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(54) Title: DILATION INSTRUMENT WITH NAVIGATION AND DISTALLY LOCATED FORCE SENSOR

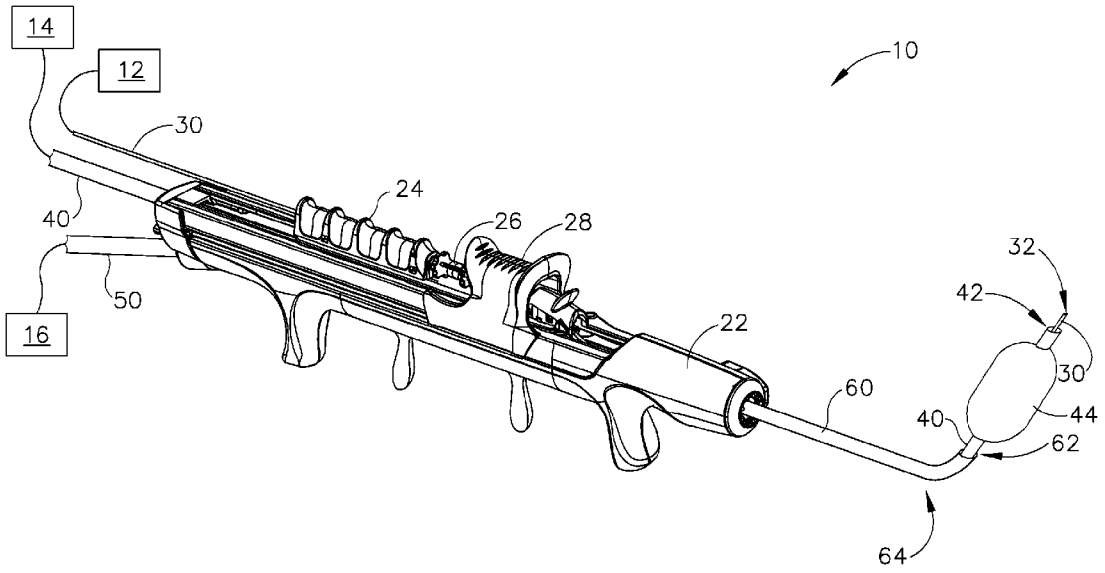



Fig. 1D

(57) Abstract: A system includes a dilation catheter and a guide member. The dilation catheter includes a proximal end, a distal end, a dilator, a navigation sensor, and a force sensor. The dilator is positioned proximal to the distal end and is configured to transition between a non-dilated configuration and a dilated configuration. The navigation sensor is positioned distal to the dilator and is configured to cooperate with a guidance system and thereby provide signals indicating a position of the dilation catheter in three-dimensional space. The force sensor is positioned distal to the dilator and is configured to provide signals indicating a force encountered by the force sensor. The dilation catheter is configured to slide relative to the guide member. A distal portion of the guide member is sized and configured to fit in a nasal cavity of a patient.

*[Continued on next page]*

(84) **Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, 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, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

**Declarations under Rule 4.17:**

— *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))*

**Published:**

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

— *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:**
25 July 2019 (25.07.2019)

# INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2018/059634

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61M25/10 A61B34/00 A61B5/06 A61M25/09 A61B17/24
A61M29/02 A61B34/20 A61B90/00
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)
A61M 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. |
|---|---|---|
| Y | US 2014/364725 A1 (MAKOWER JOSHUA [US])<br>11 December 2014 (2014-12-11)<br>cited in the application<br>figures 1,2A-B,4A,9a-13B<br>paragraph [0007] - paragraph [0009]<br>paragraph [0019]<br>paragraph [0072] - paragraph [0077]<br>paragraph [0082] - paragraph [0084]<br>paragraph [0089] - paragraph [0091]<br>paragraph [0098]<br>paragraph [0107]<br>paragraph [0121]<br>paragraph [0129]<br>-----<br>-/-- | 1-19 |

[X] Further documents are listed in the continuation of Box C.

[X] 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 May 2019 | 07/06/2019 |

| Name and mailing address of the ISA/ | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040,<br>Fax: (+31-70) 340-3016 | Lüddemann, Tobias |

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Form PCT/ISA/210 (second sheet) (April 2005)

# INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2018/059634

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| Y | EP 2 449 962 A1 (BIOSENSE WEBSTER ISRAEL LTD [IL]) 9 May 2012 (2012-05-09)<br>figure 2<br>paragraph [0015]<br>paragraph [0019]<br>paragraph [0026] - paragraph [0027]<br>paragraph [0030] - paragraph [0032]<br>----- | 1-19 |

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# INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2018/059634

**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.: 20
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:

see FURTHER INFORMATION sheet PCT/ISA/210

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 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.:

**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/IB2018/059634

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| US 2014364725 A1 | 11-12-2014 | US 2007208252 A1 | 06-09-2007 |
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| | | JP 5885999 B2 | 16-03-2016 |
| | | JP 2012096037 A | 24-05-2012 |
| | | US 2012116210 A1 | 10-05-2012 |

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

Continuation of Box II.2

Claims Nos.: 20

Claim 20 relates to a method for treatment of the human or animal body by surgery ("navigating a medical instrument in a paranasal sinus", "advancing the medical instrument into a nasal cavity of a patient"), practised on the human or animal body (Rule 39.1 (iv) PCT). Consequently, no opinion will be formulated with respect to the novelty, inventive step and industrial applicability of the subject-matter of these claims (Article 17(2)(a)(i) PCT).

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) declaration be overcome.