PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT3962842

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS

CONVEYING PARTY DATA

Name	Execution Date
NUVASIVE, INC.	02/08/2016
IMPULSE MONITORING, INC.	02/08/2016

RECEIVING PARTY DATA

Name:	BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT
Street Address:	530 LYTTON AVENUE
City:	PALO ALTO
State/Country:	CALIFORNIA
Postal Code:	94301

PROPERTY NUMBERS Total: 535

Property Type	Number
Patent Number:	D652921
Patent Number:	D652922
Patent Number:	D652519
Patent Number:	D666292
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Patent Number:	D493533
Patent Number:	D533875
Patent Number:	D752646
Application Number:	29559163
Patent Number:	D530423
Patent Number:	D594986
Patent Number:	D639741
Patent Number:	D639243
Patent Number:	D708747
Patent Number:	D733303
Application Number:	29508745
Patent Number:	D671645
Application Number:	29438216

Property Type	Number
Patent Number:	D599019
Application Number:	29496752
Application Number:	29545063
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Application Number:	29479802
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Application Number:	14622600
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Application Number:	14823315
Patent Number:	6500128
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Patent Number:	6739112
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Application Number:	62273350
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Application Number:	62294990
Application Number:	62294992
Application Number:	62295008
Application Number:	15044947
Application Number:	15048928
Application Number:	62302725

CORRESPONDENCE DATA

Fax Number: (704)444-8857

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 7043432000
Email: twitcher@mcguirewoods.com
Correspondent Name: TERRY L. WITCHER, PARALEGAL
Address Line 1: MCGUIREWOODS LLP
Address Line 2: 201 N. TRYON STREET, SUITE 3000
Address Line 4: CHARLOTTE, NORTH CAROLINA 28202

ATTORNEY DOCKET NUMBER:	2068279-3006
NAME OF SUBMITTER:	TERRY L. WITCHER, PARALEGAL
SIGNATURE:	/s/ Terry L. Witcher
DATE SIGNED:	07/14/2016
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 49

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NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS

United States Patent and Trademark Office

Ladies and Gentlemen:

Please be advised that pursuant to the Security and Pledge Agreement dated as of February 8, 2016 (as amended, modified, extended, restated, renewed, replaced, or supplemented from time to time, the "Agreement") by and among the Grantors party thereto (each an "Grantor" and collectively, the "Grantors") and Bank of America, N.A., as administrative agent (the "Administrative Agent") for the Secured Parties referenced therein, the undersigned Grantor has granted a continuing security interest in and continuing lien upon the patents and patent applications shown on Schedule 1 attached hereto to the Administrative Agent for the ratable benefit of the Secured Parties.

Each of the undersigned Grantors and the Administrative Agent, on behalf of the Secured Parties, hereby acknowledge and agree that the security interest in the foregoing patents and patent applications (a) may only be terminated in accordance with the terms of the Agreement and (b) is not to be construed as an assignment of any patent or patent application.

Very truly yours,

GRANTORS:

NUVASIVE, INC.
IMPULSE MONITORING, INC.

By:_____
Name: Jeremie Sylvain
Title: Authorized Signatory

Acknowledged and Accepted:

BANK OF AMERICA, N.A., as Administrative Agent

By: _____
Name: Tiffany Shin
Title: Assistant Vice President

Schedule 1

See attached.

Reference	Name/Title	Current Owner	CC	Appl. No.	Filing Date	Reg. No.	Reg. Date	Notes	Case Status
PD0023DES1	Dilator	NuVasive, Inc.	US	29/360,368	2010-04-23	D652,921	2012-01-24		Registered
PD0023DES2	Dilator	NuVasive, Inc.	US	29/360,369	2010-04-23	D652,922	2012-01-24		Registered
PD0023DES3	Dilator	NuVasive, Inc.	US	29/360,370	2010-04-23	D652,519	2012-01-17		Registered
PD0023DES4	Dilator	NuVasive, Inc.	US	29/411,162	2012-01-17	D666,292	2012-08-28		Registered
PD0023DES5	Dilator	NuVasive, Inc.	US	29/411,651	2012-01-24	D666,293	2012-08-28		Registered
PD0023DES6	Dilator	NuVasive, Inc.	US	29/411,652	2012-01-24	D666,294	2012-08-28		Registered
PD0074DES1	Intervertebral Implant		US	29/176,060	2003-02-14	D493,533	2004-07-27	No assignment	Registered
PD0074EPDES1	Intervertebral Implant	NuVasive, Inc.	EM	000069562	2003-08-14	000069562	2003-12-09		Registered
PD0099DES1	Graphic User Interface for a Medical Monitor		US	29/192,063	2003-10-17	D533,875	2006-12-19	Assignment from inventors in progress	Registered
PD0099DES3	Graphical User Interface for a Medical Monitor		US	29/399,922	2011-08-19	D752,646	2016-03-29	Assignment from inventors in progress	Registered
PD0099DES4	Graphic User Interface for a Medical Monitor		US	29/559,163	2016-03-24			Assignment from inventors in progress	Pending
PD0104DES1	Intervertebral Implant	NuVasive, Inc.	US	29/227,372	2005-04-11	D530,423	2006-10-17		Registered
PD0104DES2	Intervertebral Implant	NuVasive, Inc.	US	29/306,656	2009-02-28	D594,986	2009-06-23		Registered
PD0137DES1	Electrode Connector	NuVasive, Inc.	US	29/362,506	2010-05-26	D639,741	2011-06-14		Registered
PD0137DES2	Electrode Connector	NuVasive, Inc.	US	29/362,507	2010-05-26	D639,243	2011-06-07		Registered
PD0162DES1	Spinal Fusion Implant	NuVasive, Inc.	US	29/381,796	2010-12-22	D708,747	2014-07-08		Registered
PD0163DES1	Intervertebral Implant	NuVasive, Inc.	US	29/439,479	2012-12-11	D733,303	2015-06-30		Registered
PD0197DES1	Favored Angle Screw	NuVasive, Inc.	US	29/508,745	2014-11-10				Pending
PD0225DES1	Intervertebral Implant	NuVasive, Inc.	US	29/376,166	2010-10-01	D671,645	2012-11-27		Registered
PD0225DES2	Intervertebral Implant	NuVasive, Inc.	US	29/438,216	2012-11-27				Pending
PD0228DES1	Spinal Fusion Implant	NuVasive, Inc.	US	29/304,928	2008-03-10	D599,019	2009-08-25		Registered
PD0251DES1	Spinal Implant Insertion System	NuVasive, Inc.	US	29/496,752	2014-07-16				Pending
PD0256DES1	Surgical Fixation System	NuVasive, Inc.	US	29/545,063	2015-11-09				Pending
PD0268DES1	Spinal Fusion Implant	NuVasive, Inc.	US	29/474,062	2014-05-15				Pending
PD0271DES1	Spinal Fusion Implant	NuVasive, Inc.	US	29/479,802	2014-01-20				Pending
PD0291DES1	Spinal Fusion Implant	NuVasive, Inc.	US	29/475,314	2013-12-02	D731,063	2015-06-02		Registered
PD0313DES1	Bone Plate	NuVasive, Inc.	US	29/446,437	2013-02-22	D734,853	2015-07-21		Registered
PD0313DES2	Bone Plate	NuVasive, Inc.	US	29/446,441	2013-02-22				Pending
PD0314DES1	Intervertebral Implant	NuVasive, Inc.	US	29/427,492	2012-07-18	D711,537	2014-08-19		Registered
PD0330DES1	Intervertebral Implant	NuVasive, Inc.	US	29/326,326	2008-10-15	D621,509	2010-08-10		Registered
PD0330DES2	Intervertebral Implant	NuVasive, Inc.	US	29/367,504	2010-08-09	D674,092	2013-01-08		Registered

PD0330DES4	Intervertebral Implant	NuVasive, Inc.	US	29/448,485	2013-03-12	D735,336	2015-07-28		Registered
PD0330DES5	Intervertebral Implant	NuVasive, Inc.	US	29/532,085	2015-07-01	D750,252	2016-02-23		Registered
PD0330DES6	Intervertebral Implant	NuVasive, Inc.	US	29/555,472	2016-02-22				Pending
PD0338DES1	Spinal Fusion Implant	NuVasive, Inc.	US	29/486,401	2014-03-28	D741,488	2015-10-20		Registered
PD0338DES2	Spinal Fusion Implant	NuVasive, Inc.	US	29/543,139	2015-10-21				Pending
PD0342DES1	Spinal Distraction Instrument	NuVasive, Inc.	US	29/393,737	2011-06-08	D656,610	2012-03-27		Registered
PD0356DES1	Spinal Implant	NuVasive, Inc.	US	29/369,140	2010-09-02	D658,761	2012-05-01		Registered
PD0356DES2	Spinal Implant	NuVasive, Inc.	US	29/419,794	2012-05-01	D685,475	2013-07-02		Registered
PD0426DES1	Spinous Process Plate	NuVasive, Inc.	US	29/489,679	2014-05-01				Pending
PD0438DES1	Intervertebral Impalnt	NuVasive, Inc.	US	29/459,170	2013-06-26	D725,270	2015-03-24		Registered
PD0470DES1	Retractor Blade	NuVasive, Inc.	US	29/530,069	2015-06-12				Pending
PD0488DES1	Intervertebral Implant	NuVasive, Inc.	US	29/405,583	2011-11-03	D675,320	2013-01-29		Registered
PD0488DES2	Intervertebral Implant	NuVasive, Inc.	US	29/444,346	2013-01-29	D696,402	2013-12-24		Registered
PD0488DES3	Intervertebral Implant	NuVasive, Inc.	US	29/477,585	2013-12-23	D747,485	2016-01-12		Registered
PD0488DES4	Intervertebral Implant	NuVasive, Inc.	US	29/551,272	2016-01-12				Pending
PD0489DES1	Intervertebral Implant	NuVasive, Inc.	US	29/405,584	2011-11-03	D721,808	2015-01-27		Registered
PD0489DES2	Intervertebral Implant	NuVasive, Inc.	US	29/515,792	2015-01-27				Pending
PD0499DES1	Intervertebral Implant	NuVasive, Inc.	US	29/438,314	2012-11-28	D731,061	2015-06-02	Co-ownership, no assignment from Troy Walters	Registered
PD0561DES1	Surgical Instrument	NuVasive, Inc.	US	29/460,276	2013-07-09				Pending
PD0577DES1	Intervertebral Implant	NuVasive, Inc.	US	29/469,512	2013-10-10	D745,159	2015-12-08		Registered
PD0577DES2	Intervertebral Implant	NuVasive, Inc.	US	29/547,760	2015-12-07				Pending
PD0610DES1	Anterior Cervical Bone Plate	NuVasive, Inc.	US	29/504,658	2014-10-08				Pending
PD0619DES1	Combined Intradiscal Insertion Tool and Intradiscal Shim	NuVasive, Inc.	US	29/508,821	2014-11-11				Pending
PD0620DES1	Intervertebral Implant	NuVasive, Inc.	US	29/509,736	2014-11-20				Pending
PD0669DES1	Interspinous Process Spacer	NuVasive, Inc.	US	29/550,016	2015-12-30				Pending
PU0007US1	Nerve Surveillance Cannulae Systems	NuVasive, Inc.	US	09/325,998	1999-06-04	6,564,078	2003-05-13	Security Interest	Registered
PU0007US10	Surgical Access and Nerve Surveillance	NuVasive, Inc.	US	14/622,600	2015-02-13				Pending
PU0007US2	Nerve Surveillance Cannulae Systems	NuVasive, Inc.	US	10/431,619	2003-05-07	7,079,883	2006-07-18		Registered
PU0007US4	Nerve Surveillance Cannulae Systems	NuVasive, Inc.	US	11/982,254	2007-10-31	7,962,191	2011-06-14		Registered

PU0007US5	Nerve Surveillance Cannulae Systems	NuVasive, Inc.	US	11/982,250	2007-10-31	7,693,562	2010-04-06		Registered
PU0007US7	Surgical Access and Nerve Surveillance	NuVasive, Inc.	US	13/160,477	2011-06-14	8,165,653	2012-04-24		Registered
PU0007US8	Surgical Access and Nerve Surveillance	NuVasive, Inc.	US	13/494,908	2012-06-12	8,489,170	2013-07-16		Registered
PU0007US9	Surgical Access and Nerve Surveillance	NuVasive, Inc.	US	13/943,725	2013-07-16	9,014,776	2015-04-21		Registered
PU0008US1	Image Intensifier Reticle System	NuVasive, Inc.	US	09/326,740	1999-06-04	6,266,394	2001-07-24		Registered
PU0013US1	Method of Replacing Nucleus Pulposus and Repairing the Intervertebral Disk	NuVasive, Inc.	US	09/274,217	1999-03-23	6,183,518	2001-02-06		Registered
PU0014US1	Surgical Access System and Related Methods	NuVasive, Inc.	US	10/789,797	2004-02-27	7,819,801	2010-10-26		Registered
PU0014US2	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/632,373	2009-12-07	7,892,173	2011-02-22		Registered
PU0014US3	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/030,798	2011-02-18	8,303,498	2012-11-06		Registered
PU0014US4	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/668,504	2012-11-05	8,550,994	2013-10-08		Registered
PU0014US5	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/756,951	2013-02-01	8,696,559	2014-04-15		Registered
PU0014US6	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/171,347	2014-02-03				Pending
PU0015US1	Annulotomy Closure Device	NuVasive, Inc.	US	09/663,250	2000-09-15	6,964,674	2005-11-15		Registered
PU0015US2	Annulotomy Closure Device and Related Methods	NuVasive, Inc.	US	11/078,541	2005-03-11	7,901,430	2011-03-08		Registered
PU0015US3	Annulotomy Closure Device and Related Methods	NuVasive, Inc.	US	11/982,253	2007-10-31	7,883,527	2011-02-08		Registered
PU0015US4	Annulotomy Closure Device and Related Methods	NuVasive, Inc.	US	11/981,859	2007-10-31	9,277,903	2016-03-08		Registered
PU0015US5	Annulotomy Closure Device and Related Methods	NuVasive, Inc.	US	15/063,249	2016-03-07				Pending
PU0021US1	Bone Graft Harvester	NuVasive, Inc.	US	09/717,838	2000-11-21	6,764,452	2004-07-20		Registered
PU0023US1	Surgical Access System and Related Methods	NuVasive, Inc.	US	10/608,362	2003-06-26	7,582,058	2009-09-01		Registered
PU0023US10	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/297,438	2014-06-05				Pending
PU0023US11	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/297,369	2014-06-05				Pending

PU0023US2	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/428,081	2009-04-22	7,935,051	2011-05-03		Registered
PU0023US3	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/635,418	2009-12-10	8,192,356	2012-06-05		Registered
PU0023US4	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/649,604	2009-12-30	8,182,423	2012-05-22		Registered
PU0023US5	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/650,336	2009-12-30	8,187,179	2012-05-29		Registered
PU0023US6	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/466,398	2012-05-08	8,672,840	2014-03-18		Registered
PU0023US7	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/757,035	2013-02-01	8,708,899	2014-04-29		Registered
PU0023US8	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/865,598	2013-04-18	8,915,846	2014-12-23		Registered
PU0023US9	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/263,797	2014-04-28				Pending
PU0025AU1	System and Methods for Performing Percutaneous Pedicle Integrity Assessments	NuVasive, Inc.	AU	2002353954	2002-10-30	2002353954	2008-11-13		Registered
PU0025AU2	System and Methods for Performing Percutaneous Pedicle Integrity Assessments	NuVasive, Inc.	AU	2008240341	2002-10-30	2008240341 B2	2012-07-19		Registered
PU0025DE1	System and Methods for Performing Percutaneous Pedicle Integrity Assessments	NuVasive, Inc.	DE	02789358.5	2002-10-30	60238861.9-08	2011-01-05		Registered
PU0025GB1	System and Methods for Performing Percutaneous Pedicle Integrity Assessments	NuVasive, Inc.	GB	02789358.5	2002-10-30	1450681	2011-01-05		Registered
PU0025JP1	System and Methods for Performing Percutaneous Pedicle Integrity Assessments	NuVasive, Inc.	JP	2003-539520	2002-10-30	4340153	2009-07-10		Registered
PU0025US1	System and Methods for Performing Percutaneous Pedicle Integrity Assessments	NuVasive, Inc.	US	10/836,105	2002-10-30	7,664,544	2010-02-16		Registered
PU0025US2	System and Methods for Performing Percutaneous Pedicle Integrity Assessments	NuVasive, Inc.	US	12/427,612	2009-04-21				Pending
PU0027AU2	System and Methods for Determining Direction to a Nerve	NuVasive, Inc.	AU	2008200066	2003-01-15	2008200066	2012-01-12		Registered
PU0027EP1	System and Methods for Determining Direction to a Nerve	NuVasive, Inc.	EP	03710727.3	2003-01-15				Pending

PU0027JP1	System and Methods for Determining Direction to a Nerve	NuVasive, Inc.	JP	2004-566886	2003-01-15	4397817	2009-10-30		Registered
PU0027US1	System and Methods for Determining Direction to a Nerve	NuVasive, Inc.	US	11/182,545	2003-01-15	8,147,421	2012-04-03		Registered
PU0027US3	System and Methods for Determining Direction to a Nerve	NuVasive, Inc.	US	14/865,683	2015-09-25				Pending
PU0028AU1	Electromyography System	NuVasive, Inc.	AU	22517/01	2000-11-24	779567	2005-05-26		Registered
PU0028EP1	Electromyography System	NuVasive, Inc.	EP	00986240.0	2000-11-24				Pending
PU0028JP1	Electromyography System	NuVasive, Inc.	JP	2001-539347	2000-11-24	4854900	2011-11-04		Registered
PU0028US1	Electromyography System	NuVasive, Inc.	US	09/722,070	2000-11-24	7,470,236	2008-12-30		Registered
PU0028US10	Electromyography System	NuVasive, Inc.	US	13/726,110	2012-12-22	8,958,869	2015-02-17		Registered
PU0028US11	Electromyography System	NuVasive, Inc.	US	14/622,585	2015-02-13				Pending
PU0028US2	Electromyography System	NuVasive, Inc.	US	10/830,189	2004-04-21	7,963,927	2011-06-21		Registered
PU0028US3	Electromyography System	NuVasive, Inc.	US	11/894,987	2007-08-21	8,562,539	2013-10-22		Registered
PU0028US4	Electromyography System	NuVasive, Inc.	US	11/981,889	2007-10-31	8,641,638	2014-02-04		Registered
PU0028US5	Electromyography System	NuVasive, Inc.	US	11/982,238	2007-10-31	7,991,463	2011-08-02		Registered
PU0028US8	Electromyography System	NuVasive, Inc.	US	13/196,784	2011-08-02	8,337,410	2012-12-25		Registered
PU0029US1	Surgical Access System and Related Methods	NuVasive, Inc.	US	10/682,568	2003-10-08	8,137,284	2012-03-20		Registered
PU0029US2	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/650,271	2009-12-30	8,192,357	2012-06-05		Registered
PU0029US3	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/486,093	2012-06-01	8,512,235	2013-08-20		Registered
PU0029US4	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/756,908	2013-02-01	8,679,006	2014-03-25		Registered
PU0029US5	Sugical Access System and Related Methods	NuVasive, Inc.	US	14/018,173	2013-09-04	8,663,100	2014-03-04		Registered
PU0029US6	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/195,227	2014-03-03	8,956,283	2015-02-17		Registered
PU0029US7	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/599,237	2015-01-16	9,204,871	2015-12-08		Registered
PU0029US8	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/959,454	2015-12-04				Pending
PU0029US9	Surgical Access System and Related Methods	NuVasive, Inc.	US	15/059,215	2016-03-02				Pending
PU0032US1	System and Methods for Cervical Spinal Fusion	NuVasive, Inc.	US	10/283,429	2002-10-29	6,923,814	2005-08-02		Registered
PU0038AU1	Spinal Alignment Apparatus and Methods	NuVasive, Inc.	AU	2002252625	2002-03-26	2002252625	2007-10-11		Registered

PU0038US1	Spinal Alignment Apparatus and Methods	NuVasive, Inc.	US	10/105,971	2002-03-25	6,802,844	2004-10-12		Registered
PU0039US1	Surgical Access System and Related Methods	NuVasive, Inc.	US	10/759,811	2004-01-16	7,691,057	2010-04-06		Registered
PU0039US10	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/856,648	2013-04-04	8,602,982	2013-12-10		Registered
PU0039US11	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/955,950	2013-07-31	8,753,270	2014-06-17		Registered
PU0039US12	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/018,209	2013-09-04	8,747,307	2014-06-10		Registered
PU0039US13	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/287,982	2014-05-27	9,301,743	2016-04-05		Registered
PU0039US14	Surgical Access System and Related Methods	NuVasive, Inc.	US	15/058,083	2016-03-01				Pending
PU0039US2	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/636,860	2009-12-14	8,403,841	2013-03-26		Registered
PU0039US3	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/650,123	2009-12-30	8,114,019	2012-02-14		Registered
PU0039US4	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/650,301	2009-12-30	8,133,173	2012-03-13		Registered
PU0039US5	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/725,685	2010-03-17	8,172,750	2012-05-08		Registered
PU0039US6	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/984,368	2011-01-04	8,439,832	2013-05-14		Registered
PU0039US7	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/417,499	2012-03-12	8,343,046	2013-01-01		Registered
PU0039US8	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/466,531	2012-05-08	8,523,768	2013-09-03		Registered
PU0039US9	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/756,883	2013-02-01	8,562,521	2013-10-22		Registered
PU0040US1	Hinged Anterior Thoracic/Lumbar Plate	NuVasive, Inc.	US	10/108,287	2002-03-27	6,764,489	2004-07-20		Registered
PU0040US2	Hinged Anterior Thoracic/Lumbar Plate	NuVasive, Inc.	US	10/860,850	2004-06-03	7,341,590	2008-03-11		Registered
PU0042AU2	Nerve Proximity and Status Detection System and Method	NuVasive, Inc.	AU	2007200123	2001-06-08	2007200123	2008-11-13		Registered
PU0042JP1	Nerve Proximity and Status Detection System and Method	NuVasive, Inc.	JP	2002-501334	2001-06-08	5405706	2013-11-08		Registered
PU0042US1	Nerve Proximity and Status Detection System and Method	NuVasive, Inc.	US	09/590,632	2000-06-08	6,466,817	2002-10-15		Registered

