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(54) Title: DEVICES, SYSTEMS AND METHODS FOR THE TARGETED TREATMENT OF MOVEMENT DISORDERS

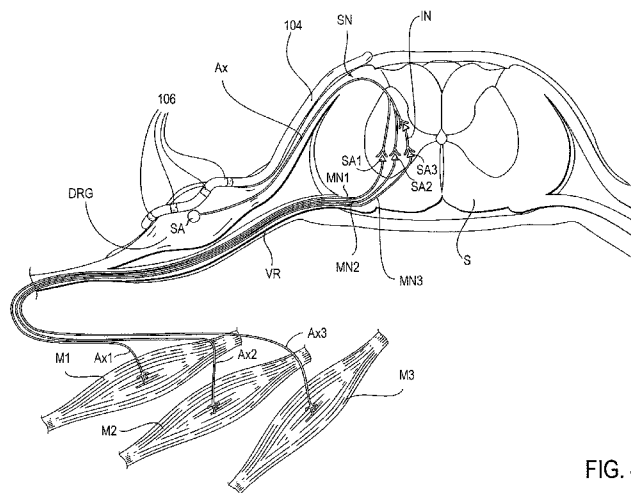


FIG. 4

(57) Abstract: Devices, systems and methods are provided for the targeted treatment of movement disorders. Typically, the systems and devices are used to stimulate one or more dorsal root ganglia while minimizing or excluding undesired stimulation of other tissues, such as surrounding or nearby tissues, ventral root and portions of the anatomy associated with body regions which are not targeted for treatment. The dorsal root ganglia are utilized in particular due to their specialized role in movement. It is in these areas that sensory fibers are isolated from motor fibers. Sensory fibers are involved in a variety of reflexes that are involved in movement control, and these reflexes can be utilized in the treatment of various movement disorders. Thus, by stimulating sensory fibers in these areas, fundamental reflexes can be affected to lessen the symptoms of movement disorders.



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/023683**A. CLASSIFICATION OF SUBJECT MATTER***A61N 1/32(2006.01)i, A61N 1/36(2006.01)i, A61N 1/05(2006.01)i, A61B 5/04(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)

A61N 1/32; A61N 1/18; A61N 1/05; A61N 1/34; A61N 1/36; A61B 17/00; A61N 1/00; A61B 17/56

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: stimulation, implantable, movement disorder, dorsal root ganglion, reflex arc.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008-0167698 A1 (KIM, DANIEL H. et al.) 10 July 2008 See paragraphs [0004],[0025], [0077], [0081]-[0084], [0103], [0110], [0121] [0136]-[0137], [0158]-[0160], and [0162]; claims 1, 4, and 17-18; and figures 2A, 12A, 14A, 17-18, 22, 23C-23D, and 27-29.	1-5, 17-19, 21
X	US 2008-0140152 A1 (IMRAN, MIR A. et al.) 12 June 2008 See paragraphs [0021],[0022],[0023],[0066], and [0077]; claims 1-2, 4-5, and 19; and figures 6-23.	1-5, 17-19, 21
X	US 2010-0121408 A1 (IMRAN, MIR A. et al.) 13 May 2010 See paragraphs [0031]-[0032] and [0039]; and figures 1A-1B and 4.	1-5, 17-19, 21
X	US 2008-0140169 A1 (IMRAN, MIR A.) 12 June 2008 See paragraphs [0025] and [0050]-[0054]; claims 37 and 31; and figures 6-11 and 13-17.	1-5, 17-19, 21
X	WO 2010-062622 A2 (SPINAL MODULATION, INC.) 03 June 2010 See paragraphs [0016],[0072], and [0113]; claims 1 and 2; and figures 7, 13, and 17-18.	1-5, 17-19, 21

 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

27 JULY 2012 (27.07.2012)

Date of mailing of the international search report

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Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/023683

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2010-132816 A2 (SPINAL MODULATION, INC.) 18 November 2010 See paragraphs [0010]-[0013] and [0046]; claims 1, 4, 6, and 18; and figures 1A-3.	1-5, 17-19, 21

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/023683**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.: 23-42
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 23-42 pertain to methods for treatment of the human body by therapy 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.: 8-10, 12, 32, and 40-42
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:
Claims 8-10, 12, 32, and 40-42 are too unclear to make meaningful search.
3. Claims Nos.: 6-7, 11, 13-16, 20, 22, 27-31, 33-35, 39
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 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.

PCT/US2012/023683

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		WO 2010-062622 A3	02.09.2010		

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2010-132816 A2	18.11.2010	AU 2010-248802 A1 US 2010-0292769 A1 WO 2010-132816 A3	18.11.2010 18.11.2010 31.03.2011