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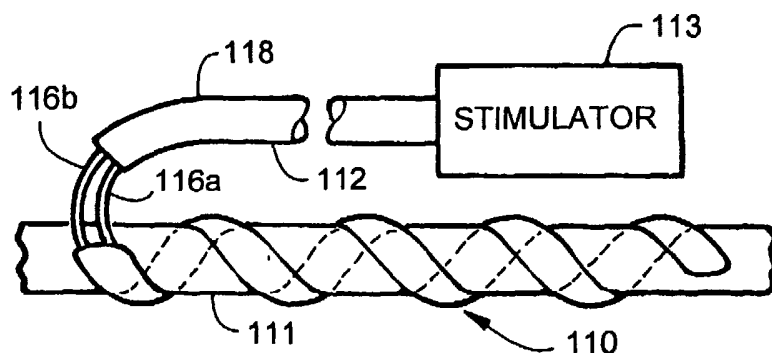
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(54) Title: DIFFERENTIAL STIMULATION OF NERVE FIBERS



(57) Abstract: An implantable helical electrode assembly (10) configured to fit around a nerve for electrically triggering or measuring an action potential or for blocking conduction in nerve tissue. A multiconductor flexible cable (16a, 16b) connects the electrode to an implanted signal receiver (13), and the assembly may include multiple individual flexible ribbon electrodes each partially embedded in a portion of the peripheral surface of a helically formed dielectric support matrix. The

helical electrode assembly has a helix of a selected pitch and with a selected number of helical turns so that the entire peripheral nerve or any portion of it extending radially inward from the surface forming an annulus can be electrically stimulated. The spiral configuration of the assembly is easy to install around a nerve bundle during surgical implantation, and the resiliency of the assembly minimizes the risk of damage to nerve tissue. The tissue-contacting surface of each electrode is roughened to increase the electrode surface area.

WO 2004/052176 A3

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US03/38913

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : A61N 1/05  
 US CL : 607/118

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. : 607/115-119, 121-123; 600/372-374, 377, 378, 381

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 --- Y	US 4,573,481 A (BULLARA) 04 March 1986 (04.03.1986), Figs. 1-5, Col. 3, line 28-Col. 5, line 68.	1-44, 46-56, 58-64, 66, 68, 71-77 ----- 65, 67
X	4,920,979 A (BULLARA) 01 May 1990 (01.05.1990), whole document.	78-90

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See patent family annex.

* Special categories of cited documents:	"T"
"A" document defining the general state of the art which is not considered to be of particular relevance	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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"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	

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