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[Continued on next page]

(54) Title: APPARATUS AND METHOD FOR ULTRASOUND TREATMENT

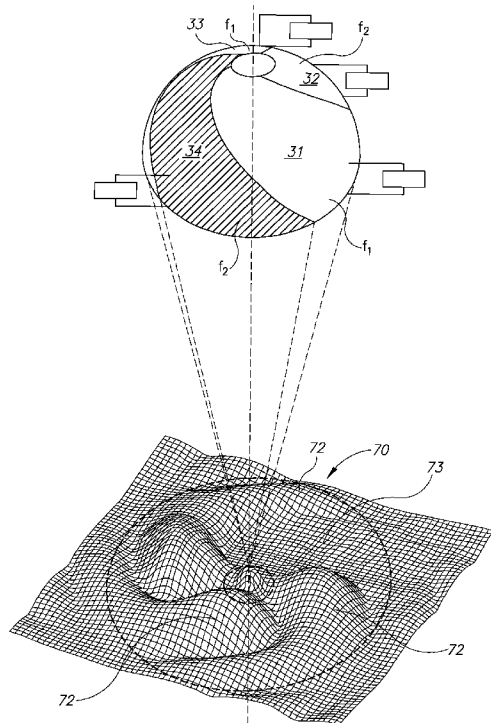


FIG. 2A

(57) Abstract: A transducer for generating an intensity pattern (70) of ultrasound comprising: a plurality of elements (31-34) independently excitable to radiate acoustic energy; and a controller that simultaneously excites some of the element (31-33) s while leaving at least one element dormant and changes which element (34) is dormant to change the intensity pattern.



— *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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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
INV. B06B1/06 G10K11/34

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)
B06B G10K A61N

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.
A	US 6 506 171 B1 (VITEK SHUKI [IL] ET AL) 14 January 2003 (2003-01-14) abstract figures 1-6 column 1, lines 5-15 column 5, lines 11-16 column 5, line 61 - column 6, line 38 column 7, lines 31-67 column 8, lines 38-63 ----- -/--	1

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

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- "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/IB2008/054025

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>SCHWARZ H-P ET AL: "Development of a new ultrasonic circular array for endoscopic application in medicine and NDT" 19881002; 19881002 - 19881005, 2 October 1988 (1988-10-02), pages 639-642, XP010075528 abstract page 639, left-hand column, paragraph 3 - page 639, right-hand column, last paragraph page 640, left-hand column, paragraph 1 page 640, right-hand column, paragraph 2-4 figures 1-3</p>	1-6,13, 14
X	<p>VOS H C L ET AL: "An ultrasonic circular array transducer for pipeline and borehole inspection" 19881002; 19881002 - 19881005, 2 October 1988 (1988-10-02), pages 659-662, XP010075531 page 659, left-hand column, paragraph 1-3 page 659, right-hand column, paragraphs 2,3 page 660, left-hand column, paragraphs 3,5 page 661, left-hand column, paragraphs 1,3 figures 1-4</p>	1-6,14
X	<p>US 2005/154314 A1 (QUISTGAARD JENS U [US]) 14 July 2005 (2005-07-14) abstract figures 1-3 paragraph [0004] paragraphs [0035] - [0041] paragraph [0045] paragraph [0051]</p>	1-4, 14-19
A	<p>US 2004/047239 A1 (BENJAMIN KIM C [US]) 11 March 2004 (2004-03-11) figures 1-4 abstract paragraphs [0032] - [0038]</p>	1
A	<p>US 4 960 107 A (AIDA SATOSHI [JP] ET AL) 2 October 1990 (1990-10-02) abstract figures 1-5 column 1, lines 5-12 column 2, lines 42-58 column 5, lines 18-27</p>	1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2008/054025

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.:
because they relate to subject matter not required to be searched by this Authority, namely:

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.:
1-6, 13-19

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: 1-6, 13-19

Multi-element ultrasound transducer comprising a controller that simultaneously excites some of the elements while leaving at least one element dormant and changes which element is dormant to change the intensity pattern. This special technical feature solves the problem of how to obtain directional steering of the array.

2. claims: 7-12, 20, 21

Multi-element ultrasound transducer comprising a controller that simultaneously excites at least three different elements at different frequencies wherein a beat frequency between any two of the frequencies is in a range between about 300 Hz and about 20 kHz. This special technical feature solves the problem of how to optimize the selection of frequencies for dual- or multi-frequency ultrasound transducers.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2008/054025

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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