

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
5 February 2004 (05.02.2004)

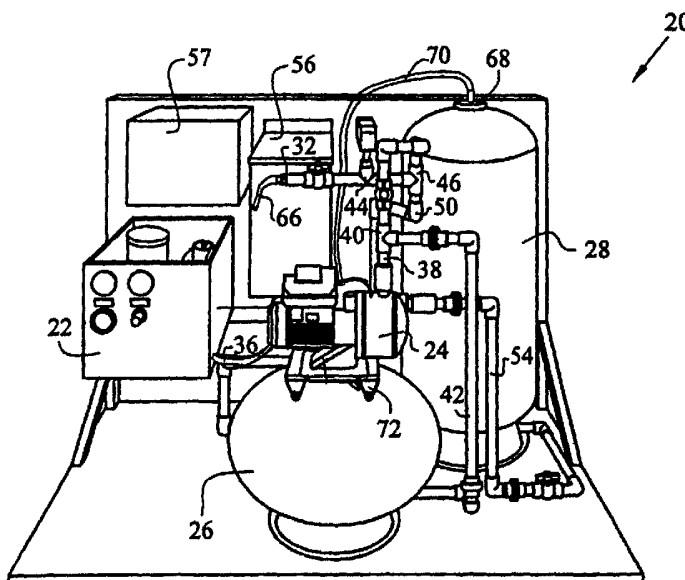
PCT

(10) International Publication Number
WO 2004/011378 A3

- (51) International Patent Classification⁷: C02F 1/78, A61L 2/20, A61M 35/00
- (21) International Application Number: PCT/US2003/023449
- (22) International Filing Date: 29 July 2003 (29.07.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 10/207,142 29 July 2002 (29.07.2002) US
- (63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:
US 10/207,142 (CIP) Filed on Not furnished
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant and
(72) Inventor: MINNIX, Charles, M. [US/US]; 153 Chestnut Drive, Greenwood, IN 46142 (US).
(74) Agent: ERDMAN, Kevin, R.; Baker & Daniels, 300 North Meridian Street, Suite 2700, Indianapolis, IN 46204 (US).
- Published:
— with international search report
- (88) Date of publication of the international search report:
1 July 2004

[Continued on next page]

(54) Title: OZONE PURIFICATION SYSTEM FOR WATER



(57) Abstract: An ozone purification system for fluids that includes a pump having an inlet for receiving the fluid. The pump includes at least one opening. An expansion tank is in communication with a first of the at least one opening of the pump, wherein the fluid may flow from the pump through the at least one opening to the expansion tank. The system includes an ozone generator having an ozone impregnator, which is in fluid communication with the expansion tank and is adapted to inject an amount of ozone into the fluid. A holding tank is in communication with the pump. A valve is in communication with the pump and includes a first and a second position. The valve directs the fluid to exit the system when valve is in the first position, and the valve recycles the fluid to the expansion tank when the is in the second position.

WO 2004/011378 A3



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.

INTERNATIONAL SEARCH REPORT

Intern: Application No

PCT/US 03/23449

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 C02F1/78 A61L2/20 A61M35/00

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 7 C02F A61L A61M

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 A	US 2002/040867 A1 (CONRAD WAYNE ERNEST) 11 April 2002 (2002-04-11) paragraphs [0014] - [0019], [0046], [0049], [0050], [0065], [0078] - [0080]; figure 10	1-6,10, 16,26,29 18-20
X,P	US 6 428 710 B1 (KEMPEN CARINNE ET AL) 6 August 2002 (2002-08-06) column 5, lines 22-64; figure 2	1,20,26, 29
X	-& EP 1 094 037 A (AIR LIQUIDE) 25 April 2001 (2001-04-25)	1,20,26, 29
X	EP 0 856 491 A (CORE CORP) 5 August 1998 (1998-08-05)	26,29
A	column 4, lines 7-36; figures 1,4	1
	-/--	

Further documents are listed in the continuation of box C.

Patent family members are listed in 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

27 November 2003

Date of mailing of the international search report

11.03.03

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

Borello, E

INTERNATIONAL SEARCH REPORT

Internationa	Application No
	PCT/us 03/23449

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	WO 00/23383 A (BOLEY ROGER J) 27 April 2000 (2000-04-27) figures 1,2 page 1, lines 12-15 page 2, lines 23-28 page 10, lines 14-18 page 12, lines 29-33 page 13, lines 1-9 -----	19,26, 29,30 1
X	WO 01/093793 A (SMIT BARTHOLOMEUS FREDERICA ; STALDER ALBERT GEORGE (NL); ZONDAG LOUIS) 13 December 2001 (2001-12-13) claim 1 -----	18

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/23449

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:

Although claim 18 is directed to a method for treatment of the human or animal body by therapy (Rule 39.1(iv) PCT), the search has been carried out and based on the alleged effects of the compound/composition.
- 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 additional 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.:

1-30

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

Continuation of Box I.1

Claims Nos.:

Although claim 18 is directed to a method for treatment of the human or animal body by therapy (Rule 39.1(iv) PCT), the search has been carried out and based on the alleged effects of the compound/composition.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-30

Claims 1-30: The invention defined in independent claim 1 (and the embodiments of dependent claims 2-17) relates to a device comprising a pump, an expansion tank, an ozone generator, a holding tank and a valve having two positions, the first one directing the water flow to exit the system and the second one recycling the water to the expansion tank. The inventions defined in independent claims 18, 19 and 20 (and the embodiments of dependent claims 21-25) relate to different applications of the above device. The invention defined in independent claim 26 (and the embodiments of dependent claims 27-30) relates to a device comprising an ozone impregnator, a holding tank and a circulator coupling the impregnator and the tank.

2. claims: 31-35

Claims 31-35: The invention defined in independent claim 31 (and the embodiments of dependent claims 32-35) relates to a device comprising a generator of sterilizing agent, a venturi tube and a plurality of injector tubes dispensing the sterilizing agent into the venturi passageway.

INTERNATIONAL SEARCH REPORT

 Inte
 application No
 PCT/US 03/23449

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2002040867	A1	11-04-2002	CA 2322991 A1	06-04-2002
			AU 1029302 A	15-04-2002
			WO 0228782 A1	11-04-2002
			CN 1476416 T	18-02-2004

US 6428710	B1	06-08-2002	FR 2800059 A1	27-04-2001
			BR 0004939 A	29-05-2001
			CA 2318651 A1	20-04-2001
			EP 1094037 A1	25-04-2001
			JP 2001170462 A	26-06-2001

EP 1094037	A	25-04-2001	FR 2800059 A1	27-04-2001
			BR 0004939 A	29-05-2001
			CA 2318651 A1	20-04-2001
			EP 1094037 A1	25-04-2001
			JP 2001170462 A	26-06-2001
			US 6428710 B1	06-08-2002

EP 0856491	A	05-08-1998	JP 10216490 A	18-08-1998
			JP 10222231 A	21-08-1998
			AT 258147 T	15-02-2004
			DE 69727289 D1	26-02-2004
			EP 0856491 A2	05-08-1998
			US 5951921 A	14-09-1999

WO 0023383	A	27-04-2000	US 6132629 A	17-10-2000
			AU 6278899 A	08-05-2000
			CA 2344174 A1	27-04-2000
			WO 0023383 A1	27-04-2000

WO 0193793	A	13-12-2001	NL 1015146 C2	13-11-2001
			AU 5511201 A	17-12-2001
			WO 0193793 A1	13-12-2001