PU0042US2	Nerve Proximity and Status Detection System and Method	NuVasive, Inc.	US	10/271,388	2002-10-14	7,177,677	2007-02-13		Registered
PU0050CH2	Stackable Interlocking Intervertebral Suport System	NuVasive, Inc.	CH	07025241.6	2001-07-13	1929978	2013-01-23		Registered
PU0050DE2	Stackable Interlocking Intervertebral Suport System	NuVasive, Inc.	DE	07025241.6	2001-07-13	1929978	2013-01-23		Registered
PU0050GB2	Stackable Interlocking Intervertebral Suport System	NuVasive, Inc.	GB	07025241.6	2001-07-13	1929978	2013-01-23		Registered
PU0050US1	Stackable Interlocking Intervertebral Support System	NuVasive, Inc.	US	09/904,179	2001-07-11	6,852,126	2005-02-08		Registered
PU0050US2	Stackable Spinal Support System and Related Methods	NuVasive, Inc.	US	11/053,016	2005-02-08	7,887,568	2011-02-15		Registered
PU0050US3	Stackable Spinal Support System	NuVasive, Inc.	US	11/981,858	2007-10-31	8,460,384	2013-06-11		Registered
PU0050US4	Stackable Spinal Support System	NuVasive, Inc.	US	11/982,251	2007-10-31	8,475,496	2013-07-02		Registered
PU0050US5	Stackable Interlocking Intervertebral Suport System	NuVasive, Inc.	US	13/915,554	2013-06-11	9,101,484	2015-08-11		Registered
PU0050US6	Stackable Interlocking Intervertebral Suport System	NuVasive, Inc.	US	14/823,315	2015-08-11				Pending
PU0052US1	Nerve Movement and Status Detection System and Method	NuVasive, Inc.	US	09/877,713	2001-06-08	6,500,128	2002-12-31		Registered
PU0054US1	System and Method for Performing Spinal Fixation	NuVasive, Inc.	US	11/031,506	2005-01-06	7,833,251	2010-11-16		Registered
PU0055US1	Bone Allograft Packaging System	NuVasive, Inc.	US	09/687,611	2000-10-11	6,739,112	2004-05-25		Registered
PU0055US2	Method of Packaging a bone allograft intended for a Spinal Fusion Procedure	NuVasive, Inc.	US	10/854,663	2004-05-25	7,162,850	2007-01-16		Registered
PU0059US1	Tissue Discrimination and Applications in Medical Proceudres	NuVasive, Inc.	US	09/860,648	2001-05-18	6,760,616	2004-07-06		Registered
PU0059US2	Tissue Discrimination and Applications in Medical Proceudres	NuVasive, Inc.	US	10/812,038	2004-03-29	7,050,848	2006-05-23		Registered
PU0059US4	Tissue Discrimination and Applications in Medical Proceudres	NuVasive, Inc.	US	12/609,004	2009-10-29	8,090,436	2012-01-03		Registered
PU0059US5	Tissue Discrimination and Applications in Medical Proceudres	NuVasive, Inc.	US	13/221,192	2011-08-30				Pending
PU0062AU2	System and Methods for Determining Nerve Proximity, Direction, and Pathology During Surgery	NuVasive, Inc.	AU	2008202081	2002-07-11	2008202081	2011-09-08		Registered
PU0062AU3	System and Methods for Determining Nerve Proximity,	NuVasive, Inc.	AU	2011202118	2002-07-11	2011202118	2013-08-29		Registered

	Direction, and Pathology During Surgery								
PU0062AU4	System and Methods for Determining Nerve Proximity, Direction, and Pathology During Surgery	NuVasive, Inc.	AU	2013204803	2002-07-11	2013204803 B2	2015-11-05		Registered
PU0062AU5	System and Methods for Determining Nerve Proximity, Direction, and Pathology During Surgery	NuVasive, Inc.	AU	2015246103	2002-07-11				Pending
PU0062EP1	System and Methods for Determining Nerve Proximity, Direction, and Pathology During Surgery	NuVasive, Inc.	EP	02756464.0	2002-07-11				Pending
PU0062JP1	System and Methods for Determining Nerve Proximity, Direction, and Pathology During Surgery	NuVasive, Inc.	JP	2003-511700	2002-07-11	4295086	2009-04-17		Registered
PU0062US1	System and Methods for Determining Nerve Proximity, Direction, and Pathology During Surgery	NuVasive, Inc.	US	10/754,899	2002-07-11	8,068,912	2011-11-29		Registered
PU0062US2	System and Methods for Determining Nerve Proximity, Direction, and Pathology During Surgery	NuVasive, Inc.	US	12/711,937	2010-02-24	7,920,922	2011-04-05		Registered
PU0062US3	System and Methods for Determining Nerve Proximity, Direction, and Pathology During Surgery	NuVasive, Inc.	US	12/434,303	2009-05-01	8,050,769	2011-11-01		Registered
PU0062US4	System and Methods for Determining Nerve Proximity, Direction, and Pathology During Surgery	NuVasive, Inc.	US	13/080,493	2011-04-05	8,055,349	2011-11-08		Registered
PU0062US5	System and Methods for Determining Nerve Proximity, Direction, and Pathology During Surgery	NuVasive, Inc.	US	13/292,065	2011-11-08	8,634,904	2014-01-21		Registered
PU0062US6	System and Methods for Determining Nerve Proximity, Direction, and Pathology During	NuVasive, Inc.	US	13/465,666	2012-05-07	8,812,116	2014-08-19		Registered

	Surgery								
PU0062US7	System and Methods for Determining Nerve Proximity, Direction, and Pathology During Surgery	NuVasive, Inc.	US	13/767,355	2013-02-14	9,037,250	2015-05-19		Registered
PU0062US8	System and Methods for Determining Nerve Proximity, Direction, and Pathology During Surgery	NuVasive, Inc.	US	14/687,745	2015-04-15				Pending
PU0063US1	Spinal Implant Inserter, Implant, and Method	NuVasive, Inc.	US	10/264,307	2002-10-02	7,776,049	2010-08-17		Registered
PU0064US1	Vertebral Endplate Decorticator and Osteophyte Resector	NuVasive, Inc.	US	09/168,306	1998-10-07	6,030,401	2000-02-29		Registered
PU0067US1	Interlocking Spinal Inserts	NuVasive, Inc.	US	09/320,236	1999-05-26	6,251,140	2001-06-26		Registered
PU0070US1	Methods for Separating and Stabilizing Adjacent Vertebrae	NuVasive, Inc.	US	09/320,161	1999-05-26	6,290,724	2001-09-18		Registered
PU0071EP1	Systems and Methods for Performing Surgery Procedures and Assessments	NuVasive, Inc.	EP	02778359.6	2002-09-25				Pending
PU0071EP2	Systems and Methods for Performing Surgery Procedures and Assessments	NuVasive, Inc.	EP	12001129.1	2002-09-25				Pending
PU0071US1	System and Methods for Performing Surgical Procedures and Assessments	NuVasive, Inc.	US	10/809,280	2002-09-25	7,522,953	2009-04-21		Registered
PU0071US10	Systems and Methods for Performing Surgical Procedures and Assessments	NuVasive, Inc.	US	13/763,816	2013-02-11	8,738,123	2014-05-27		Registered
PU0071US11	Systems and Methods for Performing Surgical Procedures and Assessments	NuVasive, Inc.	US	14/278,862	2014-05-15	8,977,352	2015-03-10		Registered
PU0071US12	Systems and Methods for Performing Surgical Procedures and Assessments	NuVasive, Inc.	US	14/618,438	2015-02-10				Pending
PU0071US3	System and Methods for Performing Surgical Procedures and Assessments	NuVasive, Inc.	US	12/423,559	2009-04-14	8,005,535	2011-08-23		Registered
PU0071US4	System and Methods for Performing Surgical Procedures and Assessments	NuVasive, Inc.	US	12/426,792	2009-04-20	8,027,716	2011-09-27		Registered
PU0071US5	System and Methods for	NuVasive, Inc.	US	12/628,549	2009-12-01	8,000,782	2011-08-16		Registered

	Performing Surgical Procedures and Assessments								
PU0071US6	System and Methods for Performing Surgical Procedures and Assessments	NuVasive, Inc.	US	13/210,977	2011-08-16	8,265,744	2012-09-11		Registered
PU0071US7	System and Methods for Performing Surgical Procedures and Assessments	NuVasive, Inc.	US	13/215,791	2011-08-23	8,244,343	2012-08-14		Registered
PU0071US8	System and Method for Performing Surgical Procedures and Assessments	NuVasive, Inc.	US	13/568,236	2012-08-07	8,548,579	2013-10-01		Registered
PU0071US9	Systems and Methods for Performing Surgical Procedures and Assessments	NuVasive, Inc.	US	13/762,624	2013-02-08	8,768,450	2014-07-01		Registered
PU0072US1	Systems and Methods for Removing Body Tissue	NuVasive, Inc.	US	10/527,538	2002-09-11	7,722,613	2010-05-25		Registered
PU0074US2	Intervertebral Implant and Related Methods	NuVasive, Inc.	US	10/367,441	2003-02-14	7,527,649	2009-05-05		Registered
PU0089US1	System and Methods for Performing Transforaminal Lumbar Interbody Fusion	NuVasive, Inc.	US	10/887,542	2004-07-07	7,905,886	2011-03-15		Registered
PU0090US2	Bone Blocks and Methods for Inserting Bone Blocks into Intervertebral Spaces	NuVasive, Inc.	US	10/032,121	2001-12-21	6,887,248	2005-05-03		Registered
PU0090US3	Spinal Implants and Methods for Inserting Spinal Implants Into Intervertebral Spaces	NuVasive, Inc.	US	11/121,394	2005-05-03	7,776,094	2010-08-17		Registered
PU0092AU1	Systems and Methods for Performing Dynamic Pedicle Integrity Assessments	NuVasive, Inc.	AU	2004263152	2004-08-05	2004263152	2009-12-10		Registered
PU0092EP1	Systems and Methods for Performing Dynamic Pedicle Integrity Assessments	NuVasive, Inc.	EP	04780392.9	2004-08-05				Pending
PU0092JP1	Systems and Methods for Performing Dynamic Pedicle Integrity Assessments	NuVasive, Inc.	JP	2006-522771	2004-08-05	4436836	2010-01-08		Registered
PU0092US1	Systems and Methods for Performing Dynamic Pedicle Integrity Assessments	NuVasive, Inc.	US	11/061,184	2004-08-05	7,657,308	2010-02-02		Registered
PU0092US2	Systems and Methods for Performing Dynamic Pedicle	NuVasive, Inc.	US	12/699,017	2010-02-02	8,255,044	2012-08-28		Registered

	Integrity Assessments								
PU0095AU1	Surgical Access System and Related Methods	NuVasive, Inc.	AU	2004275877	2004-09-27	2004275877	2008-12-18		Registered
PU0095AU2	Surgical Access System and Related Methods	NuVasive, Inc.	AU	2008251999	2004-09-27	2008251999	2011-11-03		Registered
PU0095AU3	Surgical Access System and Related Methods	NuVasive, Inc.	AU	2011239260	2004-09-27	2011239260	2013-09-12		Registered
PU0095AU4	Surgical Access System and Related Methods	NuVasive, Inc.	AU	2013204802	2004-09-27	2013204802			Pending
PU0095AU5	Surgical Access System and Related Methods	NuVasive, Inc.	AU	2016200573	2004-09-27				Pending
PU0095EP1	Surgical Access System and Related Methods	NuVasive, Inc.	EP	04785182.9	2004-09-27				Pending
PU0095JP1	Surgical Access System and Related Methods	NuVasive, Inc.	JP	2006-528306	2004-09-27	4463819	2010-02-26		Registered
PU0095JP2	Surgical Access System and Related Methods	NuVasive, Inc.	JP	2009-284152	2004-09-27	5124556	2012-11-02		Registered
PU0095JP3	Surgical Access System and Related Methods	NuVasive, Inc.	JP	2012-084693	2004-09-27	5689846	2015-02-06		Registered
PU0095JP4	Surgical Access System and Related Methods	NuVasive, Inc.	JP	2013-254978	2004-09-27				Pending
PU0095US10	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/299,800	2014-06-09	8,942,801	2015-01-27		Registered
PU0095US11	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/300,003	2014-06-09	8,821,396	2014-09-02		Registered
PU0095US12	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/449,313	2014-08-01	8,945,004	2015-02-03		Registered
PU0095US13	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/598,043	2015-01-15				Pending
PU0095US14	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/599,313	2015-01-16	9,265,493	2016-02-23		Registered
PU0095US15	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/994,640	2016-01-13				Pending
PU0095US2	Surgical Access System and Related Methods	NuVasive, Inc.	US	11/789,284	2007-04-23	8,016,767	2011-09-13		Registered
PU0095US3	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/623,016	2009-11-20	8,355,780	2013-01-15		Registered
PU0095US4	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/650,776	2009-12-31	8,388,527	2013-03-05		Registered
PU0095US5	Surgical Access System and	NuVasive, Inc.	US	13/742,268	2013-01-15	8,556,808	2013-10-15		Registered

	Related Methods								
PU0095US6	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/743,673	2013-01-17	8,500,634	2013-08-06		Registered
PU0095US7	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/954,550	2013-07-30	8,628,469	2014-01-14		Registered
PU0095US8	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/052,271	2013-10-11	8,764,649	2014-07-01		Registered
PU0095US9	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/153,777	2014-01-13	8,753,271	2014-06-17		Registered
PU0098US1	Surgical Access System and Related Methods	NuVasive, Inc.	US	10/967,668	2004-10-18	7,905,840	2011-03-15		Registered
PU0098US2	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/635,869	2009-12-11	8,303,515	2012-11-06		Registered
PU0098US3	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/983,627	2011-01-03	8,591,432	2013-11-26		Registered
PU0098US4	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/066,098	2013-10-29				Pending
PU0098US5	Surgical Access Sysem and Related Methods	NuVasive, Inc.	US	15/071,540	2016-03-16				Pending
PU0104US1	Systems and Methods for Spinal Fusion	NuVasive, Inc.	US	11/093,409	2005-03-29	7,918,891	2011-04-05		Registered
PU0104US10	Systems and Methods for Spinal Fusion	NuVasive, Inc.	US	14/921,760	2015-10-23				Pending
PU0104US2	Systems and Methods for Spinal Fusion	NuVasive, Inc.	US	13/079,645	2011-04-04	8,187,334	2012-05-29		Registered
PU0104US3	Systems and Methods for Spinal Fusion	NuVasive, Inc.	US	13/440,062	2012-04-05	8,246,686	2012-08-21		Registered
PU0104US4	Systems and Methods for Spinal Fusion	NuVasive, Inc.	US	13/441,092	2012-04-06	8,361,156	2013-01-29		Registered
PU0104US5	Systems and Methods for Spinal Fusion	NuVasive, Inc.	US	13/747,765	2013-01-23	8,608,804	2013-12-17		Registered
PU0104US6	Systems and Methods for Spinal Fusion	NuVasive, Inc.	US	13/748,925	2013-01-24	8,574,301	2013-11-05		Registered
PU0104US7	Systems and Methods for Spinal Fusion	NuVasive, Inc.	US	14/066,285	2013-10-29	8,685,105	2014-04-01		Registered
PU0104US8	Systems and Methods for Spinal Fusion	NuVasive, Inc.	US	14/171,484	2014-02-03	8,814,940	2014-08-26		Registered
PU0104US9	Systems and Methods for Spinal Fusion	NuVasive, Inc.	US	14/314,823	2014-06-25	9,180,021	2015-11-10		Registered
PU0116US2	Neurophysiological Apparatus and	NuVasive, Inc.	US	12/359,269	2009-01-23	9,131,947	2015-09-15		Registered

	Procedures								
PU0116US3	Neurophysiological Apparatus and Procedures	NuVasive, Inc.	US	14/855,156	2015-09-15				Pending
PU0118EP1	System and Method for Performing Spinal Fixation	NuVasive, Inc.	EP	05797710.0	2005-09-08				Pending
PU0118US1	System and Method for Performing Spinal Fixation	NuVasive, Inc.	US	11/667,365	2007-05-08				Pending
PU0120US1	System and Methods for Assessing the Neuromuscular Pathway Prior to Nerve Testing	NuVasive, Inc.	US	11/665,038	2005-10-07	8,538,539	2013-09-17		Registered
PU0120US2	System and Methods for Assessing the Neuromuscular Pathway Prior to Nerve Testing	NuVasive, Inc.	US	14/029,606	2013-09-17	8,989,866	2015-03-24		Registered
PU0121US1	Surgical Access System and Related Methods	NuVasive, Inc.	US	11/529,928	2006-09-29	8,876,904	2014-11-04		Registered
PU0121US2	Surgical Access System and Related Methods	NuVasive, Inc.	US	11/665,039	2005-10-11				Pending
PU0121US3	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/526,379	2014-10-28				Pending
PU0131US1	Surgical Access System and Related Methods	NuVasive, Inc.	US	11/344,711	2006-01-31	7,785,253	2010-08-31		Registered
PU0132US1	System and Methods for Monitoring During Anterior Surgery	NuVasive, Inc.	US	11/883,710	2006-02-02	8,568,331	2013-10-29		Registered
PU0133DE1	System and Methods for Performing Neurophysiologic Assessments During Surgery	NuVasive, Inc.	DE	06720282.0	2006-02-02	1846094	2011-10-05		Registered
PU0133EP2	System and Methods for Performing Neurophysiologic Assessments During Surgery	NuVasive, Inc.	EP	11176972.5	2006-02-02				Pending
PU0133GB1	System and Methods for Performing Neurophysiologic Assessments During Surgery	NuVasive, Inc.	GB	06720282.0	2006-02-02	1846094	2011-10-05		Registered
PU0133US1	System and Methods for Performing Neurophysiologic Assessments During Surgery	NuVasive, Inc.	US	11/883,709	2006-02-02				Pending
PU0135US1	Slideable Bone Plate System	NuVasive, Inc.	US	10/427,592	2003-05-01	6,945,973	2005-09-20		Registered
PU0135US2	Slidable Bone Plate System	NuVasive, Inc.	US	11/231,493	2005-09-20	8,262,705	2012-09-11		Registered
PU0140US1	Insulated Pedicle Access System and Related Methods	NuVasive, Inc.	US	11/448,237	2006-06-06	7,942,826	2011-05-17		Registered

PU0140US2	Insulated Pedicle Access System and Related Methods	NuVasive, Inc.	US	13/109,981	2011-05-17	8,784,330	2014-07-22		Registered
PU0140US3	Insulated Pedicle Access System and Related Methods	NuVasive, Inc.	US	14/338,154	2014-07-22				Pending
PU0147US1	Multi-Channel Stimulation Threshold Detection Algorithm for Use in Neurophysiology Monitoring	NuVasive, Inc.	US	11/994,409	2006-09-22	8,206,312	2012-06-26		Registered
PU0147US2	Neurophysiology Monitoring System Configured for Rapid Stimulation Threshold Acquisition	NuVasive, Inc.	US	13/533,919	2012-06-26	8,500,653	2013-08-06		Registered
PU0147US4	Multi-Channel Stimulation Threshold Detection Algorithm for Use with Neurophysiology Monitoring Systems	NuVasive, Inc.	US	14/959,850	2015-12-04				Pending
PU0151EP1	Total Disc Replacement System and Related Methods	NuVasive, Inc.	EP	06788651.5	2006-07-28				Pending
PU0151US1	Total Disc Replacement System and Related Methods	NuVasive, Inc.	US	11/989,686	2006-07-28	8,328,851	2012-12-11		Registered
PU0151US2	Total Disc Replacement System and Related Methods	NuVasive, Inc.	US	13/711,561	2012-12-11	8,870,960	2014-10-28		Registered
PU0151US3	Total Disc Replacement System and Related Methods	NuVasive, Inc.	US	14/525,440	2014-10-28	9,168,149	2015-10-27		Registered
PU0151US4	Total Disc Replacement System and Related Methods	NuVasive, Inc.	US	14/924,385	2015-10-27				Pending
PU0152AU1	Surgical Trajectory Monitoring System and Related Methods	NuVasive, Inc.	AU	2007254173	2007-05-17	2007254173	2013-11-07		Registered
PU0152EP1	Surgical Trajectory Monitoring System and Related Methods	NuVasive, Inc.	EP	07777170.7	2007-05-17				Pending
PU0152US1	Surgical Trajectory Monitoring System and Related Methods	NuVasive, Inc.	US	12/301,233	2007-05-17	8,442,621	2013-05-14	In progress to remove incorrect assignment info	Registered
PU0154US1	Spinal Fusion Implant	NuVasive, Inc.	US	11/488,744	2006-07-17	7,867,277	2011-01-11		Registered
PU0154US2	Spinal Fusion Implant and Related Methods	NuVasive, Inc.	US	13/004,474	2011-01-11	9,226,834	2016-01-05		Registered
PU0155US3	Methods and Apparatus for Treating Spinal Stenosis	NuVasive, Inc.	US	14/601,224	2015-01-20				Pending
PU0157US1	System and Methods for Treating Spinal Deformities	NuVasive, Inc.	US	11/490,995	2006-07-20	8,147,521	2012-04-03		Registered
PU0157US2	Systems and Methods for Treating Spinal Deformities	NuVasive, Inc.	US	13/438,828	2012-04-03	8,652,177	2014-02-18		Registered

PU0157US3	Systems and Methods for Treating Spinal Deformities	NuVasive, Inc.	US	14/183,198	2014-02-18				Pending
PU0158US1	System and Methods for Performing Neurophysiologic Assessments with Pressure Monitoring	NuVasive, Inc.	US	11/490,717	2006-07-20	8,740,783	2014-06-03		Registered
PU0158US3	System and Methods for Performing Neurophisologic Assessments with Pressure Monitoring	NuVasive, Inc.	US	14/294,304	2014-06-03				Pending
PU0163US1	Spinal Fusion Implant and Related Methods	NuVasive, Inc.	US	11/525,674	2006-09-22	7,815,682	2010-10-19		Registered
PU0168US1	System and Methods for Performing Pedicle Integrity Assessments of the Thoracic Spine	NuVasive, Inc.	US	11/994,411	2006-09-22	8,591,431	2013-11-26		Registered
PU0170US1	Spinal Implant	NuVasive, Inc.	US	09/104,422	1998-06-25	6,093,205	2000-07-25		Registered
PU0180US1	Methods and Apparatus for Treating Spinal Stenosis	NuVasive, Inc.	US	11/540,318	2006-09-28	8,167,915	2012-05-01		Registered
PU0184US1	System and Methods for Nerve Monitoring	NuVasive, Inc.	US	11/528,981	2006-09-27	8,568,317	2013-10-29		Registered
PU0184US3	System and Methods for Nerve Monitoring	NuVasive, Inc.	US	14/881,091	2015-10-12				Pending
PU0190US1	Spinal Fusion Implant and Related Methods	NuVasive, Inc.	US	11/891,581	2007-08-09	8,114,162	2012-02-14		Registered
PU0191US1	Methods and Apparatus for Spinal Fusion	NuVasive, Inc.	US	11/634,440	2006-12-05	7,887,595	2011-02-15		Registered
PU0193US1	Surgical Access System and Related Methods	NuVasive, Inc.	US	11/653,173	2007-01-11	8,313,430	2012-11-20		Registered
PU0193US2	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/682,719	2012-11-20	8,827,900	2014-09-09		Registered
PU0194US1	Surgical Access System and Related Methods	NuVasive, Inc.	US	11/652,705	2007-01-12	9,259,144	2016-02-16		Registered
PU0197AU1	Surgical Fixation System and Related Methods	NuVasive, Inc.	AU	2008316641	2008-10-24	AU 2008316641 B2	2015-09-10		Registered
PU0197CN1	Surgical Fixation System and Related Methods	NuVasive, Inc.	CN	200880122485.4	2008-10-24	ZL200880122485.4	2012-09-05		Registered
PU0197JP1	Surgical Fixation System and Related Methods	NuVasive, Inc.	JP	2010531301	2008-10-24	5599316	2014-08-22		Registered
PU0201JP1	Textile Prosthesis	NuVasive, Inc.; Ellis Developments	JP	2002-533772	2001-10-11	4083008	2008-02-22	Jointly owned	Registered

