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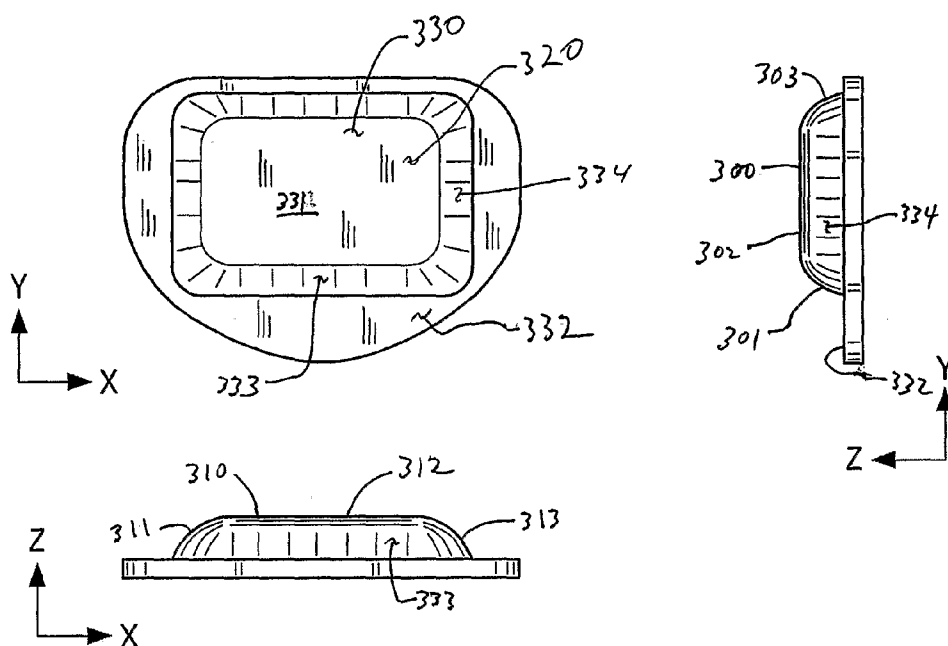
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[Continued on next page]

(54) Title: INTERVERTEBRAL DISC REPLACEMENT AND ASSOCIATED INSTRUMENTATION



(57) Abstract: An endplate for an intervertebral prosthesis includes an inner domed region (330) and a peripheral rim (332) wherein the inner domed region has a non-circular plan and has an area that is at least 50 % of the area of the endplate. A surgical instrument for milling a recess in a vertebral endplate includes a cutting tool having a drive shaft with a positioning collar, a guard frame, and a pair of guide plates attached to the guard frame and space to confine the positioning collar and having guide slots for the drive shaft.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2006/041540

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61F2/44 A61B17/17

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)
A61F

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 practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2004/039291 A (SPINECORE INC [US]) 13 May 2004 (2004-05-13) figures 1g-1j paragraph [0100]	1, 2, 4-13
Y		3
X	US 2004/167626 A1 (GEREMAKIS PERRY A [US] ET AL) 26 August 2004 (2004-08-26) figures 5, 16-17d paragraphs [0058], [0076], [0095]	26-31
Y		3
A		1, 4-7, 9, 11-13
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☒ 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 document 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.
- *Z* document member of the same patent family

Date of the actual completion of the international search

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International application No

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C(Continuation), DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2001/016773 A1 (SERHAN HASSAN [US] ET AL) 23 August 2001 (2001-08-23) figures paragraphs [0032], [0033], [0037] - [0041]	26, 27
A		
A	----- WO 2005/007041 A (MATHYS MEDIZINALTECHNIK AG [CH]; LECHMANN BEAT [CH]; BUECKI ROGER [CH]) 27 January 2005 (2005-01-27) -----	1-3, 11, 12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2006/041540

Box 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 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 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.:

see annex

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ 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: 1-13, 26-31

An endplate for an intervertebral prosthesis, comprising:
an inner domed region configured and disposed to contact a prepared recess in an endplate of a vertebra; and
a peripheral rim configured and disposed to contact an intact peripheral rim of said vertebra, said peripheral rim substantially surrounding said inner domed region and having a circumference defining an area of said endplate,
wherein said inner domed region has a base periphery joined to said peripheral rim and a dome surface within said base periphery elevated above said peripheral rim,
said base periphery of said domed region has a non-circular plan and defines an area of said domed region, and said area of said domed region constitutes at least 50% of said area of said endplate,
wherein the dome surface has a generally planar top region.

2. claims: 14-25

Apparatus for milling a recess in a vertebral endplate comprising:
a surgical cutting tool including a surgical cutter and a drive shaft attached thereto, said drive shaft having a guide collar; and
a guide frame for positioning and guiding said surgical cutter in an intervertebral space between two vertebrae adjacent along a spinal axis for milling an endplate of at least one of said vertebrae,
said guide frame including:
a first guide plate adapted to be fixed to at least one of said vertebrae, said guide plate having a first generally central aperture sized for admitting said drive shaft and at least one guide slot communicating with said central aperture adapted to guide said drive shaft in a predetermined path, and
a second guide plate having a second generally central aperture sized for admitting said drive shaft and at least one guide slot communicating with said second aperture and adapted to guide said drive shaft in said predetermined path, said second guide plate being adapted to be oriented parallel to said first guide plate and spaced anteriorly therefrom by a distance selected such that said anterior and posterior surfaces of said guide collar can be received between said first and second guide plates in sliding contact therewith.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/041540

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