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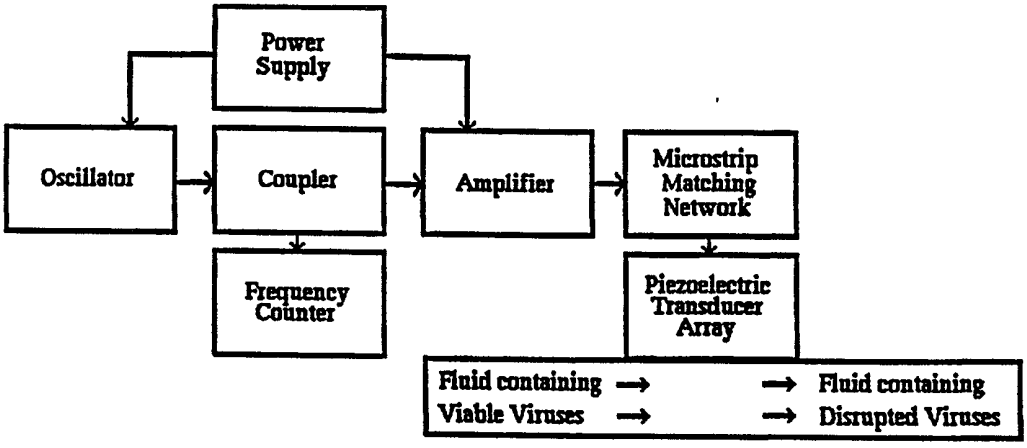
(54) Title: METHODS FOR USING RESONANT ACOUSTIC ENERGY TO DETECT OR EFFECT STRUCTURES



(57) Abstract

The present invention makes use of resonant acoustic and/or acousto–EM energy applied to inorganic or biologic structures for the detection and/or identification, and for augmentation and/or disruption of function within the biologic structure. In particular, the invention provides a method of generating resonant acoustic and/or acousto–EM energy in biologic structures such as virus, bacteria, fungi, worms and tumors for the detection and disruption of these structures. Moreover, the invention provides a method of augmenting functions of biologic structures such as bone through the generation of resonant acoustic and/or acousto–EM energy in the structure. Systems are also provided for the generation and detection of resonant acoustic and/or resonant acousto–EM energy.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/20776

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61B 17/22, 6/00; A61N 7/00
US CL : 600/427, 429, 439; 601/2, 3, 4; 73/579

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. : 600/427, 429, 439; 601/2, 3, 4; 607/97, 51; 604/22; 73/579

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)
EAST: resonant, resonance, biologic, biological, cell, acoustic, ultrasonic, ultrasound

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3,774,717 A (CHODOROW) 27 November 1973 (27.11.1973) see abstract, Figures, column 1 line 35 - column 3 line 6	1-2, 23-25, 28, 34
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Y		10, 16-18, 21-22, 35
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A		3-4, 19-20, 27, 36-39
X	US 4,315,514 A (DREWES ET AL.) 16 February 1982 (16.02.1982), see abstract, Figures, column 2 lines 30-64.	1, 5-7, 9-11, 13
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Y		8, 12, 14-18, 21-22, 35
Y	US 5,413,550 A (CASTEL) 09 May 1995 (09.05.1995) see abstract, Figures, column 1 lines 5-16, column 6 line 55 - column 7 line 27	35
Y	US 5,595,178 A (VOSS ET AL.) 21 January 1997 (21.01.1997) see abstract, Figures, column 1 lines 5-18, column 2 lines 5-29, column 3 line 47 - column 4 line 13, column 4 lines 29-44	8, 10, 12, 14-15
X	US 5,777,228 A (TSUBOI ET AL.) 07 July 1998 (07.07.1998) see abstract, Figures, column 3 line 33 - column 9 line 20	25-26, 28-29, 32-34

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Date of the actual completion of the international search	Date of mailing of the international search report
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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 Hezron Williams Telephone No. 703-308-0956

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/20776

C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X, P	US 5,886,263 A (NATH ET AL.) 23 March 1999 (23.03.1999) see abstract, Figures, column 1 line 33 - column 2 line 17	25-26, 28-29, 32-34
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A, P		27, 30-31, 36-38