

(S7) Abstract: An instrument includes a handle portion, an actuator, a shaft, a rigid member, and an angular control mechanism. The shaft has a proximal end and a distal end with an electrode region, and a flexible region in between. Moving the actuator causes portions of the flexible region distal of a pivot region to bend such that both an angular orientation and a radial offset of the electrode region reach a maximum angular orientation and a maximum radial offset, respectively, when the actuator reaches the end position. A distal portion of the rigid member defines the pivot region. Moving the rigid member along the shaft causes the pivot region to translate. The maximum radial offset varies depending on the position of the pivot region. The angular control mechanism is configured to control the angular orientation such that the maximum angular orientation is same regardless of the position of the rigid member.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/043216

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61B18/14
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)

EP0-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.
A	US 7 201 731 B1 (LUNDQUIST INGEMAR H [US] ET AL) 10 April 2007 (2007-04-10) the whole document -----	1-11, 14-20
X	US 5 389 073 A (IMRAN MIR A [US]) 14 February 1995 (1995-02-14) abstract; figures 2-5 column 1, lines 18-50 column 1, line 67 - column 4, line 47 -----	1-11, 14-20
A	WO 2010/009473 A1 (VYTRONUS INC [US]; THAPLIYAL HIRA V [US]; GALLUP DAVID A [US]; ARENSON) 21 January 2010 (2010-01-21) the whole document -----	1-11, 14-20
A	US 6 245 068 B1 (OLSON STEVEN L [US] ET AL) 12 June 2001 (2001-06-12) the whole document -----	1-11, 14-20

☐ 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

23 September 2013

Date of mailing of the international search report

31/01/2014

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/043216

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.:
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:

see additional sheet

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.:
1-11, 14-20

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-11, 14-20

An instrument comprising a handle portion, an actuator, a shaft having a pivot region and flexible region and a rigid member movably coupled to the shaft such that the distal portion of the rigid member defines the pivot region, wherein movement of the rigid member along the length of the shaft causes a position of the pivot region to translate axially along the length of the shaft or a method of controlling a shaft of an instrument including the step of translating a position of the pivot region.

2. claims: 12, 13

An instrument comprising a handle portion, a shaft having a pivot region and flexible region two pull wires adapted to bend the shaft.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2013/043216

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 7201731	B1	10-04-2007	AT 177615 T 15-04-1999
		AU 7056594 A 14-03-1995	
		DE 4423228 A1 23-02-1995	
		DE 9410654 U1 20-10-1994	
		DE 69417206 D1 22-04-1999	
		DE 69417206 T2 19-08-1999	
		EP 0667126 A1 16-08-1995	
		FR 2709065 A1 24-02-1995	
		US 5409453 A 25-04-1995	
		US 5531677 A 02-07-1996	
		US 5848986 A 15-12-1998	
		US 6102886 A 15-08-2000	
		US 7201731 B1 10-04-2007	
		WO 9505124 A1 23-02-1995	

US 5389073	A	14-02-1995	US 5389073 A 14-02-1995
			US 5533967 A 09-07-1996

WO 2010009473	A1	21-01-2010	AU 2009270717 A1 21-01-2010
			CA 2730784 A1 21-01-2010
			EP 2309939 A1 20-04-2011
			JP 2011528581 A 24-11-2011
			US 2010049099 A1 25-02-2010
			WO 2010009473 A1 21-01-2010

US 6245068	B1	12-06-2001	US 6245068 B1 12-06-2001
			US 2001014770 A1 16-08-2001
