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(54) Title: FLEXIBLE NEURAL LOCALIZATION DEVICES AND METHODS

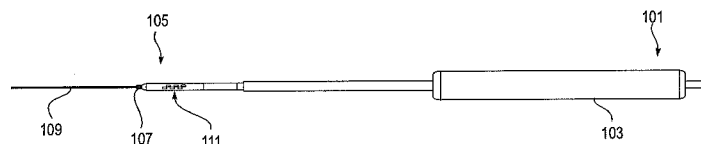


FIG. 1A

(57) Abstract: Described herein are devices, systems and methods for determining if a nerve is nearby a device or portion of a device. The neural stimulation tools described herein are configured to be flexible and low-profile, so that they can be used within body regions that may be tortuous or difficult to reach, such as within a compressed or partially occluded neural foramen. In most cases, these tools described herein are ribbon-shaped and adapted to be manipulated bimanually, for example, by applying force to the ends of the devices from separate locations outside of the patient's body. Thus, in some of the exemplary neural localization devices described herein, the distal end region of the device are configured to couple to the proximal end of a guidewire. One or more surfaces of the devices may include an electrode or multi-polar network of electrodes configured to stimulate only nerves within a predetermined distance of a particular face of the device.

A. CLASSIFICATION OF SUBJECT MATTER*A61B 17/00(2006.01)i, A61B 17/56(2006.01)i, A61N 1/05(2006.01)i, A61B 5/04(2006.01)i, A61B 5/0488(2006.01)i*

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 17/00; G06F 15/16; H04J 3/22; H04B 7/02

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: guidewire and electrode

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|---|--|
| X | US 2008-0033465 A1 (GREGORY SCHMITZ et al.) 07 February 2008 See paragraph 0040 - paragraph 0075 and figures 4-16 | 1,2,6-8,15,20-22 ,26-28,34,39-42 ,46-48,54,60-64 |
| A | US 2006-0258951 A1 (JEFFREY L. BLEICH et al.) 16 November 2006 See paragraph 0080 - paragraph 0128 and figures 2-26E | 1-64 |
| A | US 2007-0016097 A1 (ALLEN FARQUHAR et al.) 18 January 2007 See the whole document | 1-64 |
| A | US 2006-0206178 A1 (DANIEL KIM) 14 September 2006 See the whole document | 1-64 |
| A | US 2002-0022788 A1 (TIM CORVI et al.) 21 February 2002 See the whole document | 1-64 |



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 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

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INTERNATIONAL SEARCH REPORTInternational application No.
PCT/US2010/027323**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.: 65-129
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 65-129 pertain to methods for treatment of the human body by surgery and thus relate to a subject matter which this International Searching Authority is not required, under Article 17(2)(a)(i) of the PCT and Rule 39.1(iv) of the Regulations under the PCT, to search.
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:

Group 1: claims 1-19 relating to a bimanually controlled neural localization device comprising a flexible elongate body, a stimulation region, and a guidewire coupler.

Group 2: claims 20-38 relating to a bimanually controlled neural localization device comprising a flexible elongate body, a first stimulation region, a second stimulation region, and a flexible guide.

Group 3: claims 39-59 relating to a bimanually controlled neural localization device comprising a flexible elongate body.

Group 4: claims 60-64 relating to a system comprising a flexible elongate body, a stimulation region, a guidewire coupler, and a guidewire.

The common technical feature among groups 1-4 is readily derived from document US 2008/0033465 A1. Therefore, groups 1-4 do not have any common special technical feature over the prior art, thereby resulting in lack of unity of invention. (PCT Rule 13.1, 13.2).

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 fee, this Authority did not invite payment of any additional fee.
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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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