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DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
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(54) Title: TRANSDUCERS, DEVICES CONTAINING THE TRANSDUCERS, AND METHODS OF MANUFACTURE

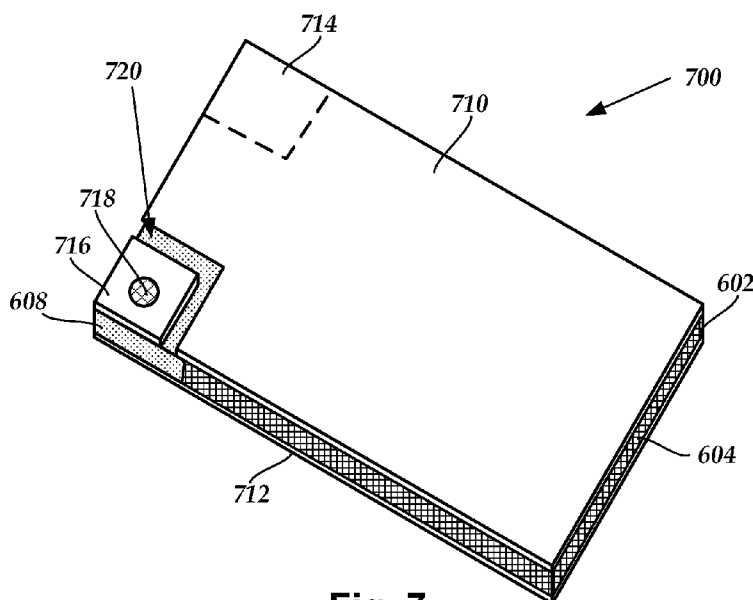


Fig. 7

(57) Abstract: A catheter assembly for an intravascular ultrasound system includes a catheter and an imaging core. The catheter includes a lumen extending along the longitudinal length of the catheter from the proximal end to the distal end and the imaging core is configured and arranged for inserting into the lumen. The imaging core includes a rotatable driveshaft, at least one transducer mounted to the distal end of the rotatable driveshaft, and a twisted wire cable coupled to the at least one transducer. In addition, a number of different transducer arrangements and methods of making transducers are presented.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
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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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 6 047045 A (OLYMPUS OPTICAL CO) 22 February 1994 (1994-02-22) * abstract; figures 1,3,11,13	1,2,6-8
X	US 2007/038111 A1 (REHRIG PAUL W [US] ET AL) 15 February 2007 (2007-02-15) cited in the application	1
Y	* abstract; figure 3 paragraph [0022]	23
X	WO 2007/099746 A1 (OLYMPUS MEDICAL SYSTEMS CORP [JP]; ADACHI HIDEO [JP]; WAKABAYASHI KATS) 7 September 2007 (2007-09-07)	9-12
Y	* abstract; figures 1,5,7, paragraphs [0019], [0020]	16-18
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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	"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
"E" earlier document but published on or after the international filing date	"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
"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)	"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.
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer de Jong, Frank
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INTERNATIONAL SEARCH REPORT

International 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 5 792 058 A (LEE WENDY J [US] ET AL) 11 August 1998 (1998-08-11) * abstract; figures 2,3 column 3, lines 1-12 column 5, line 30 - column 7, line 28 -----	13-15
X	US 5 381 385 A (GREENSTEIN MICHAEL [US]) 10 January 1995 (1995-01-10)	20-22
Y	* abstract; figures 1,2,7 column 1, lines 14-24 column 6, line 6 - column 4, line 19 -----	16-18
X	WO 2004/021404 A2 (VOLCANO THERAPEUTICS INC [US]) 11 March 2004 (2004-03-11)	19
A	* abstract; figures 7,8a, page 3, lines 30-35 page 9, lines 1-11 page 12, lines 1-7 page 18, line 12 - page 19, line 34 -----	13
Y	US 2004/193051 A1 (MANDRUSOV EVGENIA [US] ET AL) 30 September 2004 (2004-09-30) paragraph [0055] -----	23

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/046348

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.:

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: 1-8

Ultrasound transducer wherein a heat-resistant non-transducing pad is formed below first and second contacts to prevent damage during heat-bonding of wires to the contacts.

2. claims: 9-12, 20-22

Ultrasound transducer wherein a first and second contact are formed below a backing layer and electrical signals are passed to the transducer surfaces through contact vias.

3. claims: 13-15

Ultrasound transducer, wherein electrical signals are passed to the transducer surfaces through thin film (flex) circuits.

4. claims: 16-18

Ultrasound transducer wherein a first and second contact are formed below a carrier layer and the first contact passes electrical signals to the first surface through a contact via, while the second contact passes electrical signals to the second surface through a metal layer insulatedly formed on the side of the transducer.

5. claim: 19

Ultrasound transducer wherein a first and second contact are formed on the sides of the transducer, which are connected to the top and bottom layer, respectively.

6. claim: 23

Catheter assembly with twisted wire cable.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2009/046348

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