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[Continued on next page]

(54) Title: SURGICAL ACCESS WITH TARGET VISUALIZATION

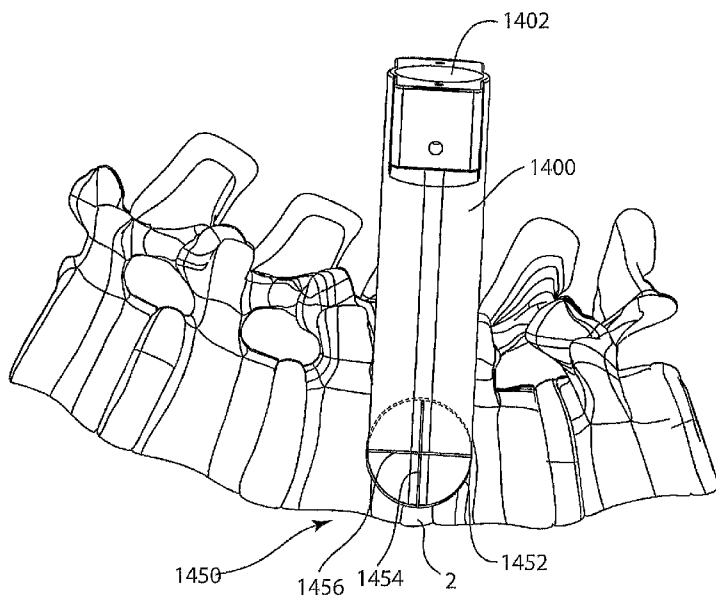


FIG. 25

(57) Abstract: Accessing a spine from a curved postero-lateral approach may include a curved cannula positioned along a curved path from an opening in the skin to a location proximate to the spine. Positioning of the distal end of a radiolucent curved access cannula may be assisted by use of one or more radio-opaque markers. Markers may be positioned to form a cross hair image in fluoroscopy to assist in cannula placement. Radio-opaque inserts placed in and extended beyond the curved access cannula may have radiolucent windows to allow viewing of the cannula's radio-opaque markers. An appropriately placed curved access cannula may be clamped to prevent subsequent movement. Appropriate tools may be introduced through the curved access cannula and the distal radio-opaque tool heads may be viewed relative to the radio-opaque markers. The curved access cannula may be attached to the spine through one or more screws.

WO 2010/017521 A3



TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *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))*

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A. CLASSIFICATION OF SUBJECT MATTER*A61B 17/70(2006.01)i, A61B 19/00(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 17/70; A61B 17/56; A61B 17/58; A61M 25/00; A61M 29/00

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

(Chinese Patents and application for patent)

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

eKOMPASS(KIPO internal) & Keywords: radio-opaque , surgical access, curved access cannula, fluoroscopy

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5203777 A1 (PETER Y. LEE) 20 April 1993 See Col.4 Line 41-Col.5 Line 14; Claim 1 ; Fig.2	1-16
A	US 5921978 A1 (RUSSELL B. THOMPSON et al.) 13 July 1999 See Col.4 Lines 20-37, Col.5 Line 52-Col.6 Line 20; Claim 1; Figs 4,5,8-10	1-16
A	US 2006-0149278 A1 (M. ABDU) 06 July 2006 See Paragraphs [0009]-[0013], [0074]-[0076]; Figs. 19-23	1-16
A	US 2007-0010844 A1 (GORMAN GONG et al.) 11 January 2007 See Paragraphs [0023], [0027], [0028]; Claim 1; Figs. 1, 6	1-16
A	US 2003-0229347 A1 (MICHAEL C. SHERMAN et al.) 11 December 2003 See Paragraphs [0018], [0052], [0058], Claims 44, 69 ; Figs. 1, 8-10	1-16

 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

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2009/053217**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.: 17-22
because they relate to subject matter not required to be searched by this Authority, namely:
Claim 17 relates to a method for providing surgical access, which is a substantial surgical method to treat human body. This method falls into the category of a method for treatment of the human body by surgery, therapy or diagnostic methods. The same reasoning applies to claims 18-22, which are dependent on claim 17 [Article 17(2)(a)(i), Rule 39.1(iv) PCT].
2. Claims Nos.: 23
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:
Claim 23 relies on reference to the description or drawings instead of definite structure expressly state in the claim.
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 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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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