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(54) Title: DYNAMIC ROD

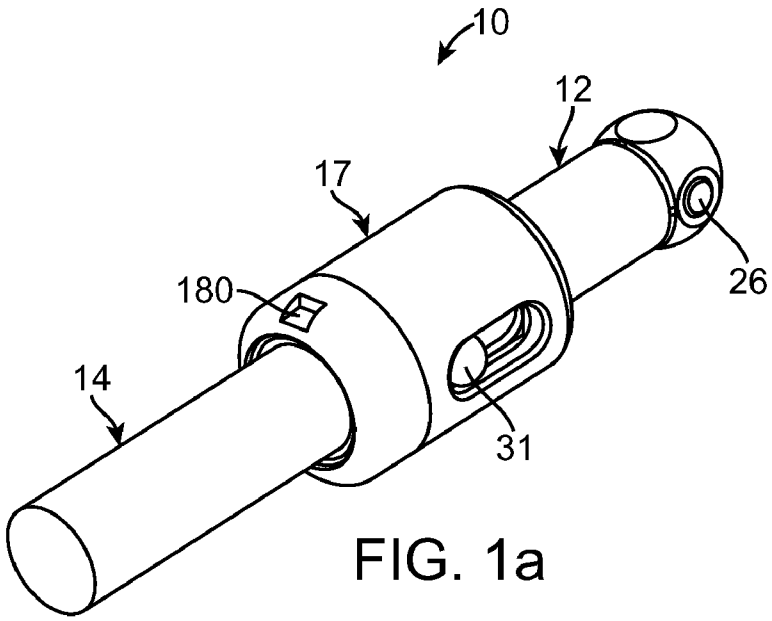


FIG. 1a

(57) Abstract: A dynamic rod implantable into a patient and connectable between two vertebral anchors in adjacent vertebral bodies is provided. The dynamic rod fixes the adjacent vertebral bodies together in a dynamic fashion providing immediate postoperative stability and support of the spine. The dynamic rod comprises a first rod portion dynamically connected to a second rod portion at a retainer that has separate chambers for receiving rod portions. One rod portion is configured for longitudinal movement and the other rod portion is configured for polyaxial angulation relative to the retainer. The dynamic rod is configured such that the retainer is located proximate to one of the facet joints when implanted into a patient. The dynamic rod permits relative movement of the first and second rod portions allowing the rod to carry some of the natural flexion, extension and rotation moments of the spine.

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B. FIELDS SEARCHED

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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
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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: dynamic rod, spine, vertebrae, fixation

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2008-0045951 A1 (JONATHAN P. FANGER et al.) 21 February 2008 See Figs. 6A-10; Paragraphs [0063]-[0089]	9,19,20 1-8,10-18
A	US 6991632 B2 (STEPHEN RITLAND) 31 January 2006 See Figs. 1, 22, 28; Col.5 Line 55-Col.6 Line 35	1-20
A	US 2006-0195088 A1 (RONALD SACHER et al.) 31 August 2006 See Figs. 1-4; Paragraphs [0009]-[0012]	1-20
A	US 6083224 A1 (STANLEY GERTZBEIN et al.) 04 July 2000 See Fig.1; Col.4 Lines 20-56	1-20
A	US 2007-0161997 A1 (JEFFERY THRAMANN et al.) 12 July 2007 See Paragraphs [0023]-[0027]	1-20

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008-0045951 A1	21.02.2008	EP 2051645 A2	29.04.2009
		WO 2008-021107 A2	21.02.2008
		WO 2008-021107 A3	21.02.2008
		WO 2008-021107 A3	12.06.2008
US 6991632 B2	31.01.2006	AU 2004-216131 A1	10.09.2004
		CA 2516791-A1	10.09.2004
		EP 1596738 A2	23.11.2005
		JP 2006-518657 T	17.08.2006
		US 2003-0093078 A1	15.05.2003
		US 2004-0181223 A1	16.09.2004
		US 2005-149023 A1	07.07.2005
		US 2006-0079899 A1	13.04.2006
		US 2007-0162006 A1	12.07.2007
		US 7207992 B2	24.04.2007
		WO 2004-075778 A2	10.09.2004
		WO 2004-075778 A3	02.06.2005
US 2006-0195088 A1	31.08.2006	None	
US 6083224 A1	04.07.2000	CA 2167990 C	11.09.2007
		EP 0726064 A2	14.08.1996
		EP 0726064 A3	28.10.1998
		EP 0726064 B1	27.08.2003
		JP 08-229052 A	10.09.1996
		US 2001-0010000 A1	26.07.2001
		US 2002-0193795 A1	19.12.2002
		US 5620443 A1	15.04.1997
		US 6066140 A1	23.05.2000
		US 6254603 B1	03.07.2001
		US 6471704 B2	29.10.2002
		US 6602254 B2	05.08.2003
US 2007-0161997 A1	12.07.2007	EP 2083717 A2	05.08.2009
		US 2006-0271055 A1	30.11.2006
		WO 2008-048973 A2	24.04.2008
		WO 2008-048973 A3	24.04.2008
		WO 2008-048973 A3	21.08.2008