

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
5 July 2007 (05.07.2007)

PCT

(10) International Publication Number  
WO 2007/075289 A3

(51) International Patent Classification:  
B01L 3/00 (2006.01) G01N 33/483 (2006.01)  
B01L 9/00 (2006.01) F04C 2/10 (2006.01)

(21) International Application Number:  
PCT/US2006/046714

(22) International Filing Date:  
7 December 2006 (07.12.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
11/306,401 27 December 2005 (27.12.2005) US

(71) Applicant (for all designated States except US): HONEYWELL INTERNATIONAL INC. [US/US]; 101 COLUMBIA ROAD, P.O. BOX 2245, Morristown, NJ 07960 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): PADMANAHAN, Aravind [IN/US]; 17625 - 45TH AVENUE NORTH, Plymouth, MN 55446 (US). REZACHEK, Tom [US/US]; 6337 - 82ND STREET SOUTH, Cottage Grove, MN 55016 (US). BARDELL, Ron, L. [US/US]; 4150 ALABAMA AVENUE SOUTH, St. Louis Park, MN 55416 (US). BIRD, Douglas [US/US]; 606 KELLER PARKWAY, Little Canada, MN 55117 (US).

(74) Agents: HOIRIIS, David et al.; HONEYWELL INTERNATIONAL INC., 101 COLUMBIA ROAD, P.O. BOX 2245, Morristown, NJ 07960 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

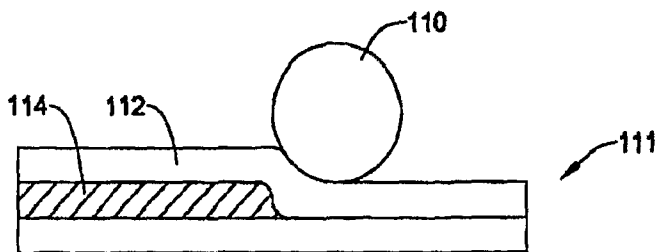
Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:  
10 January 2008

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: FLUID FREE INTERFACE FOR A FLUIDIC ANALYZER



(57) Abstract: Instrument-cartridge interfaces for fluidic analyzers that have an instrument and a removable cartridge are disclosed. For example, and in one illustrative embodiment, the instrument may include a needle that is adapted to penetrate a septum on a removable cartridge. In another illustrative embodiment, the instrument may include a plunger that is adapted to deform a deformable membrane on a removable cartridge. In yet another illustrative embodiment, the instrument may include a nozzle that is adapted to mate and seal with a flow channel on a

removable cartridge. Techniques for detecting the flow rate in a flow channel on a removable cartridge, as well as the position of fluid in a flow channel of a removable cartridge, are also disclosed.

WO 2007/075289 A3

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2006/046714

## A. CLASSIFICATION OF SUBJECT MATTER

INV. B01L3/00 B01L9/00 G01N33/483 F04C2/10

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)

B01L G01N B01J F04C F04B

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)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/254559 A1 (TANAAMI TAKEO [JP] ET AL) 16 December 2004 (2004-12-16)	1-6, 8-10, 12-14, 16-18 19-23
A	paragraphs [0068] - [0072], [0082] - [0086], [0099], [0101], [0157], [0161]; figures 4,5,8-10,28,46 ----- -/--	

 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 document but 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 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.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

13 November 2007

Date of mailing of the international search report

20/11/2007

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

Smith-Hewitt, Laura

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2006/046714

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 405 182 A (MICRO CHEMICAL SYSTEMS LTD [GB]) 23 February 2005 (2005-02-23) page 1, lines 1-3,16-18; figures	1,8,13
X	page 2, lines 8-14	1,8,13, 14
A	page 2, lines 8-14	7,11,12
X	page 3, lines 3-9	3,16,17
X	page 6, lines 7-10	3,16,17
A	page 6, lines 7-10	7,11
X	page 13, lines 16-19	15
X	page 14, line 4	4,5,9,12
X	----- US 2003/143754 A1 (LUM PAUL [US] ET AL) 31 July 2003 (2003-07-31) the whole document	1,13,14, 16
X	paragraph [0033]; figure 2	2,4,5, 7-9,11, 12
X	----- EP 1 279 436 A (LG ELECTRONICS INC [KR]; UNIV POHANG [KR]) 29 January 2003 (2003-01-29) the whole document	1,3,8, 13,14, 16,17
X	----- US 2002/015653 A1 (WEISNER THOMAS [DE] ET AL) 7 February 2002 (2002-02-07) page 1, paragraph 1-12; figures	18-23
X	----- US 6 116 863 A (AHN CHONG H [US] ET AL) 12 September 2000 (2000-09-12) the whole document	18-23
A	----- US 6 415 821 B2 (KAMHOLZ ANDREW [US] ET AL) 9 July 2002 (2002-07-09) abstract; figures	23

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2006/046714

## 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:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of 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.:

### 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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-17

A fluidic analyzer, comprising:  
a cartridge having a chamber defined by one or more chamber walls;  
an instrument for receiving the cartridge, the instrument having a force mechanism for applying a force to the cartridge that deforms at least part of one or more of the chamber walls to induce a flow in the cartridge. Method of applying external force to induce flow in such a cartridge with such an instrument.

---

2. claims: 18-23

Method of providing flow on a cartridge by providing a pumping mechanism on the cartridge and in fluid communication with a channel of the cartridge, whereby the cartridge is inserted into an instrument which powers the pumping mechanism.

---

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/046714

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2004254559	A1	16-12-2004	DE 102004023217 A1	09-12-2004
GB 2405182	A	23-02-2005	GB 2424676 A	04-10-2006
			GB 2424677 A	04-10-2006
US 2003143754	A1	31-07-2003	US 2006216212 A1	28-09-2006
EP 1279436	A	29-01-2003	JP 3732159 B2	05-01-2006
			JP 2003130765 A	08-05-2003
			KR 20030009857 A	05-02-2003
			US 2003025129 A1	06-02-2003
US 2002015653	A1	07-02-2002	NONE	
US 6116863	A	12-09-2000	NONE	
US 6415821	B2	09-07-2002	AU 2106601 A	25-06-2001
			WO 0144667 A1	21-06-2001
			US 6408884 B1	25-06-2002
			US 2001017158 A1	30-08-2001