

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
31 May 2007 (31.05.2007)

PCT

(10) International Publication Number
WO 2007/062299 A3

(51) International Patent Classification:
A61B 5/02 (2006.01)

(21) International Application Number:
PCT/US2006/060800

(22) International Filing Date:
10 November 2006 (10.11.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/738,980 23 November 2005 (23.11.2005) US
60/773,344 15 February 2006 (15.02.2006) US
11/452,920 15 June 2006 (15.06.2006) US
11/515,915 6 September 2006 (06.09.2006) US

(71) Applicant (for all designated States except US): **VITAL SENSORS, INC.** [US/US]; 800 E. LEIGH STREET, Richmond, VA 23219 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BODECKER, Volker** [DE/DE]; VAHRENWALDER STR. 7, D-30165

Hannover (DE). **OSTERMEIER, Max, Georg** [DE/DE]; VAHRENWALDER STR. 7, D-30165 Hannover (DE). **MEYER, Stefan** [DE/DE]; NORDSTRASSE 41, D-35236 Breidenbach (DE). **NIEMEYER, Axel** [DE/DE]; WASSERSTRASSE 19, D-33605 Bielefeld (DE).

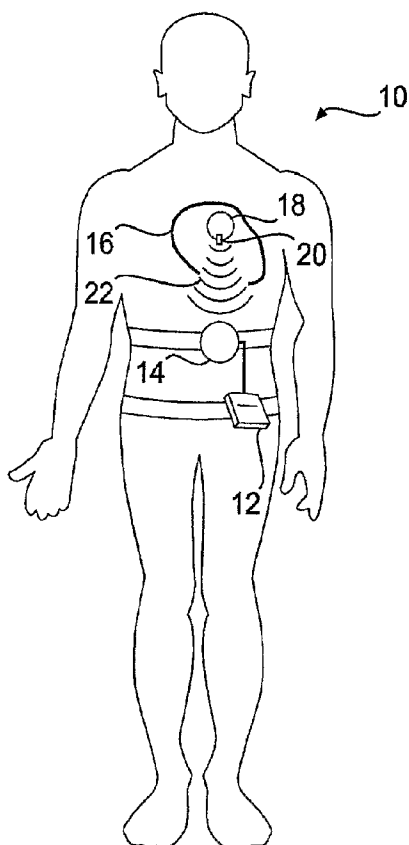
(74) Agents: **KAMHOLZ, Scott, E.** et al.; Patent Group, Foley Hoag LLP, 155 Seaport Boulevard, Boston, MA 02210-2600 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, 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,

[Continued on next page]

(54) Title: IMPLANTABLE DEVICE FOR TELEMETRIC MEASUREMENT OF BLOOD PRESSURE/TEMPERATURE WITHIN THE HEART



(57) Abstract: A system and method for the intra corporal, telemetric measuring of blood pressure, particularly within the heart or a great vessel, includes a substantially rigid sensor chip mounted in a holder and an antenna. The holder is anchored within an appropriate location in the cardiovascular system, such as in the cardiac septum, via a catheter or other minimally-invasive procedure to position at least one capacitive pressure sensor on the chip in the blood flow to be sensed. Measured values are transmitted telemetrically from the chip to an extra corporal monitoring device.

WO 2007/062299 A3



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, 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:

24 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.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 06/60800

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A61B 5/02

USPC - 600/486

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)

USPC - 600/486; IPC(8) - A61B 5/02 (2007.10)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

-USPC: 600/486; 600/489; 600/488; 600/487; 600/485; 600/481; 600/300; 128/903

-IPC(8) - A61B 5/02 (2007.10)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Database : USPTO WEST (PGPUB, EPAB, JPAB), Google patents.

terms: telemetric, measure, record, blood pressure, implant, ASIC, IC, integrated chip, antenna, catheter, anchor, temperature, substrate, chip, wireless

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X — Y	US 2002/0077553 A1 (GOVARI et al.) 20 June 2002 (20.06.2002), para[0002], [0009], [0010], [0021], [0047], [0015], [0086], [0020], [0057], [0061], [0043], [0004], [0025], [0080], [0080], [0087], [0014], [0084]-[0087], [0023], Fig. 3	1-6, 9-10, 12-15, 18-22, 25, 31-36, 38 and 40-44 7, 8, 11, 16, 17, 23, 24, 26-30, 37 and 39
Y	US 2005/0165317 A1 (TURNER et al.) 28 July 2005 (28.07.2005), para[0031], [0035], [0036], [0049], [0074]	16, 17 and 27-28
Y	US 2005/0015014 A1 (FONSECA et al.) 20 January 2005 (20.01.2005), para[0001]	26
Y	US 6,409,674 B1 (BROCKWAY et al.) 25 June 2002 (25.06.2002), col 9, ln 07-29	7 and 8
Y	US 2005/0182330 A1 (BROCKWAY et al.) 18 August 2005 (18.08.2005), para[0044], [0115], [0130], [0143], [0144]	11, 29 and 30
Y	US 2005/0004478 A1 (FITZ) 06 January 2005 (06.01.2005), para[0078]	13-15
Y	US 2005/0065592 A1 (HOLZER) 24 March 2005 (24.03.2005), para[0070]	23 and 37
Y	US 2002/0077556 A1 (SCHWARTZ) 20 June 2002 (20.06.2002), para[0028]-[0031]	24
Y	US 2004/0167580 A1 (MANN et al.) 26 August 2004 (26.08.2004), para[0029], [0110], [0112], [0188], [0191], [0338]	39



Further documents are listed in the continuation of Box C.



* 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 application or patent 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

07 August 2007 (07.08.2007)

Date of mailing of the international search report

21 NOV 2007

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents

P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300

PCT OSP: 571-272-7774