

**(19) World Intellectual Property Organization**  
International Bureau



A standard linear barcode representing the journal issue information.

**(43) International Publication Date  
23 November 2006 (23.11.2006)**

PCT

(10) International Publication Number  
**WO 2006/123258 A3**

- (51) **International Patent Classification:**  
*C02F 1/04* (2006.01)      *C02F 103/08* (2006.01)  
*H05H 1/26* (2006.01)

(21) **International Application Number:**  
PCT/IB2006/002061

(22) **International Filing Date:** 17 May 2006 (17.05.2006)

(25) **Filing Language:** English

(26) **Publication Language:** English

(30) **Priority Data:**  
60/681,474      17 May 2005 (17.05.2005) US

(71) **Applicant (for all designated States except US):** AQUA-MATTERS SA [CH/CH]; Chemin De La Vuarpilliere 35, CH-1260 Nyon (CH).

(72) **Inventors; and**

(75) **Inventors/Applicants (for US only):** AKNINE, Gerard [FR/CH]; Chemin De La Vuarpilliere 35, CH-1260 Nyon (CH). JEBSEN, Jan Henrik [NO/CH]; Chemin De La Vuarpilliere 35, CH-1260 Nyon (CH).

(74) **Agent:** LECCA, Patricia; 21, rue de Fécamp, F-75012 Paris (FR).

(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, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, 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

**(88) Date of publication of the international search report:** 15 February 2007

*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.*

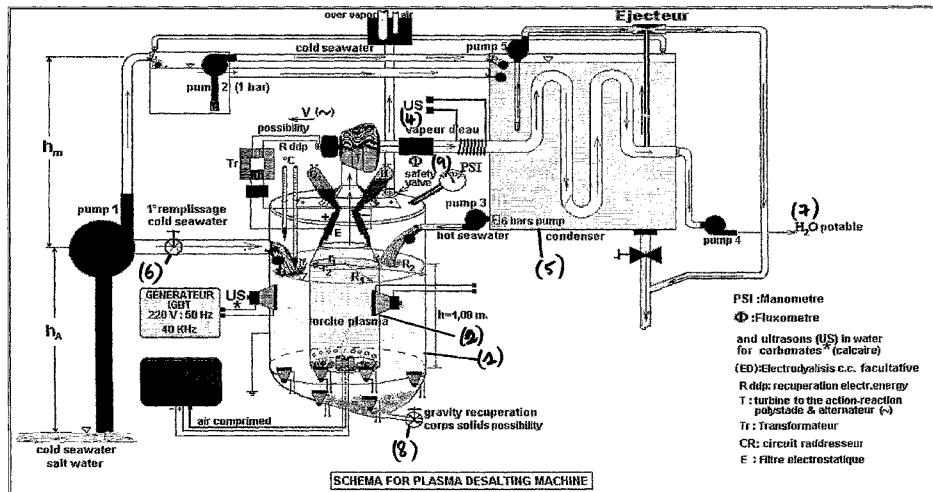
**Published:**

— with international search report

(88) Date of publication of the international search report:  
15 February 2007

*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:** WATER PURIFICATION AND TREATMENT DEVICE AND METHOD FOR DESALTING OR PURIFYING WATER



WO 2006/123258 A3

**(57) Abstract:** The invention relates to water treatment devices and methods employing high temperature plasma. In a preferred embodiment, the device or method can be used in combination with a mobile water purification, distillation, or desalination system. In other embodiments, the device or method can be used to effectively and quickly heat water for use in circulating water systems, such as, for example, building heating systems. The use of plasma technology to treat or heat water provides numerous advantages, including fast and effective steam generation, a small size compatible with mobile systems, and/or cost-effective or efficient generation of steam or heated water.

## INTERNATIONAL SEARCH REPORT

International application No PCT/IB2006/002061
---

A. CLASSIFICATION OF SUBJECT MATTER INV. C02F1/04 H05H1/26 ADD. C02F103/08
--

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) C02F B01J H05H
---

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, WPI Data
------------------------

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 187 206 B1 (BERNIER JEAN LUC [CA] ET AL) 13 February 2001 (2001-02-13) column 6, line 58 – column 7, line 13; claims 1,10,17; figures 1,11 -----	1
Y	FR 2 235 092 A (DEFLASSIEUX PIERRE [FR]) 24 January 1975 (1975-01-24) page 4, line 24 – line 36 page 7, line 36 – page 8, line 6; claims 1,17,18; figure 1 -----	1-10
X	US 5 280 757 A (CARTER GEORGE W [CA] ET AL) 25 January 1994 (1994-01-25) column 3, line 40 – column 5, line 30; claims 1,6,7,10; figure 1 -----	6
Y	----- -/-	6-10

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	Date of mailing of the international search report
---	--

27 October 2006	06/11/2006
-----------------	------------

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
---	--------------------

VAN IDDEKINGE, R
------------------

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/IB2006/002061

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 02/50215 A2 (ABB SERVICE SRL [IT]; VENTURINO MATTEO [IT]; MASCALZI GIANNI [IT]) 27 June 2002 (2002-06-27) claims 1-3,5-8,11,14,15 -----	1-10
Y	US 5 611 947 A (VAVRUSKA JOHN S [US]) 18 March 1997 (1997-03-18) claims 8,10-15 -----	1-10
Y	US 6 767 163 B2 (ALMEIDA FERNANDO CARVALHO [BR]) 27 July 2004 (2004-07-27) column 4, line 56 - column 5, line 4; claims 1,4; figure 1 -----	1-10

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No

PCT/IB2006/002061

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 6187206	B1	13-02-2001	AT	201862 T	15-06-2001
			AU	715144 B2	20-01-2000
			AU	1090797 A	14-07-1997
			BR	9612101 A	23-02-1999
			CA	2240283 A1	26-06-1997
			WO	9722556 A1	26-06-1997
			DE	69613241 D1	12-07-2001
			DE	69613241 T2	08-11-2001
			EP	0874782 A1	04-11-1998
			ES	2157471 T3	16-08-2001
			GR	3036493 T3	30-11-2001
FR 2235092	A	24-01-1975	NONE		
US 5280757	A	25-01-1994	NONE		
WO 0250215	A2	27-06-2002	AU	3171902 A	01-07-2002
			IT	MI20002790 A1	21-06-2002
US 5611947	A	18-03-1997	AU	3542395 A	27-03-1996
			WO	9608126 A2	14-03-1996
US 6767163	B2	27-07-2004	AU	8562101 A	26-03-2002
			BR	0006651 A	05-11-2002
			WO	0222215 A2	21-03-2002
			CA	2390831 A1	21-03-2002
			EP	1318859 A2	18-06-2003
			JP	2004507359 T	11-03-2004
			MX	PA02004762 A	30-08-2002
			US	2002192030 A1	19-12-2002