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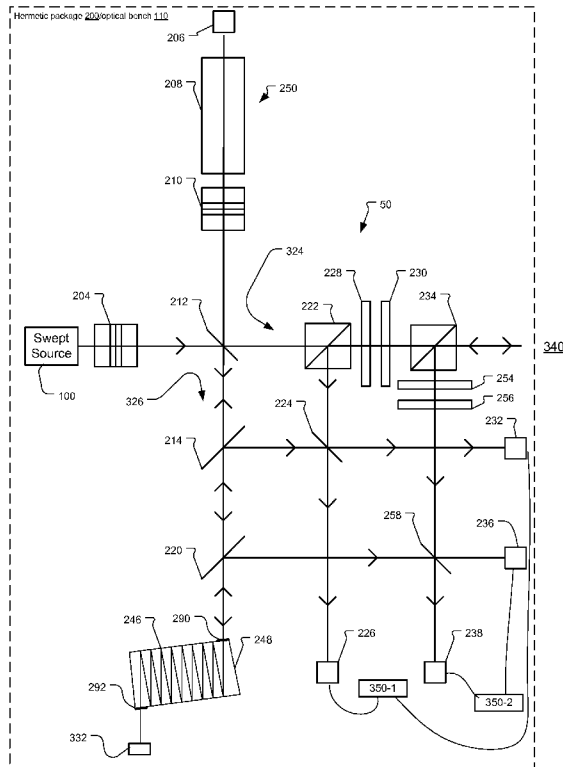
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[Continued on next page]

(54) Title: INTEGRATED OPTICAL COHERENCE TOMOGRAPHY SYSTEM



(57) Abstract: An optical detector system comprises a hermetic optoelectronic package, an optical bench installed within the optoelectronic package, a balanced detector system installed on the optical bench. The balanced detector system includes at least two optical detectors that receive interference signals. An electronic amplifier system installed within the optoelectronic package amplifies an output of at least two optical detectors. Also disclosed is an integrated optical coherence tomography system. Embodiments are provided in which the amplifiers, typically transimpedance amplifiers, are closely integrated with the optical detectors that detect the interference signals from the interferometer. Further embodiments are provided in which the interferometer but also preferably its detectors are integrated together on a common optical bench. Systems that have little or no optical fiber can thus be implemented.

WO 2012/091958 A3



SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

— *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))*

Published:

— *with international search report (Art. 21(3))*

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INTERNATIONAL SEARCH REPORT

International application No PCT/US2011/065397

A. CLASSIFICATION OF SUBJECT MATTER INV. G01B9/02 ADD.		
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) G01B G01N A61B		
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 2005/077257 A1 (OPTOVUE INC [US]; WEI JAY [US]) 25 August 2005 (2005-08-25) paragraph [0036] - paragraph [0046]; figure 14 paragraph [0071] - paragraph [0075]; figure 7	1-12
Y	----- US 2007/076223 A1 (PODOLEANU ADRIAN G [GB] ET AL) 5 April 2007 (2007-04-05) paragraph [0209] - paragraph [0222]; figure 2 paragraph [0237] - paragraph [0251]; figures 5,6	1-12
Y	----- US 5 037 202 A (BATCHELDER JOHN S [US] ET AL) 6 August 1991 (1991-08-06) column 7, line 21 - line 64; figure 5 ----- -/--	1-12
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.		
<input checked="" type="checkbox"/> 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) "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 "&" document member of the same patent family	
Date of the actual completion of the international search	Date of mailing of the international search report	
27 March 2012	12/07/2012	
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 Petelski, Torsten	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/065397

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.:

1-12

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

International application No PCT/US2011/065397

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2009/122322 A1 (POUET BRUNO [US] POUET BRUNO FRANCOIS [US]) 14 May 2009 (2009-05-14) paragraph [0034] - paragraph [0038]; figure 5	1-12
A	----- US 2009/284749 A1 (JOHNSON BARTLEY C [US] ET AL) 19 November 2009 (2009-11-19) paragraph [0087] - paragraph [0092]; figure 10B -----	1-12

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2011/065397

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2005077257 A1	25-08-2005	CA 2553761 A1	25-08-2005
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		US 2009284749 A1	19-11-2009
		WO 2009140617 A2	19-11-2009

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-12

Optical coherence analysis with polarization resolved
detection

2. claims: 13-20

Optical coherence analysis with interferometer and detectors
mounted on the same bench
