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Declarations under Rule 4.17:

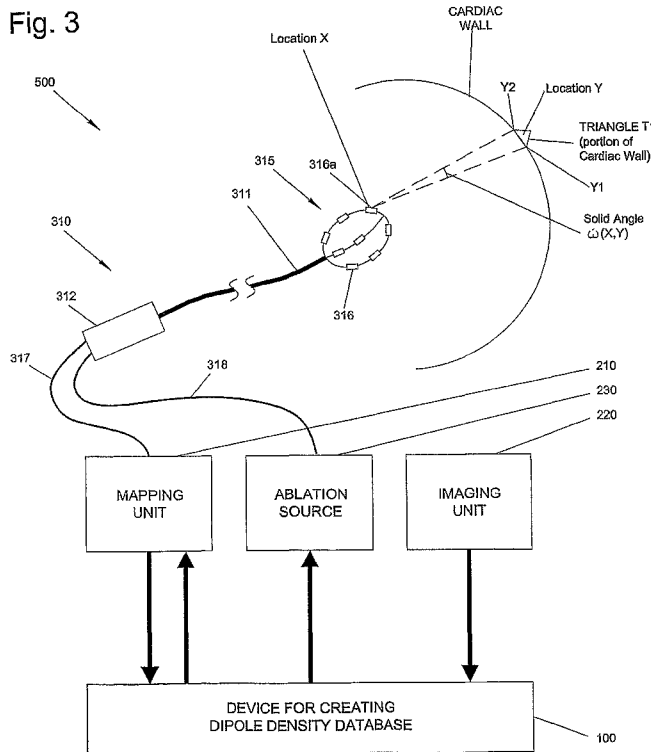
— of inventorship (Rule 4.17(iv))

Published:

— with international search report (Art. 21(3))

[Continued on next page]

(54) Title: A DEVICE AND METHOD FOR THE GEOMETRIC DETERMINATION OF ELECTRICAL DIPOLE DENSITIES ON THE CARDIAC WALL



(57) Abstract: Disclosed are devices, a systems, and methods for determining the dipole densities on heart walls. In particular, a triangularization of the heart wall is performed in which the dipole density of each of multiple regions correlate to the potential measured at various locations within the associated chamber of the heart. To create a database of dipole densities, mapping information recorded by multiple electrodes located on one or more catheters and anatomical information is used. In addition skin electrodes may be implemented.

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— *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:
11 September 2009

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2009/000071

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61B5/042

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 166 714 A (BIOSENSE INC [US] BIOSENSE WEBSTER INC [US]) 2 January 2002 (2002-01-02) the whole document	1-10, 15-17, 21, 24-28, 34
P,X	WO 2008/014629 A (SCHARF CHRISTOPH [CH]) 7 February 2008 (2008-02-07) cited in the application the whole document	1-10, 15-17, 21, 24-28, 34
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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 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

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- *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

2 April 2009

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10/07/2009

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DELLA BELLA P ET AL: "Non-contact mapping to guide catheter ablation of intolerated ventricular tachycardia." EUROPEAN HEART JOURNAL MAY 2002, vol. 23, no. 9, May 2002 (2002-05), pages 742-752, XP002522273 ISSN: 0195-668X section "Non-contact mapping system" on p. 743 -----	1
A	US 6 301 496 B1 (REISFELD DANIEL [IL]) 9 October 2001 (2001-10-09) column 16, line 1 - column 19, line 4 column 25, line 27 - column 26, line 8; figures -----	1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2009/000071

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.: 46-53
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(iv) PCT - Methods for treatment of the human or animal body by surgery ("placing a distal end of an electrode catheter into one of the one or more cardiac chambers" includes a surgical intervention, which confers surgical character to the claimed methods as a whole)
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 allsearchable 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.:

see additional sheet(s)

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: 1-10,15-17,21,24-28,34 (first two alternatives)
realisation of processing means and projections

2. claims: 11,12,34 (third alternative),35-37,39
details of the mapping/ablation catheter

3. claims: 18-20,29-33,34 (fourth alternative),38
refinement and/or correction to improve the spatial
resolution of the database of dipole densities

4. claims: 13,14,22,23,40-45
details imaging instrument and display

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/IB2009/000071

Patent document cited in search report	A	Publication date	Patent family member(s)	Publication date
EP 1166714	A	02-01-2002	AT 313294 T	15-01-2006
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