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(54) **Method and apparatus for controlling a heating element of a thermal head**

(57) A control apparatus for controlling a heating element of a thermal head (10) has a print data processing unit (40) and a drive control circuit (50). The print data processing unit (40) has a first processing function for converting first color data to first and second print data, a second processing function for converting second color data to second print data, a first line buffer (43) for storing the first print data, and a second line buffer (44)

for storing the first and the second print data. The print data processing unit (40) selectively outputs print data from the first line buffer (43) or print data from the second line buffer (44) to the drive control circuit. The drive control circuit (50) has a print buffer (52) and history buffer (53), and energizes the heating elements of the thermal head (10) based on energizing commands determined by a comparison of the content of the print buffer (52) with that of the history buffer (53).

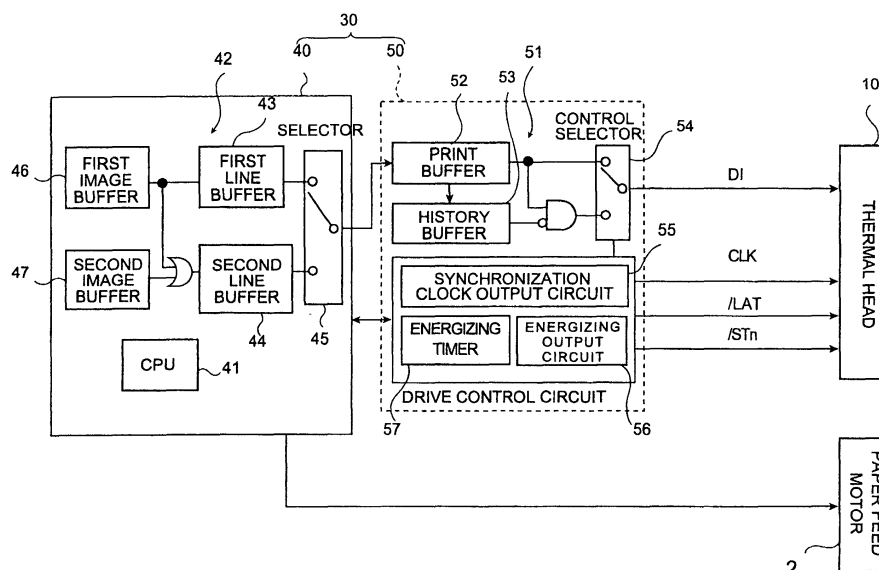


FIG. 1

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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.7)
X	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 09, 13 October 2000 (2000-10-13) & JP 2000 168116 A (NEC KOFU LTD), 20 June 2000 (2000-06-20) * abstract *	1-5	B41J2/36
X	--- PATENT ABSTRACTS OF JAPAN vol. 2000, no. 20, 10 July 2001 (2001-07-10) & JP 2001 080099 A (BROTHER IND LTD), 27 March 2001 (2001-03-27) * abstract *	1-4	
A	--- US 5 376 952 A (KOKUBO HIDEYUKI ET AL) 27 December 1994 (1994-12-27) * the whole document *	1	
A	--- EP 1 070 593 A (SEIKO EPSON CORP) 24 January 2001 (2001-01-24) * the whole document *	6	
A	--- US 5 625 394 A (FUKUDA HIROSHI ET AL) 29 April 1997 (1997-04-29) * the whole document *	1,6	TECHNICAL FIELDS SEARCHED (Int.Cl.7) B41J
P,A	--- US 6 342 911 B1 (MORIYA BUNJI) 29 January 2002 (2002-01-29) * abstract * * claims; figures *	6	
A	--- PATENT ABSTRACTS OF JAPAN vol. 009, no. 055 (M-362), 9 March 1985 (1985-03-09) & JP 59 190867 A (TOSHIBA KK), 29 October 1984 (1984-10-29) * abstract *	1	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 28 August 2003	Examiner Didenot, B
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 02 01 3169

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The members are as contained in the European Patent Office EDP file on
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28-08-2003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2000168116 A	20-06-2000	NONE	
JP 2001080099 A	27-03-2001	NONE	
US 5376952 A	27-12-1994	JP 2101329 C JP 5016400 A JP 8013546 B	22-10-1996 26-01-1993 14-02-1996
EP 1070593 A	24-01-2001	CN 1282014 A EP 1070593 A2 JP 2001088340 A US 6476839 B1	31-01-2001 24-01-2001 03-04-2001 05-11-2002
US 5625394 A	29-04-1997	JP 3197137 B2 JP 7214806 A	13-08-2001 15-08-1995
US 6342911 B1	29-01-2002	JP 3199698 B2 JP 2000280512 A	20-08-2001 10-10-2000
JP 59190867 9 A		NONE	

EPO FORM P0459

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