



(11) **EP 1 464 495 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
03.01.2007 Bulletin 2007/01

(51) Int Cl.:
B41J 2/14 (2006.01) **B41J 2/05** (2006.01)
B41J 2/21 (2006.01)

(43) Date of publication A2:
06.10.2004 Bulletin 2004/41

(21) Application number: **03022937.1**

(22) Date of filing: **09.10.2003**

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

(72) Inventors:
• **Mackenzie, Mark H.**
Corvallis, OR 97333 (US)
• **Torgerson, Joseph M.**
Philomath, Oregon 97370 (US)
• **Miller, Michael D.**
Philomath, OR 97330 (US)

(30) Priority: **11.03.2003 US 387149**

(71) Applicant: **Hewlett-Packard Development Company, L.P.**
Houston, TX 77070 (US)

(74) Representative: **Schoppe, Fritz**
Schoppe, Zimmermann, Stöckeler & Zinkler
Patentanwälte
Postfach 246
82043 Pullach bei München (DE)

(54) **Fluid ejection device**

(57) In one embodiment, the present invention recites a fluid ejection device comprising a first drop ejector (303 and 406) associated with a firing chamber (301). The first drop ejector is configured to cause fluid having a first drop weight to be ejected from the firing chamber, wherein the first drop ejector includes a first heating element (303) and first drive circuitry (406) electrically coupled with the first heating element. The present embodiment further comprises a first bore (317) disposed within an orifice layer (305) disposed proximate the first drop ejector and associated with the first drop ejector. The present embodiment also comprises a second drop ejector (304 and 408) associated with the firing chamber. The second drop ejector is configured to cause fluid having a second drop weight to be ejected from the firing chamber, wherein the second drop ejector includes a second heating element and second drive circuitry electrically coupled with the second heating element. The present embodiment further comprises a second bore (319) disposed within the orifice layer disposed proximate the second drop ejector, and the second bore is associated with the second drop ejector.

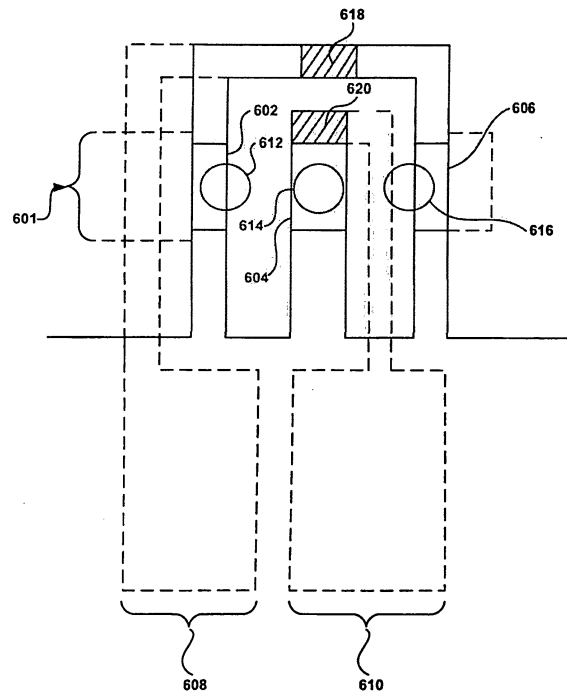


FIG. 6

EP 1 464 495 A3



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 6 137 502 A (ANDERSON FRANK EDWARD [US] ET AL) 24 October 2000 (2000-10-24) * column 3, line 12 - column 6, line 60; figures 1-5 *	1-11	INV. B41J2/14 B41J2/05 B41J2/21
X	EP 0 719 647 A (CANON KK [JP] CANON KK) 3 July 1996 (1996-07-03) * column 14, line 31 - column 18, line 17; figures 4,6A,6B,8 *	1-11	
X	US 2003/001924 A1 (CHOU CHUNG-CHENG [TW] ET AL) 2 January 2003 (2003-01-02) * paragraph [0031] - paragraph [0033]; figures 3-6 *	1-11	
X	US 2002/167566 A1 (SCHULTE DONALD W [US]) 14 November 2002 (2002-11-14) * paragraph [0025] - paragraph [0031]; figures 4-6 *	1-11	
X	US 6 318 847 B1 (WADE JOHN M [US]) 20 November 2001 (2001-11-20) * column 3, line 60 - column 6, line 27 *	1-11	
			TECHNICAL FIELDS SEARCHED (IPC)
			B41J
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 20 November 2006	Examiner Axters, Michael
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

1
EPO FORM 1503 03 82 (P04C01)

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

EP 03 02 2937

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.

20-11-2006

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6137502	A	24-10-2000	AU 7070000	A 26-03-2001
			CN 1376114	A 23-10-2002
			EP 1214199	A1 19-06-2002
			HK 1048969	A1 02-09-2005
			JP 2003508257	T 04-03-2003
			MX PA02001967	A 31-10-2002
			WO 0115904	A1 08-03-2001

EP 0719647	A	03-07-1996	CN 1262173	A 09-08-2000
			CN 1530228	A 22-09-2004
			CN 1131612	A 25-09-1996
			CN 1533891	A 06-10-2004
			DE 69534683	T2 06-07-2006
			US 6309051	B1 30-10-2001
			US 6325492	B1 04-12-2001

US 2003001924	A1	02-01-2003	DE 10228849	A1 23-01-2003
			TW 491734	B 21-06-2002

US 2002167566	A1	14-11-2002	NONE	

US 6318847	B1	20-11-2001	NONE	
