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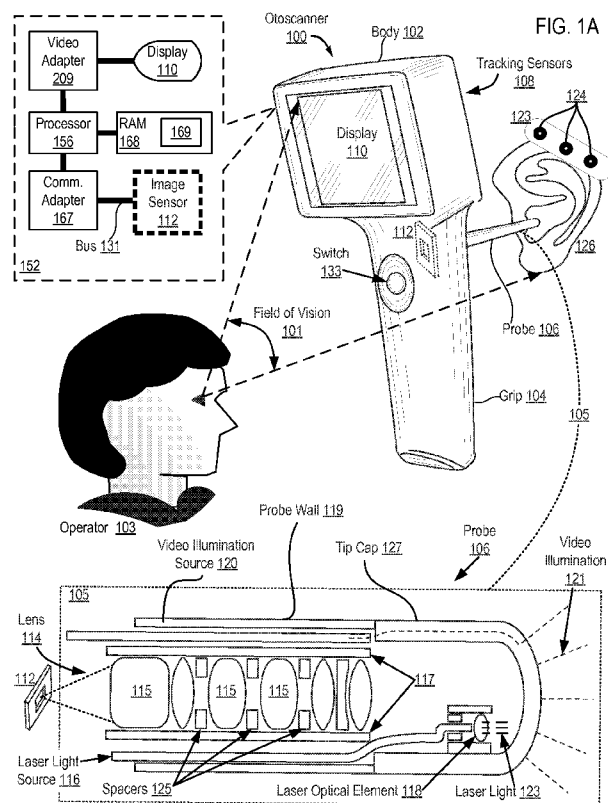
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(81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,

[Continued on next page]

(54) **Title:** OTOSCANNER WITH FAN AND RING LASER



(57) **Abstract:** An otoscanner including a conical laser-reflective optical element and a laser light source and the conical laser-reflecting optical element are configured so that the conical laser-reflecting optical element, when illuminated by the laser light source, projects a broken ring of laser light upon an interior surface of the ear when the ear probe is positioned in the ear and a diffractive laser optic lens and the laser light source and the diffractive laser optic lens are configured so that the diffractive laser optic lens, when illuminated by the laser light source, projects upon an interior surface of the ear a fan of laser light at a predetermined angle with respect to a front surface of the diffractive laser optic lens when the ear probe is positioned in the ear.



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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US13/28218

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A51B 5/00; A61F 11/00 (2013.01)

USPC - 600/184, 300, 559; 606/108

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)

IPC(8) - A51B 5/00; A61F 11/00; A61B 1/227; G01B 11/24 (2013.01)

USPC - 181/130; 356/601; 600/103, 184, 300, 559; 606/108

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)

MicroPatent (US-G, US-A, EP-A, EP-B, WO, JP-bib, DE-C,B, DE-A, DE-T, DE-U, GB-A, FR-A); DialogPRO; Google; Google Scholar; Elsevier; Medline/PubMed; Ear and Hearing: auditory, canal, defract*, ear, force, illuminat*, laser, light, otoscan*, otoscop*, pressure, probe, scan

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6319199 B1 (SHEEHAN, DM et al.) November 20, 2001; figures 3, 4; column 4, lines 40-47; column 5, lines 12-24; column 6, lines 1-21, 47-55	1-18
A	US 2003/0164952 A1 (DEICHMANN, N et al.) September 4, 2003; figures 1, 2, 11, 12; paragraphs [0010], [0028]-[0030], [0055], [0057], [0060], [0093], [0101]-[0103]	1-18
A	US 5658235 A (PRIEST, RA et al.) August 19, 1997; figure 2; column 4, lines 42-45; column 5, lines 4-14	1-18
A	US 2003/0139658 A1 (COLLIER, N et al.) July 24 2003; paragraphs [0010]-[0013], [0046]	1-18
A	US 2010/0191144 A1 (ZOTH, P et al.) July 29, 2010; figure 4; paragraphs [0021]-[0023], [0028], [0051], [0052]	1-18
A	US 2001/0051766 A1 (GAZDZINSKI, RF) December 13, 2001; paragraph [0047]	1-18
A	US 2007/0035707 A1 (MARGULIS, ND et al.) February 15, 2007; paragraphs [0037]-[0044], [0048]	1-18
A	US 2004/0107080 A1 (DEICHMANN, N et al.) June 3, 2004; paragraph [0383]	1-18
A	US 2009/0018465 A1 (HESSEL, H et al.) January 15, 2009; paragraphs [0001], [0031]-[0039], [0066]-[0080]	1-18
A	US 5044373 A (NORTHEVED, A et al.) September 3, 1991; column 1, lines 6-8; column 4, lines 27-51	1-18

☒ Further documents are listed in the continuation of Box C.

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"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

23 April 2013 (23.04.2013)

Date of mailing of the international search report

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International application No.

PCT/US13/28218

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2006/0133634 A1 (BERG, C) June 22, 2006; paragraphs [0001], [0008], [0030]	1-18
A	US 6383133 B1 (JONES, DT) May 7, 2002; column 2, lines 26-51	1-18