Title: FLUID TRANSFER AND PRINTING DEVICES

Abstract: A printing and fluid transfer pin (100) including a reservoir section (102) and a printing tip section (104). The printing tip section may have a dispensing end disposed at a first end thereof. The pin may further have a longitudinal channel (118) disposed through the reservoir section and the printing tip section for transferring fluid from the reservoir section to the dispensing end of the printing tip section. A portion of the longitudinal channel disposed in the printing tip section may extend only partially through a thickness of the printing tip section. Also, methods for making the pin described above and printheads containing such pins.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC: B01L 3/02 (2006.01)

USPC: 422/100, 436/180
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)
U.S.: 422/100; 436/180

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 practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category * Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No.


X US 2003/0148539 A1 (VAN DAM et al.) 07 August 2003, entire document 1-2, 4-6, 8, 12, 15, 18, 22-30, 38

Y US 6,101,946 A (MARTINSKY) 15 August 2000, entire documents 3, 9-11, 13-14

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

“E” earlier application or patent published on or after the international filing date

“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

“O” document referring to an oral discussion, 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

“&” document member of the same patent family

Date of the actual completion of the international search 10 March 2008 (10.03.2008)

Date of mailing of the international search report 04 APR 2008

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
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Form PCT/ISA/210 (second sheet) (April 2007)

Authorized officer
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Telephone No. 571-273-8300

DEBORAH A. THOMAS
PARALEGAL SPECIALIST

[Signature]
**INTERNATIONAL SEARCH REPORT**

**Box No. II** Observations where certain claims were found unsearchable (Continuation of item 2 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 No. III** Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

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

Please See Continuation 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 additional fees, this Authority did not invite payment of any additional fees.

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.: 1-38

**Remark on Protest**

□ The additional search fees were accompanied by the applicant’s protest and, where applicable, the payment of a protest fee.

□ The additional search fees were accompanied by the applicant’s protest but the applicable protest fee was not paid within the time limit specified in the invitation.

□ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet(2)) (April 2007)
BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-38, drawn to a printing and fluid transfer pin.

Group II, claim(s) 39-42, drawn to an etching process for making a transfer pin.

Group III, claim(s) 43-50, drawn to a molding process for forming a transfer pin.

The inventions listed as Groups I and II-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The special technical feature of Group III, employing a molding process for forming a pin, does not correspond to the special technical feature of employing a an etching process as in Group II, and the transfer pin of Group I does not correspond to either special technical features of Groups II and III.

Continuation of B. FIELDS SEARCHED Item 3:
East
Keywords: pin, reservoir, channel tip