

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
11 May 2006 (11.05.2006)

PCT

(10) International Publication Number
WO 2006/050059 A3

(51) International Patent Classification:
A61B 18/18 (2006.01)

(21) International Application Number:
PCT/US2005/038864

(22) International Filing Date: 27 October 2005 (27.10.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/623,046 28 October 2004 (28.10.2004) US

(71) Applicant (for all designated States except US): **HENRY FORD HEALTH SYSTEM** [US/US]; 1 Ford Place, Detroit, MI 48202-3450 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KRISHNAN, Subramaniam** [US/US]; 7083 Chatham Court, West Bloomfield, MI 48322 (US). **SHIVKUMAR, Kalyanam** [IN/US]; 919 Levering Avenue; #507, Los Angeles, CA 90024 (US). **RATHNAM, Suresh** [IN/IN]; 13-6-437/A Opp Khader Bagh, Hyderabad-500 008 (IN).

(74) Agent: **KAMP, James, E.**; Rader, Fishman & Grauer PLLC, 39533 Woodward Avenue, Suite 140, Bloomfield Hills, MI 48304 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, 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, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

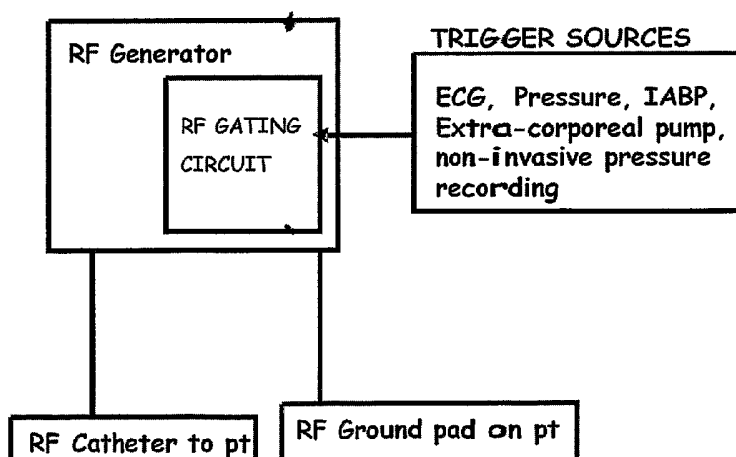
— with international search report

(88) Date of publication of the international search report:
16 November 2006

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: GATED ABLATIVE ENERGY SYSTEM FOR CARDIAC DISORDERS

SCHEMATIC FOR PULSED RF INPUT TRIGGERS AND DELIVERY



(57) Abstract: The present invention comprises methods and systems for treating a cardiac arrhythmia in a mammal by administering gated or pulsed radiofrequency current or other ablative energy to the mammal during one or more time periods of increased coronary blood flow. Preferred embodiments of the invention comprise, without limitation, the gated or pulsed administration of radiofrequency current in association with the formation of the diastolic notch in the arterial blood pressure curve of the mammal. In accordance with the invention, the thermal effects of ablative energy application on the coronary artery are avoided or mitigated due to rapid coronary blood flow resulting in heat loss and minimization of damage to blood vessels.

WO 2006/050059 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/38864

A. CLASSIFICATION OF SUBJECT MATTER

IPC: **A61B 18/18**(2006.01)

USPC: 606/41

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. : 606/32-52

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,287,297 B1 (WOODRUFF et al) 11 September 2001, Figures 10-13, col. 3	12-17
A	US 4,936,281 A (STASZ) 26 June 1990, col. 5, lines 8-34	1-17
A	US 6,468,271 B1 (WENTZEL et al) 22 October 2002, whole document	1-17
A	US 6,666,862 B2 (JAIN et al) 23 December 2003, whole document	1-17
A	US 5,125,926 A (RUDKO et al) 30 June 1992, whole document	1-17

☐

Further documents are listed in the continuation of Box C.

☐

See patent family annex.

* Special categories of cited documents:		"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
"A"	document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier application or patent published on or after the international filing date	"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
"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)	"&"	document member of the same patent family
"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		

Date of the actual completion of the international search

04 July 2006 (04.07.2006)

Date of mailing of the international search report

23 AUG 2006

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

Linda Dvorak

Telephone No. (703) 308-0858