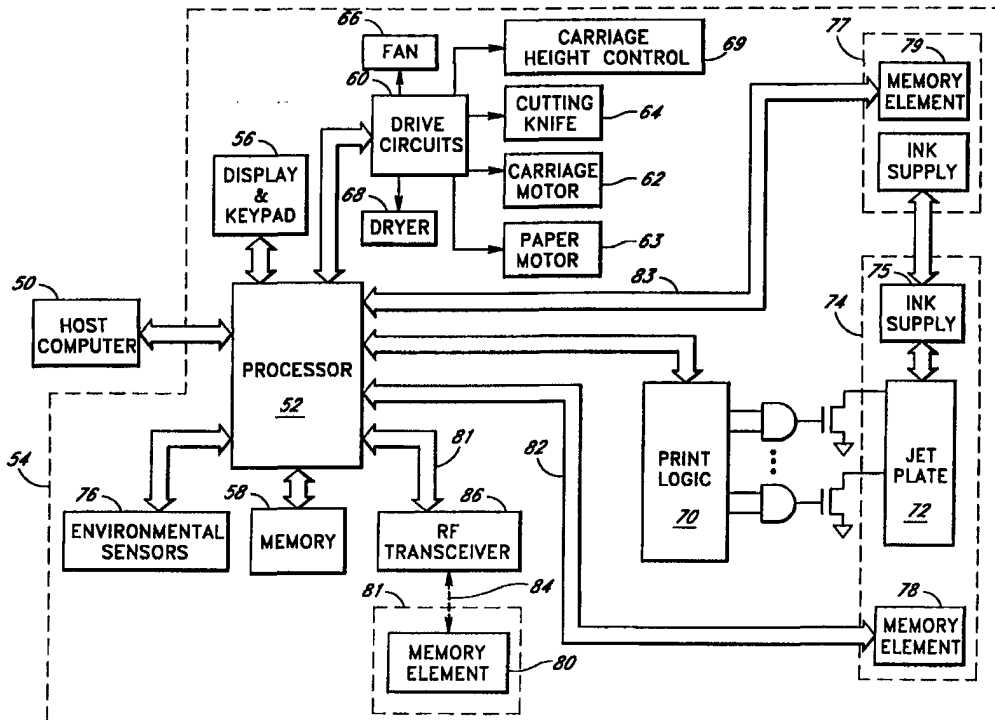




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : B41J 2/01, 2/17</p>	<p>A3</p>	<p>(11) International Publication Number: WO 98/52762 (43) International Publication Date: 26 November 1998 (26.11.98)</p>
<p>(21) International Application Number: PCT/US98/07324 (22) International Filing Date: 9 April 1998 (09.04.98) (30) Priority Data: 60/047,304 20 May 1997 (20.05.97) US 09/030,631 25 February 1998 (25.02.98) US (71) Applicant: ENCAD, INC. [US/US]; 6059 Cornerstone Court West, San Diego, CA 92121 (US). (72) Inventors: PURCELL, David, A.; 851 Rosecrans Street, San Diego, CA 92106 (US). MURRAY, Richard, A.; 11066 Twinleaf Way, San Diego, CA 92131 (US). DULL, Dan, J.; 8715-20 Westmore Road, San Diego, CA 92126 (US). (74) Agent: ALTMAN, Daniel, E.; Knobbe, Martens, Olson and Bear, LLP, 16th floor, 620 Newport Center Drive, Newport Beach, CA 92660 (US).</p>		<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> (88) Date of publication of the international search report: 11 March 1999 (11.03.99)</p>

(54) Title: INTELLIGENT PRINTER COMPONENTS AND PRINTING SYSTEM



(57) Abstract

An ink jet printer with intelligent components includes an ink jet cartridge (74) and a roll of print media (81), each of which incorporate memory elements (78, 80). Environmental sensors (76) such as temperature and humidity sensors may also be provided. Data from the memory elements (78, 80) and environmental sensors (76) is used to optimize printer operations, and to provide additional information to printer operators.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/07324

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 6 B41J2/01 B41J2/17

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 6 B41J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 14989 A (LASERMASTER CORP) 23 May 1996 see page 14, line 16 - page 18, line 10 see page 54, line 7 - page 56, line 9 see page 78, line 2 - page 80, line 14; figures 1-3,26,30,32 & US 5 592 202 A (ERICKSON PAUL R) 7 January 1997 see column 29, line 5-26; figure 1 ---	1-3,18
A	EP 0 668 165 A (HEWLETT PACKARD CO) 23 August 1995 cited in the application see abstract; figure 2 -----	1-3,18

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

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- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

20 July 1998

Date of mailing of the international search report

18. 11. 98

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Widmeier, W

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 98/07324

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See separate sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Claims 1-3, 18

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-3,18

Ink jet printer and ink jet printing method with memory elements on the ink cartridge and on the paper roll and printer control in accordance with the data of these memories.

2. Claims: 4,5,30,31

Ink jet printer and ink jet printing method with calculation of a dew point on the basis of signals from a temperature sensor and a humidity sensor.

3. Claims: 6-11

Ink jet printer with a paper roll which comprises a memory element.

4. Claims: 12,13

Paper roll with a memory element which stores information indicating the compatibility of print medium and ink.

5. Claims: 14,15

Paper roll with a memory element which stores information indicating the remaining length of the print medium.

6. Claims: 16,17

Paper roll with a memory element which stores information indicating the thickness of the print medium.

7. Claims: 19-21

Ink jet cartridge with a flex circuit whose circuit traces define a binary code.

8. Claims: 22-26

Ink jet cartridge with a flex circuit on which a memory element is mounted.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

9. Claims: 27,28

Ink jet printing method which modifies print data in accordance with the colour of the print medium.

10. Claim : 29

Ink jet printing method which adjusts the height of the print carriage in accordance with the thickness of the print medium.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 98/07324

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9614989 A	23-05-1996	US 5751303 A	12-05-1998
		US 5592202 A	07-01-1997
		US 5805183 A	08-09-1998

EP 0668165 A	23-08-1995	JP 7256876 A	09-10-1995
		US 5617516 A	01-04-1997
