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*A61B 17/56* (2006.01)    *A61B 1/317* (2006.01)  
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- (71) Applicant (for all designated States except US): **GUIDED THERAPY SYSTEMS, LLC** [US/US]; 33 South Sycamore Street, Mesa, AZ 85202 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **SLAYTON, Michael, H.** [US/US]; 1323 East Whaler's Way, Tempe, AZ 85283 (US). **BARTHE, Peter, G.** [US/US]; 15002 South 30th Street, Phoenix, AZ 85048 (US).

- (74) Agent: **ASHCRAFT, J., Damon**; Snell & Wilmer L.L.P., One Arizona Center, 400 East Van Buren, Phoenix, AZ 85004-2202 (US).
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[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR TREATING CARTILAGE

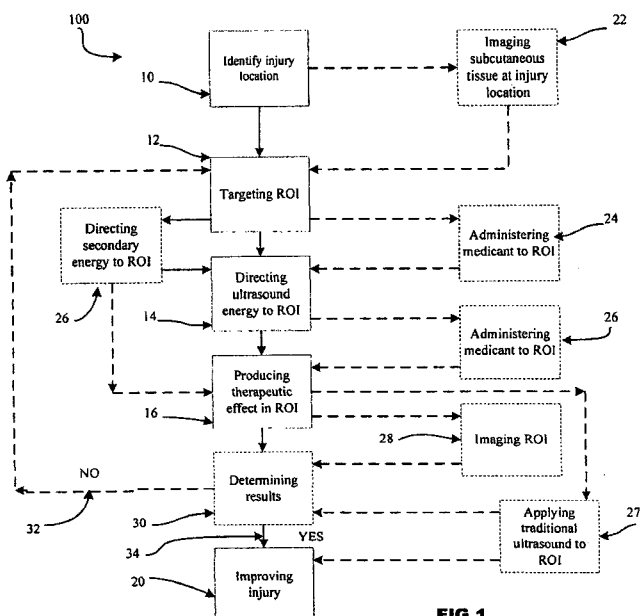


FIG 1

(57) Abstract: Various embodiments provide systems and methods of treating damaged cartilage. In some embodiments, a method can include targeting the damaged cartilage in region of interest, directing therapeutic ultrasound energy to the damaged cartilage, ablating at least a portion of the damaged cartilage and improving the damaged cartilage. The method can include focusing therapeutic ultrasound energy to create at least one lesion in a portion of the damaged cartilage. The method can also include imaging the damaged cartilage to the region of interest. The method can include increasing blood perfusion to the region of interest. The method can include welding together the damaged cartilage with therapeutic ultrasound energy. The method can include cutting the damaged cartilage and removing it from the joint with therapeutic ultrasound energy. The method can include smoothing the cartilage with therapeutic ultrasound energy. The method can include regenerating cartilage.

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**A. CLASSIFICATION OF SUBJECT MATTER***A61B 18/00(2006.01)i, A61B 17/56(2006.01)i, A61N 7/00(2006.01)i, A61B 17/94(2006.01)i, A61B 1/317(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)

A61B 18/00; A61B 18/04; A61N 7/00; A61B 18/20; A61B 18/18; A61N 7/02

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: ultrasound, acoustic, transducer, handpiece, probe, monitoring, imaging, position, sensor, interface, controller

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2009-0318909 A1 (DEBENEDICTIS, LEONARD C. et al.) 24 December 2009 See abstract; claims 43, 61, 67, 69; figs. 3, 5, 6; paragraphs 38, 47, 49-51, 55, 57, 58.	9-14
Y	US 2006-0116671 A1 (SLAYTON, MICHAEL H. et al.) 01 June 2006 See abstract; claims 1, 6, 12, 18, 19, 30; figs. 3A-4B, 12A, 12B; paragraphs 33, 35, 38, 42, 43, 45, 46, 48, 50, 66.	9-14
A	US 2009-0069677 A1 (CHEN, WO-HSING et al.) 12 March 2009 See abstract; claim 1; fig. 1; paragraph 29, 30, 31.	9-14
A	WO 2006-042201 A1 (GUIDED THERAPY SYSTEMS, L.L.C.) 20 April 2006 See figs. 2, 3A, 4A, 4B; page 7, line 19; page 23, lines 5-8; page 15, lines 11-13; page 26, lines 27-29; claims 21, 51, 66.	9-14

 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

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Name and mailing address of the ISA/KR

Korean Intellectual Property Office  
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Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

KANG, HEE GOK

Telephone No. 82-42-481-8264



**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.: 1-8, 15-20  
because they relate to subject matter not required to be searched by this Authority, namely:  
Claims 1-8 and 15-20 pertain to method for treatment of human body by surgery or therapy, and thus relate to a subject matter which this International Searching Authority is not required to search under Article 17(2)(a)(i) of the PCT and Rule 39.1(iv) of the Regulations under the PCT.
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.  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 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.

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2011/001361**

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