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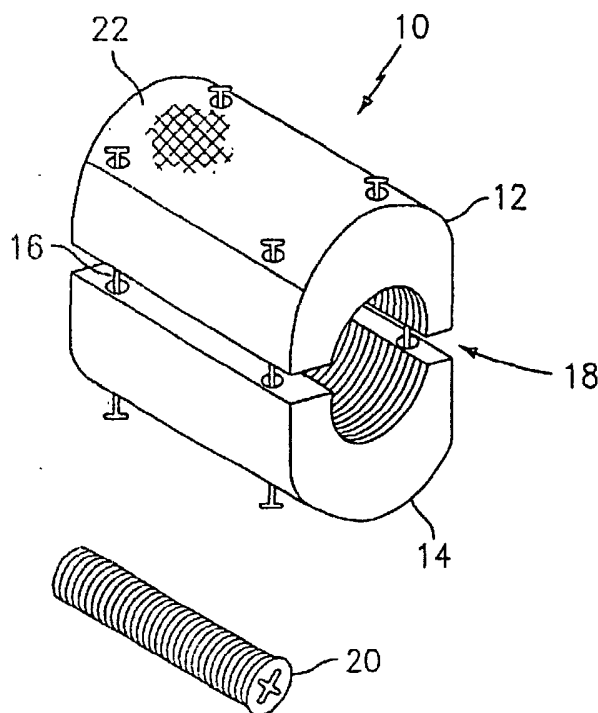
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: DEVICE AND METHOD FOR LUMBAR INTERBODY FUSION



(57) Abstract: A method for performing percutaneous interbody fusion is disclosed. The method includes the steps of inserting a guide needle posteriorly to the disc space, inserting a dilator having an inner diameter slightly larger than the outer diameter of the guide needle over the guide needle to the disc space to enlarge the disc space, and successively passing a series of dilators, each having an inner diameter slightly larger than the outer diameter of the previous dilator, over the previous dilator to the disc space the gradually and incrementally increase the height of the disc space. Once the desired disc height is achieved, the guide needle and all the dilators, with the exception of the outermost dilator, are removed. An expandable intervertebral disc spacer is then passed through the remaining dilator and positioned in the disc space. The disc spacer is expanded to the required disc height, and then a bone matrix is passed through the dilator to fill the disc space. The dilator is then removed. An expandable intervertebral disc spacer is also disclosed, having a tapered bore that causes greater expansion of one end of the spacer with respect to the other. A kit for performing the percutaneous interbody fusion procedure is also disclosed.

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 01/47121

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 A61F2/44 A61F2/46

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)

IPC 7 A61F 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 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.
A	WO 00 35388 A (PAES NEWTON ;PAES VERA (BR); PHOENIX BIOMEDICAL CORP (US)) 22 June 2000 (2000-06-22) claims 1,2,14-23; figures page 10, line 4 - line 6 ---	11-13, 15,16, 18,20
A	US 5 665 122 A (KAMBIN PARVIZ) 9 September 1997 (1997-09-09) claims 10,13; figures 4,5,9 ---	11-13, 15,20
A	US 6 129 763 A (ATTIA DAVID ET AL) 10 October 2000 (2000-10-10) claim 6; figures ---	11-13, 15,20
A	DE 44 16 605 C (AESCULAP WERKE AG) 8 June 1995 (1995-06-08) claims 1,7-10; figures 1-3 ---	11,13, 15,20
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Further documents are listed in the continuation of box C.



Patent family members are listed in 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.
- *&* document member of the same patent family

Date of the actual completion of the international search

6 September 2002

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13. 09. 2002

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/47121

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 00 49977 A (WILLIAMS LYTTON A ; WATKINS ROBERT G (US)) 31 August 2000 (2000-08-31) figures 5A-D, 7A-9D page 12, line 16 - line 27 -----	11,13, 16,17
A	WO 96 27321 A (MICHELSON GARY K) 12 September 1996 (1996-09-12) claims 35-39; figures 1-5, 19 -----	16,17

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/47121

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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.: 1-10
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
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 II Observations where unity of invention is lacking (Continuation of item 2 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.:

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: 11-15, 20

An expandible intervertebral disc spacer comprising,
a top portion and a bottom portion
which are joined by a plurality of pins permitting vertical
movement of the top portion with respect to the bottom
portion,
the inner surface of the top and the bottom portion defining
a tapered bore, and
a rod for insertion into the tapered bore for increasing the
distance between one end of the top and the bottom portion.

(Problem: Allowing the controlled, guided expansion of an
intervertebral disc spacer in the intervertebral space)

2. Claims: 16-19

A kit comprising,
at least one expandible disc spacer,
at least one guide needle,
a plurality of dilators, a first dilator having an inner
diameter that is slightly larger than an outer diameter of
the guide needle, and each dilator having an inner diameter
successively larger than an outer diameter of a previous
dilator, and
a package containing at least the one disc spacer, the one
guide needle, and the plurality of dilators.

(Problem: Providing a set for a spinal surgery comprising
an (any) intervertebral spacer and a dilator for the
careful, stepwise distraction of two adjacent vertebrae to
prepare the intervertebral disc space between them for the
insertion of a disc spacer)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/47121

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