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(54) Title: BONE REGISTRATION USING BONE ROTATION AXIS

The diagram illustrates a femur with a tracking array attached to the distal end. A circular path is shown around the distal femur, indicating its movement during flexion and extension. The femoral head is also shown, with an estimated F-E axis indicated. Labels include: Circular path of the distal femur when being moved in flexion-extension, Tracking Array, Distal Femur, Femoral Head, and Estimated F-E Axis about the femoral head.

FIG. 2

(57) Abstract: A method for registering bone data to a bone is provided that includes the recordation of tracking element locations. The tracking element being associated with the bone while the bone is rotated about an axis. The axis of rotation is determined using the recorded locations. The bone data is registered to the bone and includes a bone landmark located at a determinable or pre-determined location with respect to the bone data, wherein an approximate alignment of the bone landmark with the determined axis is used for the registration. A system for performing the registration is also provided. The system includes a tracking system for tracking locations of a tracking element, the tracking element configured to be affixed to a bone. A computer having a processor is included and configured to perform the computational steps of the method.

[Continued on next page]



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A. CLASSIFICATION OF SUBJECT MATTER

IPC - INV. A61B 34/00, A61B 17/17, A61B 17/15, G06T 3/14 (2024.01)

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CPC - INV. A61B 34/00, A61B 17/1764, A61B 17/155, G06T 3/14

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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)

See Search History document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

See Search History document

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

See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2021/0128252 A1 (THINK SURGICAL, INC) 06 May 2021 (06.05.2021) entire document especially Abstract, para [0002], para [0012]-[0014], para [0023]-[0028], para [0030]-[0036], para [0039]-[0043]	1-26
Y	US 2019/0175283 A1 (THINK SURGICAL, INC) 13 June 2019 (13.06.2019) entire document especially Abstract, para [0008]-[0010], para [0015]-[0023], para [0025]-[0031]	1-26
A	US 2023/0000556 A1 (Smith & Nephew, Inc et al.) 05 January 2023 (05.01.2023) entire document	1-26

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

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