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[Continued on next page]

(54) Title: MULTIMODAL IMAGING SYSTEM, APPARATUS, AND METHODS

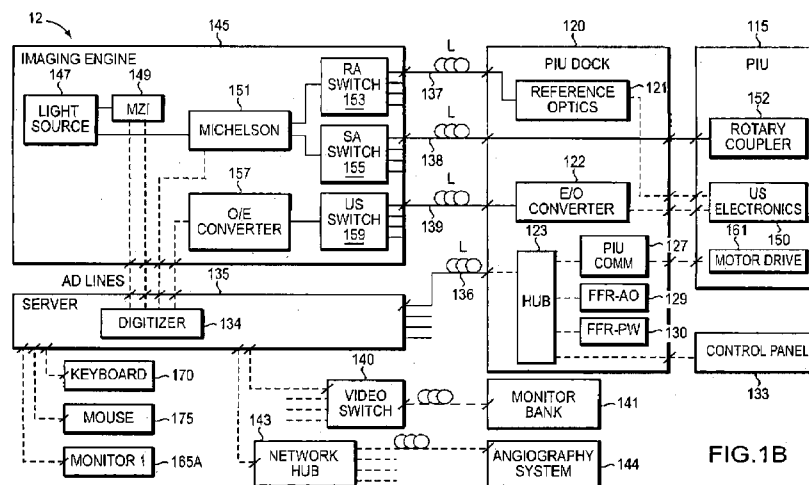


FIG. 1B

(57) Abstract: In part, the invention relates to an image data collection system. The system can include an interferometer having a reference arm that includes a first optical fiber of length of L_1 and a sample arm that includes a second optical fiber of length of L_2 and a first rotary coupler configured to interface with an optical tomography imaging probe, wherein the rotary coupler is in optical communication with the sample arm. In one embodiment, L_2 is greater than about 5 meters. The first optical fiber and the second optical fiber can both be disposed in a common protective sheath. In one embodiment, the system further includes an optical element configured to adjust the optical path length of the reference arm, wherein the optical element is in optical communication with the reference arm and wherein the optical element is transmissive or reflective.



MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,
SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2012/040060

A. CLASSIFICATION OF SUBJECT MATTER

INV. G01N21/47 A61B5/00 G01B9/02 A61B5/021 A61B8/08
A61B5/0215 G08C23/06
ADD. A61B8/12

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)

G01N A61B G01B G08C

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 practicable, 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	WO 2009/137659 A1 (INFRAREDX INC [US]; MULLER JAMES E [US]; WILDER MARK A [US]) 12 November 2009 (2009-11-12)	1-9
Y	paragraph [0032] paragraphs [0049] - [0052] paragraphs [0056] - [0060] figures 1-4	10-13
X	US 2008/177183 A1 (COURTNEY BRIAN [CA] ET AL) 24 July 2008 (2008-07-24)	1-9
Y	paragraphs [0110] - [0130] figures 1, 4	10-13
	----- -/-	

☒ 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 another citation or other special reason (as specified)

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"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

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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,P	WO 2011/143387 A2 (BRENNAN JEFFREY [US]; HUMAYUN MARK [US]; CAFFEY SEAN [US]) 17 November 2011 (2011-11-17) paragraphs [0044] - [0051] paragraph [0056] paragraph [0059] paragraph [0063] figures 1, 2, 4, 6 -----	1-6
E	WO 2012/087818 A1 (VOLCANO CORP [US]; KEMP NATHANIEL J [US]; GLYNN TIMOTHY K [US]) 28 June 2012 (2012-06-28) paragraphs [0017] - [0018] paragraphs [0023] - [0024] paragraph [0036] paragraph [0042] figure 4D -----	1-3
Y	US 2005/203338 A1 (COUVILLON LUCIEN A JR [US] ET AL) 15 September 2005 (2005-09-15) paragraphs [0013] - [0019] figures 1-3 -----	10-13

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/040060

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.:

1-13

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: 1-13

A data collection system for OCT imaging;

2. claims: 14-35, 54-60

An image data collection system for OCT imaging having a rotating probe and a sample arm of a length greater than 5m;

3. claims: 36-44

An intravascular data collection system for wirelessly receiving pressure data;

4. claims: 45-48

A method for co-registering angiographic image data with intravascular OCT data;

5. claim: 49

An image data collection system for acquiring OCT data of two patients disposed in two examination rooms;

6. claims: 50-53

An image data collection system for combined OCT and ultrasound imaging, wherein the ultrasound data is transmitted optically.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/040060

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