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(71) Applicant (for all designated States except US): **MAS-SACHUSETTS EYE & EAR INFIRMARY** [US/US];
243 Charles Street, Boston, Massachusetts 02114 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **FAY, Aaron** [US/US]; 41 Winthrop Street, Holliston, Massachusetts 01746 (US). **FOSS, Evan** [US/US]; 32 Abbottsford Road, Brookline, Massachusetts 02446 (US). **PEMBERTON, John** [US/US]; 224 Valmar Street, Little Rock, Arkansas 72205 (US).

(74) Agents: **SARKAR, Indranil** et al.; Fish & Richardson P.C., P.O. Box 1022, Minneapolis, Minnesota 55440-1022 (US).

(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, 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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17 January 2013

(54) Title: ELECTRONIC INTUBATION

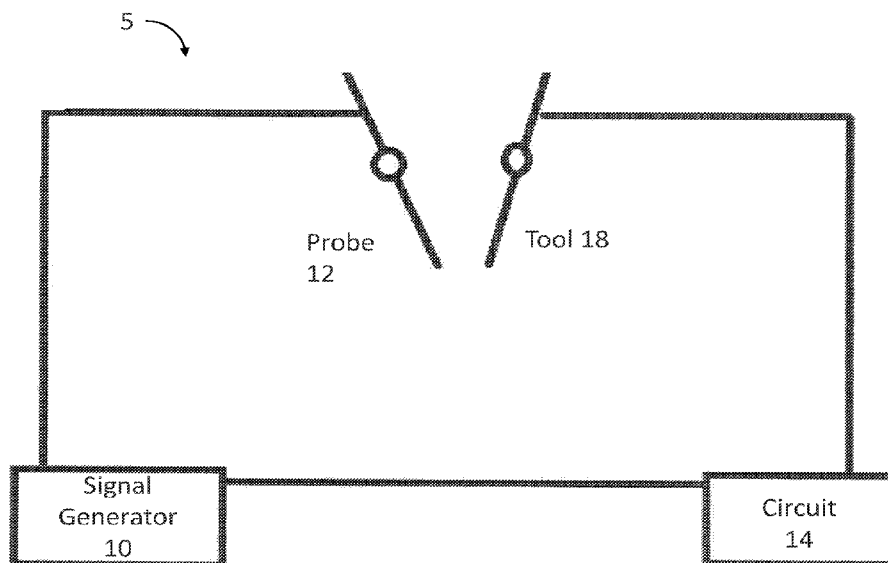


FIG. 1

(57) Abstract: The disclosure relates to systems and methods for electronic intubation of bodily passages such as the nasolacrimal duct. The disclosed technology can be embodied in an apparatus that includes an electrically conductive probe configured to be extendible through a body passage, and a conductive tool for locating the probe in the body passage. The apparatus also includes a signal generator configured to generate a feedback signal, and a circuit coupled to the probe and the conductive tool. The circuit includes a comparison module that is configured to compare a voltage developed at the probe with a reference voltage and cause a generation of the feedback signal if at least a portion of the conductive tool touches the probe. The circuit is further configured to prevent the generation of the feedback signal when no portion of the conductive tool touches the probe.



INTERNATIONAL SEARCH REPORTInternational application No.
PCT/US2012/035895**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.: 26-28
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 26-28 pertain to methods for treatment of the human body by surgery or therapy (PCT Article 17(2)(a)(i) and Rule 39.1(iv)).
2. ☒ Claims Nos.: 6,7,14,15
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 6,7,14 and 15 are unclear since they refer to the multiple dependent claims which are not drafted in accordance with the second and third sentences of Rule 6.4(a).
3. ☒ Claims Nos.: 5, 8, 9, 13, 16, 17, 23, 24, 25,28
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.

A. CLASSIFICATION OF SUBJECT MATTER*A61B 18/18(2006.01)i, A61N 1/18(2006.01)i, A61B 17/24(2006.01)i, A61B 17/34(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 18/18; A61B 5/05; A61M 37/00; A61N 1/08; C02F 1/00; A61M 27/00

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: electronic intubation, conductive probe, circuit, signaling means.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003-0171690 A1 (PETER MICHALOS et al.) 11 September 2003 See abstract; fig. 1; paragraphs 19, 20, 22, 28-30; claims 1, 5, 6.	1-4, 10-12, 18-22
A	US 2003-0195453 A1 (JAMES HAN et al.) 16 October 2003 See abstract; fig. 1; paragraphs 43, 47; claims 1, 2, 10, 14.	1-4, 10-12, 18-22
A	US 6442422 B1 (DAVID W. DUCKERT) 27 August 2002 See abstract; column 5, lines 9-25; claims 1-3.	1-4, 10-12, 18-22
A	US 04380239 A (JOHN S. CRAWFORD et al.) 19 April 1983 See abstract; figs. 1-3; column 3, lines 4-8; claim 1.	1-4, 10-12, 18-22



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 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

24 OCTOBER 2012 (24.10.2012)

Date of mailing of the international search report

25 OCTOBER 2012 (25.10.2012)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
189 Cheongsu-ro, Seo-gu, Daejeon Metropolitan
City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

YOO Min Jeong

Telephone No. 82-42-481-3463



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/035895

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2003-0171690 A1	11.09.2003	None	
US 2003-0195453 A1	16.10.2003	AU 2003-230794 A1 EP 1494736 A2 EP 2253344 A2 EP 2253344 A3 EP 2255840 A2 EP 2255840 A3 JP 04-503297 B2 JP 2006-511244 A JP 2010-155109 A MX PA04009849 A TW 1311059 B US 2006-0116623 A1 US 2010-0185132 A1 US 7052480 B2 US 7682328 B2 US 8137300 B2 WO 03-086504 A2	27.10.2003 12.01.2005 24.11.2010 15.08.2012 01.12.2010 04.05.2011 30.04.2010 06.04.2006 15.07.2010 17.06.2005 21.06.2009 01.06.2006 22.07.2010 30.05.2006 23.03.2010 20.03.2012 23.10.2003
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US 04380239 A	19.04.1983	None	