		Limited							
PU0201US1	Textile Prosthesis	NuVasive, Inc.; Ellis Developments Limited	US	10/398,883	2001-10-11	7,338,531	2008-03-04	Jointly owned	Registered
PU0201US2	Textile Prosthesis	NuVasive, Inc.; Ellis Developments Limited	US	12/042,311	2008-03-04	7,828,855	2010-11-09	Jointly owned	Registered
PU0202CH1	Connector Comprising Filaments	NuVasive, Inc.; Ellis Developments Limited	CH	01974486.1	2001-10-11	1326547	2007-01-24	Jointly owned	Registered
PU0202DE1	Connector Comprising Filaments	NuVasive, Inc.; Ellis Developments Limited	DE	01974486.1	2001-10-11	601 26 299.9	2007-01-24	Jointly owned	Registered
PU0202FR1	Connector Comprising Filaments	NuVasive, Inc.; Ellis Developments Limited	FR	01974486.1	2001-10-11	1326547	2007-01-24	Jointly owned	Registered
PU0202GB1	Connector Comprising Filaments	NuVasive, Inc.; Ellis Developments Limited	GB	01974486.1	2001-10-11	1326547	2007-01-24	Jointly owned	Registered
PU0202IE1	Connector Comprising Filaments	NuVasive, Inc.; Ellis Developments Limited	IE	01974486.1	2001-10-11	1326547	2007-01-24	Jointly owned	Registered
PU0202JP1	Connector	NuVasive, Inc.; Ellis Developments Limited	JP	2002-533755	2001-10-11	4083007	2008-02-22	Jointly owned	Registered
PU0202US1	Connector	NuVasive, Inc.; Ellis Developments Limited	US	10/399,016	2001-10-11	7,214,225	2007-05-08	Jointly owned, assignment from inventors in progress	Registered
PU0215US1	Embroidery Using Soluble Thread	NuVasive, Inc.	US	12/442,944	2007-09-25	8,074,591	2011-12-13		Registered
PU0216US1	Gravity Dependent Pedicle Screw Tap Hole Guide	NuVasive, Inc.	US	10/103,079	2002-03-21	6,638,281	2003-10-28		Registered
PU0216US4	Gravity Dependent Pedicle Screw	NuVasive, Inc.	US	11/034,594	2005-01-13	7,611,522	2009-11-03		Registered

	Tap Hole Guide								
PU0220US1	Methods and Apparatus for Treating Spinal Stenosis		US	11/891,582	2007-08-09	8,834,526	2014-09-16	Non-signing inventor, no assignment	Registered
PU0228US1	System and Methods for Spinal Fusion	NuVasive, Inc.	US	12/044,917	2008-03-07	8,673,005	2014-03-18		Registered
PU0228US2	System and Methods for Spinal Fusion	NuVasive, Inc.	US	14/193,886	2014-02-28	9,186,261	2015-11-17		Registered
PU0228US3	System and Methods for Spinal Fusion	NuVasive, Inc.	US	14/931,351	2015-11-03				Pending
PU0242AU1	Neurophysiologic Monitoring System	NuVasive, Inc.	AU	2008236665	2008-04-03	2008236665 B2	2013-12-05		Registered
PU0242AU2	Neurophysiologic Monitoring System	NuVasive, Inc.	AU	2013204806	2008-04-03	2013204806 B2	2015-10-29		Registered
PU0242EP1	Neurophysiologic Monitoring System	NuVasive, Inc.	EP	08742578.1	2008-04-03				Pending
PU0242US1	Neurophysiologic Monitoring System	NuVasive, Inc.	US	12/080,630	2008-04-03	8,255,045	2012-08-28		Registered
PU0242US2	Neurophysiologic Monitoring System	NuVasive, Inc.	US	13/597,160	2012-08-28	9,295,396	2016-03-29		Registered
PU0242US3	Neurophysiologic Monitoring System	NuVasive, Inc.	US	15/080,500	2016-03-24				Pending
PU0243US1	Implants and Methods for Spinal Fusion	NuVasive, Inc.	US	12/380,693	2009-03-02	8,083,796	2011-12-27		Registered
PU0243US2	Implants and Methods for Spinal Fusion	NuVasive, Inc.	US	13/337,967	2011-12-27	9,168,152	2015-10-27		Registered
PU0243US3	Implants and Methods for Spinal Fusion	NuVasive, Inc.	US	14/924,490	2015-10-27				Pending
PU0249US1	Spinal Impant Installation Device	NuVasive, Inc.	US	12/378,685	2009-02-17	8,343,163	2013-01-01		Registered
PU0257US1	Textile-Based Plate Implant And Related Methods	NuVasive, Inc.	US	12/274,345	2008-11-19	8,591,584	2013-11-26		Registered
PU0258US1	Textile-Based Surgical Implant and Related Methods	NuVasive, Inc.	US	12/416,048	2009-03-31	8,377,135	2013-02-19		Registered
PU0261US1	Vertebral Distraction Assembly and Related Methods	NuVasive, Inc.	US	12/378,936	2009-02-20	8,372,081	2013-02-12		Registered
PU0264US1	Surgical Fixation System and Related Methods	NuVasive, Inc.	US	12/364,507	2009-02-02				Pending
PU0265AU1	Surgical Trajectory Monitoring System and Related Methods	NuVasive, Inc.	AU	2008317311	2008-10-24	2008317311	2013-10-17		Registered
PU0265DE1	Surgical Trajectory Monitoring System and Related Methods	NuVasive, Inc.	DE	112008002851.6	2008-10-24				Pending

PU0265US1	Surgical Trajectory Monitoring System and Related Methods	NuVasive, Inc.	US	12/739,950	2008-10-24	9,119,572	2015-09-01		Registered
PU0265US2	Surgical Trajectory Monitoring System and Related Methods	NuVasive, Inc.	US	14/841,270	2015-08-31				Pending
PU0269US1	Spinal Surgical Implant and Related Methods	NuVasive, Inc.	US	12/317,867	2008-12-29	9,101,491	2015-08-11		Registered
PU0269US2	Spinal Surgical Implant and Related Methods	NuVasive, Inc.	US	14/823,329	2015-08-11				Pending
PU0270US1	Systems and Methods for Holding and Implanting Bone Anchors	NuVasive, Inc.	US	12/322,815	2009-02-06	8,439,922	2013-05-14		Registered
PU0270US2	Systems and Methods for Holding and Implanting Bone Anchors	NuVasive, Inc.	US	13/894,355	2013-05-14	9,192,415	2015-11-24		Registered
PU0270US3	Systems and Methods for Holding and Implanting Bone Anchors	NuVasive, Inc.	US	14/947,461	2015-11-20				Pending
PU0276US1	Systems and Methods for Spinous Process Fixation	NuVasive, Inc.	US	12/412,354	2009-03-26	8,343,190	2013-01-01		Registered
PU0280US9	Surgical Fixation Systems and Related Methods	NuVasive, Inc.	US	13/647,331	2012-10-08	9,060,813	2015-06-23		Registered
PU0285US1	Surgical Access System and Related Methods	NuVasive, Inc.	US	12/577,661	2009-10-12	9,044,280	2015-06-02		Registered
PU0285US2	Surgical Access System and Related Methods	NuVasive, Inc.	US	14/727,676	2015-06-01				Pending
PU0301US1	Anchors for Spinal Fixation and Correcting Spinal Deformity	NuVasive, Inc.	US	12/803,510	2010-06-28	8,506,598	2013-08-13		Registered
PU0303US1	Systems and Methods for Treating Spinal Stenosis	NuVasive, Inc.	US	12/578,577	2009-10-13	8,292,923	2012-10-23		Registered
PU0305US1	System and Method for Performing Spinal Fixation	NuVasive, Inc.	US	12/535,671	2009-08-04	8,480,712	2013-07-09		Registered
PU0309AU1	Cancellous Bone Treated with Collagenase and Essentially Free of Blood Cells	NuVasive, Inc.	AU	2007250080	2007-05-02	2007250080	2011-12-01		Registered
PU0309CN1	Cancellous Bone Treated with Collagenase and Essentially Free of Blood Cells	NuVasive, Inc.	CN	200780016495.5	2007-05-02	ZL200780016495.5	2011-08-10		Registered
PU0309US1	Cancellous Bone Treated with Collagenase and Essentially Free of Blood Cells	NuVasive, Inc.	US	11/799,606	2007-05-02	8,460,860	2013-06-11		Registered
PU0309US2	Cancellous Bone Product Including Viable Osteogenic Cells	NuVasive, Inc.	US	13/915,569	2013-06-11				Pending
PU0311US1	Cancellous bone treated with collagenase and essentially free of	NuVasive, Inc.	US	12/150,513	2008-04-28				Pending

	blood cells								
PU0315US2	Malleable, Cryopreserved Osteogenic Compositions with Viable Cells	NuVasive, Inc.	US	13/918,723	2013-06-14				Pending
PU0317AU2	Neurophysiologic Monitoring System and Related Methods	NuVasive, Inc.	AU	2015258176	2009-10-15				Pending
PU0317EP1	Neurophysiologic Monitoring System and Related Methods	NuVasive, Inc.	EP	09820909.1	2009-10-15				Pending
PU0317JP1	Neurophysiologic Monitoring System and Related Methods	NuVasive, Inc.	JP	2011-532087	2009-10-15				Pending
PU0317JP2	Neurophysiologic Monitoring System and Related Methods	NuVasive, Inc.	JP	2015-011482	2009-10-15				Pending
PU0317US1	Neurophysiologic Monitoring System and Related Methods	NuVasive, Inc.	US	13/124,608	2009-10-15				Pending
PU0329US1	Surgical Fixation System and Related Methods	NuVasive, Inc.	US	12/579,397	2009-10-14	8,328,856	2012-12-11		Registered
PU0333US1	System and Methods for performing Neurophysiologic Assessments	NuVasive, Inc.	US	12/626,880	2009-11-27	8,401,632	2013-03-19		Registered
PU0334AU1	Polyaxial Bone Screw with Compound Articulation		AU	2006244276	2006-03-30	2006244276 B2	2009-07-16	Jackson assignment in progress	Registered
PU0334CA1	Polyaxial Bone Screw with Compound Articulation		CA	PCT/US2006/012650	2006-03-30	2607157C	2011-09-20	Jackson assignment in progress	Registered
PU0334EP1	Polyaxial Bone Screw with Compound Articulation		EP	06740553.1	2006-03-30			Jackson assignment in progress	Pending
PU0334US1	Polyaxial Bone Screw with Compound Articulation	NuVasive, Inc.	US	11/126,965	2005-05-10	7,476,239	2009-01-13		Registered
PU0335US2	Systems and Methods for Performing Spinal Fusion Surgery	NuVasive, Inc.	US	13/831,711	2013-03-15	8,876,851	2014-11-04		Registered
PU0335US3	System and Methods for Performing Spinal Fusion Surgery	NuVasive, Inc.	US	14/532,316	2014-11-04				Pending
PU0338US1	Spinal Fusion Implant and Related Methods	NuVasive, Inc.	US	12/329,195	2008-12-05	8,623,088	2014-01-07		Registered
PU0340US1	Cross-Connector and Related Methods	NuVasive, Inc.	US	13/118,323	2011-05-27	9,198,696	2015-12-01		Registered
PU0342US2	Spinal Fusion Cage with Removable Planar Elements	NuVasive, Inc.	US	12/367,487	2009-02-06	8,088,163	2012-01-03		Registered
PU0342US3	Spinal Fusion Cage with Removable Planar Elements	NuVasive, Inc.	US	13/473,366	2012-05-16	8,292,960	2012-10-23		Registered
PU0342US4	Spinal Fusion Cage with Removable Planar Elements	NuVasive, Inc.	US	13/657,289	2012-10-22	8,715,355	2014-05-06		Registered

PU0346US1	Connective Tissue Regeneration Using Human Mesenchymal Stem Cell Preparation	Osiris Therapeutics, Inc.	US	08/420,297	1995-04-11	5,811,094	1998-09-22	Mesoblast International SARL	Registered
PU0347AU1	Uses for Non-Autologous Mesenchymal Stem Cells	Osiris Therapeutics, Inc.	AU	1999029042	1998-03-13	749675	2002-07-04		Registered
PU0347US1	Uses for Non-Autologous Mesenchymal Stem Cells	Osiris Therapeutics, Inc.	US	09/314,855	1999-03-12	6,355,239	2002-03-12	Mesoblast International SARL	Registered
PU0348AU1	Regeneration and Augmentation of Bone Using Mesenchymal Stem Cells	Osiris Therapeutics, Inc.	AU	24622/97	1997-04-17	731468	2001-07-26		Registered
PU0348US1	Regeneration and Augmentation of Bone Using Mesenchymal Stem Cells	Osiris Therapeutics, Inc.	US	09/042,275	1998-03-13	6,541,024	2003-04-01	Mesoblast International SARL	Registered
PU0348US2	Regeneration and Augmentation of Bone Using Mesenchymal Stem Cells	Osiris Therapeutics, Inc.	US	09/840,284	2002-06-26	6,863,900	2005-03-08	Mesoblast International SARL	Registered
PU0349US1	Vertebral Body Replacement	NuVasive, Inc.	US	12/661,206	2010-03-12				Pending
PU0349US3	Vertebral Body Replacement	NuVasive, Inc.	US	14/744,470	2015-06-19				Pending
PU0350US1	Systems and Methods for Neurophysiologic Monitoring	NuVasive, Inc.	US	12/908,876	2010-10-20				Pending
PU0351US1	Fracture Reduction Device and Methods	NuVasive, Inc.	US	13/184,576	2011-07-18	9,144,501	2015-09-29		Registered
PU0352US3	Polyaxial Bone Screw Assembly	NuVasive, Inc.	US	13/311,490	2011-12-05	8,876,869	2014-11-04		Registered
PU0353US1	Method and Apparatus for Performing Spine Surgery	NuVasive, Inc.	US	12/799,021	2010-04-16	8,287,597	2012-10-16		Registered
PU0353US2	Methods and Apparatus for Performing Spine Surgery	NuVasive, Inc.	US	13/653,335	2012-10-16	8,920,500	2014-12-30		Registered
PU0353US3	Methods and Apparatus for Performing Spine Surgery	NuVasive, Inc.	US	14/578,215	2014-12-19	9,192,482	2015-11-24		Registered
PU0353US4	Methods and Apparatus for Performing Spine Surgery	NuVasive, Inc.	US	14/918,137	2015-10-20				Pending
PU0356GB1	Laminoplasy Bone Plate System and Template Tool	NuVasive, Inc.	GB	1204773.4	2010-10-04	2486608	2016-03-30		Registered
PU0356US1	Bone Plate System and Related Methods	NuVasive, Inc.	US	13/499,659	2010-10-04	9,211,148	2015-12-15		Registered
PU0356US2	Bone Plate System and Related Methods	NuVasive, Inc.	US	14/970,299	2015-12-15				Pending
PU0357US1	Systems and Methods for	NuVasive, Inc.	US	12/945,821	2010-11-12	8,986,349	2015-03-24		Registered

	Correcting Spinal Deformities								
PU0357US2	Systems and Methods for Correcting Spinal Deformities	NuVasive, Inc.	US	14/667,619	2015-03-24				Pending
PU0358AU1	Method and Apparatus for Performing Spinal Surgery	NuVasive, Inc.	AU	2010318704	2010-11-10	2010318704	2015-10-22		Registered
PU0358AU2	Method and Apparatus for Performing Spinal Surgery	NuVasive, Inc.	AU	2015238910	2010-11-10				Pending
PU0358CN1	Retractor System (as amended)	NuVasive, Inc.	CN	201080061149.0	2010-11-10				Pending
PU0358DE1	Method and Apparatus for Performing Spinal Surgery	NuVasive, Inc.	DE	112010004338.8	2010-11-10				Pending
PU0358GB1	Method and Apparatus for Performing Spinal Surgery	NuVasive, Inc.	GB	1209824.0	2010-11-10	2488284 B	2015-12-09		Registered
PU0358GB2	Method and Apparatus for Performing Spinal Surgery	NuVasive, Inc.	GB	1519048.1	2010-11-10				Pending
PU0358JP1	Method and Apparatus for Performing Spinal Surgery	NuVasive, Inc.	JP	2012-538806	2010-11-10	5844737	2015-11-27		Registered
PU0358US1	Method and Apparatus for Performing Spine Surgery	NuVasive, Inc.	US	12/927,415	2010-11-10	8,357,184	2013-01-22		Registered
PU0358US2	Method and Apparatus for Performing Spinal Fusion Surgery	NuVasive, Inc.	US	13/204,573	2011-08-05	8,435,269	2013-05-07		Registered
PU0358US3	Method and Apparatus for Performing Spinal Surgery	NuVasive, Inc.	US	13/509,045	2010-11-10	9,050,146	2015-06-09		Registered
PU0358US4	Method and Apparatus for Performing Spinal Surgery	NuVasive, Inc.	US	13/204,583	2011-08-05	8,535,320	2013-09-17		Registered
PU0358US6	Method and Apparatus for Performing Spinal Surgery	NuVasive, Inc.	US	14/029,724	2013-09-17				Pending
PU0360BR1	Prosthetic Joint of Cervical Intervertebral Discs	Cervitech, Inc.	BR	PI0302378-8	2003-04-07	PI0302378-8	2013-06-04		Registered
PU0360CN1	Prosthetic Joint of Cervical Intervertebral Discs	Cervitech, Inc.	CN	200480009386.7	2004-02-17	ZL200480009386.7	2010-03-24		Registered
PU0360JP1	Prosthetic Joint of Cervical Intervertebral Discs	Cervitech, Inc.	JP	2006-504429	2004-02-17	4617294	2010-10-29		Registered
PU0360KR1	Prosthetic Joint of Cervical Intervertebral Discs	Cervitech, Inc.	KR	10-2005-7018979	2004-02-17	10-1134262	2012-03-30		Registered
PU0360US1	Cervical Intervertebral Disk Prosthesis	Cervitech, Inc.	US	10/407,946	2003-04-07	8,012,212	2011-09-06		Registered
PU0360US2	Method for Implanting an Intervertebral Disk Prosthesis	Cervitech, Inc.	US	11/282,604	2005-11-21	8,147,551	2012-04-03		Registered
PU0360US3	Cervical Intervertebral Prosthesis	Cervitech, Inc.	US	13/438,694	2012-04-03	8,591,586	2013-11-26		Registered
PU0362IL1	Intervertebral Disk Prosthesis	Cervitech, Inc.	IL	172608	2004-06-16	172608	2011-06-29		Registered

PU0362US1	Intervertebral Disk Prosthesis	Cervitech, Inc.	US	10/623,803	2003-07-22	7,722,673	2010-05-25		Registered
PU0363US2	Insertion Instrument for Cervical Prostheses	Cervitech, Inc.	US	11/155,597	2005-06-20	7,569,067	2009-08-04		Registered
PU0364MX1	Arrangement of a Cervical Prosthesis and Insertion Instrument	Cervitech, Inc.	MX	PA/a/2006/000546	2004-02-04	258142	2008-06-24		Registered
PU0364US1	Multi-Part Cervical Endoprosthesis with Insertion	Cervitech, Inc.	US	10/619,179	2003-07-15	7,320,689	2008-01-22		Registered
PU0365MX1	Set of Cervical Intervertebral Prostheses	Cervitech, Inc.	MX	PA/a/2006/004175	2004-08-13				Pending
PU0365US1	Set of Cervical Intervertebral Prostheses	Cervitech, Inc.	US	10/687,933	2003-10-20	7,628,813	2009-12-08		Registered
PU0368US1	Bone Separator	Cervitech, Inc.	US	10/567,966	2005-04-05	7,927,337	2011-04-19		Registered
PU0368US2	Bone Separator	Cervitech, Inc.	US	13/037,073	2011-02-28	9,072,504	2015-07-07		Registered
PU0369AU1	Intervertebral Prosthesis with Self-Tapping Fixing Projections	Cervitech, Inc.	AU	2006261207	2006-06-20	2006261207 B2	2012-07-26		Registered
PU0369BR1	Intervertebral Prosthesis with Self-Tapping Fixing Projections	Cervitech, Inc.	BR	PI0612284-1	2006-06-20				Pending
PU0369CN1	Intervertebral Prosthesis with Self-Tapping Fixing Projections	Cervitech, Inc.	CN	200680022473.5	2006-06-20	ZL200680022473.5	2010-11-24		Registered
PU0369DE2	Intervertebral Prosthesis with Self-Tapping Fixing Projections	Cervitech, Inc.	DE	06754460.1	2006-06-20	50 2006 010 480.6	2011-10-26		Registered
PU0369GB2	Intervertebral Prosthesis with Self-Tapping Fixing Projections	Cervitech, Inc.	GB	06754460.1	2006-06-20	1893136	2011-10-26		Registered
PU0369IL1	Intervertebral Prosthesis with Self-Tapping Fixing Projections	Cervitech, Inc.	IL	185183	2006-06-20	185183	2012-09-29		Registered
PU0369IN1	Intervertebral Prosthesis with Self-Tapping Fixing Projections	Cervitech, Inc.	IN	354/CHENP/2008	2006-06-20	271537	2016-02-24		Registered
PU0369JP1	Intervertebral Prosthesis with Self-Tapping Fixing Projections	Cervitech, Inc.	JP	2008-517399	2006-06-20	4764480	2011-06-17		Registered
PU0369KR1	Intervertebral Prosthesis with Self-Tapping Fixing Projections	Cervitech, Inc.	KR	10-2008-7001577	2006-06-20	10-1356241	2014-01-21		Registered
PU0369MX1	Intervertebral Prosthesis with Self-Tapping Fixing Projections	Cervitech, Inc.	MX	MX/a/2007/013283	2006-06-20	288458	2011-07-18		Registered
PU0369NZ1	Intervertebral Prosthesis with Self-Tapping Fixing Projections	Cervitech, Inc.	NZ	561232	2006-06-20	561232	2011-06-07		Registered
PU0369TW1	Intervertebral Prosthesis with Self-Tapping Fixing Projections	Cervitech, Inc.	TW	95121675	2006-06-16	I400066	2013-07-01		Registered
PU0369US2	Intervertebral Prosthesis with Self-Tapping Fixing Projections	Cervitech, Inc.	US	12/753,031	2010-04-01	8,721,725	2014-05-13		Registered

