(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau



(10) International Publication Number WO 2010/030956 A3

(43) International Publication Date 18 March 2010 (18.03.2010)

- (51) International Patent Classification: *A61B 6/08* (2006.01)
- (21) International Application Number:

PCT/US2009/056751

(22) International Filing Date:

11 September 2009 (11.09.2009)

(25) Filing Language:

English

(26) Publication Language:

English

US

(30) Priority Data:

61/096,662 12 September 2008 (12.09.2008)

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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

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

[Continued on next page]

(54) Title: METHOD AND SYSTEM FOR TRACKING OBJECTS USING RADIO TOMOGRAPHIC IMAGING

(57) Abstract: New systems and methodologies that use radio tomography for object tracking.

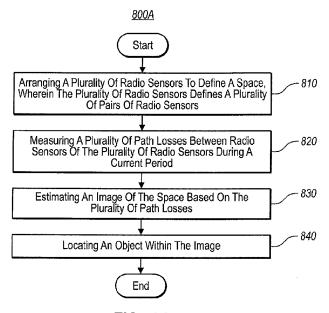


FIG. 8A





 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))

(88) Date of publication of the international search report: $17~\mathrm{June}~2010$

International application No. PCT/US2009/056751

A. CLASSIFICATION OF SUBJECT MATTER

A61B 6/08(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 6/08; G01S 13/52; G01S 13/538; G01S 3/02; H04B 17/00

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

(Chinese Patents and application for patent)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) eKOMPASS(KIPO internal) & Keywords: radio sensor, tomography, locate, track

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005-0285792 A1 (GARY SUGAR et al.) 29 December 2005 See claims 1-61, and figures 1-12	1-31,33-40
A	US 2002-0168943 A1 (EDGAR H. CALLAWAY et al.) 14 November 2002 See claims 1-38, and figures 1-19	1-31,33-40
A	US 7307575 B2 (ZEMANY PAUL D.) 11 December 2007 See claims 1-22, and figures 1-11	1-31,33-40
A	US 2005-0195109 A1 (GREGG DAVI et al.) 08 September 2005 See claims 1-43, and figures 1-5	1-31,33-40

		Further	documents	are	listed	in	the	con	tinua	ation	of	Box	C
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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
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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
12 MARCH 2010 (12.03.2010)

Date of mailing of the international search report

15 APRIL 2010 (15.04.2010)

Name and mailing address of the ISA/KR



Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Seogu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2009/056751

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:
Claims Nos.: 32 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:
Claims of this application are not numbered consecutively in Arabic numbers, since claim 32 is found missing.
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/US2009/056751

Information on patent family members			PCT/US2009/056751		
Patent document cited in search report	Publication date	Patent family member(s)	Publication date		
US 2005-0285792 A1	29.12.2005	US 2005-0285793 A1 US 7236128 B2	29. 12. 2005 26. 06. 2007		
		US 7317419 B2 WO 2006-009955 A3	08.01.2008 26.01.2006		
US 2002-0168943 A1	14.11.2002	US 6745038 B2	01.06.2004		
US 7307575 B2	11.12.2007	EP 1711844 A2 EP 1711844 A4 EP 1711844 B1 EP 1714167 A2 EP 1714167 A4	18. 10. 2006 03. 10. 2007 14. 10. 2009 25. 10. 2006 26. 09. 2007		
		US 2006-0250294 A1 US 2006-0284757 A1 US 2007-0024487 A1 US 2007-0024488 A1	09.11.2006 21.12.2006 01.02.2007 01.02.2007		
		US 2008-0111729 A1 US 7355545 B2 US 7460052 B2	15.05.2008 08.04.2008 02.12.2008		
		US 7460053 B2 US 7528764 B2 WO 2005-081682 A3 WO 2005-104417 A3	02.12.2008 05.05.2009 09.09.2005 03.11.2005		
US 2005-0195109 A1	08.09.2005	CA 2558442-A1 DE 202005021141 U1 EP 1733247 A2	06. 10.2005 22. 11.2007 20. 12.2006		
		US 7205938 B2 WO 2005-091905 A3	17.04.2007 13.07.2006		