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[US/US]; 2457 Calkins Road, Germantown, Minnesota 38139 (US). **BERRY, Bret, M.** [US/US]; 3848 Karissa Ann PIE, Jacksonville, Florida 32223 (US).

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(74) Agents: **REVIS, Paul, A.** et al.; MC LC340, 710 Medtronic Parkway, Minneapolis, Minnesota 55432 (US).

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(71) Applicant (*for all designated States except US*): **SDGI HOLDINGS, INC.** [US/US]; 300 Delaware Avenue Suite 508, Wilmington, Delaware 19801 (US).

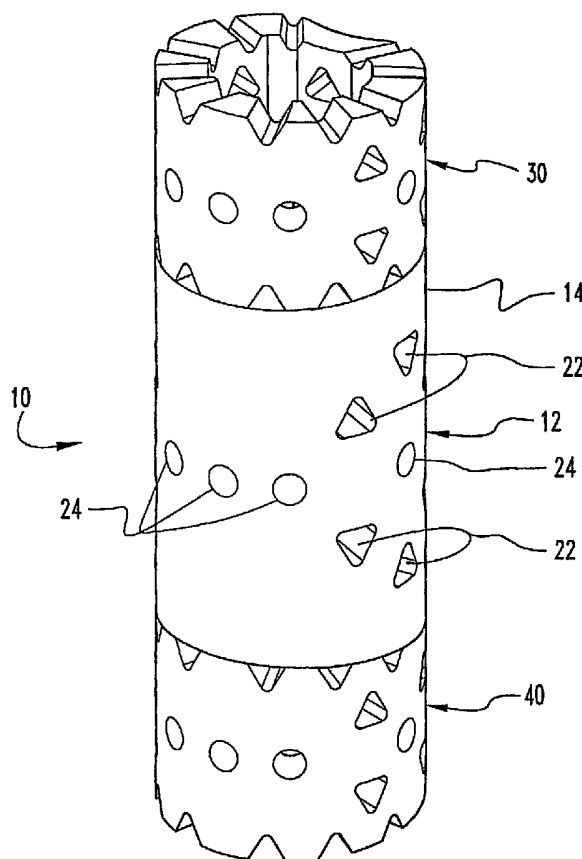
(72) Inventors; and

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

(75) Inventors/Applicants (*for US only*): **LANGE, Eric, C.**

[Continued on next page]

(54) Title: VERTEBRAL BODY AND DISC SPACE REPLACEMENT DEVICES



(57) Abstract: A vertebral replacement body device (10) for supporting adjacent vertebrae includes a connecting member (12) having an upper member (30) and a lower member (40) engaged thereto at opposite ends thereof. The members can be restrained relative to one another to resist axial, rotation and/or lateral displacement. The vertebral replacement body device can have a chamber extending therethrough for fusion of the supported vertebrae.

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**Declaration under Rule 4.17:**

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent*

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US2004/007362

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 A61F2/44 A61F2/30

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

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	US 5 192 327 A (BRANTIGAN JOHN W) 9 March 1993 (1993-03-09) claim 1; figures column 4, line 4 - column 5, line 21 column 7, line 7 - line 14	60,62, 63,77
Y	----- US 2002/099444 A1 (KOZAK JEFFREY ET AL) 25 July 2002 (2002-07-25) claims 1,12,13; figure 2 paragraph [0039]	1-7, 10-14
Y	----- US 2002/099444 A1 (KOZAK JEFFREY ET AL) 25 July 2002 (2002-07-25) claims 1,12,13; figure 2 paragraph [0039]	1-7, 10-14
A	----- US 2003/009235 A1 (BODEN SCOTT D ET AL) 9 January 2003 (2003-01-09) claims 1,13,20,30; figure 3 paragraphs [0104], [0127] -----	1,6,7

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

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European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Stach, R

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2004/007362

## 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.:  
  
1-15, 60, 62, 63, 77

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

**INTERNATIONAL SEARCH REPORT**

International Application No. PCT/ US2004/ 007362

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-15, 60, 62, 63, 77

A vertebral replacement device, comprising:  
a first member including a first end and an opposite second end positionable against an endplate of a vertebra, said first member defining a chamber extending between said first end and said second end; and  
a second member including a first end and a second end, wherein one of said first member and said second member includes a first receptacle formed in said first end thereof and opening laterally in a wall thereof, and the other of said first member and said second member includes a first extension extending from said first end thereof, wherein said first member is laterally positionable on said second member with said first extension being slidably received and axially restrained in said first receptacle and engaging said first receptacle to resist axial and rotational displacement of said first member relative to said second member.

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2. claims: 16-28

A vertebral replacement device, comprising:  
a first member having a first end and an opposite second end positionable against an endplate of a vertebra, said first member defining a chamber extending between said first end and second ends; and  
a second member including a first end and a second end, said second member including a chamber extending between said first and second ends,  
wherein one of said first member and said second member includes a number of receptacles radially formed in and positioned about said first end thereof, and the other of said first member and said second member includes a number of extensions extending radially from and positioned about said first end thereof,  
wherein said first member is positionable on said second member with said number of extensions being received in corresponding ones of said number of receptacles in interdigitating fashion to resist lateral and rotational displacement of said first member relative to said second member.

