



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 1 031 422 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
10.01.2001 Bulletin 2001/02

(51) Int. Cl.⁷: **B41J 2/045**, B41J 2/14

(43) Date of publication A2:
30.08.2000 Bulletin 2000/35

(21) Application number: **00107972.2**

(22) Date of filing: **27.02.1995**

(84) Designated Contracting States:
DE GB IT

(30) Priority: **03.03.1994 JP 5987294**
20.01.1995 JP 684595

(62) Document number(s) of the earlier application(s) in
accordance with Art. 76 EPC:
95301259.8 / 0 670 218

(71) Applicant: **FUJITSU LIMITED**
Kawasaki-shi, Kanagawa 211-8588 (JP)

(72) Inventors:
• **Onda, Nobuhiko,**
Fujitsu Limited
Kawasaki-shi, Kanagawa 211-8588 (JP)
• **Mikami, Tomohisa,**
Fujitsu Limited
Kawasaki-shi, Kanagawa 211-8588 (JP)
• **Nakazawa, Akira,**
Fujitsu Limited
Kawasaki-shi, Kanagawa 211-8588 (JP)
• **Kutami, Miohinori,**
Fujitsu Limited
Kawasaki-shi, Kanagawa 211-8588 (JP)
• **Suzuki, Shigeharu,**
Fujitsu Limited
Kawasaki-shi, Kanagawa 211-8588 (JP)

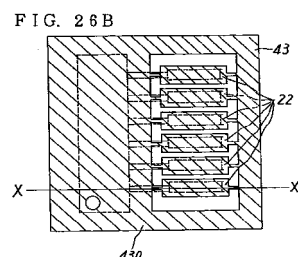
- **Yamagishi, Fumio,**
Fujitsu Limited
Kawasaki-shi, Kanagawa 211-8588 (JP)
- **Kato, Masayuki,**
Fujitsu Limited
Kawasaki-shi, Kanagawa 211-8588 (JP)
- **Koike, Shuji,**
Fujitsu Limited
Kawasaki-shi, Kanagawa 211-8588 (JP)
- **Kashioka, Junji,**
Fujitsu Limited
Kawasaki-shi, Kanagawa 211-8588 (JP)
- **Sakai, Shino,**
Fujitsu Limited
Kawasaki-shi, Kanagawa 211-8588 (JP)
- **Taniguchi, Osamu,**
Fujitsu Limited
Kawasaki-shi, Kanagawa 211-8588 (JP)
- **Soneda, Hiromitsu,**
Fujitsu Limited
Kawasaki-shi, Kanagawa 211-8588 (JP)

(74) Representative:
Billington, Lawrence Emlyn et al
Haseltine Lake & Co.
Imperial House
15-19 Kingsway
London WC2B 6UD (GB)

(54) **Ink jet head**

(57) A multi-nozzle ink jet head comprising a plurality of pressure chambers adapted for accommodating ink; a plate or plates including a plurality of nozzles for jetting ink particles out of the pressure chambers when pressure is applied to the pressure chambers; a pressurizing member (43) including a plurality of pressurizing plates (22) separated from one another and provided for respective ones of the pressure chambers; and actuating means for driving each pressurizing plate (22) independently in order to apply pressure to said pressure chambers; wherein said pressurizing member (43) comprises a common holding member (430), said plurality of pressurizing plates (22), and a plurality of ribs con-

necting said plurality of pressurizing plates (22) to said common holding member (430).





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 10 7972

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.7)
A	EP 0 443 628 A (SEIKO EPSON CORP) 28 August 1991 (1991-08-28) * column 4, line 40 - column 5, line 23 * * figures 1,2 * ---	1-11	B41J2/045 B41J2/14
A	US 4 364 070 A (SAGAE SYOJI ET AL) 14 December 1982 (1982-12-14) * column 4, line 4 - line 31 * * figures 5-8 * ---	1,3,4,11	
A	PATENT ABSTRACTS OF JAPAN vol. 016, no. 195 (M-1246), 12 May 1992 (1992-05-12) & JP 04 028557 A (FUJITSU LTD), 31 January 1992 (1992-01-31) * abstract * ---	1	
P,A	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 02, 31 March 1995 (1995-03-31) & JP 06 328690 A (SEIKO EPSON CORP), 29 November 1994 (1994-11-29) * abstract * ---	1	TECHNICAL FIELDS SEARCHED (Int.Cl.7) B41J
E	EP 0 677 386 A (SEIKO EPSON CORP) 18 October 1995 (1995-10-18) * page 4, line 54 - page 6, line 7 * * figures 4-7 * -----	1	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 21 November 2000	Examiner Van den Meerschaut,G
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			

EPO FORM 1503 03/82 (P4/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 10 7972

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

21-11-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0443628 A	28-08-1991	JP 3041952 B	15-05-2000
		JP 4001052 A	06-01-1992
		DE 9117235 U	27-11-1997
		DE 69116900 D	21-03-1996
		DE 69116900 T	13-06-1996
		DE 69120806 D	14-08-1996
		DE 69120806 T	07-11-1996
		DE 69126997 D	28-08-1997
		DE 69126997 T	29-01-1998
		DE 69127378 D	25-09-1997
		DE 69127378 T	19-03-1998
		DE 69130837 D	11-03-1999
		DE 69130837 T	19-08-1999
		EP 0516188 A	02-12-1992
		EP 0655333 A	31-05-1995
		EP 0655334 A	31-05-1995
		EP 0678384 A	25-10-1995
		EP 0873872 A	28-10-1998
		HK 129997 A	19-09-1997
		HK 198096 A	08-11-1996
		HK 1000440 A	20-03-1998
		HK 1002427 A	21-08-1998
		US 5444471 A	22-08-1995
		US 5910809 A	08-06-1999
		US 5600357 A	04-02-1997
		US 5894317 A	13-04-1999
		US 5446485 A	29-08-1995
US 4364070 A	14-12-1982	JP 57015976 A	27-01-1982
		DE 3126351 A	16-06-1982
JP 04028557 A	31-01-1992	NONE	
JP 06328690 A	29-11-1994	NONE	
EP 0677386 A	18-10-1995	JP 7329292 A	19-12-1995
		DE 69515715 D	27-04-2000
		US 5684520 A	04-11-1997

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82