

(19) World Intellectual Property Organization
International Bureau



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

PCT

(10) International Publication Number
WO 2006/123363 A3

(51) International Patent Classification:
B01D 11/02 (2006.01)

(21) International Application Number:
PCT/IN2006/000087

(22) International Filing Date: 10 March 2006 (10.03.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
593/MUM/2005 16 May 2005 (16.05.2005) IN

(71) Applicant and

(72) Inventor: CHAUHAN, Prabhat, Singh [IN/IN]; 602 Sabari Aangan, 11th Road, Chembur, Mumbai 400 071, Maharashtra (IN).

(74) Agent: NAIR, Gopakumar, G.; Patent & Trademark Agent, Gopakumar Nair Associates, Nair Baug, Akurli Road, Kandivli (East), Mumbai 400 101 (IN).

(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).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))
- of inventorship (Rule 4.17(iv))

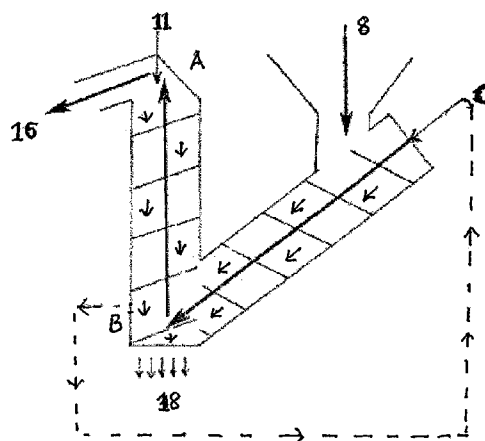
Published:

- with international search report

(88) Date of publication of the international search report:
15 March 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: A COUNTER-CURRENT-CUM -CONCURRENT EXTRACTOR AND THE METHOD OF EXTRACTION BY USING THE SAME



(57) Abstract: A counter-current-cum-concurrent extractor (1/20) comprises a substantially "V"-shaped body (2) having a pair of inclined tubular arms (3 and 4) interconnected at the bottom (5), the said arms forming a concurrent cylinder (C1) and a counter-current cylinder (C2), an inlet (7) for feeding the raw material (8) provided at/near the top end of the concurrent cylinder, an inlet (10) for feeding the solvent (11) and an outlet (15) for discharging the waste (16) of extracted raw material provided at/near the top end of the counter-current cylinder, an opening (22) for sucking out the extract provided near the bottom of the counter-current cylinder, an inlet (12) for feeding the particularly saturated extract (13), received from the counter-current cylinder (C2), provided near top end of the concurrent cylinder (C1), an outlet (19) for recovering the final concentrated extract (18) provided at the bottom of the extractor below the junction (5) of the said two inclined arms and means (P1, P2/S1, S2) for gradually moving the raw material from top to bottom of the concurrent cylinder and then from bottom to top of the counter-current cylinder and the said means being provided with perforations (17/21), such that the solvent and/or the extract passes downwards therethrough without allowing any raw material particles to pass through.



WO 2006/123363 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/IN2006/000087

A. CLASSIFICATION OF SUBJECT MATTER INV. B01D11/02		
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) 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, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3 755 285 A (PIAZZA C) 28 August 1973 (1973-08-28) column 3, line 27 - line 66; figure 1 column 5, line 17 - line 30; figure 3	1
A	EP 0 144 038 A2 (SCHUMACHER HEINZ) 12 June 1985 (1985-06-12) page 8, line 23 - page 10, line 12; figure 1	1
A	EP 0 057 979 A2 (TABAC FAB REUNIES SA [CH]) 18 August 1982 (1982-08-18) page 1, line 10 - line 27; figure 1	1
A	EP 0 136 380 A1 (TABAC FAB REUNIES SA [CH]) 10 April 1985 (1985-04-10) page 2, line 22 - line 29; figure 1	1
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> 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 <p align="center">19 October 2006</p>		Date of mailing of the international search report <p align="center">22/11/2006</p>
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 <p align="center">Haderlein, Andreas</p>

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IN2006/000087

Box 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.: **11, 15**
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:
see FURTHER INFORMATION sheet PCT/ISA/210

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 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:

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.:

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 II.2

Claims Nos.: 11,15

Non-compliance with R. 6.2(a): The claims [...] shall not rely on such references as: "as described in part ... of the description," or "as illustrated in figure ... of the drawings."

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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IN2006/000087

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 3755285	A	28-08-1973		NONE	
EP 0144038	A2	12-06-1985	DE	3343478 A1	27-06-1985
EP 0057979	A2	18-08-1982	DE	3101768 A1	26-08-1982
			US	4448208 A	15-05-1984
EP 0136380	A1	10-04-1985	DE	3371173 D1	04-06-1987