(19) World Intellectual Property Organization International Bureau

Ciliational Bulcau



(43) International Publication Date 25 October 2007 (25.10.2007)

PCT

(10) International Publication Number WO 2007/119144 A3

(51) International Patent Classification: *A61B 5/053* (2006.01)

(21) International Application Number:

PCT/IB2007/000949

(22) International Filing Date: 12 April 2007 (12.04.2007)

(25) Filing Language: Italian

(26) Publication Language: English

(30) Priority Data:

MI2006A000756 14 April 2006 (14.04.2006) IT

(71) Applicants and

- (72) Inventors: COCCOLI, Gianfranco [IT/IT]; Via Valotti 37, I-25133 Brescia (IT). LAZZARI, Claudio [IT/IT]; Via Madre Teresa di Calcutta 4, I-25126 Brescia (IT).
- (74) Agent: BARONI, Matteo; c/o Bugnion S.P.A., Viale Lancetti, 17, I-20158 Milano (IT).
- (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, LV, LY, MA, MD, 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.

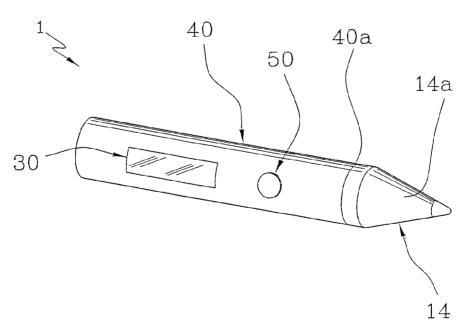
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, 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
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 10 January 2008

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: APPARATUS AND METHOD FOR MEASURING THE CUTANEOUS ELECTRICAL IMPEDANCE OP AN INDIVIDUAL



(57) Abstract: An apparatus for measuring the cutaneous electrical impedance of an individual, comprising an oscillator (10) operatively associable with a first skin portion (21) of the individual, and tuning means (11) for carrying out tuning of an oscillation frequency of said- oscillator (10) with a characteristic frequency of the nervous rete innervating the first skin portion (21), thereby obtaining a corresponding tuned frequency (f). The apparatus (1) further comprises an output block (30) connected to the oscillator (10) to generate, as a function of the tuned frequency (f), an output signal (31) representative of the electrical impedance (Zeq) of the first skin portion (21). Also described is a method of measuring the electrical impedance of an individual.



INTERNATIONAL SEARCH REPORT

International application No PCT/IB2007/000949

A. CLASSII INV.	FICATION OF SUBJECT MATTER A61B5/053							
ļ								
According to	o International Patent Classification (IPC) or to both national classifi	cation and IPC						
	SEARCHED							
A61B	cumentation searched (classification system followed by classifica	tion symbols)						
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched								
Electronic da	ata base consulted during the international search (name of data b	ase and, where practical, search terms used)					
EPO-In	ternal							
C. DOCUME	ENTS CONSIDERED TO BE RELEVANT							
Category*	Citation of document, with indication, where appropriate, of the re-	elevant passages	Relevant to claim No.					
Х	DE 102 17 765 A1 (HTI GMBH [DE]; [DE]; KLINGBEIL FURCH AGNES [DE] 20 November 2003 (2003-11-20) paragraphs [0018] - [0028]	1,13						
Х	US 5 063 937 A (EZENWA BERTRAM N AL) 12 November 1991 (1991-11-12 column 1, line 66 - column 2, li column 5, line 10 - column 7, li	1,13						
		-/						
			i					
	,		ļ					
			•					
X Furth	ner documents are listed in the continuation of Box C.	X See patent family annex.	·					
* Special c	ategories of cited documents:	"T" later document published after the inte	rnational filing date					
"A" document defining the general state of the art which is not considered to be of particular relevance		or priority date and not in conflict with cited to understand the principle or the invention						
filing d		"X" document of particular relevance; the cannot be considered novel or cannot	be considered to					
"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) 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								
other r		document is combined with one or mo ments, such combination being obvior	ore other such docu-					
"P" docume later th	ent published prior to the international filing date but nan the priority date claimed	in the art. &' document member of the same patent family						
Date of the actual completion of the international search		Date of malling of the international search report						
26 October 2007		07/11/2007						
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2		Authorized officer						
	NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Manschot, Jan						

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2007/000949

C(Continue	ation). DOCUMENTS CONSIDERED TO BE RELEVANT	PCT/IB2007/000949
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FUKUMOTO T ET AL: "A basic study about multi channel measurment of skin impedance vector loci on the acupunctur points" PROCEEDINGS OF THE 23RD. ANNUAL INTERNATIONAL CONFERENCE OF THE IEEE ENGINEERING IN MEDICINE AND BIOLOGY SOCIETY. 2001 CONFERENCE PROCEEDINGS. (EMBS). INSTANBUL, TURKEY, OCT. 25 - 28, 2001, ANNUAL INTERNATIONAL CONFERENCE OF THE IEEE ENGINEERING IN M, vol. VOL. 1 OF 4. CONF. 23, 25 October 2001 (2001-10-25), pages 3392-3395, XP010593835 ISBN: 0-7803-7211-5 the whole document	1,13
A	FRADEN J: "Active acupuncture point impedance and potential measurements" AMERICAN JOURNAL OF ACUPUNCTURE, ACUPUNCTURE RESEARCH PUBL. CO., FELTON, CA, US, vol. 7, no. 2, June 1970 (1970-06), pages 137-144, XP002158561 ISSN: 0091-3960 the whole document	1,13

INTERNATIONAL SEARCH REPORT

International application No

	Information on patent family members				International application No PCT/IB2007/000949	
Patent document cited in search report		Publication date		Patent family member(s)	•	Publication date
DE 10217765	A1	20-11-2003	NONE			-1
US 5063937	Α	12-11-1991	NONE			- 1945 Mari (1945 (1945 (1945 (1945 (1945 (1945 (1945 (1945 (1945 (1945 (1945 (1945 (1945 (1945 (1945 (1945 (19
ر ها نظا هم احت نظا ها هار هم ها آگا آها آها		. درد انتا اس به سر ها به سه درد به به به ها درد انتا ا				
		•				