PU0369ZA1	Intervertebral Prosthesis with Self-Tapping Fixing Projections	Cervitech, Inc.	ZA	2007/07589	2006-06-20	2007/07589	2008-10-29			Registered
PU0371CN1	Cervical Intervertebral Prosthesis	Cervitech, Inc.	CN	03805695.X	2003-02-21	ZL03805695.X	2009-09-09			Registered
PU0371IL1	Cervical Intervertebral Prosthesis	Cervitech, Inc.	IL	163560	2003-02-21	163560	2011-03-01			Registered
PU0371KR1	Cervical Intervertebral Prosthesis	Cervitech, Inc.	KR	10-2004-7014210	2003-02-21	10-0961020	2010-05-25			Registered
PU0371US1	Cervical Intervertebral Prosthesis	Cervitech, Inc.	US	10/349,183	2003-01-23	7,267,691	2007-09-11			Registered
PU0374AU1	Instrument for the Insertion of an Intervertebral Articular Prosthesis	Cervitech, Inc.	AU	2004296536	2004-11-24	2004296536	2010-08-12			Registered
PU0374CN1	Instrument for the Insertion of an Intervertebral Articular Prosthesis	Cervitech, Inc.	CN	200480036660.X	2004-11-24	200480036660.X	2008-07-30			Registered
PU0374DE1	Instrument for the Insertion of an Intervertebral Articular Prosthesis	Cervitech, Inc.	DE	04798069.3	2004-11-24	1694215	2010-01-13			Registered
PU0374GB1	Instrument for the Insertion of an Intervertebral Articular Prosthesis	Cervitech, Inc.	GB	04798069.3	2004-11-24	1694215	2010-01-13			Registered
PU0374US1	Instrument Set for Fitting an Intervertebral Joint Prosthesis	Cervitech, Inc.	US	10/731,432	2003-12-10	7,527,629	2009-05-05			Registered
PU0374ZA1	Instrument for the Insertion of an Intervertebral Articular Prosthesis	Cervitech, Inc.	ZA	2006/05651	2004-11-24	2006/5651	2007-10-31			Registered
PU0377KR1	Prosthesis for Partial Replacement of a Vertebral Body	Cervitech, Inc.	KR	10-2006-7027546	2005-05-18					Pending
PU0377US1	Prosthesis for Partial Replacement of a Vertebral Body	Cervitech, Inc.	US	11/125,313	2005-05-10	8,070,812	2011-12-06			Registered
PU0377US2	Prosthesis for Partial Replacement of a Vertebral Body	Cervitech, Inc.	US	13/295,966	2011-11-14	8,409,285	2013-04-02			Registered
PU0378US2	Prosthesis for Bridging a Vertebral Body	Cervitech, Inc.	US	12/683,919	2010-01-07	8,192,493	2012-06-05			Registered
PU0386GB2	Intervertebral Prosthesis	Cervitech, Inc.	GB	02782913.4	2002-10-15	1482875	2009-03-11			Registered
PU0386ZA1	Intervertebral Prosthesis	Cervitech, Inc.	ZA	2004/7101	2002-10-15	2004/7101	2005-08-31			Registered
PU0387US1	Medical Implant with a Secured Bone Screw	Cervitech, Inc.	US	10/349,175	2003-01-23	7,160,303	2007-01-09			Registered
PU0392US1	Systems and Methods for Vessel Avoidance During Spine surgery	NuVasive, Inc.	US	12/848,950	2010-08-02	8,983,567	2015-03-17			Registered
PU0393US1	Spinal Cross Connector	NuVasive, Inc.	US	12/826,590	2010-06-29	8,246,657	2012-08-21			Registered
PU0406US1	Insulated Pedicle Access System and Related Methods	NuVasive, Inc.	US	12/945,705	2010-11-12					Pending
PU0407AU1	Surgical Access System and Related Methods	NuVasive, Inc.	AU	2010318711	2010-11-12	2010318711	2014-08-28			Registered
PU0407DE1	Surgical Access System and Related Methods	NuVasive, Inc.	DE	112010004350.7	2010-11-12					Pending

PU0407GB1	Surgical Access System	NuVasive, Inc.	GB	1209825.7	2010-11-12	2493810	2013-07-03		Registered
PU0407US1	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/509,064	2010-11-12	9,138,217	2015-09-22		Registered
PU0409US1	Spinal Fusion Implants and Related Methods	NuVasive, Inc.	US	12/945,787	2010-11-12	8,740,983	2014-06-03		Registered
PU0417US1	Neurophysiologic Monitoring	NuVasive, Inc.	US	13/236,600	2011-09-19				Pending
PU0418US1	Fracture Reduction Device and Methods	NuVasive, Inc.	US	13/184,574	2011-07-18	8,795,369	2014-08-05		Registered
PU0420US1	Method and Apparatus for Performing Spine Surgery	NuVasive, Inc.	US	13/077,977	2011-03-31				Pending
PU0422US0	Method and Apparatus for Computerized Surgery	NuVasive, Inc.	US	09/948,940	2001-09-07	7,338,526	2008-03-04		Registered
PU0422US10	Methods and Apparatus for Computerized Surgery	NuVasive, Inc.	US	14/698,667	2015-04-28				Pending
PU0422US2	Method and Apparatus for Computerized Surgery	NuVasive, Inc.	US	11/929,114	2007-10-30	9,017,313	2015-04-28		Registered
PU0422US3	Method and Apparatus for Computerized Surgery	NuVasive, Inc.	US	11/928,940	2007-10-30				Pending
PU0422US4	Method and Apparatus for Computerized Surgery	NuVasive, Inc.	US	11/929,070	2007-10-30				Pending
PU0422US8	Spinal Implant System	NuVasive, Inc.	US	13/428,875	2012-03-23	8,747,476	2014-06-10		Registered
PU0422US9	Spinal Implant System	NuVasive, Inc.	US	14/299,203	2014-06-09				Pending
PU0424US2	Interbody Fusion Implant and Related Methods	NuVasive, Inc.	US	13/949,174	2013-07-23				Pending
PU0428AU1	Surgical Access System and Related Methods	NuVasive, Inc.	AU	2011293853	2011-08-23	2011293853	2015-11-19		Registered
PU0428AU2	Surgical Access System and Related Methods	NuVasive, Inc.	AU	2015252096	2011-08-23				Pending
PU0428CN1	Surgical Access System and Related Methods	NuVasive, Inc.	CN	201180050236.0	2011-08-23				Pending
PU0428DE1	Surgical Access System and Related Methods	NuVasive, Inc.	DE	112011102801.6	2011-08-23				Pending
PU0428GB1	Surgical Access System and Related Methods	NuVasive, Inc.	GB	1302945.9	2011-08-23				Pending
PU0428JP1	Surgical Access System and Related Methods	NuVasive, Inc.	JP	2013-525897	2011-08-23	5763194	2015-06-19		Registered
PU0428JP2	Surgical Access System and Related Methods	NuVasive, Inc.	JP	2014-185179	2011-08-23				Pending
PU0428JP3	Surgical Access System and Related Methods	NuVasive, Inc.	JP	2015-199428	2011-08-23				Pending

PU0428US1	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/821,224	2011-08-23				Pending
PU0436US1	Spinal Implants, Instruments and Related Methods	NuVasive, Inc.	US	12/945,789	2010-11-12	8,840,668	2014-09-23	In progress to remove incorrect assignment info	Registered
PU0443US1	Lateral Fixation Constructs and Related Methods	NuVasive, Inc.	US	13/415,769	2012-03-08	8,992,579	2015-03-31		Registered
PU0447DE1	Spinal Implants for Rotationally Adjusting Vertebrae	NuVasive, Inc.	DE	112012000567.8	2012-01-25				Pending
PU0447US1	Spinal Implants for Rotationally Adjusting Vertebrae	NuVasive, Inc.	US	13/950,277	2013-07-24				Pending
PU0448US1	Spinal Fixation System and Related Methods	NuVasive, Inc.	US	13/361,855	2012-01-30	8,940,030	2015-01-27		Registered
PU0448US2	Spinal Fusion Implant and Related Methods	NuVasive, Inc.	US	14/606,501	2015-01-27				Pending
PU0449US1	Implant Installation Assembly and Related Methods	NuVasive, Inc.	US	13/411,465	2012-03-02	8,840,622	2014-09-23		Registered
PU0450US2	Filter Device	NuVasive, Inc.	US	14/735,128	2015-06-09				Pending
PU0453US1	Posterior Cervical Fixation System	NuVasive, Inc.	US	13/410,213	2012-03-01				Pending
PU0454US1	Vertebral Body Replacement and Insertion Methods	NuVasive, Inc.	US	13/425,380	2012-03-20				Pending
PU0455US1	Minimally Invasive Spinal Fixation System and Related Methods	NuVasive, Inc.	US	13/456,210	2012-04-25	9,198,698	2015-12-01		Registered
PU0455US2	Minimally Invasive Spinal Fixation System and Related Methods	NuVasive, Inc.	US	14/949,280	2015-11-23				Pending
PU0457US1	Spinal Fixation Anchor	NuVasive, Inc.	US	13/371,370	2012-02-10	9,198,692	2015-12-01		Registered
PU0458US1	Method and Apparatus for Performing Spinal Fusion Surgery	NuVasive, Inc.	US	13/469,076	2012-05-10	9,307,972	2016-04-12		Registered
PU0467US1	Surgical Access System and Related Methods	NuVasive, Inc.	US	13/434,845	2012-03-29				Pending
PU0468BR1	System and Method for Designing and Forming a Surgical Implant	NuVasive, Inc.	BR	PI0911078-0	2009-04-03				Pending
PU0468CN1	System and Method for Designing and Forming a Surgical Implant	NuVasive, Inc.	CN	200980115946.X	2009-04-03	CN102036615B	2014-08-13		Registered
PU0468CN2	System and Method for Designing and Forming a Surgical Implant	NuVasive, Inc.	CN	201410335982.X	2009-04-03				Pending
PU0468EP1	System and Method for Designing and Forming a Surgical Implant	NuVasive, Inc.	EP	09727829.5	2009-04-03				Pending
PU0468IN1	System and Method for Designing and Forming a Surgical Implant	NuVasive, Inc.	IN	6294/CHENP/2010	2009-04-03				Pending

PU0468JP1	System and Method for Designing and Forming a Surgical Implant	NuVasive, Inc.	JP	2011-503207	2009-04-03	5572898	2014-07-11		Registered
PU0468KR1	System and Method for Designing and Forming a Surgical Implant	NuVasive, Inc.	KR	10-2010-7024634	2009-04-03				Pending
PU0468US2	System and Method for Designing and Forming a Surgical Implant	NuVasive, Inc.	US	12/246,581	2008-10-07	7,957,831	2011-06-07		Registered
PU0468US3	System and Method for Designing and Forming a Surgical Implant	NuVasive, Inc.	US	12/417,937	2009-04-03	8,549,888	2013-10-08		Registered
PU0468US4	System and Method for Designing and Forming a Surgical Implant	NuVasive, Inc.	US	14/049,183	2013-10-08				Pending
PU0469US1	Tissue Retractor and Related Methods	NuVasive, Inc.	US	13/457,484	2012-04-26	8,900,137	2014-12-02		Registered
PU0469US2	Cervical Retractor	NuVasive, Inc.	US	13/507,111	2012-06-04	8,974,381	2015-03-10		Registered
PU0470US1	Systems and Methods for Performing Spine Surgery	NuVasive, Inc.	US	13/601,986	2012-08-31	9,113,853	2015-08-25		Registered
PU0470US2	Tissue Retraction System and Related Methods	NuVasive, Inc.	US	14/794,709	2015-07-08				Pending
PU0472US2	Osteoinductive Calcium Phosphates	Progentix Orthobiology B.V.	US	12/607,874	2009-10-28	7,942,934	2011-05-17		Registered
PU0472US3	Osteoinductive Calcium Phosphates	Progentix Orthobiology B.V.	US	14/792,305	2015-07-06				Pending
PU0475US1	Vertebral Body Replacement	NuVasive, Inc.	US	14/177,100	2014-02-10				Pending
PU0479US1	Minimally Invasive Facet Release	NuVasive, Inc.	US	13/684,492	2012-11-23				Pending
PU0483US1	Tissue Regeneration	Progentix Orthobiology B.V.	US	11/298,208	2005-12-08	8,071,083	2011-12-06		Registered
PU0484US1	Spinal Cross-Connector	NuVasive, Inc.	US	13/410,218	2012-03-01	9,247,964	2016-02-02		Registered
PU0484US2	Spinal Cross-Connector	NuVasive, Inc.	US	14/977,532	2015-12-21				Pending
PU0487US2	Resorbable Hollow Devices for Implantation and Delivery of Therapeutic Agents	NuVasive, Inc.	US	12/424,140	2009-04-15				Pending
PU0491US1	Systems and Methods for Performing Spine Surgery	NuVasive, Inc.	US	13/663,459	2012-10-29				Pending
PU0492US1	Spinal Fusion Implants and Related Methods	NuVasive, Inc.	US	13/648,253	2012-10-09				Pending
PU0493AU1	Method of Improving the Osteoinductivity of Calcium Phosphate	Progentix Orthobiology B.V.	AU	PCT/NL2006/000210	2006-04-21	2006241047	2011-06-02		Registered

PU0493DE1	Method of Improving the Osteoinductivity of Calcium Phosphate	Progentix Orthobiology B.V.	DE	06733017.5	2006-04-21	1877107	2009-07-24		Registered
PU0493GB1	Method of Improving the Osteoinductivity of Calcium Phosphate	Progentix Orthobiology B.V.	GB	06733017.5	2006-04-21	1877107	2009-07-24		Registered
PU0493JP1	Method of Improving the Osteoinductivity of Calcium Phosphate	Progentix Orthobiology B.V.	JP	2008-555181	2006-04-21				Pending
PU0493US1	Method of Improving the Osteoinductivity of Calcium Phosphate	Progentix Orthobiology B.V.	US	11/919,390	2009-08-31	8,460,685	2013-06-11		Registered
PU0495US1	Expandable Spinal Fusion Implants and Related Methods	NuVasive, Inc.	US	13/665,787	2012-10-31	9,198,765	2015-12-01		Registered
PU0495US2	Expandable Spinal Fusion Implants and Related Methods	NuVasive, Inc.	US	14/918,197	2015-10-20				Pending
PU0496US1	Surgical Fixation System and Related Methods	NuVasive, Inc.	US	13/666,933	2012-11-01				Pending
PU0500US1	Spinal Fusion Implants and Related Methods	NuVasive, Inc.	US	13/668,209	2012-11-02				Pending
PU0504US1	Bi-Cortical Screw Fixation	NuVasive, Inc.	US	13/771,076	2013-02-19	8,936,626	2015-01-20		Registered
PU0505US2	System, Method and Computer Program Product For Real Time Monitoring, Assignment and Balancing of Professional Oversight	Impulse Monitoring, Inc.	US	12/332,728	2008-12-11				Pending
PU0509US1	Systems and Methods for Performing Neurophysiologic Monitoring During Spine Surgery	NuVasive, Inc.	US	13/761,039	2013-02-06				Pending
PU0510US1	Systems and Methods for Performing Neurophysiologic Monitoring during Spine Surgery	NuVasive, Inc.	US	13/761,098	2013-02-06	9,066,701	2015-06-30		Registered
PU0517US1	Systems and Methods for Performing Spinal Surgery	NuVasive, Inc.	US	13/815,643	2013-03-12				Pending
PU0518US1	Directional Dilator for Intraoperative Monitoring	NuVasive, Inc.	US	13/830,508	2013-03-14				Pending
PU0519US1	Systems and Methods for Promoting Sacroiliac Joint Fusion	NuVasive, Inc.	US	13/830,028	2013-03-14				Pending
PU0521US2	Osteoinductive Bone Graft Substitute	NuVasive, Inc.	US	14/697,443	2015-04-27	9,272,072	2016-03-01		Registered
PU0521US3	Osteoinductive Bone Graft Substitute	NuVasive, Inc.	US	15/057,879	2016-03-01				Pending

PU0523US1	Devices and Methods for Inter-Vertebral Orthopedic Device Placement	NuVasive, Inc.	US	11/613,146	2006-12-19	8,002,802	2011-08-23		Registered
PU0524US1	Spinal Stabilization Systems and Methods of Use	NuVasive, Inc.	US	12/072,695	2008-02-26	7,842,074	2010-11-30		Registered
PU0524US2	Spinal Stabilization Systems and Methods of Use	NuVasive, Inc.	US	12/790,754	2010-05-28	8,801,757	2014-08-12		Registered
PU0524US3	Spinal Stabilization Systems and Methods of Use	NuVasive, Inc.	US	14/458,164	2014-08-12				Pending
PU0527US1	Systems and Methods for Performing Spine Surgery	NuVasive, Inc.	US	13/831,696	2013-03-15	9,060,815	2015-06-23		Registered
PU0527US2	Systems and Methods for Performing Spine Surgery	NuVasive, Inc.	US	14/748,048	2015-06-23				Pending
PU0529US1	Expandable Spinal Fusion Implant, Related Instruments and Methods	NuVasive, Inc.	US	14/060,558	2013-10-22				Pending
PU0530US1	Neurophysiologic Monitoring System and Related Methods	NuVasive, Inc.	US	14/060,561	2013-10-22				Pending
PU0531US1	Malleable, Cryopreserved Osteogenic Compositions with Viable Cells	NuVasive, Inc.	US	14/066,589	2013-10-29				Pending
PU0542US1	Implants and Methods for Treating Spinal Disorders	NuVasive, Inc.	US	13/694,105	2012-10-25	8,758,411	2014-06-24		Registered
PU0543US1	Systems and Methods for Performing Neurophysiologic Monitoring During Spine Surgery	NuVasive, Inc.	US	14/073,772	2013-11-06				Pending
PU0543US2	Systems and Methods for Performing Neurophysiologic Monitoring During Spine Surgery	NuVasive, Inc.	US	14/535,318	2014-11-06				Pending
PU0544US1	Systems and Methods for Performing Neurophysiologic Monitoring During Spine Surgery	NuVasive, Inc.	US	13/830,120	2013-03-14				Pending
PU0549US1	Waveform Marker Placement Algorithm For Use in Neurophysiologic Monitoring	NuVasive, Inc.	US	14/178,176	2014-02-11				Pending
PU0550US1	Spinal Alignment Frame	NuVasive, Inc.	US	14/214,099	2014-03-14				Pending
PU0552US1	Expandable Intervertebral Implant and Methods of Use Thereof	NuVasive, Inc.	US	14/217,358	2014-03-17				Pending
PU0553US1	Compounds and Matrices For Use In Bone Growth and Repair	NuVasive, Inc.	US	14/216,156	2014-03-17				Pending
PU0554US1	Spine Balance Assessment	NuVasive, Inc.	US	14/216,411	2014-03-17				Pending

PU0555US1	Rod Reduction Assembly and Related Methods	NuVasive, Inc.	US	14/217,101	2014-03-17				Pending
PU0558US1	Magnetic Spinal Implant for PLIF/TLIF Procedures	NuVasive, Inc.	US	13/874,274	2013-04-30				Pending
PU0559US1	Expandable Spinal Fusion Implant and Related Methods	NuVasive, Inc.	US	14/285,590	2014-05-22				Pending
PU0563AU1	Magnetic Targeting System and Method of Using the Same	NuVasive, Inc.	AU	2008350872	2008-02-21	2008350872	2015-01-08		Registered
PU0563CN1	Magnetic Targeting System and Method of Using the Same	NuVasive, Inc.	CN	200880127333.3	2008-02-21	ZL 200880127333.3	2015-06-17		Registered
PU0563CN2	Magnetic Targeting System for Facilitating Navigation	MagRod, LLC	CN	200980127694.2	2009-06-10	ZL200980127694.2	2013-11-06		Registered
PU0563EP1	Magnetic Targeting System and Method of Using the Same	NuVasive, Inc.	EP	08730366.5	2008-02-21				Pending
PU0563IN1	Magnetic Targeting System and Method of Using the Same	MagRod, LLC	IN	6552/DELNP/2010	2008-02-21				Pending
PU0563JP1	Magnetic Targeting System and Method of Using the Same	MagRod, LLC	JP	2010-547604	2008-02-21	5403763	2013-11-08		Registered
PU0563KR1	Magnetic Targeting System and Method of Using the Same	NuVasive, Inc.	KR	10-2010-7020596	2008-02-21	10-1472847	2014-12-09		Registered
PU0563MX1	Magnetic Targeting System and Method of Using the Same	MagRod, LLC	MX	MX/a/2010/009218	2008-02-21				Pending
PU0563NZ1	Magnetic Targeting System and Method of Using the Same	NuVasive, Inc.	NZ	587467	2008-02-21	587467	2013-09-03		Registered
PU0563RE1	Magnetic Targeting System and Method of Using the Same	NuVasive, Inc.	US	14/152,985	2014-01-10	RE45,436	2015-03-24		Registered
PU0563RE2	Magnetic Targeting System and Method of Using the Same	NuVasive, Inc.	US	14/152,987	2014-01-10	RE45,659	2012-01-10		Registered
PU0563RE3	Magnetic Targeting System and Method of Using the Same	NuVasive, Inc.	US	14/667,599	2015-03-24				Pending
PU0563RE4	Magnetic Targeting System and Method of Using the Same	NuVasive, Inc.	US	14/842,745	2015-09-01				Pending
PU0563US2	Magnetic Targeting System and Method of Using the Same	NuVasive, Inc.	US	12/157,397	2008-06-10	7,976,546	2011-07-12		Registered
PU0563US4	Magnetic Targeting System and Method of Using the Same	NuVasive, Inc.	US	12/728,818	2010-03-22	8,092,461	2012-01-10		Registered
PU0563US5	Magnetic Targeting System and Method of Using the Same	NuVasive, Inc.	US	13/151,756	2011-06-02	8,366,715	2013-02-05		Registered
PU0563US6	Magnetic Targeting System and Method of Using the Same	NuVasive, Inc.	US	13/313,528	2011-12-07	8,317,801	2012-11-27		Registered

