

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
27 December 2007 (27.12.2007)

PCT

(10) International Publication Number
WO 2007/149162 A3

(51) International Patent Classification:

G01N 21/89 (2006.01) *G01N 33/34* (2006.01)
G01N 21/57 (2006.01) *D21F 7/06* (2006.01)

(21) International Application Number:

PCT/US2007/011575

(22) International Filing Date: 15 May 2007 (15.05.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

11/439,653 24 May 2006 (24.05.2006) US

(71) Applicant (for all designated States except US): **ABB LTD.** [IE/IE]; Belgard Road Tallaght, 24 Dublin (IE).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **HELLSTROM, Ake, Arvid** [SE/US]; 5714 Brinkley Court, Columbus, OH 43235 (US).

(74) Agent: **RICKIN, Michael, M.**; 29801 Euclid Avenue, Wickliffe, OH 44092-1832 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, 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, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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, MT, 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).

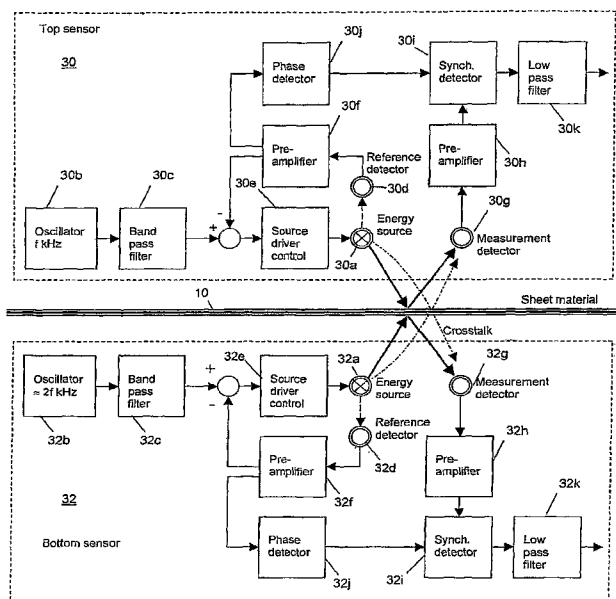
Published:

— with international search report

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

6 March 2008

(54) Title: INDEPENDENT MEASUREMENT OF DUAL SIDED PROPERTIES OF SHEET MATERIAL



(57) Abstract: A dual sided sheet surface property sensor has the capability to simultaneously measure both sides of a moving sheet at the same location of the sheet on the top and bottom surfaces of the sheet. The energy directed to each side of the sheet may include UV, visible light, infrared, radio frequency, microwave, broadband, or X-ray. The sensor has a source and associated detector on each side of the moving sheet and each source provides energy at a different modulation frequency and the associated detector is responsive only to that frequency.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/011575

A. CLASSIFICATION OF SUBJECT MATTER INV. G01N21/89 G01N21/57 G01N33/34 D21F7/00 ADD. D21F7/06		
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) G01N D21F 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 6 233 053 B1 (PRESTON JOHN G [US] ET AL) 15 May 2001 (2001-05-15)	1-3,5-11
Y	column 3, lines 18-46	4,12-19
Y	EP 1 655 881 A (DRAEGER MEDICAL SYSTEMS INC [US]) 10 May 2006 (2006-05-10) column 1, line 43 - column 2, line 35	4,14
Y	US 2002/011319 A1 (SHAKESPEARE JOHN FRANCIS [FI] ET AL SHAKESPEARE JOHN FRANCIS [FI] ET A) 31 January 2002 (2002-01-31) paragraphs [0078], [0093], [0094]	12-19
A	EP 0 304 795 A (AGFA GEVAERT AG [DE]) 1 March 1989 (1989-03-01) column 4, lines 17-39	1,2,12
-/--		
☒ Further documents are listed in the continuation of Box C. ☒ 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. *Z* document member of the same patent family		
Date of the actual completion of the international search 29 November 2007		Date of mailing of the international search report 07/12/2007
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 NAVAS MONTERO, E

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/011575

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 03/031904 A (ABB INC [US]) 17 April 2003 (2003-04-17) page 19, lines 7-13; figure 7b -----	1-19

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/011575

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6233053	B1	US 2001033382 A1	25-10-2001
EP 1655881	A	NONE	
US 2002011319	A1	NONE	
EP 0304795	A	DE 3728705 A1	09-03-1989
		US 4937449 A	26-06-1990
WO 03031904	A	AU 2002342030 A1	22-04-2003
		CA 2460601 A1	17-04-2003
		EP 1436569 A2	14-07-2004
		JP 2005505765 T	24-02-2005
		US 2003066200 A1	10-04-2003