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3. claims: 29-37, 61, 78

# INTERNATIONAL SEARCH REPORT

International Application No. PCT/US2004/007362

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

A vertebral replacement device, comprising:  
a first member including a body extending between a first end and an opposite second end positionable toward an endplate of a vertebra, said first member defining a chamber extending between said first end and second ends, said body further including a wall portion adjacent said chamber, said wall portion including first and second holes extending therethrough between said first and second ends; and  
a second member including a body extending between a first end and a second end, said second member defining a chamber extending between said first and second ends, said body further including a wall portion adjacent said chamber, said wall portion including first and second holes extending therethrough between said first and second ends; and  
first and second coupling members positionable in respective ones of said first and second holes to axially secure said first member to said second member with said first ends adjacent one another, wherein said first and second coupling members further resist lateral and rotational displacement of said first member relative to said second member.

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#### 4. claims: 38-50

A vertebral replacement device, comprising:  
a first member including a body extending between a first end and an opposite second end positionable toward an endplate of a vertebra, said first member defining a chamber extending between said first end and second ends, said body further including a wall portion adjacent said chamber; and  
a second member including a body extending between a first end and a second end, said second member defining a chamber extending between said first and second ends, said body further including a wall portion adjacent said chamber, wherein one of said wall portions of said first and second members includes a pair of holes opening toward said first end thereof and the other of said first and second members includes a pair of extensions extending from said first end at said wall portion, said pair of extensions positionable in corresponding ones of said pair of holes when said first member is stacked on said second member with said first ends adjacent one another.

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#### 5. claims: 51-59

## INTERNATIONAL SEARCH REPORT

International Application No. PCT/ US2004/ 007362

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

A vertebral replacement device, comprising:  
a first member including a body extending between a first end and an opposite second end positionable toward an endplate of a vertebra, said first member defining a chamber extending between said first and second ends, said body further including a wall portion adjacent said chamber; and  
a second member including a body extending between a first end and a second end, said second member defining a chamber extending between said first and second ends, said body further including a wall portion adjacent said chamber,  
wherein said first and second members each include a receptacle between said first and second ends in said wall portion of said body, said receptacles being aligned when said first member is stacked on said second member, and  
further comprising a coupling member slidably received in said aligned receptacles and engageable to each of said first and second members with an engagement member to axially secure said first and second members thereto.

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### 6. claim: 64

A device positionable in a space between vertebrae,  
comprising:  
a body having a height between upper and lower ends, said body including a first end wall and a pair of opposite side walls, said first end wall including a convexly curved outer surface, said body further comprising a chamber between said end wall and said opposite side walls, wherein said body includes a second end wall opposite said first end wall extending between said opposite side walls, said second end wall including upper and lower ends recessed below said upper and lower ends of said body  
wherein said opposite side walls extend from a first end at said first end wall to an opposite second end, said second wall being offset from said second ends toward said first end wall.

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### 7. claims: 65-69

A device positionable in a space between vertebrae,  
comprising:  
a body having a height between upper and lower ends, said body including a first end wall and a pair of opposite side walls, said first end wall including a convexly curved outer surface and an inner surface, said body further comprising a chamber between said opposite side walls,  
wherein said chamber is open between said opposite side walls in a direction opposite said first end wall and said first end wall includes a thickness between said inner surface and said outer surface that is greater than a thickness of said opposite side walls.

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## INTERNATIONAL SEARCH REPORT

International Application No. PCT/ US2004/ 007362

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

8. claims: 70-76

A device positionable in a space between vertebrae, comprising:  
a body having a height between upper and lower ends, said body including a first end wall, a second end wall, and a pair of opposite side walls extending therebetween, said body further comprising a chamber between said first and second end walls and said opposite side walls, said body further comprising a pair of medial walls between said opposite side walls extending from said second end wall toward said first end wall.

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9. claims: 79, 80

A device positionable in a space between vertebrae, comprising:  
a body having a height between upper and lower ends, said body including a first end wall, a second end wall, and a pair of opposite side walls extending therebetween, said body further comprising a chamber between said first and second end walls and said opposite side walls, said body further comprising a medial wall between said opposite side walls extending through said chamber from said first end wall to said second end wall  
wherein said second end wall includes a concavely curved outer surface portion at said medial wall, and linear outer surface portions extending from said concavely outer surface portion to respective ones of said opposite side walls.

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10. claims: 81-85

A vertebral replacement device, comprising:  
a first member extending between a first end and a second end, said first member including a chamber opening at least at said first end, and said second end positionable toward an adjacent vertebra;  
a second member extending between a first end and a second end, said second member including a chamber opening at least at said first end; and  
a sleeve extending between said first and second members and positionable in said chambers thereof opening at said first ends, wherein said first and second members are slidable along said sleeve, said sleeve including at least one flexible engaging member thereof for engaging the adjacent first member or second member thereto when said first member is stacked on said second member.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/007362

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