

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
23 January 2003 (23.01.2003)

PCT

(10) International Publication Number
WO 03/005797 A3

- (51) International Patent Classification⁷: **A61F 7/12**
- (21) International Application Number: PCT/US02/22528
- (22) International Filing Date: 15 July 2002 (15.07.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
09/904,802 13 July 2001 (13.07.2001) US
- (71) Applicant (for all designated States except US):
AD-TECH MEDICAL INSTRUMENT CORP.
[US/US]; 1901 William Street, Racine, WI 53404 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

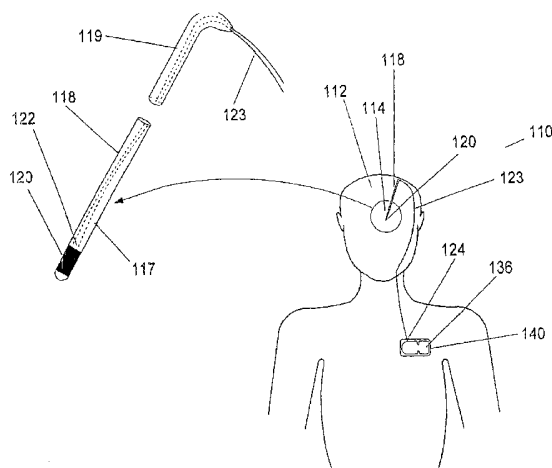
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **PUTZ, David, A.** [US/US]; 3539 Fence Line Road, Franksville, WI 53126 (US). **ZIOBRO, John** [US/US]; S6W31134 Hidden Hollow, Delafield, WI 53018 (US).
- (74) Agents: **DELANEY, James, P.** et al.; Jansson, Shupe & Munger, Ltd., 245 Main Street, Suite M, Racine, WI 53403 (US).

Published:
— with international search report

(88) Date of publication of the international search report:
11 December 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HEAT-REMOVAL METHOD AND APPARATUS FOR TREATMENT OF MOVEMENT DISORDER EPISODES



(57) Abstract: Heat-removal method and apparatus for treatment of movement disorder episodes; more specifically, a device and method for intracranially suppressing movement disorder episodes upon the detection of physiological symptoms. The device (110) includes a temperature-contact (120) implanted at a targeted portion (114) in the brain (112) which is determined to be associated with such episodes and connection to an implanted heat-transfer operator (123), typically a Peltier cooler or a thermal-electric cooler. Heat transfer from the temperature-contact to the heat-transfer operator cools the targeted portion and suppresses the movement disorder episode. Such heat transfer is performed upon the sensing of symptoms which normally preface episodes. The symptoms can be sensed intracranially by sensing-contacts (230), on the skin by a sensor or person. Alternatively, heat removal (cooling) can be performed without sensing symptoms to prevent episodes when the patient is particularly sensitive to, or in danger from, episodes.



WO 03/005797 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/22528

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61F 7/12
 US CL : 607/113, 96, 99

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)
 U.S. : 607/113, 96, 99

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 NONE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 6,248,126 B1 (LESSER et al) 19 June 2001, see entire document.	1-4,6,7,12-17,21,23-26,29,30,32,33,37,39,40,42,44,46,47,49,50,52,53,55-57,59,64,66-68,70,71,74,75 ----- 8,9,18- 21,22,31,35,36,43,45,51,58,60-63,65,72
A	US 4,903,702 A (PUTZ) 27 February 1990, see entire document.	1-78
A	US 5,843,093 A (HOWARD, III) 01 December 1998, see entire document.	1-78

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	"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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"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

18 September 2002 (18.09.2002)

Date of mailing of the international search report

07 APR 2003

Name and mailing address of the ISA/US
 Commissioner of Patents and Trademarks
 Box PCT
 Washington, D.C. 20231

Facsimile No. (703)305-3230

Authorized officer


 Roy Gibson

Telephone No. 703-308-0858