(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
28 August 2008 (28.08.2008)

PCT

(10) International Publication Number
WO 2008/102308 A3

(51) International Patent Classification:
G01L 1/20 (2006.01) *A61B 5/00* (2006.01)
G01L 1/14 (2006.01)

(21) International Application Number:
PCT/IB2008/050606

(22) International Filing Date:
20 February 2008 (20.02.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
07102964.9 23 February 2007 (23.02.2007) EP

(71) Applicant *(for DE only)*: **PHILIPS INTELLECTUAL PROPERTY & STANDARDS GMBH** [DE/DE]; Lübeckertordamm 5, 20099 Hamburg (DE).

(71) Applicant *(for all designated States except DE, US)*: **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **BRAUERS, Andreas** [DE/DE]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(74) Agent: **SCHOUTEN, Marcus, M.**; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, 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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, 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*

[Continued on next page]

(54) **Title:** SHEAR FORCE AND PRESSURE MEASUREMENT IN WEARABLE TEXTILES

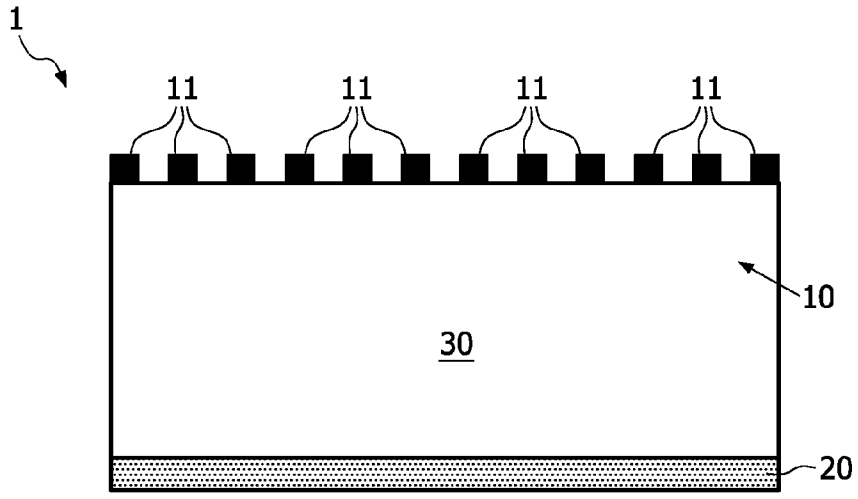

FIG. 4a

(57) **Abstract:** The invention refers to a sensor arrangement comprising at least one capacitance sensor for detecting a pressure and a shear force, wherein the capacitance sensor is integrated into a wearable textile, a method for measuring a shear force and a pressure by such a sensor arrangement, wherein the shear force and pressure is exerted on a skin of a person lying in a bed or sitting in a chair and to combinations and uses of the method. This described textile sensors allow for a simultaneous measurement of shear stress and pressure in anti decubitus textiles. This enhances risk assessment with regard to the development of bedsore ulcer.

WO 2008/102308 A3

(88) Date of publication of the international search report:
23 October 2008

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2008/050606

A. CLASSIFICATION OF SUBJECT MATTER
INV. G01L1/20 G01L1/14 A61B5/00

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)
G01L A61B G06K B63B C23C

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, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2005/121729 A (ETH ZUERICH ETH TRANSFER [CH]; KIRSTEIN TUENDE [CH]; MEYER JAN [CH]; T) 22 December 2005 (2005-12-22) page 3, line 31 - page 4, line 12; figures 1,2	1,2,7-10
Y	the whole document -& JAN MEYER ET AL: "Textile Pressure Sensor for Muscle Activity and Motion Detection" WEARABLE COMPUTERS, 2006 10TH IEEE INTERNATIONAL SYMPOSIUM ON, IEEE, PI, 1 October 2006 (2006-10-01), pages 69-72, XP031011761 ISBN: 978-1-4244-0597-8 the whole document	3,4,11, 18-20

-/--

[X] Further documents are listed in the continuation of Box C. [X] 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	Date of mailing of the international search report
24 July 2008	08/08/2008

Name and mailing address of the ISA/	Authorized officer
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	Giesen, Fabian

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2008/050606

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
L	EP 1 211 633 A (ST MICROELECTRONICS SRL [IT]) 5 June 2002 (2002-06-05) Cited in WO 2005/121729; figure 1	7-9
Y	US 2005/241409 A1 (TAYLOR GEOFFREY L [CA]) 3 November 2005 (2005-11-03) paragraphs [0009], [0010]	1,2,7, 11,14-20
Y	DATABASE INSPEC [Online] THE INSTITUTION OF ELECTRICAL ENGINEERS, STEVENAGE, GB; 1 November 2004 (2004-11-01), ROWE G I ET AL: "Simulation of a sensor array for multiparameter measurements at the prosthetic limb interface" XP002488720 Database accession no. 8214885 the whole document & HEALTH MONITORING AND SMART NONDESTRUCTIVE EVALUATION OF STRUCTURAL AND BIOLOGICAL SYSTEMS III 15-17 MARCH 2004 SAN DIEGO, CA, USA, vol. 5394, no. 1, 1 November 2004 (2004-11-01), pages 493-500, Proceedings of the SPIE - The International Society for Optical Engineering SPIE-Int. Soc. Opt. Eng USA ISSN: 0277-786X	1,2,7, 11,14-17
Y	WO 2006/030405 A (UNIV LIMERICK [IE]; CASEY VINCENT [IE]) 23 March 2006 (2006-03-23) page 8, line 28 - page 9, line 8; figure 2	3,4
A	US 2006/148351 A1 (TAO XIAOMING [CN] ET AL) 6 July 2006 (2006-07-06) the whole document	1-20
A	US 6 216 545 B1 (TAYLOR GEOFFREY L [CA]) 17 April 2001 (2001-04-17) the whole document	1-20

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2008/050606

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2005121729 A	22-12-2005	EP 1605240 A1	14-12-2005
EP 1211633 A	05-06-2002	DE 60011445 D1	15-07-2004
		US 2002121146 A1	05-09-2002
US 2005241409 A1	03-11-2005	NONE	
WO 2006030405 A	23-03-2006	NONE	
US 2006148351 A1	06-07-2006	NONE	
US 6216545 B1	17-04-2001	AU 1070297 A	05-06-1997
		WO 9718450 A1	22-05-1997
		US 6155120 A	05-12-2000