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20 April 2017

(54) Title: SPATIAL CONFIGURATION OF A MOTION SENSOR IN AN IMPLANTABLE MEDICAL DEVICE

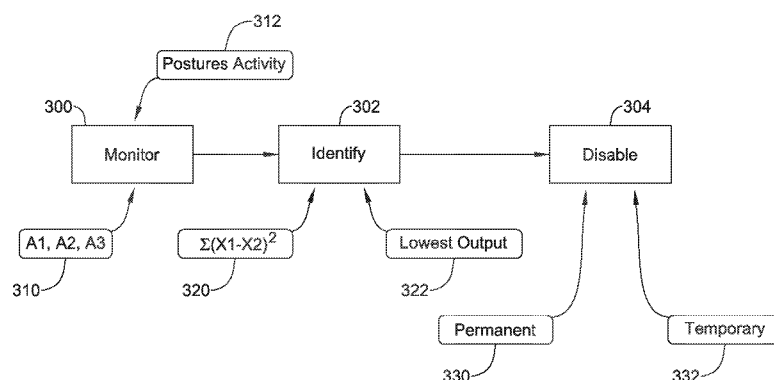


FIG. 3

(57) Abstract: Implantable devices having motion sensors. In some examples the a configuration is generated for the implantable device to use the motion sensor in an energy preserving mode in which one or more axis of detection of the motion sensor is disabled or ignored. In some examples the motion sensor outputs along multiple axes are analyzed to determine which axes best correspond to certain patient parameters including patient motion/activity and/or cardiac contractility. In other examples the output of the motion sensor is observed across patient movements or postures to develop conversion parameters to determine a patient standard frame of reference relative to outputs of the motion sensor of an implanted device.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2016/048360

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61N1/375 A61N1/365 A61N1/372 A61B5/00
ADD.

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)

A61N A61B

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 2015/217119 A1 (NIKOLSKI VLADIMIR P [US] ET AL) 6 August 2015 (2015-08-06) abstract -----	1-7
X	US 5 318 596 A (BARRERAS FRANCISCO J [US] ET AL) 7 June 1994 (1994-06-07) abstract -----	1
X	US 2015/173655 A1 (DEMME WADE M [US] ET AL) 25 June 2015 (2015-06-25) abstract -----	1
A	US 2006/178586 A1 (DOBAK JOHN D III [US]) 10 August 2006 (2006-08-10) the whole document -----	1

☐ 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

7 December 2016

Date of mailing of the international search report

28/02/2017

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/048360

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.:
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:
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.:

1-7

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-7

I: Claims 1-7 directed to an implantable medical device for monitoring an output from a motion sensor

2. claims: 8, 9

II: Claims 8-9 directed to a method of initializing an implantable medical device

3. claims: 10-15

III: Claims 10-15 directed to an implantable medical device for establishing a standard frame of reference

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2016/048360

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		WO 2015119852 A1	13-08-2015

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