon 3 and a printer 4, the latter arranged to apply print to the web 2 via the ink ribbon 3. However, the printer could equally well be of the kind known as a thermal-transfer printer in which print is transferred to the web by means of a thermal-transfer ink ribbon.

Fig. 2 illustrates the printing unit 4 on a larger scale. The printing unit is of an entirely prior art nature and therefore need not be described in any detail. The web 2 and the ink ribbon 3 are carried through the printing unit 4 as illustrated in Fig. 1 and the printing unit 4 is pressed against web and ribbon with a comperatively large force in the direction of arrow 5 with the aid of compression springs, not illustrated in the drawings.

In accordance with the invention the printing unit 4 is arranged to be pivoted counter to the direction of arrow 5 about a shaft 6. One end of the latter fixedly supports a lever 7. An eccenter member 9 abuts against that end 8 of the lever 7 that is opposite to the attachment of said lever to the pivot shaft 6. In accordance with a further characteristic feature of the invention the eccenter member consists of a roller bearing comprising an inner carrier ring 10, an outer carrier ring 11, and rolling elements 12, i.e. bearing balls, positioned intermediate the rings. In other words, the roller bearing could be an ordinary ball bearing.

The roller bearing is mounted eccentrically on a rotary shaft 13 to which the roller bearing is fixedly mounted by means of its inner carrier ring 10 and which shaft thus forms the output shaft of an electric motor 14. When the latter brings the rotary shaft 13 to turn, the inner carrier ring 10 thus will co-rotate therewith whereas the outer carrier ring instead will perform an orbiting movement, from a lowest position to the highest position illustrated in dash- and -dot lines in Fig. 3. Because the out carrier ring 11 abuts against the end 8 of the lever 7 the lever 7 will follow the movements of the outer carrier ring 11 vertically. In consequence thereof, when the eccenter member 9 moves to its lower position, the lever 7 will pivot the printing unit 4, via the shaft 6, against the action of the downwardly directed spring action, so as to form a gap allowing advancement of the ink ribbon 3 and the web 2. When the eccenter member 9 is turned to its upper position, illustrated in dash- and -dot lines, the printing unit 4 will again be forced downwards, thus bringing the lever 7, via the shaft 6, to follow the eccenter member upwards to the upper position.

It is easy to synchronise the turning of the eccenter member 9 by means of the electric motor 14 with the advancement of the web 2 and of the ribbon 3. Consequently, the device in accordance with the invention is of a simple and reliable construction to control and guide the printing unit 4 from its open position to its closed position of application, and vice versa.

The invention is not limited to the embodiment illustrated but may be varied in several ways within the scope of the appended claims. For instance, the eccenter member 9 may be formed by another type of roller bearing than a ball bearing.

Claims

1. A device in printers comprising a printing unit (4) which is arranged, by being pressed against a web (2), to apply print on said web (2), and means arranged to remove said printing unit from its print-application position against the web (2) for the purpose of allowing the web (2) to be advanced to a fresh print-application position, **characterized in** that said printing-unit removal means comprise a pivot shaft (6) on which the printing unit (4) is mounted for pivotal movements towards or away from its print-application position against the web (2), and a lever (7) which is rigidly mounted on the pivot shaft (6) and in contact with a rotary eccenter

member (9) arranged, when turning round, to pivot the lever (7), thus bringing the latter to turn the shaft (6) for the purpose of pivoting the printing unit (4) away from the web (2).

2. A device as claimed in claim 1, **characterized in** that said eccenter member consists of a roller bearing (9) comprising an inner carrier ring (10), and outer carrier ring (11), and rolling elements (12) positioned intermediate said carrier rings, and that said roller bearing (9) is eccentrically mounted on the rotary shaft (13) to which the inner carrier ring (10) of the roller bearing (9) is fixedly secured.

