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(71) Applicant: **INTUITIVE SURGICAL OPERATIONS, INC.** [US/US]; 2323 Victory Avenue, Suite 700, Dallas, Texas 75219 (US).

(72) Inventor: **DIOLAITI, Nicola**; 1020 Kifer Road, Sunnyvale, California 94086 (US).

(74) Agent: **NICKOLS, Julie M.** et al.; HAYNES AND BOONE, LLP., 2323 Victory Avenue, Suite 700, Dallas, Texas 75219 (US).

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(54) Title: SYSTEMS AND METHODS FOR MOTION CONTROL OF STEERABLE DEVICES

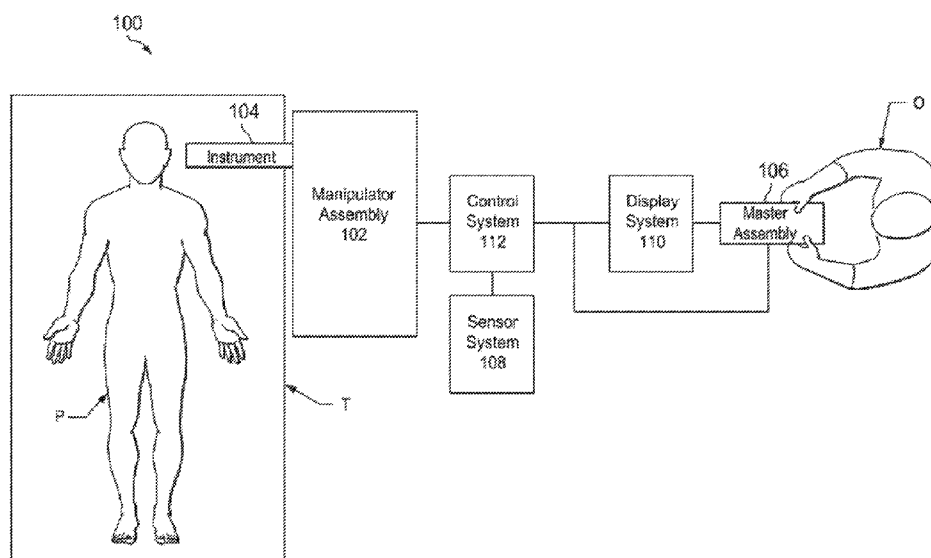


Fig. 1

(57) Abstract: Systems and methods for controlling movement of a steerable device are provided. In some embodiments, a system may include a control device, a manipulator system, and/or a control system communicatively coupled to the manipulator system and the control device. The control system may track a virtual user-instructed position based on a first user input, determine a device position of a portion of the steerable device, and determine a position discrepancy in a first direction between the determined device position and the virtual user-instructed position. The control system may also receive a second user input commanding motion of the steerable device in a second direction. At least a portion of the second direction may be opposite the first direction. The control system may also reduce the position discrepancy based on an aspect of the second user input and a catch-up profile.

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- *with international search report (Art. 21(3))*
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2019/054016

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.: 14-27
because they relate to subject matter not required to be searched by this Authority, namely:
see FURTHER INFORMATION sheet PCT/ISA/210
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.:
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

International application No
PCT/US2019/054016

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61B1/00
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)
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.
X	US 2015/011830 A1 (HUNTER IAN W [US] ET AL) 8 January 2015 (2015-01-08) paragraphs [0053] - [0058]; figures 3B, 3D -----	1-13, 28-39
A	WO 2016/191298 A1 (INTUITIVE SURGICAL OPERATIONS [US]) 1 December 2016 (2016-12-01) cited in the application the whole document -----	1-13, 28-39



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

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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

"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

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08/05/2020

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Fischer, Martin

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2019/054016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2015011830 A1	08-01-2015	US 2015011830 A1	08-01-2015
		WO 2012027581 A2	01-03-2012

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		US 2018153621 A1	07-06-2018
		WO 2016191298 A1	01-12-2016

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: 14-27

Rule 39.1 (iv) PCT defines that it is not required to search the part of an international application to the extent to which, its subject matter is a method for treatment of the human or animal body by surgery or therapy. As exemplified in paragraph [0018] as well as in the figures of the present application, the methods defined in present claims 14 to 27 do however encompass such treatment by surgery or therapy. This is why no search has been carried out for the methods of claims 14 to 27.