PU0563US7	Magnetic Targeting System and Method of Using the Same	NuVasive, Inc.	US	13/313,765	2011-12-07	8,333,771	2012-12-18		Registered
PU0564US1	Reversibly Deformable Implant	NuVasive, Inc.	US	11/462,609	2006-08-04	7,758,649	2010-07-20		Registered
PU0565US1	Connecting Rod for Bone Anchors Having a Bioresorbable Tip	NuVasive, Inc.	US	11/462,566	2006-08-04	8,439,952	2013-05-14		Registered
PU0566CN1	Implant Equipped for Nerve Location and Method of Use	Integrity Intellect Inc.	CN	200880127332.9	2008-02-21	ZL 200880127332.9	2014-03-12		Registered
PU0566US1	Implant Equipped for Nerve Location and Method of Use	NuVasive, Inc.	US	11/534,129	2006-09-21	7,981,144	2011-07-19		Registered
PU0567US1	Systems and Methods for Inserting Cross-Connectors	NuVasive, Inc.	US	14/052,015	2013-10-11				Pending
PU0568AU1	Vertebral Disc Prosthesis	NuVasive, Inc.	AU	2006230808	2006-04-06	2006230808	2012-05-03		Registered
PU0568CN1	Vertebral Disc Prosthesis		CN	200680019708.5	2006-04-06	101222887 B	2012-11-07	Filed in inventor name	Registered
PU0568EP1	Vertebral Disc Prosthesis	NuVasive, Inc.	EP	06721339.7	2006-04-06				Pending
PU0568KR1	Vertebral Disc Prosthesis	NuVasive, Inc.	KR	10-2007-7025789	2006-04-06	1360150	2014-02-03		Registered
PU0568US2	Vertebral Disc Prosthesis	NuVasive, Inc.	US	14/032,143	2013-09-19	9,138,329	2015-09-22		Registered
PU0568US3	Vertebral Disc Prosthesis	NuVasive, Inc.	US	14/827,972	2015-08-17				Pending
PU0569AU1	Method of Reducing Loading Failure for a Prosthetic Component	NuVasive, Inc.	AU	2006308801	2006-11-02	2006308801	2012-07-05		Registered
PU0569AU3	Method of Reducing Loading Failure for a Prosthetic Component	NuVasive, Inc.	AU	2014280965	2006-11-02				Pending
PU0569CN1	Method of Reducing Loading Failure for a Prosthetic Component		CN	200680046378.9	2006-11-02	101340863 B	2013-04-03	Filed in inventor name	Registered
PU0569EP1	Method of Reducing Loading Failure for a Prosthetic Component	NuVasive, Inc.	EP	06804463.5	2006-11-02				Pending
PU0569KR1	Method of Reducing Loading Failure for a Prosthetic Component	NuVasive, Inc.	KR	10-2008-7013434	2006-11-02	1360188	2014-02-03		Registered
PU0569US1	Method of Reducing Loading Failure for a Prosthetic Component	NuVasive, Inc.	US	12/084,471	2006-11-02				Pending
PU0572US1	Magnetically Connectable Interbody Spinal Implat Devices	NuVasive, Inc.	US	14/216,509	2014-03-17				Pending
PU0573US1	Spinal Fusion Implant with Reducible Graft Aperture	NuVasive, Inc.	US	14/457,108	2014-08-11				Pending
PU0574US1	Orthopedic Screw Insert	NuVasive, Inc.	US	12/009,441	2008-01-18	8,221,479	2012-07-17		Registered
PU0574US2	Orthopedic Screw Insert	NuVasive, Inc.	US	13/524,968	2012-06-15	8,951,293	2015-02-10		Registered
PU0575US1	Bone Anchor with Offset Rod Connector	NuVasive, Inc.	US	14/510,107	2014-10-08				Pending
PU0576US1	Systems and Methods for		US	14/511,038	2014-10-09			Assignment from	Pending

	Performing Spine Surgery							inventors in progress	
PU0582US1	Spinal Fusion Implant and Related Methods	NuVasive, Inc.	US	14/594,272	2015-01-12				Pending
PU0583US1	Oblique TLIF Implant and Related Methods	NuVasive, Inc.	US	14/597,085	2015-01-14				Pending
PU0589US1	Minimally Invasive Spinal Fixation System and Related Methods	NuVasive, Inc.	US	14/631,839	2015-02-25				Pending
PU0591US1	Method for Placing Minimally Invasive Pedicle Screws	NuVasive, Inc.	US	14/727,831	2015-06-01				Pending
PU0598US1	Posterior Cervical Fusion System and Techniques	NuVasive, Inc.	US	13/503,050	2010-10-21	9,204,906	2015-12-08		Registered
PU0598US2	System and Method for Posterior Cervical Fusion	NuVasive, Inc.	US	14/623,988	2015-02-17				Pending
PU0600US1	Spinal Fixation Constructs and Related Methods	NuVasive, Inc.	US	14/703,852	2015-05-04				Pending
PU0603AU1	Surgical Retractor System and Methods of Use	NuVasive, Inc.	AU	2012299061	2012-08-17				Pending
PU0603CN1	Surgical Retractor System and Methods of Use	NuVasive, Inc.	CN	201280044606.4	2012-08-17				Pending
PU0603EP1	Surgical Retractor System and Methods of Use	NuVasive, Inc.	EP	12826211.0	2012-08-17				Pending
PU0603JP1	Surgical Retractor System and Methods of Use	NuVasive, Inc.	JP	2014-526262	2012-08-17				Pending
PU0603US1	Surgical Retractor System and Methods of Use	NuVasive, Inc.	US	14/239,528	2012-08-17				Pending
PU0607US1	Minimally Disruptive Retractor and Associated Methods for Spinal Surgery	NuVasive, Inc.	US	14/756,198	2015-08-14				Pending
PU0607WO1	Minimally Disruptive Retractor and Methods	NuVasive, Inc.	WO	PCT/US2015/000084	2015-08-14				Pending
PU0608US1	Lordotic Expandable Interbody Implant	NuVasive, Inc.	US	14/456,640	2014-08-11				Pending
PU0609US1	Systems and Methods for Performing Neurophysiologic Monitoring	NuVasive, Inc.	US	14/856,525	2015-09-16				Pending
PU0611US1	Adjustable Iliac Connector	NuVasive, Inc.	US	14/856,467	2015-09-16				Pending
PU0612AU1	Surgical Spinal Correction		AU	PCT/US2014/059974	2014-10-09			Assignment from inventors in progress	Pending
PU0612CN1	Surgical Spinal Correction		CN	PCT/US2014/059974	2014-10-09			Assignment from inventors in progress	Pending

PU0612EP1	Surgical Spinal Correction		EP	PCT/US2014/059974	2014-10-09			Assignment from inventors in progress	Pending
PU0612JP1	Surgical Spinal Correction		JP	PCT/US2014/059974	2014-10-09			Assignment from inventors in progress	Pending
PU0612US1	Surgical Spinal Correction		US	PCT/US2014/059974	2014-10-09			Assignment from inventors in progress	Pending
PU0612WO1	Surgical Spinal Correction		WO	PCT/US2014/059974	2014-10-09			Assignment from inventors in progress	Pending
PU0614WO1	Systems and Methods for Performing Neurophysiologic Monitoring During Spine Surgery		WO	PCT/US2014/064449	2014-11-06			Assignment from inventors in progress	Pending
PU0616US1	Systems and Methods for Performing Spine Surgery	NuVasive, Inc.	US	14/887,245	2015-10-19				Pending
PU0617USP2	Pedicle Screw Biomechanical Strength Intraoperative Assessment System and Method		US	62/252,248	2015-11-06			Provisional	Pending
PU0622USP	Anterior Spinal Column Reduction Instrument and Methods		US	62/175,624	2015-06-15			Provisional	Pending
PU0623USP	Adjustable Depth Drill Guide		US	62/271,719	2015-12-28			Provisional	Pending
PU0625US1	Method and Apparatus for Performing Spine Surgery		US	15/000,033	2016-01-19			Assignment from inventors in progress	Pending
PU0626USP2	Systems and Methods for Performing Spine Surgery		US	62/278,873	2016-01-14			Provisional	Pending
PU0627US1	Systems and Methods for Planning, Performing, and Assessing Spinal Correction During Surgery		US	15/045,084	2016-02-16			Assignment from inventors in progress	Pending
PU0628US1	Systems and Methods for Facilitating Surgical Procedures		US	15/047,049	2016-02-18			Assignment from inventors in progress	Pending
PU0630US1	Rod Reduction Assemblies and Related Methods	NuVasive, Inc.	US	14/634,729	2015-02-28				Pending
PU0632USP	Porous Interbody Implant with Contoured Surfaces		US	62/148,622	2015-04-16			Provisional	Pending
PU0632USP2	Spinal Fusion Implant		US	62/268,430	2015-12-16			Provisional	Pending
PU0633USP	Expandable Lordosis Intervertebral Implant		US	62/160,544	2015-05-12			Provisional	Pending
PU0633USP2	Expandable Lordosis Intervertebral Implant		US	62/190,251	2015-07-09			Provisional	Pending

PU0634USP	Methods and Instruments for Performing Leveraged Reduction During Single Position Spine Surgery		US	62/165,078	2015-05-21			Provisional	Pending
PU0635WO1	Systems and Methods for Planning, Performing, and Assessing Spinal Correction During Surgery		WO	PCT/US2015/036301	2015-06-17			Assignment from inventors in progress	Pending
PU0636USP	Planar and Work Rod Correction System and Tecnique		US	62/261,737	2015-12-01			Provisional	Pending
PU0638USP	Deformity Correction Pelvic Tilt Frame and Pelvic Tilt Assessment Feature		US	62/261,186	2015-11-30			Provisional	Pending
PU0640US1	Vertebral Anchor	NuVasive, Inc.	US	11/850,393	2007-09-05	8,177,816	2012-05-15		Registered
PU0641US1	Expandable Support Device and Method of Use	NuVasive, Inc.	US	12/780,744	2010-05-14	8,382,842	2013-02-26		Registered
PU0644US1	Orthopedic Implant Rod Reduction Tool Set and Method		US	10/789,134	2004-02-27	7,470,279	2008-12-30	Jackson assignment in progress	Registered
PU0645AU1	Orthopedic Implant Rod Reduction Tool Set and Method		AU	2004317551	2004-09-29	2004317551	2009-03-19	Jackson assignment in progress	Registered
PU0645CA1	Orthopedic Implant Rod Reduction Tool Set and Method		CA	PCT/US2004/031860	2004-09-29	2555868	2011-09-06	Jackson assignment in progress	Registered
PU0645US1	Orthopedic Implant Rod Reduction Tool Set and Method		US	10/789,149	2004-02-27	7,160,300	2007-01-09	Jackson assignment in progress	Registered
PU0645US10	Method for Implanting a Rod Implant Along a Spine of a Patient		US	14/245,828	2014-04-04	9,173,682	2015-11-03	Jackson assignment in progress	Registered
PU0645US11	Method for Implanting a Rod Implant Along a Spine of a Patient		US	14/553,246	2014-11-25			Jackson assignment in progress	Pending
PU0645US12	System for Implanting a Rod Implant Along a Spine of a Patient		US	14/553,327	2014-11-25			Jackson assignment in progress	Pending
PU0645US13	System for Implanting a Rod Implant Along a Spine of a Patient		US	14/553,408	2014-11-25			Jackson assignment in progress	Pending
PU0645US14	System for Implanting a Rod Implant Along a Spine of a Patient		US	14/553,471	2014-11-25			Jackson assignment in progress	Pending
PU0645US15	Orthopedic Implant Rod Reduction Tool Set and Method		US	14/738,195	2015-06-12			Jackson assignment in progress	Pending
PU0645US2	Orthopedic Implant Rod Reduction Tool Set and Method		US	12/220,185	2008-07-22	8,162,948	2012-04-24	Jackson assignment in progress	Registered
PU0645US3	Orthopedic Implant Rod Reduction Tool Set and Method		US	12/454,152	2009-05-13	8,292,892	2012-10-23	Jackson assignment in progress	Registered

PU0645US4	Orthopedic Implant Rod Reduction Tool Set and Method		US	12/584,413	2009-09-04	8,100,915	2012-01-24	Jackson assignment in progress	Registered
PU0645US5	Orthopedic Implant Rod Reduction Tool Set and Method		US	13/374,932	2012-01-24	8,377,067	2013-02-19	Jackson assignment in progress	Registered
PU0645US6	Orthopedic Implant Rod Reduction Tool Set and Method		US	13/573,660	2012-10-02	9,055,978	2015-06-16	Jackson assignment in progress	Registered
PU0645US7	Bone Anchor Configured to Anchor an Elongated Implant to a Patient Bone		US	14/245,660	2014-04-04			Jackson assignment in progress	Pending
PU0645US8	Method for Implanting an Elongated Implant Along a Spine of a Patient		US	14/245,728	2014-04-04	9,101,415	2015-08-11	Jackson assignment in progress	Registered
PU0645US9	System for Anchoring an Elongated Implant to a Vertebra of a Patient Spine		US	14/245,775	2014-04-04			Jackson assignment in progress	Pending
PU0646US1	Spinal Fixation Tool Attachment Structure		US	11/272,508	2005-11-10	9,050,148	2015-06-09	Jackson assignment in progress	Registered
PU0646US2	Spinal Fixation Tool Attachment Structure		US	14/601,834	2015-01-21			Jackson assignment in progress	Pending
PU0647US1	Dynamic Stabilization Assemblies, Tool Set and Method		US	11/328,481	2006-01-09	7,862,587	2011-01-04	Jackson assignment in progress	Registered
PU0647US2	Dynamic Stabilization Assemblies, Tool Set and Method		US	12/927,673	2010-11-19	9,216,039	2015-12-22	Jackson assignment in progress	Registered
PU0647US3	Dynamic Stabilization Assemblies, Tool Set and Method		US	14/482,562	2014-09-10			Jackson assignment in progress	Pending
PU0648US1	Tool System for Dynamic Spinal Implants		US	11/999,689	2007-12-06	8,066,739	2011-11-29	Jackson assignment in progress	Registered
PU0648US2	Tool System for Dynamic Spinal Implants		US	13/373,735	2011-11-28	8,894,657	2014-11-25	Jackson assignment in progress	Registered
PU0648US3	Tool System for Dynamic Spinal Implants		US	13/901,672	2013-05-24			Jackson assignment in progress	Pending
PU0648US4	Tool System for Dynamic Spinal Implants		US	14/549,201	2014-11-20			Jackson assignment in progress	Pending
PU0649US1	Orthopedic Implant Rod Reduction Tool Set and Method		US	13/815,933	2013-03-15	9,050,139	2015-06-09	Jackson assignment in progress	Registered
PU0649US2	Orthopedic Implant Rod Reduction Tool Set and Method		US	14/733,222	2015-06-08			Jackson assignment in progress	Pending
PU0650US1	Spinal FixationTool Set and Method		US	14/041,552	2013-09-30			Jackson assignment in progress	Pending
PU0651US1	Spinal Fixation Tool Set and Method		US	10/996,289	2004-11-23	8,152,810	2012-04-10	Jackson assignment in progress	Registered

PU0651US2	Spinal Fixation Tool Set and Method		US	11/541,321	2006-09-29	8,273,089	2012-09-25	Jackson assignment in progress	Registered
PU0651US3	Spinal Fixation Tool Set and Method		US	12/924,223	2010-09-23	9,211,150	2015-12-15	Jackson assignment in progress	Registered
PU0651US4	Spinal Fixation Tool Set and Method		US	13/507,471	2012-06-29			Jackson assignment in progress	Pending
PU0652AU1	Poly Axial Bone Screw With Spherical Capture, Compression and Alignment and Retention Structures		AU	2008226963	2008-03-06	2008226963 B2	2011-09-06	Jackson assignment in progress	Registered
PU0652DE1	Poly Axial Bone Screw With Spherical Capture, Compression and Alignment and Retention Structures		DE	08726468.5	2008-03-06	2129310 B1	2012-09-05	Jackson assignment in progress	Registered
PU0652GB1	Poly Axial Bone Screw With Spherical Capture, Compression and Alignment and Retention Structures		GB	08726468.5	2008-03-06	2129310 B1	2012-09-05	Jackson assignment in progress	Registered
PU0652JP1	Poly Axial Bone Screw With Spherical Capture, Compression and Alignment and Retention Structures		JP	2013-001793	2008-03-06			Jackson assignment in progress	Pending
PU0652US1	Polyaxial Bone Screw With Spherical Capture, Compression and Alignment and Retention Structures		US	12/072,354	2008-02-26			Jackson assignment in progress	Pending
PU0652US2	Polyaxial Bone Screw With Spherical Capture, Compression Insert and Alignment and Retention Structures		US	13/507,822	2012-07-31			Jackson assignment in progress	Pending
PU0653BR1	Polyaxial Bone Anchor With Compound Articulation and Pop-On Shank		BR	PCT/US2012/000147	2012-03-16			Jackson assignment in progress	Pending
PU0653CN1	Polyaxial Bone Anchor With Compound Articulation and Pop-On Shank		CN	PCT/US2012/000147	2012-03-16			Jackson assignment in progress	Pending
PU0653JP1	Polyaxial Bone Anchor With Compound Articulation and Pop-On Shank		JP	2014-501061	2012-03-16			Jackson assignment in progress	Pending
PU0653US1	Polyaxial Bone Anchor With Compound Articulation and Pop-		US	13/385,997	2012-03-20			Jackson assignment in progress	Pending

	On Shank								
PU0658US1	Systems and Methods for Performing Spine Surgery	NuVasive, Inc.	US	14/887,246	2015-10-19				Pending
PU0659USP	Spinal Compression Instrument and Related Methods		US	62/262,491	2015-12-03			Provisional	Pending
PU0661USP	Bone Anchor with Increased Angulation Housing		US	62/262,530	2015-12-03			Provisional	Pending
PU0663USP	Pressue-Based Motion Detection for Spine Surgery		US	62/257,158	2015-11-18			Provisional	Pending
PU0665USP	Bone Anchor with Deployable Purchase Element		US	62/306,201	2016-03-10			Provisional	Pending
PU0666USP	Integral Double Rod Spinal Construct		US	62/298,279	2016-02-22			Provisional	Pending
PU0667USP	Immunomodulation with implantation of cellular allograft		US	62/263,945	2015-12-07			Provisional	Pending
PU0668USP	3D Visualization During Surgery with Reduced Radiation Exposure		US	62/266,888	2015-12-14			Provisional	Pending
PU0668USP2	3D Visualization During Surgery with Reduced Radiation Exposure		US	62/307,942	2016-03-14			Provisional	Pending
PU0669USP	Midline Spinous Process Allograft		US	62/272,618	2015-12-29			Provisional	Pending
PU0670USP	Spinous Process Plate System		US	62/273,350	2015-12-30			Provisional	Pending
PU0672USP	Visual, Audible, Tactile Feedback Mechanism		US	62/273,377	2015-12-30			Provisional	Pending
PU0672USP2	Interfixated Interbody Guide		US	62/273,445	2015-12-31			Provisional	Pending
PU0673USP	Expandable Trial Implant		US	62/273,390	2015-12-30			Provisional	Pending
PU0673USP2	Cranial/Caudal Expandable Lordosis Spinal Implant		US	62/273,441	2015-12-31			Provisional	Pending
PU0674USP	Anterolateral Implant Inserter		US	62/273,443	2015-12-31			Provisional	Pending
PU0675USP	Systems and Methods for Performing Spine Surgery		US	62/286,166	2016-01-22			Provisional	Pending
PU0678USP	Disc Preparation Confirmation Tool		US	62/294,505	2016-02-12			Provisional	Pending
PU0679USP	Magnetically Activated Deployable Fixation Interbody Device		US	62/294,884	2016-02-12			Provisional	Pending
PU0680USP	Magnetically Actuated Instruments		US	62/294,979	2016-02-12			Provisional	Pending
PU0681USP	Post-Operatively Adjustable Angled Rod		US	62/294,988	2016-02-12			Provisional	Pending
PU0682USP	Post-Operatively Adjustable Tension Devices		US	62/294,975	2016-02-12			Provisional	Pending
PU0683USP	Magnetically Actuateable Rod Insertion for Minimally Invasive Surgery		US	62/295,001	2016-02-12			Provisional	Pending

PU0684USP	Systems and Methods for Spinous Process Fixation		US	62/294,422	2016-02-12			Provisional	Pending
PU0685USP	Systms and Methods for an Interspinous Spacer		US	62/294,440	2016-02-12			Provisional	Pending
PU0687USP	Surgical Fixation System and Related Methods		US	62/294,989	2016-02-12			Provisional	Pending
PU0688USP	Systems and Methods for Performing Spine Surgery		US	62/294,990	2016-02-12			Provisional	Pending
PU0689USP	Magnetic Disc Prosthesis		US	62/294,992	2016-02-12			Provisional	Pending
PU0690USP	Magnetically Actuated Expandable Interbody Device		US	62/295,008	2016-02-13			Provisional	Pending
PU0692US1	Systems and Methods for Planning, Performing, and Assessing Spinal Correction During Surgery		US	15/044,947	2016-02-16				Pending
PU0693US1	Expandable Rod System To Treat Scoliosis and Method of Using the Same	Ellipse Technologies, Inc.	US	11/172,678	2005-06-30	7,955,357	2011-06-07		Registered
PU0693US2	Expandable Rod System To Treat Scoliosis and Method of Using the Same	Ellipse Technologies, Inc.	US	12/421,569	2009-04-09	8,343,192	2013-01-01		Registered
PU0693US3	Expandable Rod System To Treat Scoliosis and Method of Using the Same	Ellipse Technologies, Inc.	US	13/691,530	2012-11-30	8,852,236	2014-10-07		Registered
PU0693US4	Expandable Rod System To Treat Scoliosis and Method of Using the Same	Ellipse Technologies, Inc.	US	14/321,386	2014-07-01				Pending
PU0693US5	Expandable Rod System To Treat Scoliosis and Method of Using the Same	Ellipse Technologies, Inc.	US	14/601,999	2015-01-21	9,011,499	2015-04-21		Registered
PU0694DE1	Gastrointestinal Restriction Device	Ellipse Technologies, Inc.	DE	08730778.1	2008-02-26	2114258	2014-06-25		Registered
PU0694EP2	Gastrointestinal Restriction Device	Ellipse Technologies, Inc.	EP	14168308.6	2008-02-26				Pending
PU0694FR1	Gastrointestinal Restriction Device	Ellipse Technologies, Inc.	FR	08730778.1	2008-02-26	2114258	2014-06-25		Registered
PU0694GB1	Gastrointestinal Restriction Device	Ellipse Technologies, Inc.	GB	08730778.1	2008-02-26	2114258	2014-06-25		Registered

PU0694US1	Gastrointestinal Restriction Device	Ellipse Technologies, Inc.	US	11/760,482	2007-06-08	7,862,502	2011-01-04		Registered
PU0694US2	Gastrointestinal Restriction Device	Ellipse Technologies, Inc.	US	12/259,965	2008-10-28	7,981,025	2011-07-19		Registered
PU0694US3	Gastrointestinal Restriction Device	Ellipse Technologies, Inc.	US	13/158,117	2011-06-10	8,715,159	2014-05-06		Registered
PU0694US4	Gastrointestinal Restriction Device	Ellipse Technologies, Inc.	US	13/649,977	2012-10-11	8,808,163	2014-08-19		Registered
PU0694US5	Gastrointestinal Restriction Device	Ellipse Technologies, Inc.	US	14/328,568	2014-07-10				Pending
PU0694US6	Gastrointestinal Restriction Device	Ellipse Technologies, Inc.	US	14/668,901	2015-03-25	9,271,857	2016-03-01		Registered
PU0694US7	Gastrointestinal Restriction Device	Ellipse Technologies, Inc.	US	14/920,709	2015-10-22				Pending
PU0695US1	Implant System with Resonant-Driven Actuator	Ellipse Technologies, Inc.	US	11/760,488	2007-06-08	8,246,533	2012-08-21		Registered
PU0696CA1	Skeletal Manipulation System	Ellipse Technologies, Inc.	CA	2703562	2008-10-13				Pending
PU0696CN1	Skeletal Manipulation System	Ellipse Technologies, Inc.	CN	200880121423.1	2008-10-13	ZL200880121423.1	2012-11-21		Registered
PU0696CN2	Skeletal Manipulation System	Ellipse Technologies, Inc.	CN	201210404498.9	2008-10-13	ZL201210404498.9	2015-03-04		Registered
PU0696EP1	Skeletal Manipulation System	Ellipse Technologies, Inc.	EP	08845847.6	2008-10-13				Pending
PU0696JP2	Skeletal Manipulation System	Ellipse Technologies, Inc.	JP	2014-081308	2008-10-13	5860496	2015-12-25		Registered
PU0696JP3	Skeletal Manipulation System	Ellipse Technologies,	JP	2015-178762	2008-10-13				Pending

