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- (71) Applicant (for all designated States except US): ABLAT-
IVE SOLUTIONS, INC. [US/US]; 71 Riverlawn Drive,
Fair Haven, NJ 07004 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): FISCHELL, David,
R. [US/US]; 71 Riverlawn Drive, Fair Haven, NJ 07004
(US). FISCHELL, Tim, A. [US/US]; 3727 Greenleaf
Circle, Kalamazoo, MI 49008 (US).
- (74) Agent: KNOBBE, MARTENS, OLSON & BEAR, LLP;
2040 Main Street, Fourteenth Floor, Irvine, CA 92614
(US).
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MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD,
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Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a
patent (Rule 4.17(ii))

[Continued on next page]

(54) Title: EXPANDABLE CATHETER SYSTEM FOR PERI-OSTIAL INJECTION AND MUSCLE AND NERVE FIBER AB-
LATION

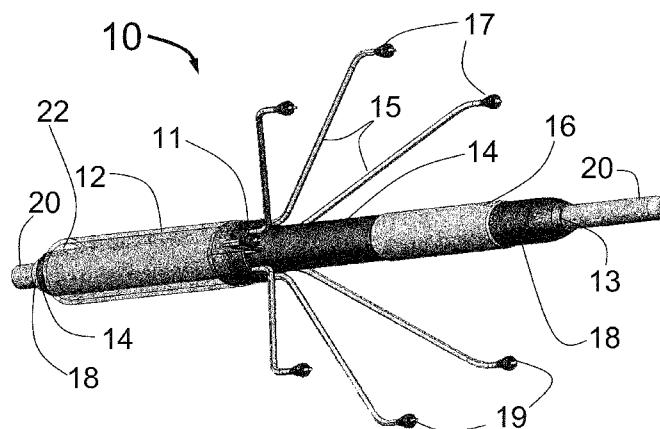


FIG. 1

(57) Abstract: At the present time, physicians often treat patients with atrial fibrillation (AF) using radiofrequency (RF) catheter systems to ablate conducting tissue in the wall of the Left Atrium of the heart around the ostium of the pulmonary veins. These systems are expensive and take time consuming to use. The present invention circular ablation system CAS includes a multiplicity of expandable needles that can be expanded around a central axis and positioned to inject a fluid like ethanol to ablate conductive tissue in a ring around the ostium of a pulmonary vein quickly and without the need for expensive capital equipment. The expansion of the needles is accomplished by self-expanding or balloon expandable structures. The invention includes centering means so that the needles will be situated in a pattern surrounding the outside of the ostium of a vein. Also included are members that limit the distance of penetration of the needles into the wall of the left atrium, or the aortic wall. The present invention also has an important application to ablate tissue around the ostium of one or both renal arteries, for the ablation of the sympathetic nerve fibers and/or other afferent or efferent nerves going to or from each kidney in order to treat hypertension.





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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US12/33918

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A61M 31/00, 5/32 (2012.01)

USPC - 604/506, 164.01, 174

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)

IPC(8): A61M 31/00, 5/32 (2012.01)

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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)

MicroPatent (US-G, US-A, EP-A, EP-B, WO, JP-bib, DE-C,B, DE-A, DE-T, DE-U, GB-A, FR-A); DialogPRO; Google/Google Scholar; Medline/PubMed: catheter*, ablat*, fluid*, liquid*, solution*, inject*, needle*, penetrat*, limit*, manifold*, adhesive*, mold*

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2010/0222851 A1 (DEEM, M et al.) September 2, 2010, figures 12-14; paragraphs [0038]-[0040], [0044], [0072], [097], [0102], [0116], [0132]-[0134]	1-36
Y	US 5980516 A1 (MULIER, PMJ et al.) November 9, 1999, figures 1, 2, 5; column 2, lines 50-67 to column 4; column 5, lines 44-63	1-36
Y	US 6905480 B2 (MCGUCKIN, JR., JF et al.) June 14, 2005, figures 6, 11, 14A; column 5, lines 44-63; column 7, lines 59-67 to column 9, lines 1-54	1-36
Y	US 6854467 B2 (BOEKSTEGERS, P) February 15, 2005, figures 4, 11; column 6, lines 1-14; column 7, lines 7-26; column 10, lines 25-49	1-32
Y	US 7881807 B2 (SCHAER, AK) February 1, 2011, abstract; column 4, lines 10-67	33-36
Y	US 7472705 B2 (BARAN, G) January 6, 2009, figure 39; column 24, lines 4-23	2, 8-11, 16, 17, 19-21, 24
Y	US 7850656 B2 (MCKAY, WF et al.) December 14, 2010, figures 3A-3D, 4A-4C; column 6, lines 24-53 to column 7, lines 1-24	4-7
Y	US 7794444 B2 (LESH, MD) September 14, 2010, column 3, lines 40-48	31
Y	US 6375660 B1 (FISCHELL, RE et al.) April 23, 2002, column 2, lines 34-58	32
Y	US 5474102 A1 (LOPEZ, R) December 12, 1995, column 5, lines 60-67 to column 6, lines 1-23	6
Y	US 7621945 B2 (LENNOX, CD et al.) November 24, 2009, figures 3, column 10, lines 37-47	7

☒ 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

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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:

Shane Thomas

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0876805 B1 (TURNLUND, TH) August 23, 2006, figure 1; paragraphs [0019]-[0021], [0030]	21, 24