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(71) Applicant: MEDTRONIC, INC. [US/US]; MS LC340,
710 Medtronic Parkway NE, Minneapolis, MN 55432
(US).

(72) Inventors: BREYER, Branko; Prilaz G. Dezelixa 79,
10000 Zabreb (HR). FEREK-PETRIC, Bozidar; Sovinec
17, 10000 Zagreb (HR).

(74) Agents: WALDKOETTER, Eric, R. et al.; MS LC340,
710 Medtronic Parkway NE, Minneapolis, MN 55432
(US).

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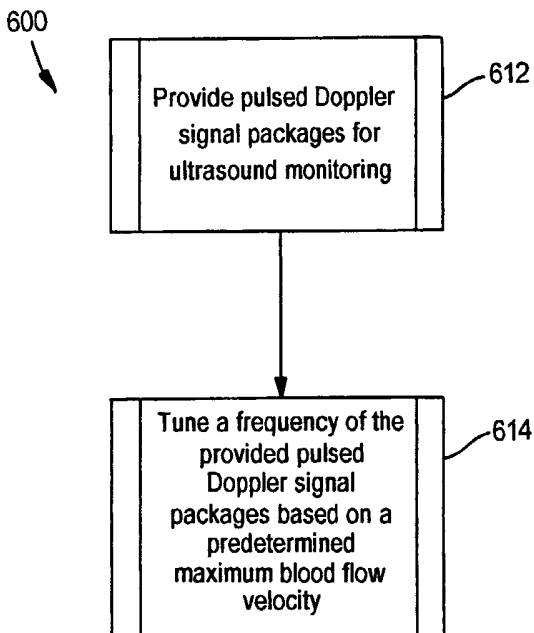
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Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted
a patent (Rule 4.17(ii)) for the following designations AE,
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI,
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OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG)

[Continued on next page]

(54) Title: ULTRASOUND METHODS AND IMPLANTABLE MEDICAL DEVICES USING SAME



(57) Abstract: An ultrasound method and medical devices using same provide for various techniques of sampling blood flow velocity, e.g., at several sampling rates. To minimize the energy required for ultrasound monitoring, pulsed Doppler signal packages provided by a pulsed ultrasound circuit are switched in such a way that the repetition rate is the lowest possible and yet sufficiently high to be able to record the blood flow velocity within the heart. For example, an ultrasound circuit may be activated only within a part of the cardiac cycle designated as the Doppler Measurement Interval (DMI); the ultrasound circuit may be switched between an on state and an off state during the DMI; and/or the ultrasound circuit may also be switched on and off in different sampling modes: detection mode and measurement mode (e.g., using different sampling rates).

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International Application No
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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 7 A61N				
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 practical, search terms used) EPO-Internal				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 5 316 001 A (FEREK-PETRIC ET AL) 31 May 1994 (1994-05-31) abstract the whole document	1,12,25, 28,40, 43,55, 68,80, 89,96, 99,104		
X	US 5 183 040 A (NAPPHOLZ ET AL) 2 February 1993 (1993-02-02)	55-95		
Y	column 3, paragraph 18 - column 5, paragraph 48	96-98, 104-108		
Y	EP 0 474 957 A (FEREK-PETRIC, BOZIDAR; BREYER, BRANCO, DR) 18 March 1992 (1992-03-18) the whole document	96-98, 104-108		
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.				
<input checked="" type="checkbox"/> Patent family members are listed in annex.				
° Special categories of cited documents :				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document 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 </td> <td style="width: 50%; border: none; vertical-align: top;"> *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 </td> </tr> </table>			*A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document 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
A document defining the general state of the art which is not considered to be of particular relevance *E* earlier document 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			
Date of the actual completion of the international search <p style="text-align: center; font-weight: bold;">13 July 2005</p>		Date of mailing of the international search report <p style="text-align: center; font-weight: bold;">05/08/2005</p>		
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer <p style="text-align: center; font-weight: bold;">Gaillard, A</p>		

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/12595

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 409 009 A (OLSON ET AL) 25 April 1995 (1995-04-25) abstract -----	55-98, 104-108
A	EP 0 503 839 A (TELECTRONICS N.V) 16 September 1992 (1992-09-16) abstract -----	55-98, 104-108

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/12595

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: 54
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy
2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/12595

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