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(71) Applicant: **THE MINISTER OF NATIONAL DEFENCE OF HER MAJESTY'S CANADIAN GOVERNMENT**
Ottawa Ontario, K1A 0K2 (CA)

(72) Inventors:
- **Stergiopoulos, Stergios**
  Toronto, Ontario M4N 1S8 (CA)
- **Uzunoglu, Nikolaos**
  Patisia, Athens 112-53 (GR)

(74) Representative: **SERJEANTS**
25, The Crescent
King Street
Leicester, LE1 6RX (GB)

(54) Non-invasive 3-D intracranial thermography system

(57) A microwave thermography apparatus to measure temperatures within a dielectric body (30) comprises a partial ellipsoidal cavity (1) with an electrical conductive surface wherein the body (30) can be located at one focus (F_1) of the cavity (1). A microwave antenna (32) located at a second focus (F_2) of the cavity (1) is connected to a radiometer (36). That radiometer (36) amplifies and filters signals from the antenna (32) before they are applied to a detector (18) with the temperature of the body (30) being determined from the voltage amplitude of the detected signals.

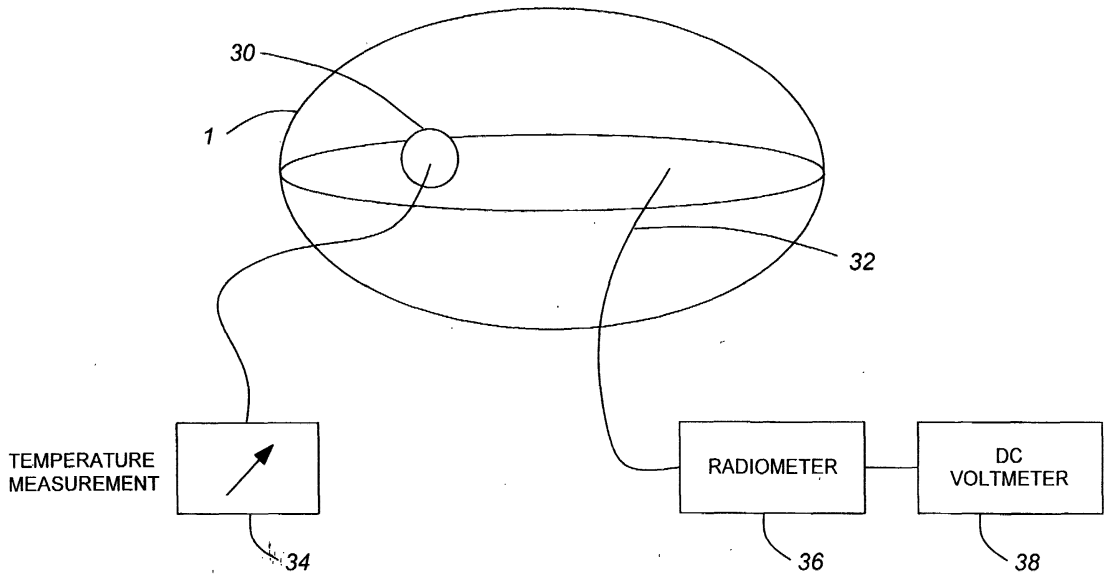

FIG. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 02 25 0057

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	FRIED D ET AL: "THERMAL RESPONSE OF HARD DENTAL TISSUES TO 9-THROUGH 11-MUM CO2-LASER IRRADIATION" OPTICAL ENGINEERING, SOC. OF PHOTO-OPTICAL INSTRUMENTATION ENGINEERS. BELLINGHAM, US, vol. 35, no. 7, 1 July 1996 (1996-07-01), pages 1976-1984, XP000631021 ISSN: 0091-3286 * page 1977 - 1978, section 2.2 "Infrared Radiometry" * ---	1,8	A61B5/00
A	HAGNESS S C ET AL: "Two-dimensional FDTD analysis of a pulsed microwave confocal system for breast cancer detection: fixed-focus and antenna-array sensors" IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING, IEEE, USA, vol. 45, no. 12, December 1998 (1998-12), pages 1470-1479, XP002201090 ISSN: 0018-9294 * page 1470-1471, section "B. Technology Basis" * ---	1,8	TECHNICAL FIELDS SEARCHED (Int.Cl.7) G01K A61B
A	WO 00 15109 A (UNIV CALIFORNIA) 23 March 2000 (2000-03-23) * page 4, line 21 - page 5, line 8 * * page 7, line 4 - line 11 * * page 7, line 24 - line 27 * ---	1,8	
	-/--		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	5 June 2002	Knüpling, M

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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EUROPEAN SEARCH REPORT

Application Number
EP 02 25 0057

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	EDRICH J: "Elliptical reflector antennas for near-field applications in microwave thermography and hyperthermia" JINA '86: JOURNEES INTERNATIONALES DE NICE SUR LES ANTENNES (JINA '86: INTENATIONAL CONFERENCE AT NICE ON ANTENNAS), NICE, FRANCE, 4-6 NOV. 1986, pages 422-424, XP008003975 1986, Cap d'Ail, France, CNET, France * abstract * -----	1,8	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	5 June 2002	Knüpling, M

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 02 25 0057

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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05-06-2002

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0015109 A	23-03-2000	US 6233479 B1	15-05-2001
		AU 5816899 A	03-04-2000
		WO 0015109 A1	23-03-2000

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	非侵入性3-D颅内热成像系统		
公开(公告)号	EP1224905A3	公开(公告)日	2002-07-31
申请号	EP2002250057	申请日	2002-01-07
[标]申请(专利权)人(译)	国防部		
申请(专利权)人(译)	女王陛下的加拿大政府国防大臣		
当前申请(专利权)人(译)	女王陛下的加拿大政府国防大臣		
[标]发明人	STERGIOPOULOS STERGIOS UZUNOGLU NIKOLAOS		
发明人	STERGIOPOULOS, STERGIOS UZUNOGLU, NIKOLAOS		
IPC分类号	A61B5/00 G01K11/00		
CPC分类号	A61B5/015 A61B5/0507 A61B5/4064 G01K11/006		
代理机构(译)	差役		
优先权	60/261815 2001-01-17 US		
其他公开文献	EP1224905A2		
外部链接	Espacenet		

摘要(译)

用于测量介电体（30）内的温度的微波热成像设备包括具有导电表面的部分椭圆形腔（1），其中主体（30）可以位于腔（1）的一个焦点（F1）处。位于腔（1）的第二焦点（F2）的微波天线（32）连接到辐射计（36）。辐射计（36）在将天线（32）施加到检测器（18）之前放大并滤波来自天线（32）的信号，其中主体（30）的温度由检测信号的电压幅度确定。

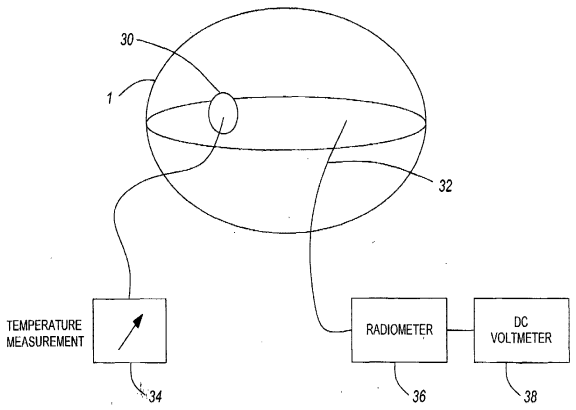

FIG. 4