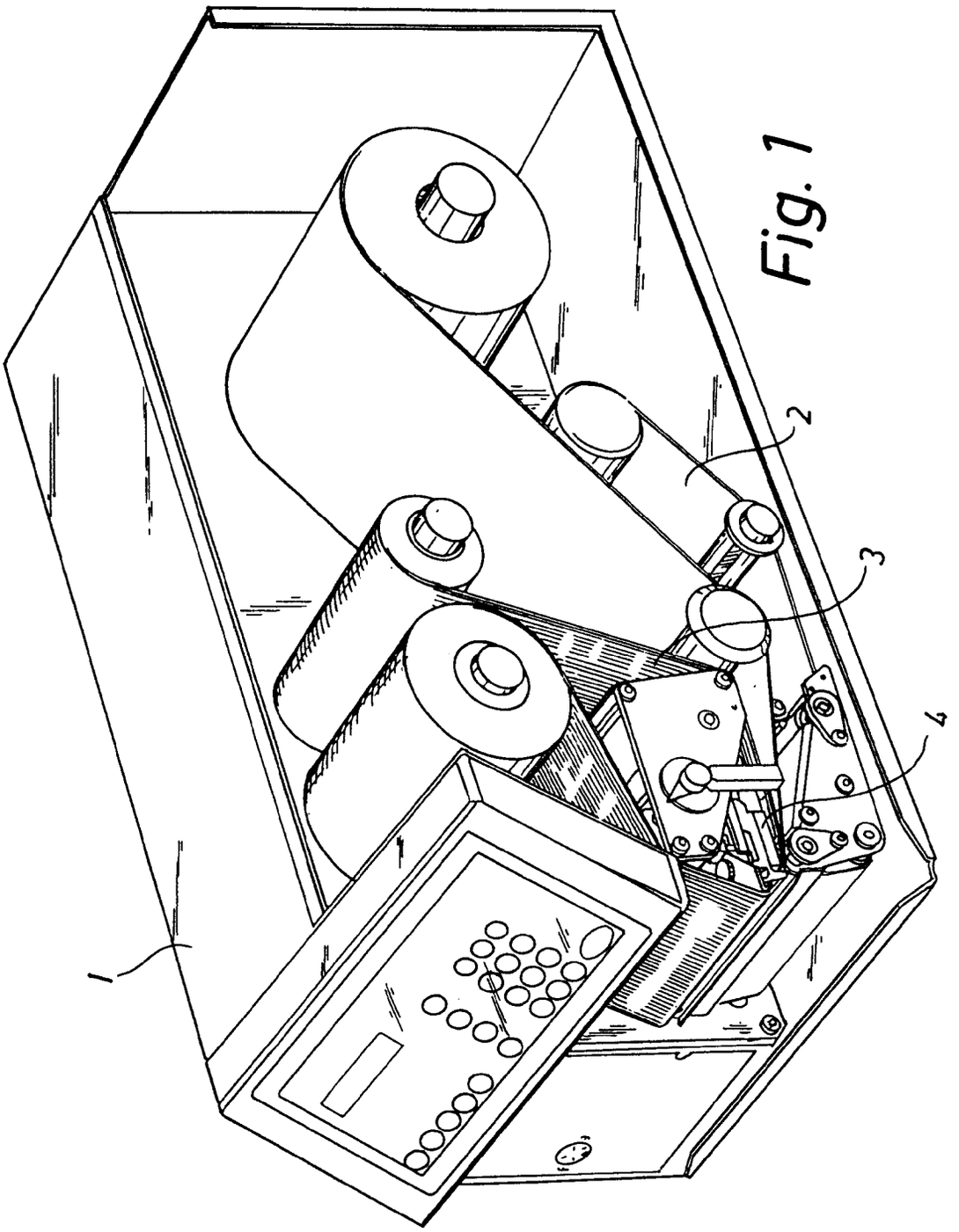


Fig. 1

Fig. 2

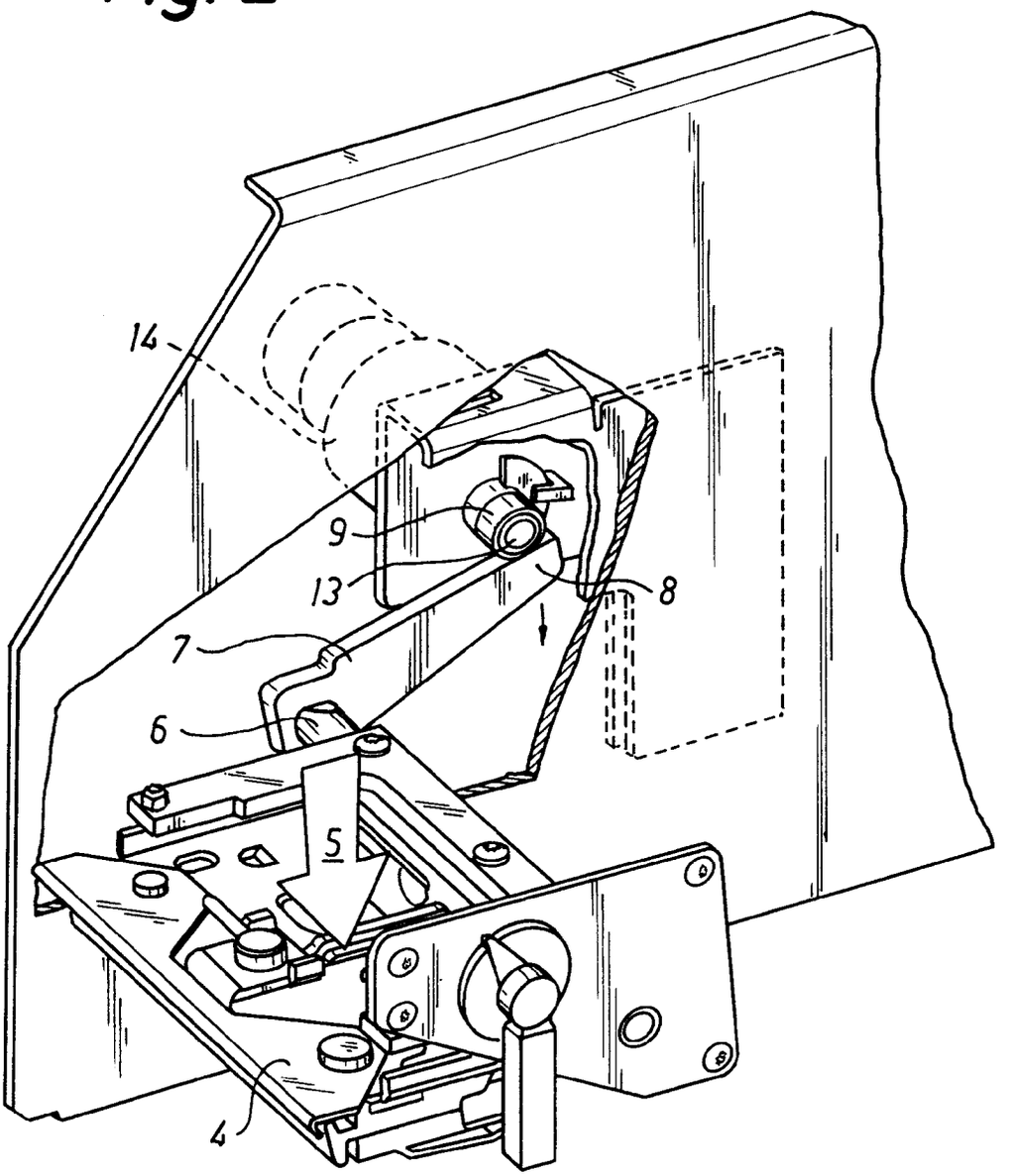
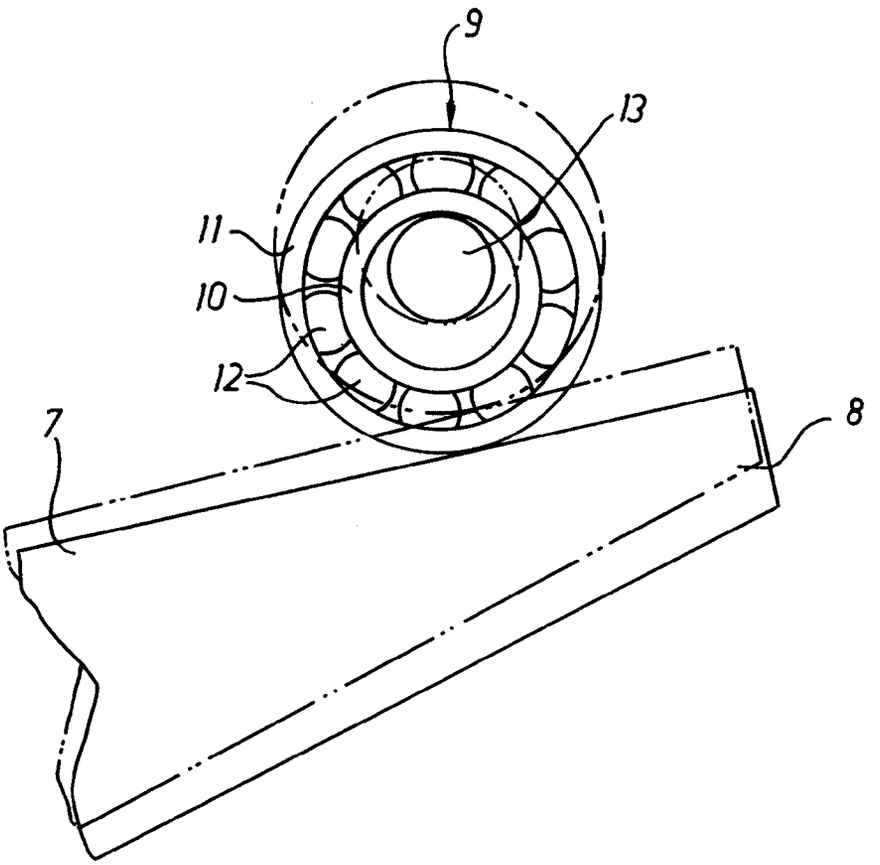


Fig. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 95 85 0149

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	DE-A-42 19 798 (ESSELTE METO INTERNATIONAL PRODUCTIONS GMBH) * the whole document *	1	B41J25/316
X	EP-A-0 361 915 (SEIKO INSTRUMENTS INC) * column 3, line 45 - column 5, line 47 * * figures 3,4 *	1	
X	PATENT ABSTRACTS OF JAPAN vol. 12 no. 105 (M-681) [2952] ,6 April 1988 & JP-A-62 234972 (S. KOIKE) 15 October 1987, * abstract *	2	
A	US-A-4 594 598 (F. IWAGAMI) * the whole document *	1	
A	DE-A-26 53 675 (ROBERT BOSCH GMBH) * page 5, line 1 - line 23; figures 1,2 *	2	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	DE-A-26 42 507 (NORDISCHER MASCHINENBAU RUD. BAADER) * column 2, line 53 - line 66; figure 1 *	2	B41J

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	24 November 1995	Van den Meerschaut,G

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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