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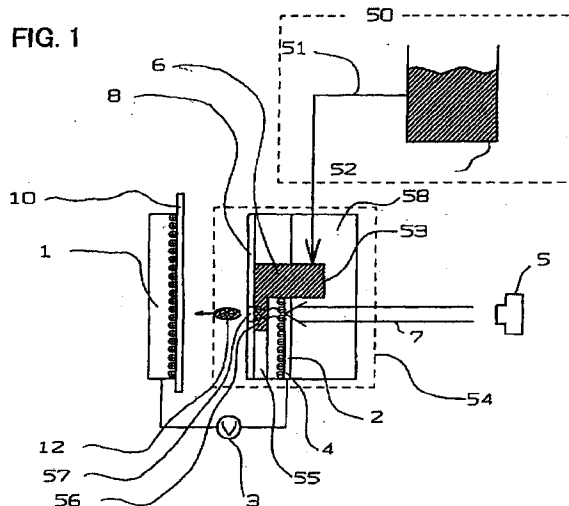
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(54) Record head

(57) A record head is constituted such that an ink storage groove (53) for temporarily storing ink on a substrate (58) is formed along a longitudinal direction of a slit (57), the ink storage groove is disposed in an ink chamber formed between the substrate and the slit plate and is disposed at an upper side, or a lower side both sides of the slit in a direction of a face of the substrate by which a sufficient amount of ink is stably supplied to

the slip portion at high speed and prevention of discharge phenomenon and acceleration of the record speed are achieved. Also, a record head having a photoconductive film formed on a transparent electrode, means for supplying ink on the photoconductive film, and light irradiating means for supplying light on to the photoconductive film in a form of a pulse and in correspondence with a desired pixel.





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EUROPEAN SEARCH REPORT

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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	PATENT ABSTRACTS OF JAPAN vol. 17, no. 623 (M-1511), 17 November 1993 & JP 05 193135 A (OLYMPUS OPTICAL CO LTD), 3 August 1993 * abstract *	6	B41J2/415 B41J2/14 B41J2/06
Y	---	1	
Y	US 5 534 898 A (T. KASHINO ET AL.) 9 July 1996 * column 6, line 1 - line 21; figure 2B *	1	
A	PATENT ABSTRACTS OF JAPAN vol. 8, no. 58 (P-261), 16 March 1984 & JP 58 207058 A (YOKOGAWA DENKI SEISAKUSHO KK), 2 December 1983 * abstract *	1,6	
A	PATENT ABSTRACTS OF JAPAN vol. 11, no. 391 (P-649), 22 December 1987 & JP 62 156674 A (SEIKOSHA CO LTD), 11 July 1987 * abstract *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	US 3 484 162 A (H. E. CLARK) 16 December 1969 * line 2 - column 71, line 3; figure 35; example 2 *	1,6	B41J G03G
A	PATENT ABSTRACTS OF JAPAN vol. 7, no. 177 (M-233), 5 August 1983 & JP 58 081171 A (RICOH KK), 16 May 1983 * abstract *	1,3,6	

The present search report has been drawn up for all claims			
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BERLIN		13 January 1999	Ducreau, F
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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Application Number
EP 98 30 0566

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. 16, no. 122 (M-1226), 27 March 1992 & JP 03 288652 A (SHARP CORP), 18 December 1991 * abstract *	2		
A	--- PATENT ABSTRACTS OF JAPAN vol. 96, no. 8, 30 August 1996 & JP 08 095356 A (NEC CORP), 12 April 1996 * abstract *	1,6		
A	--- PATENT ABSTRACTS OF JAPAN vol. 14, no. 256 (M-980), 4 June 1990 & JP 02 072960 A (TOSHIBA CORP), 13 March 1990 * abstract *	1,6		
A	--- EP 0 268 277 A (CANON KABUSHIKI KAISHA) 25 May 1988 * abstract; figure 2A *	1		TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	--- WO 95 25637 A (SPECTRA, INC.) 28 September 1995 * page 14, line 2 - line 35; figures 1,2 *	1,5		
A	--- EP 0 670 220 A (CANON KABUSHIKI KAISHA) 6 September 1995 * column 1, line 29 - line 33; figure 1 *	4		
The present search report has been drawn up for all claims				
Place of search BERLIN		Date of completion of the search 13 January 1999	Examiner Ducreau, F	
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		

EPC FORM 1503 03.82 (P04C01)

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ON EUROPEAN PATENT APPLICATION NO.

EP 98 30 0566

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The members are as contained in the European Patent Office EDP file on
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13-01-1999

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5534898	A	09-07-1996	JP 2187362 A	23-07-1990
			JP 2188260 A	24-07-1990
			JP 2705960 B	28-01-1998
			DE 69031666 D	11-12-1997
			DE 69031666 T	02-04-1998
			EP 0383019 A	22-08-1990
			KR 9410871 B	19-11-1994
US 3484162	A	16-12-1969	CH 472710 A	15-05-1969
			DE 1497109 A	29-05-1969
			GB 1086197 A	
			NL 6411249 A,B	05-04-1965
			SE 331032 B	07-12-1970
EP 268277	A	25-05-1988	JP 2681350 B	26-11-1997
			JP 63128947 A	01-06-1988
			DE 3778123 A	14-05-1992
			US 5021809 A	04-06-1991
WO 9525637	A	28-09-1995	US 5659346 A	19-08-1997
			CA 2163369 A	28-09-1995
			EP 0699137 A	06-03-1996
			JP 8506540 T	16-07-1996
			US 5640184 A	17-06-1997
			US 5701148 A	23-12-1997
			US 5605659 A	25-02-1997
			US 5771052 A	23-06-1998
EP 670220	A	06-09-1995	JP 7241990 A	19-09-1995
			JP 8127129 A	21-05-1996
			CA 2143895 A	05-09-1995
			CN 1113185 A	13-12-1995

EPO FORM P0469

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