

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
3 March 2005 (03.03.2005)

PCT

(10) International Publication Number
WO 2005/018780 A3

(51) International Patent Classification:
B01D 50/00 (2006.01) **B01D 45/16** (2006.01)

(21) International Application Number:
PCT/EP2004/009365

(22) International Filing Date: 20 August 2004 (20.08.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
1024149 22 August 2003 (22.08.2003) NL

(71) Applicants (for all designated States except US): **FLASH TECHNOLOGIES N.V.**; Kaya W.F.G. (Jombi), Mensing 36, Willemstad, Curaçao (AN). **FMC TECHNOLOGIES C.V.** [US/US]; 200 East Randolph Drive, Chicago, IL 60601 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LARNHOLM, Per-Reidar** [NO/NO]; Refsnesstranda 1, N-15187 Moss (NO). **SWANBORN, Rombout, Adriaan** [NL/NL]; Kemperbergerweg 39, NL-6816 RN Arnhem (NL).

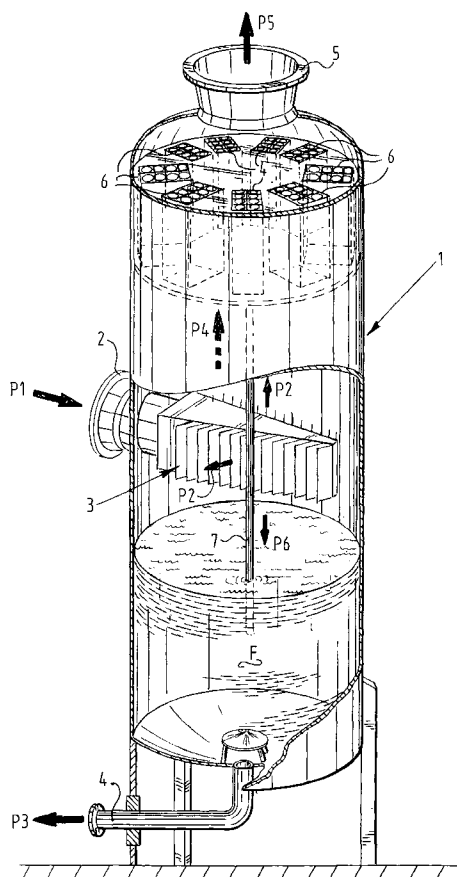
(74) Agent: **HYLARIDES, Paul, Jacques**; Arnold & Siedsma, Sweelinckplein 1, NL-2517 GK The Hague (NL).

(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, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, 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 (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, IT, LU, 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).

[Continued on next page]

(54) Title: SEPARATION DEVICE AN INLET THEREFOR



(57) Abstract: Separation device for separating a liquid/gas mixture in a heavy fraction mainly containing liquid and a light fraction mainly containing gas, comprising: - a separation vessel comprising at least one inlet, at least a first outlet for the discharge of the heavy fraction and at least a second outlet for the discharge of the light fraction; - separator for separating the mixture into the heavy and light fraction; - a vane type inlet device connected to the inlet for admitting the gas/liquid mixture to the vessel en for distributing the admitted gas/liquid mixture in the vessel, the inlet device comprising: an elongated support structure; is - a plurality of curved guiding vanes placed one behind the other and attached to the support structure, the guiding vanes being arranged so as intercept and deflect the admitted gas/liquid mixture sideways; - at least an agglomerator arranged close to the guiding vanes for agglomerating the liquid in the gas/liquid mixture.

WO 2005/018780 A3



Published:

— with international search report

(88) Date of publication of the international search report:

1 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.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2004/009365

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B01D50/00 B01D45/16

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 B01D

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 4 297 116 A (KENNETH M. CUSICK) 27 October 1981 (1981-10-27) cited in the application figures 4,5	1,28
A	----- EP 0 195 464 A (SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ) 24 September 1986 (1986-09-24) the whole document	1-30
A	----- US 5 676 717 A (LARRY H. COPE ET AL.) 14 October 1997 (1997-10-14)	
A	----- US 6 251 168 B1 (DANIEL P. BIRMINGHAM ET AL.) 26 June 2001 (2001-06-26) -----	

☐ 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

1 November 2004

Date of mailing of the international search report

08/11/2004

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

Bogaerts, M

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/EP2004/009365

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4297116	A	27-10-1981	NONE	
EP 0195464	A	24-09-1986	AU 577927 B2	06-10-1988
			AU 5421286 A	16-10-1986
			CA 1286233 C	16-07-1991
			DE 3662839 D1	24-05-1989
			DK 95986 A	06-09-1986
			EG 17664 A	30-03-1991
			EP 0195464 A1	24-09-1986
			JP 1839666 C	25-04-1994
			JP 5054365 B	12-08-1993
			JP 61204017 A	10-09-1986
			NO 860784 A ,B,	08-09-1986
			NZ 215346 A	31-03-1987
			US 4767424 A	30-08-1988
US 5676717	A	14-10-1997	NONE	
US 6251168	B1	26-06-2001	CA 2313903 A1	23-01-2001