		Inc.							
PU0696US3	Skeletal Manipulation System and Method	Ellipse Technologies, Inc.	US	12/121,499	2008-05-15	8,057,472	2011-11-15		Registered
PU0696US4	Skeletal Manipulation Method	Ellipse Technologies, Inc.	US	13/277,980	2011-10-20	8,419,734	2013-04-16		Registered
PU0696US5	Skeletal Manipulation Method	Ellipse Technologies, Inc.	US	13/849,405	2013-03-22	9,271,781	2016-03-01		Registered
PU0696US6	Skeletal Manipulation Method	Ellipse Technologies, Inc.	US	14/629,426	2015-02-23	9,179,960	2015-11-10		Registered
PU0696US7	Skeletal Manipulation Method	Ellipse Technologies, Inc.	US	14/880,980	2015-10-12				Pending
PU0697US2	Adjustable Implant System	Ellipse Technologies, Inc.	US	13/625,725	2012-09-24	9,198,755	2015-12-01		Registered
PU0697US3	Adjustable Implant System	Ellipse Technologies, Inc.	US	14/885,749	2015-10-16				Pending
PU0698US1	External Adjustment Device for Distraction Device	Ellipse Technologies, Inc.	US	12/615,855	2009-11-10	8,382,756	2013-02-26		Registered
PU0698US2	External Adjustment Device for Distraction Device	Ellipse Technologies, Inc.	US	13/747,028	2013-01-22	9,192,411	2015-11-24		Registered
PU0698US3	External Adjustment Device	Ellipse Technologies, Inc.	US	14/885,227	2015-10-16				Pending
PU0699CN1	Spinal Distraction System	Ellipse Technologies, Inc.	CN	201080008758.X	2010-02-10	ZL201080008758.X	2015-09-16		Registered
PU0699CN2	Spinal Distraction System	Ellipse Technologies, Inc.	CN	201510509680.4	2010-02-10				Pending
PU0699CN3	Spinal Distraction System	Ellipse Technologies, Inc.	CN	20150509301.1	2010-02-10				Pending
PU0699EP1	Spinal Distraction System	Ellipse	EP	10744153.7	2010-02-10				Pending

		Technologies, Inc.							
PU0699JP1	Spinal Distraction System	Ellipse Technologies, Inc.	JP	2011-551126	2010-02-10				Pending
PU0699US1	Non-Invasive Adjustable Distraction System	Ellipse Technologies, Inc.	US	12/391,109	2009-02-23	8,197,490	2012-06-12		Registered
PU0699US2	Non-Invasive Adjustable Distraction System	Ellipse Technologies, Inc.	US	13/477,945	2012-05-22	8,974,463	2015-03-10		Registered
PU0699US3	Non-Invasive Adjustable Distraction System	Ellipse Technologies, Inc.	US	14/332,286	2014-07-15				Pending
PU0700US1	Interspinous Process Device and Method	Ellipse Technologies, Inc.	US	12/761,141	2010-04-15				Pending
PU0701AU1	Bone Growth Device and Method	Ellipse Technologies, Inc.	AU	2010289288	2010-09-03				Pending
PU0701CN1	Bone Growth Device and Method	Ellipse Technologies, Inc.	CN	201080039442.7	2010-09-03	ZL2010-80039442.7	2015-09-09		Registered
PU0701CN2	Bone Growth Device and Method	Ellipse Technologies, Inc.	CN	2015104847223	2010-09-03				Pending
PU0701CN3	Bone Growth Device and Method	Ellipse Technologies, Inc.	CN	201510484965.7	2010-09-03				Pending
PU0701EP1	Bone Growth Device and Method	Ellipse Technologies, Inc.	EP	10814570.7	2010-09-03				Pending
PU0701JP1	Bone Growth Device and Method	Ellipse Technologies, Inc.	JP	2012-528095	2010-09-03	5751642	2015-05-29		Registered
PU0701JP2	Bone Growth Device and Method	Ellipse Technologies, Inc.	JP	2015-098790	2010-09-03				Pending
PU0701KR1	Bone Growth Device and Method	Ellipse Technologies, Inc.	KR	10-2012-7008627	2010-09-03				Pending

PU0701RU1	Bone Growth Device and Method	Ellipse Technologies, Inc.	RU	2012112925	2010-09-03				Pending
PU0701RU2	Bone Growth Device and Method	Ellipse Technologies, Inc.	RU	2016101629	2010-09-03				Pending
PU0701US1	Bone Growth Device and Method	Ellipse Technologies, Inc.	US	12/875,585	2010-09-03	8,449,543	2013-05-28		Registered
PU0701US2	Bone Growth Device and Method	Ellipse Technologies, Inc.	US	13/892,182	2013-05-10				Pending
PU0702US1	External Adjustment Device for Distraction Device	Ellipse Technologies, Inc.	US	13/172,598	2011-06-29	9,248,043	2016-02-02		Registered
PU0702US2	External Adjustment Device for Distraction Device	Ellipse Technologies, Inc.	US	14/995,503	2016-01-14				Pending
PU0704US1	Maintenance Feature in Magnetic Implant	Ellipse Technologies, Inc.	US	13/198,571	2011-08-04	8,734,488	2014-05-27		Registered
PU0704US2	Maintenance Feature in Magnetic Implant	Ellipse Technologies, Inc.	US	14/250,313	2014-04-10	9,186,183	2015-11-17		Registered
PU0704US3	Maintenance Feature in Magnetic Implant	Ellipse Technologies, Inc.	US	14/883,485	2015-10-14				Pending
PU0705US1	System and Method for Altering Rotational Alignment of Bone Sections	Ellipse Technologies, Inc.	US	13/370,966	2012-02-10	8,715,282	2014-05-06		Registered
PU0705US2	Variable Length Device and Method	Ellipse Technologies, Inc.	US	13/371,012	2012-02-10	8,852,187	2014-10-07		Registered
PU0705US3	System and Method for Altering Rotational Alignment of Bone Sections	Ellipse Technologies, Inc.	US	14/146,336	2014-01-02				Pending
PU0705US4	Variable Length Device and Method	Ellipse Technologies, Inc.	US	14/667,620	2015-03-24				Pending
PU0706DE1	Devices and Methods for Non-Invasive Implant Length Sensing	Ellipse Technologies,	DE	112012004130.5	2012-10-02				Pending

		Inc.							
PU0706US1	Devices and Methods for Non-Invasive Implant Length Sensing	Ellipse Technologies, Inc.	US	13/253,065	2011-10-04				Pending
PU0707US6	Spinal Distraction System	Ellipse Technologies, Inc.	US	13/730,773	2012-12-28				Pending
PU0708US1	Adjustable Magnetic Devices and Methods of Using Same	Ellipse Technologies, Inc.	US	14/355,202	2012-10-31				Pending
PU0708US2	Adjustable Magnetic Devices and Methods of Using Same	Ellipse Technologies, Inc.	US	14/301,238	2014-06-10				Pending
PU0708US3	Adjustable Magnetic Devices and Methods of Using Same	Ellipse Technologies, Inc.	US	14/449,761	2014-08-01				Pending
PU0709DE1	Devices and Methods for Detection of Slippage of Magnetic Coupling in Implantable Medical Devices	Ellipse Technologies, Inc.	DE	112013002825.5	2013-06-04				Pending
PU0709US1	Devices and Methods for Detection of Slippage of Magnetic Coupling in Implantable Medical Devices	Ellipse Technologies, Inc.	US	13/490,107	2012-06-06	9,078,711	2015-07-14		Registered
PU0709US2	Devices and Methods for Detection of Slippage of Magnetic Coupling in Implantable Medical Devices	Ellipse Technologies, Inc.	US	14/737,192	2015-06-11				Pending
PU0710US1	Magnetic Implants with Improved Anatomical Compatibility	Ellipse Technologies, Inc.	US	13/525,058	2012-06-15				Pending
PU0711US1	Intramedullary Implant for Replacing Lost Bone	Ellipse Technologies, Inc.	US	13/655,246	2012-10-18	9,044,281	2015-06-02		Registered
PU0711US2	Implantable Dynamic Apparatus Having an Anti Jamming Feature	Ellipse Technologies, Inc.	US	14/451,190	2014-08-04				Pending
PU0712US1	Distraction Devices and Method of Assembling the Same	Ellipse Technologies, Inc.	US	13/791,430	2013-03-08	9,179,938	2015-11-10		Registered
PU0712US2	Systems and Methods for Ultrasonic Detection of Device Distraction	Ellipse Technologies, Inc.	US	14/863,019	2015-09-23				Pending
PU0713AU1	Adjustable Devices for Treating	Ellipse	AU	2013338218	2013-10-28				Pending

	Arthritis of the Knee	Technologies, Inc.							
PU0713BR1	Adjustable Devices for Treating Arthritis of the Knee	Ellipse Technologies, Inc.	BR	112015009446.5	2013-10-28				Pending
PU0713CA1	Adjustable Devices for Treating Arthritis of the Knee	Ellipse Technologies, Inc.	CA	2889768	2013-10-28				Pending
PU0713CN1	Adjustable Devices for Treating Arthritis of the Knee	Ellipse Technologies, Inc.	CN	2013800689268	2013-10-28				Pending
PU0713EP1	Adjustable Devices for Treating Arthritis of the Knee	Ellipse Technologies, Inc.	EP	13850787.6	2013-10-28				Pending
PU0713IN1	Adjustable Devices for Treating Arthritis of the Knee	Ellipse Technologies, Inc.	IN	3762/DELNP/2015	2013-10-28				Pending
PU0713RU1	Adjustable Devices for Treating Arthritis of the Knee	Ellipse Technologies, Inc.	RU	2015120291	2013-10-28				Pending
PU0713US1	Adjustable Devices for Treating Arthritis of the Knee	Ellipse Technologies, Inc.	US	14/065,342	2013-10-28				Pending
PU0713US2	Adjustable Devices for Treating Arthritis of the Knee	Ellipse Technologies, Inc.	US	14/379,742	2013-10-28				Pending
PU0714US1	Noninvasively Adjustable Suture Anchors	Ellipse Technologies, Inc.	US	14/447,391	2014-07-30				Pending
PU0715US1	Adjustable Spinal Implant	Ellipse Technologies, Inc.	US	14/511,084	2014-10-09				Pending
PU0716US1	Methods and Apparatus for Bone Reshaping	Ellipse Technologies, Inc.	US	14/512,119	2014-10-10				Pending
PU0716WO1	Methods and Apparatus for Bone Reshaping	Ellipse Technologies, Inc.	WO	PCT/US2014/060131	2014-10-10				Pending
PU0717US1	System for Informational Magnetic Feedback in Adjustable Implants	Ellipse Technologies, Inc.	US	14/698,665	2015-04-28				Pending

PU0717US2	System for Informational Magnetic Feedback in Adjustable Implants	Ellipse Technologies, Inc.	US	14/932,904	2015-11-04				Pending
PU0717WO1	System for Informational Magnetic Feedback in Adjustable Implants	Ellipse Technologies, Inc.	WO	PCT/US2015/028079	2015-04-28				Pending
PU0717WO2	System for Informational Magnetic Feedback in Adjustable Implants	Ellipse Technologies, Inc.	WO	PCT/US2015/059102	2015-11-04				Pending
PU0718WO1	Remotely Adjustable Interactive Bone Reshaping	Ellipse Technologies, Inc.	WO	PCT/US2015/057010	2015-10-22				Pending
PU0719US1	Systems and Methods for Distraction	Ellipse Technologies, Inc.	US	14/981,762	2015-12-28				Pending
PU0719WO1	Systems and Methods for Distraction	Ellipse Technologies, Inc.	WO	PCT/U2015/000283	2015-12-23				Pending
PU0720US1	Systems and Methods for Vertebral Adjustment	NuVasive, Inc.	US	15/048,928	2016-02-19				Pending
PU0720WO1	Systems and Methods for Vertebral Adjustment	NuVasive, Inc.	WO	PCT/US2016/018797	2016-02-19				Pending
PU0721USP	Adjustable Devices for Treating Arthritis of the Knee	Ellipse Technologies, Inc.	US	62/242,931	2015-10-16				Pending
PU0722USP	Systems and Methods for Treatment of Incontinence	Ellipse Technologies, Inc.	US	62/249,059	2015-10-30				Pending
PU0723USP	External Adjustment Device for Distraction Device	Ellipse Technologies, Inc.	US	62/265,430	2015-12-10				Pending
PU0723USP2	Adjustment Device for Distraction	Ellipse Technologies, Inc.	US	62/276,196	2016-01-07				Pending
PU0724USP	Systems and Methods for Bone Transport	Ellipse Technologies, Inc.	US	62/288,348	2016-01-28				Pending
PU0725USP	Systems and Methods for Controlling Multiple Surgical Variables	Ellipse Technologies, Inc.	US	62/293,755	2016-02-10				Pending
PU0737USP	Systems and Methods for Sagittal		US	62/302,725	2016-03-02			Provisional	Pending


Realignment Planning

UNITED STATES PATENT AND TRADEMARK OFFICE
Certificate

Patent No. 7,918,891 B1 Patented: April 5, 2011

On petition requesting issuance of a certificate for correction of inventorship pursuant to 35 U.S.C. 256, it has been found that the above identified patent, through error and without any deceptive intent, improperly sets forth the inventorship.

Accordingly, it is hereby certified that the correct inventorship of this patent is: Matthew Curran, Carlsbad, CA (US); Mark Peterson, Medford, OR (US); and Luiz Pimenta, São Paulo (BR).

Signed and Sealed this Third Day of September 2013.

EDUARDO C. ROBERT
Supervisory Patent Examiner
Art Unit 3733
Technology Center 3700

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/093,409	03/29/2005	Matthew Curran	104US1	6640

30328 7590 08/08/2013

NuVasive, Inc.
c/o CPA Global
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Minneapolis, MN 55402

EXAMINER	
FISHER, ELANA BETH	

ART UNIT	PAPER NUMBER
3733	

NOTIFICATION DATE	DELIVERY MODE
08/08/2013	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip@nuvasive.com
docketing@cpaglobal.com

UNITED STATES PATENT AND TRADEMARK OFFICE

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ALEXANDRIA, VA 22313-1450
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In re Patent No. CURRAN ET AL.	:	
Issue Date: April 5, 2011	:	**DECISION GRANTING**
Appl No.: 11/093,409	:	**PETITION**
Filed: March 29, 2005	:	*37 CFR 1.324*
For: SYSTEMS AND METHODS FOR SPINAL FUSION	:	
	:	
	:	
	:	

This is a decision on the petition filed June 21, 2013 to correct inventorship under 37 CFR 1.324.

The petition is granted.

The patented file is being forwarded to Certificate of Corrections Branch for issuance of a certificate naming only the actual inventor or inventors.

/Eduardo C. Robert/

EDUARDO C. ROBERT
Supervisory Patent Examiner
Art Unit 3733
Technology Center 3700

NuVasive, Inc.
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UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
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ALEXANDRIA, VA 22313-1450
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DATE: August 6, 2013
TO: Certificates of Correction Branch
FROM: Eduardo C. Robert, SPE, Art Unit 3733
SUBJECT: Request for Certificate of Correction

Please issue a Certificate of Correction in U. S. Letters Patent No. 7,918,891 as specified on the attached Certificate.

/Eduardo C. Robert/

Eduardo C. Robert, SPE
Art Unit 3733

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE

Patent No. 7,918,891
Patented: April 5, 2011

On petition requesting issuance of a certificate for correction of inventorship pursuant to 35 U.S.C. 256, it has been found that the above identified patent improperly sets forth the inventorship. Accordingly, it is hereby certified that the correct inventorship of this patent is:

Matthew Curran, Carlsbad, CA; Mark Peterson, Medford, OR; Luiz Pimenta, Sao Paulo, Brasil

/Eduardo C. Robert/

Eduardo C. Robert, Supervisory Patent Examiner
Art Unit 3733

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Matthew Curran et al.	Art Unit	: 3733
Patent No.	: 7,918,891	Examiner	: Elana Beth Fisher
Issue Date	: April 5, 2011	Conf. No.	: 6640
Serial No.	: 11/093,409		
Filed	: March 29, 2005		
Title	: SYSTEMS AND METHODS FOR SPINAL FUSION		

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST TO CORRECT INVENTORSHIP
UNDER 37 C.F.R. § 1.324(a)

Applicant requests correction of inventorship for the above-captioned issued patent by the addition of the following inventor:

LUIZ PIMENTA

Applicant submits herewith the following:

1) Inventor's Declaration to Correct Inventorship by LUIZ PIMENTA ;

2) Declarations by current named Inventors: MATTHEW CURRAN and MARK PETERSON;

3) Consent of Assignee to Correct Inventorship;

4) Certificate Under 37 C.F.R. §3.73(b); and

5) Certificate of Correction.

A credit card payment of $230 ($130 in payment for the petition fee of §1.20(b), $100 in payment for the Certificate of Correction fee of §1.20(a)) is submitted herewith. Please apply any other charges or credits to Deposit Account No. 50-2040, referencing Attorney Docket No. 104US1.

Date: June 21, 2013

Rory Schermerhorn, Esq.
Reg. No. 58,148

Customer Number 30328
NuVasive, Inc.
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402
Telephone: (858) 909-1845

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: NuVasive, Inc.	Art Unit	: 3733
Patent No.	: 7,918,891	Examiner	: Elana Beth Fisher
Issue Date	: April 5, 2011	Conf. No.	: 6640
Serial No.	: 11/093,409		
Filed	: March 29, 2005		
Title	: SYSTEMS AND METHODS FOR SPINAL FUSION		

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INVENTOR'S DECLARATION TO CORRECT INVENTORSHIP

I, LUIZ PIMENTA hereby declare:

1. That I am an original named inventor of the noted patent application.

2. That through error, without any deceptive intention on my part or that of any actual inventor, the above-captioned application was filed naming MATTHEW CURRAN and MARK PETERSON, rather than MATTHEW CURRAN, MARK PETERSON and LUIZ PIMENTA. This error was discovered after the application was filed.

3. That all statements made herein of my own knowledge and true and that all statements made on information and belief are believed to be true and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 11/6/2013

LUIZ PIMENTA
Rua Vergueiro,1.421 – Top Towers Offices
Torre Sul – Sala 305 | Paraíso, 04101-000
São Paulo/Brasil

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: NuVasive, Inc.	Art Unit	: 3733
Patent No.	: 7,981,891	Examiner	: Elana Beth Fisher
Issue Date	: April 5, 2011	Conf. No.	: 6640
Serial No.	: 11/093,409		
Filed	: March 29, 2005		
Title	: SYSTEMS AND METHODS FOR SPINAL FUSION		

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INVENTOR'S DECLARATION TO CORRECT INVENTORSHIP

I, MATTHEW CURRAN hereby declare:

1. That I am an original named inventor of the noted patent application.

2. That through error, without any deceptive intention on my part or that of any actual inventor, the above-captioned application was filed naming MATTHEW CURRAN and MARK PETERSON, rather than MATTHEW CURRAN, MARK PETERSON and LUIZ PIMENTA. This error was discovered after the application was filed.

3. That I hereby consent to the correction of inventorship to include LUIZ PIMENTA, as described in paragraph 2, hereinabove.

4. That all statements made herein of my own knowledge and true and that all statements made on information and belief are believed to be true and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 6/10/13

MATTHEW CURRAN
3218 Rancho Quartillo
Carlsbad, CA 92009
United States

Customer Number 30328
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c/o CPA Global
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : NuVasive, Inc.
Patent No. : 7,918,891
Issue Date : April 5, 2011
Serial No. : 11/093,499
Filed : March 29, 2005
Title : SYSTEMS AND METHODS FOR SPINAL FUSION

Art Unit : 3733
Examiner : Elana Beth Fisher
Conf. No. : 6640

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INVENTOR'S DECLARATION TO CORRECT INVENTORSHIP

I, MARK PETERSON declare:

1. That I am an original named inventor of the noted patent application.

2. That through error, without any deceptive intention on my part or that of any actual inventor, the above-captioned application was filed naming MATTHEW CURRAN and MARK PETERSON, rather than MATTHEW CURRAN, MARK PETERSON and LUIZ PIMENTA. This error was discovered after the application was filed.

3. That I hereby consent to the correction of inventorship to include LUIZ PIMENTA, as described in paragraph 2, hereinabove.

4. That all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 6/7/13

MARK PETERSON
840 Royal Avenue, Suite #1
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United States

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Telephone: (858) 909-1845

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: NuVasive, Inc.	Art Unit	: 3733
Patent No.	: 7,918,891	Examiner	: Elana Beth Fisher
Issue Date	: April 5, 2011	Conf. No.	: 6640
Serial No.	: 11/093,409		
Filed	: March 29, 2005		
Title	: SYSTEMS AND METHODS FOR SPINAL FUSION		

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CONSENT OF ASSIGNEE TO CORRECT INVENTORSHIP

As an officer of the concern to which the noted application has been assigned, I hereby consent to the correction of inventorship of this issued patent from the naming of MATTHEW CURRAN and MARK PETERSON to the naming of MATTHEW CURRAN, MARK PETERSON, and LUIZ PIMENTA.

Respectfully submitted,

Date: June 20, 2013

Jonathan Spangler, Esq.
Vice President and Chief Patent Counsel
NuVasive, Inc.
7475 Lusk Boulevard
San Diego, CA 92121

Customer Number 30328
NuVasive
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Minneapolis, MN 55402
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Matthew Curran et al.	Art Unit	: 3733
Patent No.	: 7,918,891	Examiner	: Elana Beth Fisher
Issue Date	: April 5, 2011	Conf. No.	: 6640
Serial No.	: 11/093,409		
Filed	: March 29, 2005		
Title	: SYSTEMS AND METHODS FOR SPINAL FUSION		

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE UNDER 37 CFR §3.73(b)

Under 37 CFR §3.73(b) NUVASIVE, INC., a corporation, certifies that it is the assignee of the entire right, title and interest in the patent application identified above by virtue of assignments from the inventors of the patent application identified above. The assignments were recorded in the Patent and Trademark Office at

Reel 016832, Frame 0646 on August 4, 2005; and

Reel 030212, Frame 0928 on April 15, 2003.

The undersigned, whose title is supplied below, is empowered to act on behalf of the assignee.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief and believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Respectfully submitted,

Date: June 20, 2013

Jonathan Spangler, Esq.
Vice President and Chief Patent Counsel of
NuVasive, Inc.

