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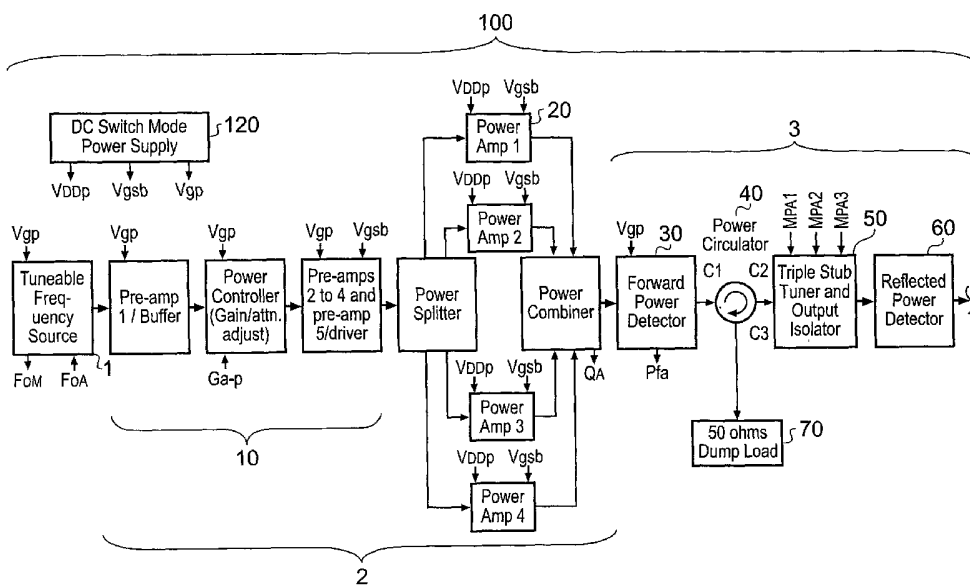
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- (74) Agents: CALDERBANK, T., Roger et al.; Mewburn Ellis, York House, 23 Kingsway, London, Greater London WC2B 6HP (GB).
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[Continued on next page]

(54) Title: TISSUE ABLATION APPARATUS AND METHOD OF ABLATING TISSUE



(57) Abstract: An apparatus and method for ablating tissue is disclosed. The apparatus comprises a source of microwave radiation (1), a probe (5) for directing the microwave radiation into tissue, one or more detectors for detecting the power and phase of the microwave radiation and an impedance adjuster (50) for adjusting impedance so as to minimize the amount of microwave radiation which reflected back through the probe. The detector or detectors use a local oscillator (230) to derive the phase information. A modulator for modulating the microwave radiation to a cutting frequency is also disclosed.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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INTERNATIONAL SEARCH REPORT

Application No
PCT/GB 03/05166A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61B18/14

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 A61B

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, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 957 969 A (GRUNDY DAVID ALAN ET AL) 28 September 1999 (1999-09-28) column 2, line 11 -column 15, line 3; figures 1,6-12 ---	1-18
X	US 5 693 082 A (GRUNDY DAVID ALAN ET AL) 2 December 1997 (1997-12-02) column 2, line 7 -column 14, line 67; figures 1,6-12 ---	1-18
X	US 5 364 392 A (WARNER GLEN G ET AL) 15 November 1994 (1994-11-15) column 2, line 30 -column 8, line 40; figures 1,6,7 --- -/--	1-18

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

° Special categories of cited documents:

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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

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

 Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 405 346 A (WARNER GLEN G ET AL) 11 April 1995 (1995-04-11) column 3, line 14 -column 12, line 31; figures 2-4,8,9 ----	1-18
X	EP 1 186 274 A (AFX INC) 13 March 2002 (2002-03-13) column 1, line 41 -column 36, line 27; figure 2 ----	1-18
X A	US 6 413 255 B1 (STERN ROGER A) 2 July 2002 (2002-07-02) column 3, line 60 -column 30, line 10 ----	34, 36, 38, 39 37
X A	WO 00/53113 A (STERN ROGER ;THERMAGE INC (US)) 14 September 2000 (2000-09-14) page 9, line 8 -page 48, line 14 ----	34, 36, 38, 39 37
X A	US 2002/120261 A1 (MORRIS DAVID L ET AL) 29 August 2002 (2002-08-29) paragraph '0008! - paragraph '0193!; figure 55 ----	34, 36, 38, 39 37
A	US 6 350 276 B1 (KNOWLTON EDWARD W) 26 February 2002 (2002-02-26) column 2, line 20 -column 22, line 32; figures 23-25 ----	34, 36-39
A	WO 97/43971 A (SOMNUS MEDICAL TECH INC ;EDWARDS STUART D (US)) 27 November 1997 (1997-11-27) page 4, line 2 -page 31, line 21 -----	34, 36-39

INTERNATIONAL SEARCH REPORT

application No.
PCT/GB 03/05166

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.: 19-26
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
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:

see additional sheet

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.:
1-18, 34, 36-39
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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-18

Tunable tissue ablation apparatus

2. Claim : 27

Probe with ceramic tip

3. Claims: 28-33,35,38,39

Coaxial probe and method of making a balun therefor

4. Claims: 34,36-39

Surgical apparatus with modulator

INTERNATIONAL SEARCH REPORT

Information on patent family members

Application No

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