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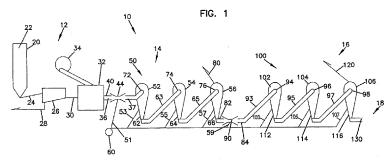
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(54) Title: APPARATUS AND METHOD FOR REMOVING WATER FROM WET MATERIAL



(57) Abstract: The apparatus for separating water from a wet material includes an air lock feeder, a venturi, a plurality of centrifugal accelerators, at least one blower, at least one vapor vent, and at least one product outlet. The air lock feeder receives air from a feed blower and moves the wet material as entrained material to the venturi, which accelerates the entrained material. The accelerators receive the entrained material and accelerate the flow. The accelerator blower is provided for accelerating the flow of the wet material within the centrifugal accelerators. The vapor vent removes water vapor. The product outlet removes dried material. A method for separating water from a wet material is provided.



INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER INV. F26B17/10

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B. FIELDS SEARCHED

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F26B

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

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
————	Challott of document, with indication, where appropriate, of the relevant passages	Helevani to dalii No.
χ	WO 2008/016623 A2 (DINGEE H CLAY IV [US])	1-2,4-9,
	7 February 2008 (2008-02-07)	13-15,
		17-24
Y	figure 1	3,16
	paragraphs [0002], [0009], [0010], [0011], [0013], [0014], [0017]	
	paragraph [0021] - paragraph [0039]	
Y	US 2007/272626 A1 (HIRAYAMA KOTARO [JP] ET	3,16
	AL) 29 November 2007 (2007-11-29) figures 1a,1b	
	paragraphs [0002], [0045], [0047]	
	-/	
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Date of the actual completion of the international search 13 November 2009	Date of mailing of the international search report $20/11/2009$
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Hauck, Gunther

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT						
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.				
A	DE 42 40 716 A1 (WACKER CHEMIE GMBH [DE]) 9 June 1994 (1994-06-09) column 1, line 3 - line 5 column 2, line 27 - line 40 column 3, line 46 - line 59 column 4, line 9 - line 14	10-12				
Α	US 6 491 242 B1 (DINGEE IV H CLAY [US] ET AL) 10 December 2002 (2002-12-10) figures 7,8 column 2, line 61 - column 3, line 5 column 3, line 37 - line 42 column 4, line 15 - line 34 column 5, line 41 - line 65 column 6, line 17 - line 26	1,7-9				
Α	US 3 273 257 A (JOHNSON FRANK E ET AL) 20 September 1966 (1966-09-20) figure 3 column 1, line 9 - line 11 column 1, line 55 - line 69 column 3, line 29 - line 32	1,3,16				
Α	GB 463 060 A (ALEC HENRY ROWLES; W S BARRON & SON LTD) 22 March 1937 (1937-03-22) page 2, line 10 - line 18 page 2, line 59 - line 81	1				
Α	DE 456 816 C (JOSEPH TRAUTMANN) 2 March 1928 (1928-03-02) the whole document	1				
A	US 2006/051236 A1 (CASE WAYNE A [US] ET AL) 9 March 2006 (2006-03-09) figure 2	1				
A	EP 0 503 241 A1 (BASF AG [DE]) 16 September 1992 (1992-09-16) page 1, line 1 - line 2 page 2, line 2 - line 4	3,16				
A	US 2007/251120 A1 (CONNELL LARRY V [US]) 1 November 2007 (2007-11-01) figure 1 paragraphs [0002], [0013]	16				

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2009/039516

Patent document cited in search report		Publication date	Patent family Publication member(s) date
WO 2008016623	A2	07-02-2008	AU 2007281514 A1 07-02-2008 CN 101529190 A 09-09-2009 EP 2052198 A2 29-04-2009 KR 20090035014 A 08-04-2009 US 2008028633 A1 07-02-2008
US 2007272626	A1	29-11-2007	NONE
DE 4240716	A1-	09-06-1994	NONE
US 6491242	B1	10-12-2002	US 2003080223 A1 01-05-2003
US 3273257	A	20-09-1966	GB 1009248 A 10-11-1969 OA 229 A 15-03-1960
GB 463060	Α	22-03-1937	NONE
DE 456816	С	02-03-1928	NONE
US 2006051236	A1	09-03-2006	NONE
EP 0503241	A1	16-09-1992	AT 111012 T 15-09-1996 AU 644943 B2 23-12-1996 AU 1090792 A 20-08-1996 CA 2061175 A1 15-08-1996 DE 4104418 C1 14-05-1996 ES 2059164 T3 01-11-1996 JP 4318003 A 09-11-1996 US 5145878 A 08-09-1996
US 2007251120	A1	01-11-2007	NONE