



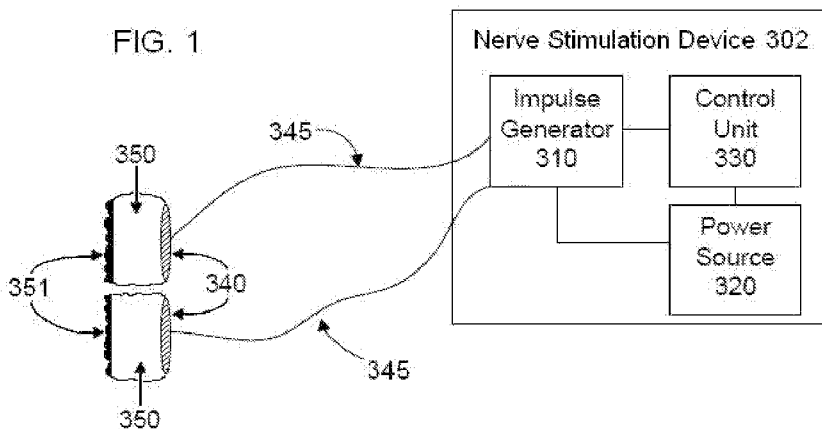
- (51) International Patent Classification:
A61N 1/00 (2006.01)
- (21) International Application Number:
PCT/US2014/011123
- (22) International Filing Date:
10 January 2014 (10.01.2014)
- (25) Filing Language:
English
- (26) Publication Language:
English
- (30) Priority Data:
61/752,895 15 January 2013 (15.01.2013) US
13/858,114 8 April 2013 (08.04.2013) US
- (71) Applicant: ELECTROCORE, LLC [US/US]; 150 Allen Road, Suite 201, Basking Ridge, New Jersey 07920 (US).
- (72) Inventors: SIMON, Bruce J.; 56 Pollard Road, Mountain Lakes, New Jersey 07040 (US). ERRICO, Joseph P.; 5 Tiffanys Way, Warren, New Jersey 07059 (US). RAFFLE, John T.; 1905 W. 33d Street, Austin, Texas 78703 (US).
- (74) Agent: BOCK, Joel N.; Dentons US LLP, P.O. BOX 061080, Wacker Drive Station, Willis Tower, Chicago, Illinois 60606 (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, BN, BR, BW, BY,

BZ, CA, CH, CL, 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, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, 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, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, 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, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

- Published:
 - 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 48.2(h))
- (88) Date of publication of the international search report:
5 March 2015

(54) Title: MEDICAL SELF-TREATMENT USING NON-INVASIVE VAGUS NERVE STIMULATION



(57) Abstract: Devices, systems and methods are disclosed that allow a patient to self-treat a medical condition, such as migraine headache, by electrical noninvasive stimulation of a vagus nerve. The system comprises a stimulator that is applied to the surface of the patient's neck, as well as a docking station that is used to charge a rechargeable battery within the stimulator. The docking station and stimulator housing transmit data to one another regarding the status of a stimulation session, as well as to a computer program in a patient interface device such as a mobile phone or computer. The interface device in turn communicates with medical record and billing databases contained within other computers, via the internet. The system is designed to address problems that arise particularly during self-treatment, when a medical professional is not present.

WO 2014/113294 A3

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A61N 1/00 (2014.01)

CPC - A61N 1/36

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)
CPC: A61N 1/36 IPC(8): A61N 1/00 (2014.01)Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 607/2, 45, 46, 48, 115 (keyword limited; terms below)Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatBase; Google Patents; Google

Search Terms Used: vagal, vagus, nerve, stimulat*, electrode%, external, remote, program*, computer, host, server, internet, wireless*, pulse%, burst%, authentic*

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2008/0208266 A1 (LESSER et al) 28 August 2008 (28.08.2008) fig 2, para [0044], [0046]-[0047]	1-21
Y	US 2005/0192644 A1 (BOVEJA et al) 01 September 2005 (01.09.2005) table 5, para [0324]-[0325], [0327], [0331]-[0334]	1-21
Y	US 5,487,759 A (BASTYR et al) 30 January 1996 (30.01.1996) col 5, ln 4-6, col 5, ln 14-16	5-6

 Further documents are listed in the continuation of Box C.

* 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

26 December 2014 (26.12.2014)

Date of mailing of the international search report

09 JAN 2015

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774