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Telephone: (858) 909-1845

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Matthew Curran et al.	Art Unit	: 3733
Patent No.	: 7,918,891	Examiner	: Elana Beth Fisher
Issue Date	: April 5, 2011	Conf. No.	: 6640
Serial No.	: 11/093,409		
Filed	: March 29, 2005		

Title : SYSTEMS AND METHODS FOR SPINAL FUSION

Attn.: Certificate of Corrections Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF REQUEST FOR CERTIFICATE OF CORRECTION

Applicant hereby requests that a certificate of correction be issued for the above patent in accordance with the attached request.

One or more of the errors sought to be corrected were made by Applicants, therefore a credit card payment of the $100 required fee of 37 CFR §1.20(a) is submitted herewith. Please apply any other charges or credits to Deposit Account 50-2040, referencing Attorney Docket No.: 104US1.

Respectfully submitted,

Date: June 21, 2013

Rory Schermerhorn, Esq.
Reg. No. 58,148

Customer Number 30328
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Telephone: (858) 909-1845

PTO/SB/44 (09-07)
Approved for use through 08/31/2013. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,918,891

APPLICATION NO.: 11/093,409

ISSUE DATE : April 4, 2011

INVENTOR(S) : Matthew Curran et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title Page, Inventors, please insert -- Luiz Pimenta, Sao Paulo, Brasil --

MAILING ADDRESS OF SENDER (Please do not use customer number below):

NuVasive, c/o CPA Global, P.O. Box 52050, Minneapolis, MN 55402

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	11093409
Filing Date:	29-Mar-2005
Title of Invention:	SYSTEMS AND METHODS FOR SPINAL FUSION
First Named Inventor/Applicant Name:	Matthew Curran
Filer:	Rory A. Schermerhorn/Marjorie Jarvis
Attorney Docket Number:	104US1

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Certificate of Correction	1811	1	100	100
Processing Fee Correcting Inventorship	1816	1	130	130

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**230**

Electronic Acknowledgement Receipt

EFS ID:	16125041
Application Number:	11093409
International Application Number:	
Confirmation Number:	6640
Title of Invention:	SYSTEMS AND METHODS FOR SPINAL FUSION
First Named Inventor/Applicant Name:	Matthew Curran
Customer Number:	30328
Filer:	Rory A. Schermerhorn/Marjorie Jarvis
Filer Authorized By:	Rory A. Schermerhorn
Attorney Docket Number:	104US1
Receipt Date:	21-JUN-2013
Filing Date:	29-MAR-2005
Time Stamp:	18:53:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$230
RAM confirmation Number	17157
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Petition for review/processing depending on status	2013-06-21_RqstCorrInventorship_104US1.pdf	24185 f50675827a24bab35cab4f47d600c475c29fbe17	no	1
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
2	Oath or Declaration filed	2013-06-21_Declaration_Pimenta_104US1.pdf	50213 cc235c351a7aa84d7570414d2fe7cd87bba0ba5c	no	1
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
3	Oath or Declaration filed	2013-06-21_Declaration_Curran_104US1.pdf	50340 945d6c4bc6573cfa09712d9eee56640dfe65acfc	no	1
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
4	Oath or Declaration filed	2013-06-21_Declaration_Peterson_104US1.pdf	75103 69a2af1fe34b3d1491ff49a31afe20c90f9bad52	no	1
Warnings:					
Information:					
5	Consent of Assignee accompanying the declaration	2013-06-21_ConsentAssignee_104US1.pdf	29947 47fb0b0ecbf41960d9654aa1d326f3d702f5bf5c	no	1
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
6	Assignee showing of ownership per 37 CFR 3.73.	2013-06-21_Cert3-73b_104US1.pdf	32291 dcb0731ba18272ede83fd0c015a86e05f56bdb17	no	1
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
7	Request for Certificate of Correction	2013-06-21_COC_Transmittal_104US1.pdf	25017 f571dd2476f9008dae3218aa3f706f4a89e19a1a	no	1
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					

Information:					
8	Request for Certificate of Correction	2013-06-21_COC_104US1.pdf	164255 f7ea6632f26ee58eba723b2d172b6b39afe8b0db	no	2
Warnings:					
Information:					
9	Fee Worksheet (SB06)	fee-info.pdf	31854 d964adda40a4933659395d4d94f3b15766069708	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	483205		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/093,409	04/05/2011	7918891	104US1	6640

30328 7590 03/16/2011

NuVasive
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 308 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Matthew Curran, Carlsbad, CA;
Mark Peterson, Medford, OR;

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Bib Data Sheet

CONFIRMATION NO. 6640

SERIAL NUMBER	FILING OR 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
11/093,409	03/29/2005 RULE	623	3733	104US1

APPLICANTS

Matthew Curran, Carlsbad, CA;
Mark Peterson, Medford, OR;

**** CONTINUING DATA ***************************

This appln claims benefit of 60/557,536 03/29/2004

**** FOREIGN APPLICATIONS *********************

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
** 04/23/2005

Foreign Priority claimed	STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS
☐ yes ☐ no	CA	20	26	2

35 USC 119 (a-d) conditions met ☐ yes ☐ no ☐ Met after Allowance

Verified and Acknowledged _____ Examiner's Signature Initials

ADDRESS
30328

TITLE
SYSTEMS AND METHODS FOR SPINAL FUSION

FILING FEE RECEIVED		
715	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

PTO/SB/08A(08-03)
Approved for use through 07/31/2006 OMB 0651-0031
US Patent & Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 3 of 6

Complete if Known	
Application Number	11/093,409
Filing Date	March 29, 2005
First Named Inventor	Matthew Curran
Group Art Unit	Unknown
Examiner Name	Unknown
Attorney Docket No: 104US1	

	US-5,683,400	11/04/1997	McGuire, David A.	
	US-5,683,464	11/04/1997	Wagner, et al.	
	US-5,690,629	11/25/1997	Asher, et al.	
	US-5,700,264	12/23/1997	Zucherman, et al.	
	US-5,700,291	12/23/1997	Kuslich, et al.	
	US-5,700,292	12/23/1997	Marguiles	
	US-5,702,449	12/30/1997	McKay, W. F.	
	US-5,702,451	12/30/1997	Biedermann, et al.	
	US-5,702,453	12/30/1997	Rabbe, et al.	
	US-5,702,454	12/30/1997	Baumgartner	
	US-5,702,455	12/30/1997	Saggar, R.	
	US-5,703,451	12/30/1997	Yamamichi, et al.	
	US-5,707,373	01/13/1998	Sevrain, et al.	
	US-5,711,957	01/27/1998	Patat, et al.	
	US-5,716,415	02/10/1998	Steffee	
	US-5,720,748	02/24/1998	Kuslich, et al.	
	US-5,720,751	02/24/1998	Jackson	
	US-5,728,159	03/17/1998	Stroever, B. W., et al.	
	US-5,741,261	04/21/1998	Moskovitz, et al.	
	US-5,755,797	05/26/1998	Baumgartner	
	US-5,766,252	06/16/1998	Henry, et al.	
	US-5,772,661	06/30/1998	Michelson	
	US-5,775,331	07/07/1998 7/1998	Raymond, S. A., et al.	
	US-5,779,642	~~04/14/1998~~	Nightengale, Christopher	
	US-5,782,830	07/21/1998	Farris, Robert A.	
	US-5,782,919	07/21/1998	Zdeblick, et al.	
	US-5,785,710	07/28/1998	Michelson	
	US-5,797,909	08/25/1998	Michelson	
	US-5,800,549	09/01/1998	Bao, et al.	
	US-5,800,550	09/01/1998	Sertich	
	US-5,814,084	09/29/1998	Grivas, et al.	
	US-5,851,208	12/22/1998	Trott	
	US-5,865,845	02/02/1999	Thalgott, John S.	
	US-5,865,848	02/02/1999	Baker	
	US-5,885,299	03/23/1999	Winslow, et al.	
	US-5,888,219	03/30/1999	Bonutti	
	US-5,888,224	03/30/1999	Beckers, et al.	
	US-5,893,890	04/13/1999	Pisharodi	
	US-5,904,719	05/18/1999	Errico, et al.	
	US-5,910,315	06/08/1999	Stevenson, et al.	
	US-5,954,769	09/21/1999	Rosenlicht	
	US-5,968,098	10/19/1999	Winslow	

Change(s) applied to document, /D.H.P./ 3/2/2011

EXAMINER **DATE CONSIDERED**

Substitute Disclosure Statement Form (PTO-1449)

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

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PTO/SB/08A(08-03)
Approved for use through 07/31/2006. OMB 0651-0031
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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 1 of 6

Complete if Known	
Application Number	11/093,409
Filing Date	March 29, 2005
First Named Inventor	Matthew Curran
Group Art Unit	Unknown
Examiner Name	Unknown
Attorney Docket No: 104US1	

US PATENT DOCUMENTS

Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines,Where Relevant Passages or Relevant Figures Appear
	US-2002/0058950 A1	05/16/2002	Winterbottom, et al.	
	US-2003/0105528	06/05/2003	Shimp, et al.	
	US-3,486,505	12/30/1969	Morrison, Gordon M.	
	US-3,518,993	07/07/1970	Blake, Lawrence W.	
	US-3,604,487	09/14/1971	Gilbert, Richard S.	
	US-3,745,995	07/17/1973	Kraus	
	US-3,848,601	11/19/1974	Ma, et al.	
	US-4,026,304	~~05/31/1977~~ 5/1977	Levy	
Change(s) applied to document, /D.H.P./ 3/2/2011	US-4,026,305	05/31/1977	Brownlee, et al.	
	US-4,646,738	03/03/1987	Trott, Arthur F.	
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	US-4,781,591	11/01/1988	Allen	
	US-4,834,757	05/30/1989	Brantigan	
	US-4,877,020	10/31/1989	Vich	
	US-4,878,915	11/07/1989	Brantigan,	
	US-4,932,975	06/12/1990	Main, et al.	
	US-4,961,740	10/09/1990	Ray, et al.	
	US-4,962,766	10/16/1990	Herzon, G. D.	
	US-5,026,373	06/25/1991	Ray, et al.	
	US-5,055,104	10/08/1991	Ray	
	US-5,062,845	11/05/1991	Kuslich, et al.	
	US-5,092,572	03/03/1992	Litwak, et al.	
	US-5,133,717	07/28/1992	Chopin	
	US-5,133,755	07/28/1992	Brekke	
	US-5,171,278	12/15/1992	Pisharodi	
	US-5,192,327	03/09/1993	Brantigan, John W.	
	US-5,217,497	06/08/1993	Mehdian	
	US-5,269,785	12/14/1993	Bonutti	
	US-5,284,153	02/08/1994	Raymond, S. A., et al.	
	US-5,290,494	03/01/1994	Coombes, et al.	
	US-5,300,076	~~05/05/1994~~ 4/1994	~~Lerich~~ Leriche	
	US-5,304,210	04/19/1994	Crook	
	US-5,306,307	04/26/1994	Senter, et al.	
	US-5,306,309	04/26/1994	Wagner, et al.	
	US-5,322,505	06/21/1994	Krause, Kenneth W., et al.	

EXAMINER /Elana Fisher/ **DATE CONSIDERED** 02/12/2011

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(6) 1449 02/16/11

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	11093409
Filing Date	2005-03-29
First Named Inventor	Matthew Curran
Art Unit	3733
Examiner Name	Jerry L. Cumberledge
Attorney Docket Number	104US1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4950296		1990-08-21	McIntyre, J. L.	
	2	5484437		1996-01-16	Michelson, Gary K.	
	3	5741253		1998-04-21	Michelson, Gary K.	
Change(s) applied to document /D.H.P./ 3/2/2011	4	5860973		1/1999 ~~1996-10-30~~	Michelson, Gary K.	
	5	6059829		2000-05-09	Schlapfer, F. et al.	
	6	6120503		2000-09-19	Michelson, Gary K.	
	7	6409766		2002-06-25	Brett, D. C.	
	8	6432140		2002-08-13	Lin, Chih-I	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /E.F./

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571) 273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

NuVasive
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/093,409	03/29/2005	Matthew Curran	104US1	6640

TITLE OF INVENTION:

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$0	$1510	04/20/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 NUVASIVE INC.

2 Jonathan Spangler

3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: NUVASIVE INC.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): San Diego CA

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:

☑ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _

4b. Payment of Fee(s):

☐ A check in the amount of the fee(s) is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☑ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number 502040 .

5. **Change in Entity Status** (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.
NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /Jennifer Risser/ Date March 1, 2011

Typed or printed name Jennifer Risser Registration No. 60059

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
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4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
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Electronic Patent Application Fee Transmittal

Application Number:	11093409
Filing Date:	29-Mar-2005
Title of Invention:	SYSTEMS AND METHODS FOR SPINAL FUSION
First Named Inventor/Applicant Name:	Matthew Curran
Filer:	Jennifer Lynn Risser
Attorney Docket Number:	104US1

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1510	1510
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
		Total in USD ($)		**1510**

Electronic Acknowledgement Receipt

EFS ID:	9560525
Application Number:	11093409
International Application Number:	
Confirmation Number:	6640
Title of Invention:	SYSTEMS AND METHODS FOR SPINAL FUSION
First Named Inventor/Applicant Name:	Matthew Curran
Customer Number:	30328
Filer:	Jennifer Lynn Risser
Filer Authorized By:	
Attorney Docket Number:	104US1
Receipt Date:	01-MAR-2011
Filing Date:	29-MAR-2005
Time Stamp:	15:01:30
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1510
RAM confirmation Number	1289
Deposit Account	502040
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Issue Fee Payment (PTO-85B)	2011-03-01-IssueFeePartB104US1.pdf	220605 d2a78f6098ca221198f36bb3c80b65d690c26b34	no	2
Warnings:					
Information:					
2	Fee Worksheet (PTO-875)	fee-info.pdf	29641 303aa4b86315230594d10dac4cd7006ca5aeef09	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	250246	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/093,409	03/29/2005	Matthew Curran	104US1	6640

30328 7590 02/16/2011

NuVasive
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

EXAMINER	
FISHER, ELANA BETH	

ART UNIT	PAPER NUMBER
3733	

MAIL DATE	DELIVERY MODE
02/16/2011	PAPER

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The time period for reply, if any, is set in the attached communication.

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U.S. Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
11093409	3/29/2005	CURRAN ET AL.	104US1

NuVasive
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

EXAMINER	
ELANA B. FISHER	
ART UNIT	**PAPER**
3733	20110212

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

The IDS submitted on April 22, 2005 has been reconsidered.

/EDUARDO C. ROBERT/
Supervisory Patent Examiner, Art Unit 3733

/Elana B Fisher/
Examiner, Art Unit 3733

PTO/SB/08A(08-03)
Approved for use through 07/31/2006. OMB 0651-0031
US Patent & Trademark Office: U.S. DEPARTMENT OF COMMERCE
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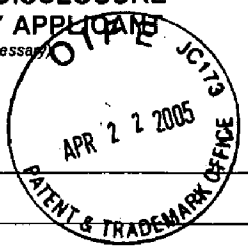
INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)



Sheet 1 of 6

Complete if Known	
Application Number	11/093,409
Filing Date	March 29, 2005
First Named Inventor	Matthew Curran
Group Art Unit	Unknown
Examiner Name	Unknown
Attorney Docket No: 104US1	

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	US-5,306,309	04/26/1994	Wagner, et al.	
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EXAMINER /Elana Fisher/ **DATE CONSIDERED** 02/12/2011

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Complete if Known	
Application Number	11/093,409
Filing Date	March 29, 2005
First Named Inventor	Matthew Curran
Group Art Unit	Unknown
Examiner Name	Unknown

Sheet 2 of 6

Attorney Docket No: 104US1

	US-5,334,205	08/02/1994	Cain	
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	US-5,443,514	08/22/1995	Steffee	
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	US-5,653,761	08/05/1997	Pisharodi	
	US-5,653,762	08/05/1997	Pisharodi	
	US-5,658,336	08/19/1997	Pisharodi	
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EXAMINER /Elana Fisher/ **DATE CONSIDERED** 02/12/2011

Substitute Disclosure Statement Form (PTO-1449)

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

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PTO/SB/08A(08-03)
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US Patent & Trademark Office: U.S. DEPARTMENT OF COMMERCE
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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known

Application Number	11/093,409
Filing Date	March 29, 2005
First Named Inventor	Matthew Curran
Group Art Unit	Unknown
Examiner Name	Unknown

Sheet 3 of 6

Attorney Docket No: 104US1

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EXAMINER **DATE CONSIDERED**

Substitute Disclosure Statement Form (PTO-1449)

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known	
Application Number	11/093,409
Filing Date	March 29, 2005
First Named Inventor	Matthew Curran
Group Art Unit	Unknown
Examiner Name	Unknown

Sheet 4 of 6 — Attorney Docket No: 104US1

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EXAMINER /Elana Fisher/ **DATE CONSIDERED** 02/12/2011

Substitute Disclosure Statement Form (PTO-1449)

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known	
Application Number	11/093,409
Filing Date	March 29, 2005
First Named Inventor	Matthew Curran
Group Art Unit	Unknown
Examiner Name	Unknown

Sheet 5 of 6

Attorney Docket No: 104US1

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Foreign Document No	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines, Where Relevant Passages or Relevant Figures Appear	T[2]
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OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No [1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
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EXAMINER /Elana Fisher/ **DATE CONSIDERED** 02/12/2011

Substitute Disclosure Statement Form (PTO-1449)

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Substitute for form 1449A/PTO **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** *(Use as many sheets as necessary)*	*Complete if Known*	
	Application Number	11/093,409
	Filing Date	March 29, 2005
	First Named Inventor	Matthew Curran
	Group Art Unit	Unknown
	Examiner Name	Unknown
Sheet 6 of 6	Attorney Docket No: 104US1	

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	**Cite No [1]**	**Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.**	**T[2]**
		BENINI, et al., "Undercutting decompression and posterior fusion with translaminar facet screw fixation in degenerative lumbar spinal stenosis: Technique and results", Neuro-Orthopedics, (1995),159-172	
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EXAMINER /Elana Fisher/ **DATE CONSIDERED** 02/12/2011

Substitute Disclosure Statement Form (PTO-1449)
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NOTICE OF ALLOWANCE AND FEE(S) DUE

30328 7590 01/20/2011

NuVasive
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

EXAMINER	
FISHER, ELANA BETH	
ART UNIT	PAPER NUMBER
3733	

DATE MAILED: 01/20/2011

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/093,409	03/29/2005	Matthew Curran	104US1	6640

TITLE OF INVENTION: SYSTEMS AND METHODS FOR SPINAL FUSION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$755	$0	$0	$755	04/20/2011

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
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Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

30328 7590 01/20/2011

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P.O. Box 52050
Minneapolis, MN 55402

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/093,409	03/29/2005	Matthew Curran	104US1	6640

TITLE OF INVENTION: SYSTEMS AND METHODS FOR SPINAL FUSION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$755	$0	$0	$755	04/20/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
FISHER, ELANA BETH	3733	623-017160

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/093,409	03/29/2005	Matthew Curran	104US1	6640

30328 7590 01/20/2011

NuVasive
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

EXAMINER	
FISHER, ELANA BETH	
ART UNIT	PAPER NUMBER
3733	

DATE MAILED: 01/20/2011

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 11 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 11 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	11/093,409	CURRAN ET AL.	
	Examiner	Art Unit	
	ELANA B. FISHER	3733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the request for continued examination submitted on November 18, 2010*.

2. ☒ The allowed claim(s) is/are *1-5 and 31-51*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 01/10/2011
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *20110112* .
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Elana B Fisher/ Examiner, Art Unit 3733	/EDUARDO C. ROBERT/ Supervisory Patent Examiner, Art Unit 3733

Examiner-Initiated Interview Summary	Application No.	Applicant(s)	
	11/093,409	CURRAN ET AL.	
	Examiner	Art Unit	
	ELANA B. FISHER	3733	

All Participants:

(1) *ELANA B. FISHER*.

(2) *RORY SCHERMERHORN*.

Status of Application: _____

(3) _____.

(4) _____.

Date of Interview: *28 December 2010*

Time: *4 PM*

Type of Interview:

☒ Telephonic
☐ Video Conference
☐ Personal (Copy given to: ☐ Applicant ☐ Applicant's representative)

Exhibit Shown or Demonstrated: ☐ Yes ☒ No
If Yes, provide a brief description: .

Part I.

Rejection(s) discussed:
N/A

Claims discussed:
36 & 37

Prior art documents discussed:
N/A

Part II.

SUBSTANCE OF INTERVIEW DESCRIBING THE GENERAL NATURE OF WHAT WAS DISCUSSED:
Examiner contacted applicant's representative about anticedent basis issues with claims 36 and 37. Applicant's representative agreed to an examiner's amendment in order to place the application in condition for allowance.

Part III.

☐ It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview directly resulted in the allowance of the application. The examiner will provide a written summary of the substance of the interview in the Notice of Allowability.
☒ It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview did not result in resolution of all issues. A brief summary by the examiner appears in Part II above.

/Elana B Fisher/
Examiner, Art Unit 3733

(Applicant/Applicant's Representative Signature – if appropriate)

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Rory Schermerhorn on December 28, 2010.

