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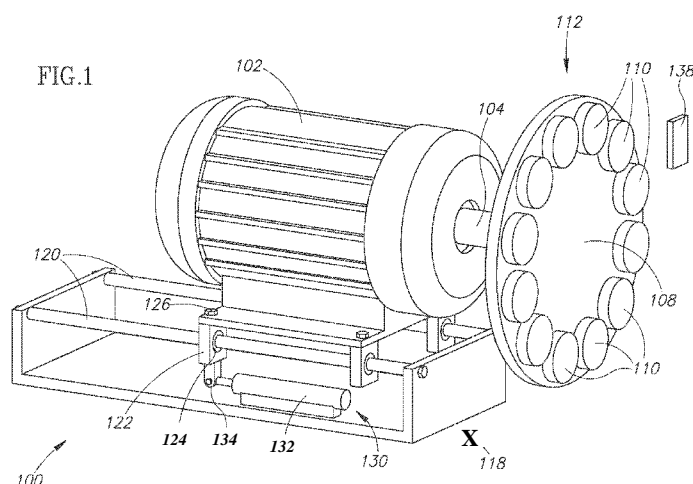
Published:

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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 (Rule 48.2(h))

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19 April 2012

(54) Title: SYSTEM AND METHOD FOR HYPERTHERMIC TUMOR TREATMENT



(57) Abstract: A system to induce hyperthermia in a selected portion of the body utilizes permanent magnets mounted on a variable speed motor. A conductive button is positioned at a location proximate the target tissue to be heated, such as a tumor. The magnetic rotor assembly is positioned at a selected distance from the conductive button and rotated at a desired frequency to produce a changing permanent magnetic field that induces an eddy current on the surface of the conductive button. A temperature sensor may be positioned near the conductive button as a feedback mechanism to a control circuit. At higher magnetic polarity frequencies, the conductive button may be implemented in the form of metallic nanoparticles. In this embodiment, the nanoparticles may include molecular elements that selectively bind with the target tissue and thereby accumulate at the target tissue prior to the introduction of the rotating magnetic field.



WO 2012/006290 A3

## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/US2011/042974****A. CLASSIFICATION OF SUBJECT MATTER****A61N 2/06(2006.01)i, A61F 7/00(2006.01)I, A61B 18/00(2006.01)I**

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)

A61N 2/06; A61B 5/04; A61B 18/04; A61F 2/00; A61N 5/00; A61N 2/00; A61N 1/42

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords: hyperthermia, alternating magnetic field, motor, tumor.

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2006-0142748 A1 (FOREMAN et al.) 29 June 2006 See paragraphs [0014], [0038], [0043]-[0047], [0050], [0053], [0058]-[0062], [0069], and [0087]-[0088]; claims 45 and 83; and figures 1a-2b and 6a-6b.	1-31
Y	US 5,342,283 A (GOOD) 30 August 1994 See col. 2, lines 13-14, col. 11, lines 47-49, col. 15, lines 39-45, col. 15, lines 60-62, and col. 44, lines 62-63; claims 1 and 23-25; and figures 1-5.	1-25, 28-31
A		26-27
Y	US 2006-0030914 A1 (EGGERS et al.) 09 February 2006 See paragraphs [0121], [0158], [0184], and [0217]; and figures 1 and 14-15D.	1-31
A	US 4,537,181 A (SHALHOOB et al.) 27 August 1985 See col. 1, lines 40-55, col. 2, lines 11-15, col. 2, lines 60-66, and col. 3, lines 5-17; claim 1; and figures 1-2 and 4-5.	1-31

 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 application or patent 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 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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

27 FEBRUARY 2012 (27.02.2012)

Date of mailing of the international search report

**28 FEBRUARY 2012 (28.02.2012)**

Name and mailing address of the ISA/KR

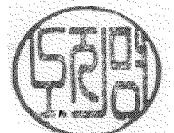
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**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

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.: **32-52**  
because they relate to subject matter not required to be searched by this Authority, namely:  
Claims 32-52 pertain to methods for treatment of the human body by therapy and thus relate to subject matter which this International Searching Authority is not required, under Article 17(2)(a)(i) of the PCT and Rule 39.1(iv) of the Regulations under the PCT, to search.
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:

1. IAs all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. IAs all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. IAs 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. INo 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 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.
- I No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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