



(51) International Patent Classification:

A61B 5/00 (2006.01) A61B 5/03 (2006.01)
A61B 5/0215 (2006.01) G01L 9/00 (2006.01)

(21) International Application Number:

PCT/GB2017/052802

(22) International Filing Date:

20 September 2017 (20.09.2017)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

1616090.5 21 September 2016 (21.09.2016) GB

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(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, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
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KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, 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, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

(54) Title: IMPLANTABLE INTRAVASCULAR PRESSURE SENSING APPARATUS AND METHOD OF OPERATING IT

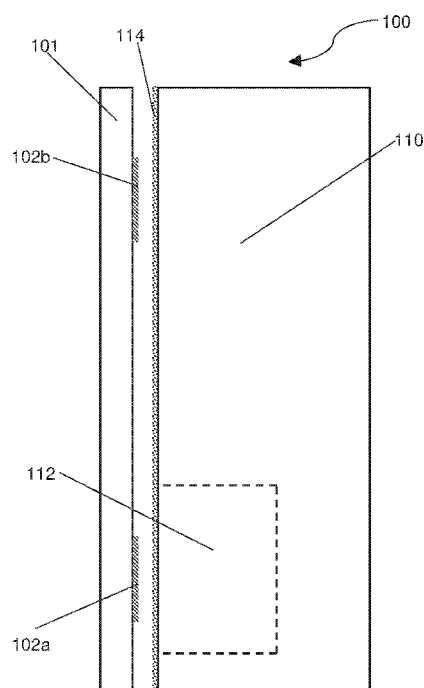


Fig. 1

(57) Abstract: An implantable intravascular pressure sensor comprising a first transducer arranged to provide a pressure dependent signal in response to alternating electrical signals of a first frequency band, a second transducer arranged to provide a reference signal in response to alternating electrical signals of a second frequency band different from the first frequency band and an antenna coupling for sending and receiving said signals.



Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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

03 May 2018 (03.05.2018)

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2017/052802

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61B5/00 A61B5/0215 A61B5/03
ADD. G01L9/00

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)

A61B G01L

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 practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011/036173 A1 (CHOMMELOUX LUC [FR] ET AL) 17 February 2011 (2011-02-17) figures 1-6 paragraphs [0001] - [0002], [0008] - [0026], [0045] - [0075] -----	1-26
X	EP 1 837 638 A1 (RADI MEDICAL SYSTEMS [SE]) 26 September 2007 (2007-09-26) figures 1-8 paragraphs [0019], [0022] - [0040] -----	1-26
X	US 2007/282172 A1 (TOUMAZOU CHRISTOPHER [GB] ET AL) 6 December 2007 (2007-12-06) figures 1,2 paragraphs [0014] - [0022], [0027] - [0045] -----	1-26



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 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

10 January 2018

Date of mailing of the international search report

26/03/2018

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2017/052802

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 50
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-26

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2017/052802

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2011036173 A1	17-02-2011	EP 2282666 A1	16-02-2011
		FR 2930712 A1	06-11-2009
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		EP 1699359 A1	13-09-2006
		ES 2368917 T3	23-11-2011
		JP 2007513669 A	31-05-2007
		US 2007282172 A1	06-12-2007
		WO 2005058166 A1	30-06-2005

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-26

Implantable intravascular pressure sensing device

2. claims: 27-45

Method of reading an intravascular pressure sensor, external reader and controller

3. claims: 46-49

Pressure transducer architecture

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 50

Dependent claim 50 does not meet the requirements of Article 6 PCT in that it is not clear. The subject-matter of claim 50 is defined by a mere reference to the description and/or to the drawings, whereas Article 6 PCT specifies that the claims shall define the subject-matter for which protection is sought (see also Rule 6.2(a) PCT). This should be done in terms of the technical features of the invention (Rule 6.3(1) PCT). Since it is unclear which features of the description and/or the drawings are intended to be included into claim 50, a meaningful examination of this claim is not possible.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) declaration be overcome.