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(54) **Inkjet printer**

(57) An inkjet printer comprises a printer unit (10) and a paper feed unit (50). Printer unit (10) is provided with the following: a carriage (12), an inkjet cartridge (11) mounted on the carriage and having an inkjet head (11a), that performs printing by ejecting ink towards a print medium; and a drive mechanisms (15, 16, 17, ...) for reciprocating carriage (12). The carriage and the drive mechanism are located either at the rear of or below inkjet head (11a). Paper feed unit (50) is provided with a mechanism for feeding the recording paper and is secured onto the recording head side of printer unit (10) on a detachable basis. The inkjet printer is capable of easily printing various print patterns on various recording materials, such a slip printing, in addition to normal printing which is performed by feeding a recording material that is relatively soft.

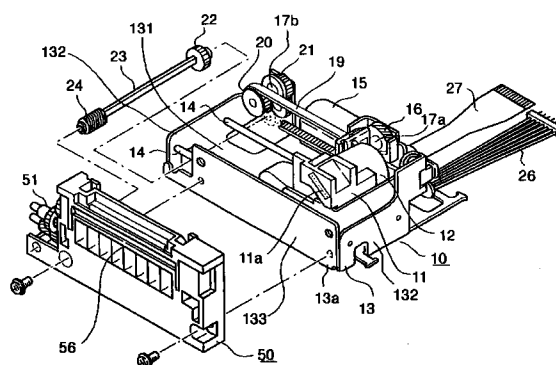


FIG. 1

EP 0 659 568 A3



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EUROPEAN SEARCH REPORT

Application Number
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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	EP 0 537 679 A (SEIKO) * column 5, line 30 - column 7, line 9; figures 1-3 *	1-3	B41J3/28 B41J13/10
Y	---	4,7	
A	US 5 129 646 A (MIYAKAWA) * column 5, line 63 - column 7, line 5; figures 7,8 *	1-3	
A	--- PATENT ABSTRACTS OF JAPAN vol. 16, no. 578 (M-1346), 17 December 1992 & JP 04 226774 A (CANON), 17 August 1992, * abstract *	1-3	
A	--- IBM TECHNICAL DISCLOSURE BULLETIN, vol. 31, no. 7, pages 299-300, XP002003059 "Automatic paper feed presence detection"	1	
A	--- EP 0 418 793 A (CANON)		TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	--- PATENT ABSTRACTS OF JAPAN vol. 9, no. 243 (P-392), 30 September 1985 & JP 60 095552 A (OLYMPUS), 28 May 1985, * abstract *		B41J
A	--- US 5 063 451 A (YANAGISAWA)		
Y	--- GB 2 141 669 A (CANON KK) 3 January 1985 * page 1, column 60 - page 2, column 12; figure 1 *	4	
A	--- PATENT ABSTRACTS OF JAPAN vol. 006, no. 097 (M-134), 5 June 1982 & JP 57 032971 A (SEIKO EPSON CORP), 22 February 1982, * abstract *	4	
	--- -/-		
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		11 April 1997	Adam, E
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EUROPEAN SEARCH REPORT

Application Number
EP 94 12 0468

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)
A	PATENT ABSTRACTS OF JAPAN vol. 007, no. 111 (E-175), 14 May 1983 & JP 58 033353 A (NIPPON DENKI KK), 26 February 1983, * abstract *		
A	EP 0 424 968 A (CANON KK) 2 May 1991 ---		
Y	US 4 671 686 A (HOWES JAMES K ET AL) 9 June 1987 * column 6, line 34 - column 7, line 38; figure 11 *	7	
A	PATENT ABSTRACTS OF JAPAN vol. 018, no. 055 (M-1550), 28 January 1994 & JP 05 278278 A (BROTHER IND LTD), 26 October 1993, * abstract *	9	
A	PATENT ABSTRACTS OF JAPAN vol. 006, no. 080 (M-129), 19 May 1982 & JP 57 018282 A (BROTHER IND LTD), 30 January 1982, * abstract *	9	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	PATENT ABSTRACTS OF JAPAN vol. 014, no. 335 (M-1000), 19 July 1990 & JP 02 116574 A (SEIKO EPSON CORP), 1 May 1990, * abstract *		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11 April 1997	Examiner Adam, E
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1-3:
Paper feed unit detachably mounted to the printer unit and guide surface provided on the printer
2. Claims 4-6:
Ink collecting means and ink absorption means
3. Claims 7,8:
Means for drivingly coupling the paper feed mechanism
4. Claims 9,10:
Print media transported by an amount per cycle

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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EP 94 12 0468 -B-

LACK OF UNITY OF INVENTION - a posteriori -

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1-3:
Paper feed unit detachably mounted to the printer unit
and guide surface provided on the printer
2. Claims 4-6:
Ink collecting means and ink absorption means
3. Claims 7,8:
Means for drivingly coupling the paper feed mechanism
4. Claims 9,10:
Print media transported by an amount per cycle