

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference ISRG09000PCT	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2017/065162	International filing date (<i>day/month/year</i>) 07 December 2017 (07.12.2017)	(Earliest) Priority Date (<i>day/month/year</i>) 08 December 2016 (08.12.2016)
Applicant INTUITIVE SURGICAL OPERATIONS, INC.		

This International search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

the international application in the language in which it was filed

a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. **Certain claims were found unsearchable** (See Box No. II)

3. **Unity of invention is lacking** (See Box No. III)

4. With regard to the **title**,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

a. the figure of the **drawings** to be published with the abstract is Figure No. 5B

as suggested by the applicant.

as selected by this Authority, because the applicant failed to suggest a figure.

as selected by this Authority, because this figure better characterizes the invention.

b. none of the figures is to be published with the abstract.

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.: 16
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 any 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

International application No.
PCT/US2017/065162**A. CLASSIFICATION OF SUBJECT MATTER****A61B 34/20(2016.01)i, A61B 6/03(2006.01)i, A61B 90/00(2016.01)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 34/20; A61B 5/05; G06F 3/048; G06F 19/00; A61B 1/00; G06G 7/60; A61B 6/03; A61B 19/00; G06T 7/00; G06T 1/00; A61B 90/00

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: medical imaging, processing, filtering, navigation, tracking, virtual, airway

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2014-0282216 A1 (COVIDIEN LP) 18 September 2014 See claims 1-20; paragraphs [0062]-[0087]; figures 1-13.	1-15, 17-23, 28-38
Y		24-27
Y	US 2016-0000302 A1 (COVIDIEN LP) 07 January 2016 See claims 1-15.	24-27
A	US 2009-0105579 A1 (GARIBALDI, J. M.) 23 April 2009 See the whole document.	1-15, 17-38
A	US 2013-0223702 A1 (VERAN MEDICAL TECHNOLOGIES, INC.) 29 August 2013 See the whole document.	1-15, 17-38
A	US 2011-0107270 A1 (WANG, B. et al.) 05 May 2011 See the whole document.	1-15, 17-38

 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 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

29 March 2018 (29.03.2018)

Date of mailing of the international search report

29 March 2018 (29.03.2018)

Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2017/065162

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2014-0282216 A1	18/09/2014	CA 2845918 A1 CN 104050313 A EP 2779004 A1 JP 2014-180546 A US 2017-0161456 A1 US 9639666 B2	15/09/2014 17/09/2014 17/09/2014 29/09/2014 08/06/2017 02/05/2017
US 2016-0000302 A1	07/01/2016	CA 2953142 A1 CN 106572794 A EP 3164049 A1 JP 2017-529882 A US 2018-0008212 A1 US 9770216 B2 WO 2016-004000 A1	07/01/2016 19/04/2017 10/05/2017 12/10/2017 11/01/2018 26/09/2017 07/01/2016
US 2009-0105579 A1	23/04/2009	None	
US 2013-0223702 A1	29/08/2013	EP 2816966 A1 US 2013-0225942 A1 US 2013-0225943 A1 US 2013-0231556 A1 US 2015-0379710 A1 US 2017-0236272 A1 US 9138165 B2 WO 2013-126659 A1	31/12/2014 29/08/2013 29/08/2013 05/09/2013 31/12/2015 17/08/2017 22/09/2015 29/08/2013
US 2011-0107270 A1	05/05/2011	US 8819591 B2 WO 2011-059554 A2 WO 2011-059554 A3	26/08/2014 19/05/2011 06/10/2011