(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
6 August 2009 (06.08.2009)

(10) International Publication Number
WO 2009/097597 A3

(51) International Patent Classification:
A61N 1/39 (2006.01)   A61N 1/372 (2006.01)

(21) International Application Number:
PCT/US2009/032783

(22) International Filing Date:
3 January 2009 (31.01.2009)

(25) Filing Language:   English

(26) Publication Language:   English

(30) Priority Data:
61/025,780   2 February 2008 (02.02.2008)   US

(71) Applicant (for all designated States except US):  CAMERON HEALTH, INC. [US/US]; 905 CaUe
Amanecer, Suite 300, San Clemente, CA 92673 (US).

(72) Inventors;   and

(75) Inventors/Applicants (for US only):  SANGHERA, Rick [US/US]; 2901 Bonanza, San Clemente, CA 92673 (US);

(74) Agent: PRAMUDJI, Ari; Pramudji, Wondt, And Tran, 1800 Bering Drive, Suite 540, Houston, TX 77057 (US).

(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, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, 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, LI, LS, LT, LU, LY, MA, MD, ME,
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, ST, 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, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR),
OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
MR, NE, SN, TD, TG).

Declarations under Rule 4.17:   — as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(h))

[Continued on next page]

(54) Title: ADAPTIVE SHOCK DELIVERY IN AN IMPLANTABLE CARDIAC STIMULUS DEVICE

(57) Abstract: Methods and devices that are configured to deliver cardiac stimuli in a particular fashion. In an illustrative embodiment, a method is used wherein a first stimulus is delivered using a first polarity, and, if the first stimulus fails to successfully convert an arrhythmia, a second stimulus having a second polarity that is different from or opposite of the first polarity is then delivered. Subsequent stimuli, if needed, are delivered in a continuing alternating-polarity manner. The first polarity may be determined by observing whether successfully-converting stimulus has been delivered previously and, if so, the polarity of the most recent stimulus that resulted in successful conversion is used as the first polarity. In additional embodiments, electrode configuration may be changed instead of or in addition to polarity, following unsuccessful stimulus delivery. Devices configured to perform such methods are included in additional illustrative embodiments.
Published: (88) Date of publication of the international search report: 22 October 2009
— 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 48.2Q(i))
# INTERNATIONAL SEARCH REPORT

**International application No**

PCT/US2009/032783

---

**A. CLASSIFICATION OF SUBJECT MATTER**

INV. A61N1/39
ADD. A61N1/372

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

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

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document with indication, where appropriate of the relevant passages</th>
<th>Relevant to claim</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>paragraphs [0033], [0041] paragraphs [0078] - [0089]; figures 7,8</td>
<td>6,10</td>
</tr>
<tr>
<td>A</td>
<td>WO 00/09206 A (MEDTRONIC INC [US]) 24 February 2000 (2000-02-24) page 4, lines 1-25 page 11, lines 4-28 page 18, lines 7,8</td>
<td>2,4,7,9</td>
</tr>
</tbody>
</table>

---

**D.** Further documents are listed in the continuation of Box C

**X** 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 invention or other special reason (as specified)
- **O** document referred to in an oral disclosure, use, exhibition or other means
- **P** document published prior to the international filing date but later than the priority date claimed

**Date of the actual completion of the international search**

10 August 2009

**Date of mailing of the international search report**

18/08/2009

**Name and mailing address of the ISA/Representative of the International Bureau**

European Patent Office P B 5818 Patentlaan 2 NL - 2280 HV Rijswijk
Tel (+31-70) 340-2040,
Fax (+31-70) 340-3016

**Authorized officer**

Loveniers, Kris

Form PCT/ISA/210 (second stip) (A) (April 2005)
### 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. [T] Claims Nos.: 11-22 because they relate to subject matter not required to be searched by this Authority, namely:
   - Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy
   - Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery

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:

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.'

**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.
<table>
<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 2004215253 A1</td>
<td>28-10-2004</td>
<td>NONE</td>
<td></td>
</tr>
</tbody>
</table>