(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 28 February 2002 (28.02.2002)

PCT

(10) International Publication Number WO 02/16892 A3

(51) International Patent Classification7: B29C 47/00, B01F 15/04

G01J 3/46,

(21) International Application Number: PCT/US01/19416

(22) International Filing Date: 15 June 2001 (15.06.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

09/643,245 22 August 2000 (22.08.2000) US

(71) Applicant: GENERAL ELECTRIC COMPANY [US/US]; 1 River Road, Schenectady, NY 12345 (US).

(72) Inventors: RAJAMANI, Ravi; 71 Bainard Road, West Harford, CT 06117 (US). HANAGANDI, Vijay, Kumar, M.; 602 Crestmont, Evansville, IN 47712 (US).

(74) Agents: SNYDER, Bernard et al.; General Electric Company, 3135 Easton Turnpike W3C, Fairfield, CT 06431 (US).

- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, 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, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

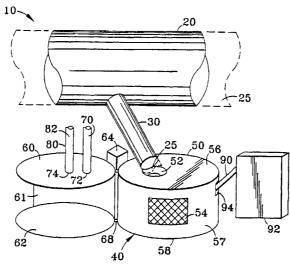
Published:

with international search report

(88) Date of publication of the international search report: 10 May 2002

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: ON-LINE COLOR MEASUREMENT SYSTEM FOR COOLED PRODUCT





(57) Abstract: An on-line color sensor (40) supplies light to a spectrophotometer (160) for color measurement of product (25) after cooling. The product (25) is extruded in a main extruder (20) having a bypass section (30). The on-line color sensor (40) includes an housing (50) having an interior portion (100). The housing (50) is positioned proximate to the bypass section (30) and is used to direct the product (25) from the bypass section (30) into the interior portion (100). A receptacle (110) that is connected to the housing (50) is positioned in the interior portion (100) of the housing (50) to hold the product (25) directed into the interior portion (100). The product (25) is allowed to cool while being held on the receptacle (110). A light source (170) is connected to the housing (50) and supplies light to the interior portion (100) of the housing (50). A light receiver (80) is connected to the housing (50) to capture the light from the light source (170) in the interior portion (100) that is affected by the cooled product (140). The captured light is supplied to the spectrophotometer (160) to measuring the color of the cooled product (140) in the interior portion (100) of the housing (50).

INTERNATIONAL SEARCH REPORT

Inter[,] nnal Application No PCT/US 01/19416

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 G01J3/46 B29C47/00

B01F15/04

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) G01J B29C B01F IPC 7

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, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of t	the relevant passages	Relevant to claim No.		
X A	EP 0 407 927 A (HOECHST AG) 16 January 1991 (1991-01-16) the whole document	20,21, 23-26,28 1,22,27, 29			
X A	US 5 568 266 A (CIZA JEAN-CHAR 22 October 1996 (1996-10-22) column 5, line 31 -column 7, figure 2	20,21, 23-26,28 1,22,27, 29			
Α	US 5 559 173 A (CAMPO PETER J 24 September 1996 (1996-09-24) column 4, line 15 -column 5,)	1,20,29		
A	US 5 859 708 A (FELDMAN SANDRA 12 January 1999 (1999-01-12) column 2, line 33 -column 5,		1,20,29		
X Furti	her documents are listed in the continuation of box C.	χ Patent family members are listed	in annex.		
"A" docume consid "E" earlier of filing of "L" docume which citation "O" docume other of the results of the res	ent defining the general state of the art which is not defining the general state of the art which is not deced to be of particular relevance document but published on or after the international date ent which may throw doubts on priority claim(s) or is cited to establish the publication date of another n or other special reason (as specified) ent referring to an oral disclosure, use, exhibition or means ent published prior to the international filing date but than the priority date claimed	 "T" later document published after the inte or priority date and not in conflict with cited to understand the principle or the invention "X" document of particular relevance; the cannot be considered novel or cannot involve an inventive step when the do "Y" document of particular relevance; the cannot be considered to involve an inventive step with one or mode of the cannot be considered to involve an inventive combined with one or mode of the same patent "&" document member of the same patent 	the application but early underlying the claimed invention be considered to cument is taken alone claimed invention wentive step when the ore other such docuus to a person skilled		
Date of the actual completion of the international search		Date of mailing of the international sea	Date of mailing of the international search report		
2	8 December 2001	09/01/2002			
Name and r	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 Jacquin, J			

1

INTERNATIONAL SEARCH REPORT

Inter onal Application No
PCT/US 01/19416

	tion) DOCUMENTS CONSIDERED TO BE RELEVANT	
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Α	US 4 684 488 A (RUDOLPH JOACHIM) 4 August 1987 (1987-08-04) figure 1	1
A	US 5 953 129 A (MOEDERSHEIM NORBERT ET AL) 14 September 1999 (1999-09-14) figure 1	1

1

INTERNATIONAL SEARCH REPORT

ormation on patent family members

Internional Application No
PCT/US 01/19416

Patent document cited in search report	Publication date	i	ent family ember(s)	Publication date
EP 0407927	16-01-1991	AT AU AU CA DE 59 EP ES JP	3922902 A1 107190 T 644086 B2 5887090 A 2020947 A1 9006110 D1 0407927 A2 2056308 T3 3045304 A	17-01-1991 15-07-1994 02-12-1993 17-01-1991 13-01-1991 21-07-1994 16-01-1991 01-10-1994 26-02-1991 24-04-1991
US 5568266	22-10-1996	NONE		
US 5559173	A 24-09-1996	DE 69 DE 69 EP 9 ES 7	5723517 A 9421990 D1 9421990 T2 0646409 A1 2140510 T3 3143024 B2 7173295 A	03-03-1998 13-01-2000 15-06-2000 05-04-1995 01-03-2000 07-03-2001 11-07-1995
US 5859708	12-01-1999		0901004 A2 1132852 A 67541 A1	10-03-1999 21-05-1999 21-09-1999
US 4684488	04-08-1987	DE EP JP JP	3505036 A1 3662491 D1 0191338 A2 1792268 C 2001648 B 1188124 A	14-08-1986 27-04-1989 20-08-1986 14-10-1993 12-01-1990 21-08-1986
US 5953129	14-09-1999	EP (9626785 A1 0816815 A1 0104078 A	08-01-1998 07-01-1998 24-04-1998