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Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

[Continued on next page]

(54) **Title:** APPARATUS, SYSTEMS, AND METHODS FOR LOCALIZING MARKERS OR TISSUE STRUCTURES WITHIN A BODY

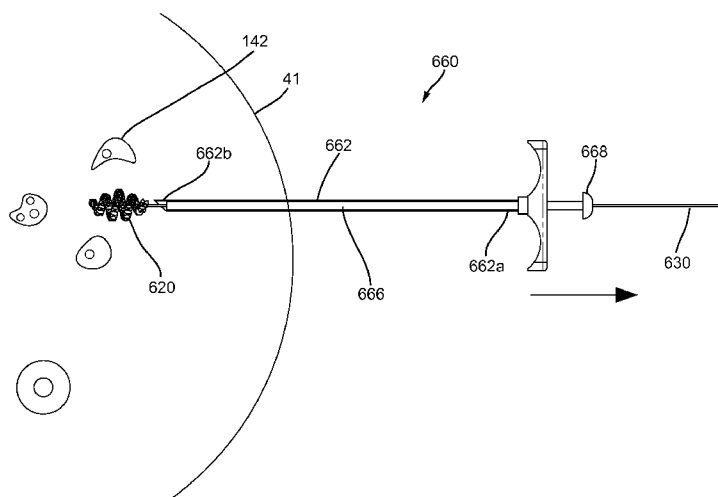


FIG. 37

(57) **Abstract:** Apparatus, systems, and methods are provided for localizing lesions within a patient's body, e.g., within a breast. The system may include one or more markers implantable within or around the target tissue region, and a probe for transmitting and receiving electromagnetic signals to detect the one or more markers. During use, the marker(s) are into a target tissue region, and the probe is placed against the patient's skin to detect and localize the marker(s). A tissue specimen, including the lesion and the marker(s), is then removed from the target tissue region based at least in part on the localization information from the probe.



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INTERNATIONAL SEARCH REPORT

International application No PCT/US2010/040107

A. CLASSIFICATION OF SUBJECT MATTER
 INV. A61B5/06 A61B19/00

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)
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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 374 793 A1 (BIOSENSE INC [US]) 2 January 2004 (2004-01-02) paragraphs [0024] - [0031] -----	1,5,11, 20
X	WO 2007/117478 A2 (HEALTH BEACONS INC [US]; PETCAVICH ROBERT J [US]; REICHER MURRAY [US]) 18 October 2007 (2007-10-18) the whole document -----	1,5,10, 11
X	US 6 363 940 B1 (Krag David N [US]) 2 April 2002 (2002-04-02) cited in the application column 5, line 20 - column 7, line 15 column 9, line 56 - column 10, line 17 column 14, lines 26-50 column 16, line 16 - column 17, line 8 ----- -/--	1,5,10, 11,20

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

- "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

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2010/040107

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>AMINEH R K ET AL: "Ultra-wide band TEM horn antenna for microwave imaging of the breast" ANTENNA TECHNOLOGY AND APPLIED ELECTROMAGNETICS AND THE CANADIAN RADIO SCIENCE MEETING, 2009. ANTEM/URSI 2009. 13TH INTERNATIONAL SYMPOSIUM ON, IEEE, PISCATAWAY, NJ, USA, 15 February 2009 (2009-02-15), pages 1-4, XP031444166 ISBN: 978-1-4244-2979-0 the whole document</p> <p>-----</p>	7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2010/040107

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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.: 35-55
because they relate to subject matter not required to be searched by this Authority, namely:
see FURTHER INFORMATION sheet PCT/ISA/210
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 No. III Observations where unity of invention is lacking (Continuation of item 3 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 fees, this Authority did not invite payment of additional fees.
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.:
1-11, 20(completely); 29, 30(partially)

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- 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: 1-11, 20(completely); 29, 30(partially)

System for localizing a tissue with active marker

2. claims: 12-19(completely); 29, 30(partially)

Marker with elongate core and plurality of beads

3. claims: 21-28(completely); 29, 30(partially)

System for localizing tissue region with localization wire
and target

4. claims: 31-34

System for localizing tissue region with marker delivery
device

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2010/040107

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
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			US 2002013596 A1	31-01-2002

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: 35-55

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery

Introducing a target (or marker) into the breast and/or removing a lesion concerns a substantial physical intervention on the body requiring professional medical expertise and which entails a substantial health risk. Consequently, the method of present claim 35-55 relates to a method for treatment of the human body by surgery (see Rule 39.1 (iv) PCT) for which no search has to be carried out (Article 17. 2 (a) (i).