



(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
07.02.2001 Bulletin 2001/06

(51) Int Cl.7: B41J 2/175

(43) Date of publication A2:
28.06.2000 Bulletin 2000/26

(21) Application number: 99309506.6

(22) Date of filing: 29.11.1999

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

- McCann, James D.
Waynesville, Ohio 45068 (US)
- Enz, Richard T.
Dayton, Ohio 45458 (US)

(30) Priority: 14.12.1998 US 211664

(71) Applicant: Scitex Digital Printing, Inc.
Dayton, Ohio 45420-4099 (US)

(74) Representative: Freed, Arthur Woolf et al
Reginald W. Barker & Co.,
Clifford's Inn,
Fetter Lane
London EC4A 1BY (GB)

(72) Inventors:
• Woolard, Daniel E.
Dayton, Ohio 45419 (US)

(54) Fluid system for multiple print heads

(57) A single fluid system (100) simultaneously and independently controls multiple print heads of a continuous ink jet printer. An ink reservoir supplies ink to the multiple print heads and a common vacuum system withdraws ink from the multiple print heads back to the ink reservoir. The system controls the concentration of ink to the multiple print heads and separately supplies

ink to the multiple print heads. Multiple print heads are supported independently by this single fluid controller, allowing each print head to operate independently, as if it were controlled by its own fluid system. Hence, each one of the multiple print heads has the capability of cleaning, shutting down, and printing without any interference from the other, while sharing similar components.

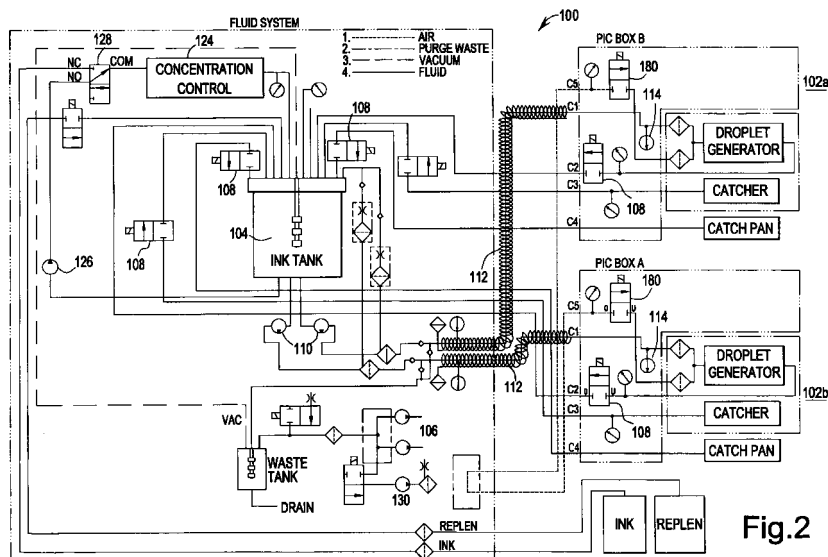


Fig.2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 30 9506

DOCUMENTS CONSIDERED TO BE RELEVANT				
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CI.7)	
X	US 4 067 020 A (ARWAY GEORGE) 3 January 1978 (1978-01-03) * column 2, line 20 - column 3, line 56; figure 1 *	1,2,4	B41J2/175	
X	US 4 340 896 A (CRUZ-URIBE ANTONIO S ET AL) 20 July 1982 (1982-07-20) * column 2, line 34 - column 4, line 27; figure 1 *	1,2,4		
X	EP 0 714 779 A (CANON KK) 5 June 1996 (1996-06-05) * column 16, line 28 - line 53 *	1,2,4		
A	WO 97 44194 A (GEN ELECTRIC CO PLC) 27 November 1997 (1997-11-27) * page 4, line 10 - page 6, line 18; figures 2-4 *	1,2,4		
A	US 4 680 696 A (EBINUMA RYUICHI ET AL) 14 July 1987 (1987-07-14) * column 5, line 26 - column 6, line 45; figure 6 *	1,2,4		TECHNICAL FIELDS SEARCHED (Int.CI.7)
A	US 5 343 226 A (ROGERS ROBERT L ET AL) 30 August 1994 (1994-08-30)			B41J
A	US 4 658 272 A (TOGANO SHIGEO ET AL) 14 April 1987 (1987-04-14)			
A	US 4 413 267 A (HEIN RICHARD A) 1 November 1983 (1983-11-01)			
The present search report has been drawn up for all claims				
Place of search THE HAGUE		Date of completion of the search 8 December 2000	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				

EPO FORM 1503 03 82 (P04C01)

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

EP 99 30 9506

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.

08-12-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4067020 A	03-01-1978	NONE	
US 4340896 A	20-07-1982	NONE	
EP 0714779 A	05-06-1996	JP 8150725 A	11-06-1996
		JP 8150730 A	11-06-1996
		CN 1135969 A,B	20-11-1996
		US 5943078 A	24-08-1999
WO 9744194 A	27-11-1997	AU 2909697 A	09-12-1997
		CA 2255019 A	27-11-1997
		EP 0902743 A	24-03-1999
US 4680696 A	14-07-1987	JP 1701511 C	14-10-1992
		JP 3071021 B	11-11-1991
		JP 60137655 A	22-07-1985
		JP 60137656 A	22-07-1985
		JP 60137657 A	22-07-1985
		JP 60137658 A	22-07-1985
		JP 60137659 A	22-07-1985
		JP 60137660 A	22-07-1985
		JP 60137662 A	22-07-1985
		DE 3446998 A	04-07-1985
		DE 3448421 C	24-05-1995
		DE 3448422 C	13-02-1997
		DE 3448424 C	23-11-2000
		US 5008688 A	16-04-1991
		US 5245360 A	14-09-1993
US 5343226 A	30-08-1994	US 6033061 A	07-03-2000
US 4658272 A	14-04-1987	JP 58057960 A	06-04-1983
		JP 58057963 A	06-04-1983
		JP 1691049 C	27-08-1992
		JP 3057867 B	03-09-1991
		JP 58057964 A	06-04-1983
		JP 1691050 C	27-08-1992
		JP 3057868 B	03-09-1991
		JP 58057965 A	06-04-1983
		JP 1694312 C	17-09-1992
		JP 3060672 B	17-09-1991
		JP 58057966 A	06-04-1983
		JP 1691051 C	27-08-1992
		JP 3057869 B	03-09-1991
		JP 58057967 A	06-04-1983
		JP 1691052 C	27-08-1992

EPO FORM P0459

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

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

EP 99 30 9506

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.

08-12-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4658272 A		JP 3057870 B	03-09-1991
		JP 58057968 A	06-04-1983
US 4413267 A	01-11-1983	CA 1197895 A	10-12-1985
		DE 3246709 A	07-07-1983
		GB 2113151 A,B	03-08-1983
		JP 1665255 C	19-05-1992
		JP 3026652 B	11-04-1991
		JP 58145457 A	30-08-1983

EPO FORM P0459

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