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- (71) Applicant (for all designated States except US): **ARDIAN, INC.** [US/US]; 1810A Embarcadero Road, Palo Alto, CA 94303 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **DEMARAIS, Denise** [US/US]; 15403 Shannon Road, Los Gatos, CA (US). **ZADNO, Nicolas** [FR/US]; 47066 Palo Amarillo, Fremont, CA 94539 (US). **CLARK, Benjamin, J.** [US/US]; 498 Alameda de Las Pulgas, Redwood City, CA 94062 (US). **THAI, Erik** [US/US]; 2318 Brushgen Way, San Jose, CA (US).
- (74) Agents: **PARKER, Paul, T.** et al.; Perkins Coie LLP, P.O. Box 1247, Seattle, WA 98111-1247 (US).

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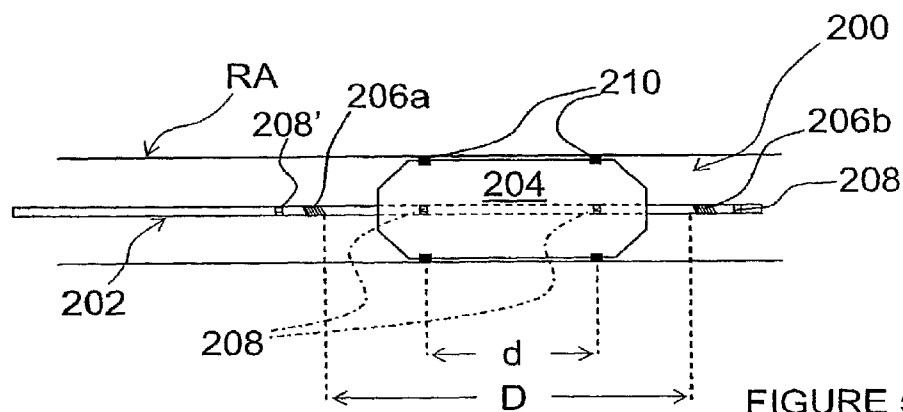


FIGURE 5

(57) Abstract: Methods and apparatus are provided for intravascularly-induced neuromodulation using a pulsed electric field, e.g., to effectuate irreversible electroporation or electrofusion, necrosis and/or induction of apoptosis, alteration of gene expression, changes in cytokine upregulation, etc., in target neural fibers. In some embodiments, the intravascular PEF system comprises a catheter having a pair of bipolar electrodes for delivering the PEF, with a first electrode positioned on a first side of an impedance-altering element and a second electrode positioned on an opposing side of the impedance-altering element. A length of the electrodes, as well as a separation distance between the first and second electrodes, may be specified such that, with the impedance-altering element deployed in a manner that locally increases impedance within a patient's vessel, e.g., with the impedance-altering element deployed into contact with the vessel wall at a treatment site within the patient's vasculature, a magnitude of applied voltage delivered across the bipolar electrodes necessary to achieve desired neuromodulation is reduced relative to an intravascular PEF system having similarly spaced electrodes but no (or an undeployed) impedance-altering element. In a preferred embodiment, the impedance-altering element comprises an inflatable balloon configured to locally increase impedance within a patient's vasculature. The methods and apparatus of the present invention may be used to modulate a neural fiber that contributes to renal function.

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**INTERNATIONAL SEARCH REPORT**

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**A. CLASSIFICATION OF SUBJECT MATTER**

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**B. FIELDS SEARCHED**

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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 --- Y	US 5,505,700 A (LEONE et al) 09 April 1996 (09.04.1996) See entire document.	1-5, 9-15, 17-22, 25-26, 28-29 -----
Y	US 6,219,577 A (Brown, III et al.) 17 April 2001 (17.04.2001) See column 6 lines 17-32 for renal treatments.	6-8, 16, 23-24, 30 16
Y,P	US 2005/0261672 (DEEM et al) 24 November 2005 (24.11.2005) See entire document pertaining to eletcroporation and ablation of nerves in the heart that ultimately effect renal function.	23-24

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
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Name and mailing address of the ISA/US  
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Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
Facsimile No. (571) 273-3201

Authorized officer  
Mark W. Bockelman  
Telephone No. N/A