The application has been amended as follows:

Claim 36, line 1: "The implant of claim 31…" has been changed to "The implant of claim 2…"

Claim 37, lines 2-3: "said later side" has been changed to "said anterior side"

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELANA B. FISHER whose telephone number is (571)270-3643. The examiner can normally be reached on Monday through Friday from 8:30AM to 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eduardo Robert can be reached on (571)272-4719. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elana B Fisher/
Examiner, Art Unit 3733
/EDUARDO C. ROBERT/
Supervisory Patent Examiner, Art Unit 3733

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11093409	CURRAN ET AL.
	Examiner	**Art Unit**
	ELANA B FISHER	3733

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	02/12/2007	02/27/2008	09/12/2008	08/16/2009	05/15/2010	01/12/2011			
	1	÷	✓	✓	✓	✓	=			
	2	÷	✓	✓	✓	✓	=			
	3	÷	✓	✓	✓	✓	=			
	4	÷	✓	✓	✓	✓	=			
	5	÷	✓	✓	✓	✓	=			
	6	÷	✓	-	-	-	-			
	7	÷	✓	-	-	-	-			
	8	÷	✓	-	-	-	-			
	9	÷	✓	-	-	-	-			
	10	÷	✓	-	-	-	-			
	11	÷	✓	✓	-	-	-			
	12	÷	✓	✓	-	-	-			
	13	÷	✓	✓	-	-	-			
	14	÷	N	N	-	-	-			
	15	÷	N	N	-	-	-			
	16	÷	N	N	-	-	-			
	17	÷	N	N	-	-	-			
	18	÷	N	N	-	-	-			
	19	÷	N	-	-	-	-			
	20	÷	N	-	-	-	-			
	21	÷	N	-	-	-	-			
	22	÷	N	-	-	-	-			
	23	÷	N	-	-	-	-			
	24	÷	N	N	-	-	-			
	25	÷	N	N	-	-	-			
	26	÷	N	N	-	-	-			
	27			✓	-	-	-			
	28			✓	-	-	-			
	29			N	-	-	-			
	30			N	-	-	-			
	31				✓	✓	=			
	32				✓	✓	=			
	33				✓	✓	=			
	34				✓	✓	=			
	35				✓	✓	=			
	36				✓	✓	=			

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11093409	CURRAN ET AL.
	Examiner	**Art Unit**
	ELANA B FISHER	3733

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
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☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	02/12/2007	02/27/2008	09/12/2008	08/16/2009	05/15/2010	01/12/2011			
	37				✓	✓	=			
	38				✓	✓	=			
	39				✓	✓	=			
	40				✓	✓	=			
	41				✓	✓	=			
	42				✓	✓	=			
	43				✓	✓	=			
	44					✓	=			
	45					✓	=			
	46					✓	=			
	47					✓	=			
	48					✓	=			
	49					✓	=			
	50					✓	=			
	51					✓	=			

Issue Classification

Application/Control No.	Applicant(s)/Patent Under Reexamination
11093409	CURRAN ET AL.
Examiner	**Art Unit**
ELANA B FISHER	3733

ORIGINAL		INTERNATIONAL CLASSIFICATION														
CLASS	SUBCLASS	CLAIMED									NON-CLAIMED					
623	17.16	A	6	1	F	2 / 44 (2006.01)										

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1		17	9	33	19	49								
2	2		18	10	34	20	50								
4	3		19	22	35	21	51								
5	4		20	3	36										
6	5		21	11	37										
	6		22	16	38										
	7		23	17	39										
	8		24	23	40										
	9		25	24	41										
	10		26	25	42										
	11		27	26	43										
	12		28	12	44										
	13		29	13	45										
	14		30	14	46										
	15	7	31	15	47										
	16	8	32	18	48										

/ELANA B FISHER/ Examiner.Art Unit 3733	01/12/2011	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	26	
/EDUARDO C ROBERT/ Supervisory Patent Examiner.Art Unit 3733	01/13/2011	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11093409	CURRAN ET AL.
	Examiner	**Art Unit**
	JERRY CUMBERLEDGE	3733

SEARCHED

Class	Subclass	Date	Examiner
623	17.11-17.16	2/27/2008	JLC
606	99	2/27/2008	JLC
	Updated Search	9/12/2008	JLC
	Above Updated	08/16/2009	EF
	Above Updated	05/15/2010	EF
	Above Updated	01/12/2011	EF

SEARCH NOTES

Search Notes	Date	Examiner
Inventor Name Search Performed	2/27/2008	JLC
EAST classification search	08/16/2009	EF
EAST citation search	08/16/2009	EF
EAST text search	08/16/2009	EF
IDS reference search in EAST	08/16/2009	EF
Above Updated	05/15/2010	EF
Above Updated	01/12/2011	EF

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner
	See Attached	01/12/2011	EF

/ELANA B FISHER/ Examiner.Art Unit 3733	

EAST Search History

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	((spinal adj fusion adj implant) and (top adj surface) and (bottom adj surface) and (distal adj side) and (proximal adj side) and (first adj side adj wall) and (second adj side adj wall) and (anterior adj side) and (posterior adj side) and length and (fusion adj apertures) and (radiopaque adj marker) and three and (medial adj support)).clm.	USPAT; UPAD	OR	ON	2011/01/12 15:00

1/12/2011 3:00:36 PM
C:\Documents and Settings\efisher1\My Documents\EAST\Workspaces\11093409.wsp

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	11093409
Filing Date	2005-03-29
First Named Inventor	Matthew Curran
Art Unit	3733
Examiner Name	Elana Beth Fisher
Attorney Docket Number	104US1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	3867728		1975-02-25	Stubstad et al.	
	2	4501269		1985-02-26	Bagby	
	3	4834757		1989-05-30	Brantigan	
	4	5015247		1991-05-14	Michelson	
	5	5047055		1991-09-10	Bao et al.	
	6	5192327		1993-03-09	Brantigan	
	7	5263953		1993-11-23	Bagby	
	8	5397364		1995-03-14	Kozak	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /E.F./

Receipt date: 01/10/2011	Application Number	11093409	11093409 - GAU: 3733
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2005-03-29	
	First Named Inventor	Matthew Curran	
	Art Unit	3733	
	Examiner Name	Elana Beth Fisher	
	Attorney Docket Number	104US1	

	9	5489307		1996-02-06	Kuslich et al.	
	10	5658337		1997-08-19	Kohrs et al.	
	11	4545374		1985-10-08	Jacobson	
	12	5026373		1991-06-25	Ray	
	13	5071437		1991-12-10	Steffee	
	14	4961740		1990-10-09	Ray et al.	

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U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

EFS Web 2.1.17

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	Attorney Docket Number	104US1	

	1	90/00037	WO		1990-01-11	Michelson		☐
	2	92/14423	WO		1992-09-03	Pisharodi		☐

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	BAULOT et al. "Complementary anterior spondylodesis by thoracoscopy. Technical note regarding an observation," Technical Designs and Experimental Research, 90(5):347-351 (1994).	☐
	2	BERRY et al. "A morphometric study of human lumbar and selected thoracic vertebrae, study of selected vertebrae" (1986)	☐
	3	CROCK, H.V., "Anterior Lumber Interbody Fusion" Clinical Orthopaedics & Related Research (1982)	☐
	4	CROCK, H.V., "A short practice of spinal surgery," Published 1993 by Spinger-Verlag/Wien, New York	☐
	5	EDELAND, H.G. "Some additional suggestions for a intervertebral disck prosthesis" 7 Journal of Biomedical Engineering 57 (1985)	☐
	6	KEMP, H.B.S. "Anterior fusion of the spine for infective lesions in adults" 55B Journal of Bone & Joint Surgery 715 (1973)	☐
	7	NUVASIVE, INC. Corrected Final Invalidity Contentions Regarding US Patent Nos. 5,860,973, 6,592,586 and 6,945,933 filed in the United States District Court Southern District of California on June 14, 2010 (and 23 Appendices)	☐

If you wish to add additional non-patent literature document citation information please click the Add button Add

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	Art Unit	3733	
	Examiner Name	Elana Beth Fisher	
	Attorney Docket Number	104US1	

EXAMINER SIGNATURE			
Examiner Signature	/Elana Fisher/	Date Considered	01/12/2011

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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If you wish to add additional U.S. Patent citation information please click the Add button. Add

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	2	BERRY et al. "A morphometric study of human lumbar and selected thoracic vertebrae, study of selected vertebrae" (1986)	☐
	3	CROCK, H.V., "Anterior Lumber Interbody Fusion" Clinical Orthopaedics & Related Research (1982)	☐
	4	CROCK, H.V., "A short practice of spinal surgery," Published 1993 by Spinger-Verlag/Wien, New York	☐
	5	EDELAND, H.G. "Some additional suggestions for a intervertebral disck prosthesis" 7 Journal of Biomedical Engineering 57 (1985)	☐
	6	KEMP, H.B.S. "Anterior fusion of the spine for infective lesions in adults" 55B Journal of Bone & Joint Surgery 715 (1973)	☐
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	First Named Inventor	Matthew Curran
	Art Unit	3733
	Examiner Name	Elana Beth Fisher
	Attorney Docket Number	104US1

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

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Filing Date	2005-03-29
First Named Inventor	Matthew Curran
Art Unit	3733
Examiner Name	Elana Beth Fisher
Attorney Docket Number	104US1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Jennifer Risser/	Date (YYYY-MM-DD)	2011-01-10
Name/Print	Jennifer Risser	Registration Number	60059

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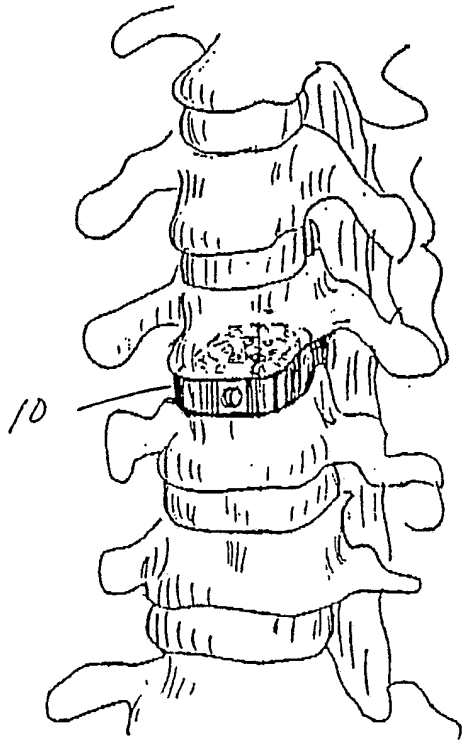

(57) Abstract

A spinal implant (10) is disclosed which when placed within the spinal disc space stabilizes that spinal segment and materially participates in, and is incorporated in the ensuing fusion.

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ARTIFICIAL SPINAL FUSION IMPLANTS

Background

The present invention relates to an artificial fusion implant to be placed into the intervertebral space left after the removal of a damaged spinal disc.

The purpose of the present invention is to provide an implant to be placed within the intervertebral disc space and provide for the permanent elimination of all motion at that location. To do so, the device is space occupying within the disc space, rigid, self-stabilizing to resist dislodgement, stabilizing to the adjacent spinal vertebrae to eliminate local motion, and able to intrinsically participate in a vertebra to vertebra bony fusion so as to assure the permanency of the result.

At present, following the removal of a damaged disc, either bone or nothing is placed into the spacea left. If nothing is placed in the space the space may collapse which may result in damage to the nerves; or the space may fill with scar tissue and eventually lead to a reherniation. The use of bone is less than optimal in that the bone obtained from the patient requires additional surgery and is of limited availability in its most useful form, and if obtained elsewhere, lacks living bone cells, carries a significant risk of infection, and is also limited in supply as it is usually obtained elsewhere, lacks living bone cells, carries a significant risk of infection, and is also limited in supply as it is usually obtained from young accident victims. Furthermore, regardless of the source of the bone, it is only marginal structurally and lacks a means to either stabilize itself, against dislodgement, or to stabilize the adjacent vertebrae.

A review of all possibly related prior art will demonstrate the novelty of the present invention.

There have been an extensive number of attempts to develop an acceptable disc prothesis (an artificial

disc). Such devices by design would be used to replace a damaged disc and seek to restore the height of the interspace and to restore the normal motion of that spinal joint. No such device has been found that is medically acceptable. This group of prosthetic or artificial disc replacements seeking to preserve spinal motion which are different from the present invention include:

Patent No. 3,867,728 STUBSTAD - describing a flexible disc implant.

Patent No. 4,349,921 KUNTZ - describing a flexible disc replacement with rope or file like surface projections to discourage device dislocation.

Patent No. 4,309,777 PATIL - describing motion preserving implant with spike outer surfaces to resist dislocation and containing a series of springs to urge the vertebrae away from each other.

Patent No. 3,875,595 FRONING - describing a motion preserving bladder like disc replacement with two opposed stud like projections to resist dislocation.

Patent No. 2,372,622 FRENCH (FASSIO) - describing a motion preserving implant comprising complimentary opposed convex and concave surfaces.

In summary then, these and other similar devices resemble the present invention only in that they are placed within the intervertebral space following the removal of a damaged disc. In that thy seek to preserve spinal motion, they are diametrically different from the present invention which seeks to permanently eliminate all motion at that spinal segment.

A second related area of prior art includes those devices utilized to replace essentially wholly removed vertebrae. Such removal is generally necessitated by extensive vertebral fractures, or tumors, and is not associated with the treatment of disc disease, or therefore related to the present invention. While the present invention is to be placed within the disc space, these prior devices cannot be placed within the disc space as at least one vertebrae has already been removed and there no longer remains a "disc space." Furthermore, all of these devices are limited in that they seek to perform as

temporary structural members mechanically replacing the removed vertebrae (not a removed disc), and do not intrinsically participate in supplying osteogenic material to achieve cross vertebrae bony fusion. Therefore, again unlike the present invention which provides for a source of osteogenesis, use of this group of devices must be accompanied by a further surgery consisting of a bone fusion procefure utilizing conventional technique. This group consisting of vertebral struts rather than disc replacements would include the following:

Patent No. 4,553,273 WU - describing a turnbuckle like vertebral strut.

Patent No. 4,401,112 REZAIAN - describing a turnbuckle like vertebral strut with the addition of a long stabilizing staple that spans the missing vertebral body.

Patent No. 4,554,914 KAPP - describing a large distractible spike that elongates with a screw mechanism to span the gap left by the removal of a entire vertebrae and to serve as an anchor for acrylic cement which is then used to replace the missing bone (vertebrae).

Patent No. 4,636,217 OGILVIE - describing a vertebral strut mechanism that can be implanted after at least one vertebrae has been removed and which device consists of a mechanism for causing the engagement of screws into the vertebrae above the vertebrae below the one removed.

In summary then, this group of devices differs from the present invention in that they are vertebral replacements struts, do not intrinsically participate in the bony fusion, can only be inserted in the limited circumstances where an entire vertebrae has been removed from the anterior approach, and are not designed for, or intended to be used for the treatment of disc disease.

A third area of prior art related to the present invention includes all devices designed to be applied to one of the surfaces of the spine. Such devices include all types of plates, struts, and rods which are attached by hooks, wires, and screws. These devices differ significantly from the present invention in that they are not inserted within the disc space, and furthermore do not

intrinsically participate in supplying osteogenic material for the fusion.

Therefore, with these devices where permanent spinal immobilization is desired an additional surgery consisting of a spinal fusion performed by conventional means or the use of supplemental methylmethacrylate cement is required. Such devices, applied to the spine but not within the disc space, would include the following:

Patent No. 4,604,995 - STEPHENS - describing a "U" shaped metal rod attached to the posterior elements of the spine with wires to stabilize the spine over a large number of segments.

Patent No. 2,677,369 - KNOWLES - describing a metal column device to be placed posteriorly along the lumbar spine to be held in position by its shape alone and to block pressure across the posterior portions of the spinal column by locking the spine in full flexion thereby shifting the miximum weight back onto the patient's own disc.

Other devices are simply variations on the use of rods (e.g. Harrington, Luque, Cotrel-Dubosset, Zielke), wires or cables (Dwyer), plates and screws (Steffee), or struts (Dunn, Knowles).

In summary, none of these devices are designed for or can be used within the disc space, do not replace a damaged disc, and do not intrinsically participate in the generation of a bony fusion.

Other prior art possibly related to the present invention and therefore, to be considered related to "Bony Ingrowth". Patents related to this feature describe either methods of producing materials or devices to achieve the same. Such patents would include:

Patents No. 4,636,526 (DORMAN), No. 4,634,720 (DORMAN), No. 4,542,539 (ROWE), No. 4,405,319 (COSENTINO), No. 4,439,152 (SMALL), No. 4,168,326 (BROEMER), No. 4,535,485 (ASHMAN), No. 3,987,499 (SCHARBACH), No. 3,605,123 (HAHN), No. 4,655,777 (DUNN), No. 4,645,503 (LIN), No. 4,547,390 (ASHMAN), No. 4,608,052 (VAN KAMPEN), No. 4,698,375 (DORMAN), No. 4,661,536 (DORMAN), No. 3,952,334 (BOKROS), No. 3,905,047 (LONG), No. 4,693,721

(DUCHEYNE), No. 4,070,514 (ENTHERLY).

However, while the present invention would utilize bone ingrowth technology, it would do so with conventional technology.

The final area of related prior art to be considered is that of devices designed to be placed within the vertebral interspace following the removal of a damaged disc, and seeking to eliminate further motion at that location.

Such a device is contained in Patent No. 4,501,269 BAGBY describing an implantable device, limited instrumentation, and a method; whereby a hole is bored transversely across the joint and then a hollow metal basket of larger diameter is then pounded into the hole and then filled with the bone debris generated by the drilling. The present invention differs from the prior art devices in the following ways:

1. UNIVERSAL APPLICABILITY WITHOUT CONTOURING OF THE INTERSPACE. The present device will fit any patient, anywhere throughout the spine, in any intervertebral disc space, and without alteration of that interspace regardless of its natural size or shape.

2. RESTORATION AND PRESERVATION OF THE INTERSPACE. The present invention will restore the intervertebral space to its premorbid dimensions, and do so by having the implant fit the space rather than having to modify the interspace, by bone removal from the vertebrae, to accommodate the implant.

3. END PLATE PRESERVATION. Preservation of the highly specialized weight bearing cortical bone is allowed and end plate perforation into the highly vascular cancellous bone marrow with its attendant bleeding is avoided. Such bleeding, when it occures, bears all the risks of blood loss (e.g. hypoglycemic shock, transfusion transmitted diseases such as hepatitis and acquired immune deficiency syndrome, etc.), and all the complications arising from the resultant impaired visualization of the vital structures (e.g. nerves, blood vessels, and organs due to such bleeding.

4. TECHNIQUE. The technique for insertion of

these implants is consistent with the established methods of disc removal, and requires neither specialized instrumentation nor specialized surgical technique.

5. EXTENT OF DISC REMOVAL. The extent of disc removal can be determined by the surgeon at the time surgery and can be individualized for each patient.

6. NO DRILLING. No drilling is involved with the use of the present invention.

7. ELIMINATION OF INCORRECT IMPLANT SIZE SELECTION. In those implant systems where a drill is used and significant bone is removed then an estimate of the implant size must first be made, and then, regardless of the fit, an implant at least as large as the space created by the drilling must be utilized, regardless of the quality of that fit. With the present invention no significant bone is removed, and the correct size implants are fitted directly to the interspace eliminating the need to guess at the correct implant size before the fact.

8. MODULAR DESIGN. The present implants are available in varying lengths to accommodate the changing depths of the interspace from central to lateral. The devices are available in varying heights or are infinitely adjustable as to the height within the physiological range. The widths are standardized, and the various embodiments can be used in any combination (e.g. in the lumbar spine two auto-expanding implants could be used in conjunction with two anchor deploying implants to completely fill the interspace).

9. AVOIDANCE OF SIZE LIMITATIONS. Because in one embodiment the system is modular, component parts can be inserted through a very small opening until a much larger implant is reconstituted completely filling the available interspace; and yet much larger when assembled than the opening through which the component modular sections were introduced. For example, in the lumbar spine four implants introduced one at a time and measuring 8mm in width, would when reconstituted within the interspace constitute a 32mm wide implant. Implantation of a single implant of those dimensions from a posterior approach in the lumbar spine would otherwise be impossible because of

the presence of the dural sac and spinal nerves.

10. THE AVOIDANCE OF INTERSPACE COLLAPSE. The device is many times stronger than bone and will not collapse. The implantation of the device allows preservation of the very strong vertebral cortex, which is resistant to compression preventing the migration of the implant into the vertebrae. The large surface area of the assembled modular implant, minimizes the load per unit area. For example, a reconstituted lumbar implant of four modular components would have the weight distributed over approximately 8 sq. cm. per vertebral interface.

11. REMOVABILITY. Because the present invention is an interspace implant and not a "through vertebrae" cross interspace implant, removal of the implant, should that become necessary, would not result in iatrogenic destruction of the adjacent vertebrae.

12. SELF-STABILIZING. The implant is self-stabilizing without the use of threads. All of the implants are surface configured to resist dislodgement and the preferred embodiments contain active, mechanical means to assure permanent anchoring. Long term stability begins with the above and is further enhanced by surface treating of the implant for bone ingrowth (by known conventional means) and osteogenically loading the implants.

13. SPINE REDUCING. Various embodiments of the present invention such as the ones with the 180 degree opposed ratcheted surface, and the auto-expanding type, are capable of reducing a vertebral listheses (a forward or backward translation of one vertebrae upon another).k

14. SPINAL STABILITY. These implants are capable of stabilizing a spial segment following disc removal, and do so without the use of threads (threads would be design need to violate the vertebrae themselves extensively).

15. SAFETY. The entire procedure is performed under direct vision and with complete visualization of the adjacent vital structures (e.g. organs, neural structures and blood vessels).

In summary then, the present invention is an interspace implant utilized to replace a damaged disc, which unlike an artificial disc, seeks to permanently

eliminate rather than to preserve spinal motion, and to do so by a bony fusion. The present invention is clearly an improvement over the prior art providing an interspace implant intrinsically participating in the fusion process, self-stabilizing, stabilizing to the spinal segment, consistent with conventional methods of discectomy, and uniquely consistent with the preservation of the integrity of the adjacent vertebrae.

BRIEF SUMMARY OF THE PRESENT INVENTION

The present invention comprises an artificial implant, the purpose of which is to participate in, and directly cause bone fusion across an intervertebral space following the excision of a damaged disc. Said implants are structurally load bearing devices, stronger than bone, capable of withstanding the substantial forces generated within the spinal interspace. Such devices have a plurality of macro sized cells and openings of 1-3mm, which can be loaded with fusion promoting materials, such as autogenous bone, for the purpose of materially influencing the adjacent vertebrae to perform a bony bond to the implants and to each other. The implant casing may be surface textured or otherwise treated by any of a number of known technologies to achieve a "bone ingrowth surface" to further enhance the stability of the implant and to expedite the fusion. Further, said devices are so configured and designed so as to promote their own stability within the vertebral interspace to resist dislodgement, and furthermore, to stabilize the adjacent vertebrae.

To use the implant of the present invention a conventional discectomy is performed and the vertebral endplates scraped, but not perforated. The appropriately sized implants are loaded with autogenous bone and implanted within the interspace.

For example for an anterior cervical device implantation, a short transverse incision is made across the front of the neck and to the right of the midline directly over the diseased disc. The platysma muscle is split, and the sternocleidomastoid muscle with is split, and the sternocleidomastoid muscle with the carotid sheath

is protected and retracted laterally. The esophagus, trachea and associated midline structures are protected and retracted medically, thus exposing the anterior aspect of the cervical spine. The diseased disc is identified and removed by conventional surgical methods. The adjacent vertebral endplates are gently scraped free of any remaining cartilage until diffuse fine punctuate decortication is achieved. The dimensions of the interspace are then measured in mild distraction, and the appropriate implant selected. Cancellous bone, obtained from the patient's iliac crest or the equivalent, is loaded into the implant. The safety driver is then utilized to insert the implant behind the anterior lips of the vertebrae. The wound is then closed in the routine manner.

Objects of the Present Invention

It is an object of the present invention to provide for means of achieving interspace fusion and stabilization as a single procedure by a means consistent with the conventional method of discectomy.

It is another object of the present invention to provide for a means of achieving an interspace fusion and stabilization that is quicker, safer, and entails less blood loss than by any other known means.

It is another object of the present invention to provide for means of achieving a one stage interspace fusion and stabilization without significant violation or removal of the adjacent vertebral bone stock.

It is another object of the present invention to provide for method of intervertebral arthrodesis and stabilization of enhanced safety where the entire procedure is performed under direct vision.

It is another object of the present invention to provide for a method of intervertebral arthrodesis and stabilization of greater simplicity and requiring minimal specialized instrumentation or technique not already possessed by those doing such procedures by conventional means.

It is another object of the present invention to provide for modular prosthesis, allowing complimentary

subunits to be inserted individually through a small opening and to then be reassembled within the interspace, so as to reconstitute an interspace occupying device much larger than would be insertable as a whole.

It is another object of the present invention to to provide for a modular impant system such that it is possible to precisely fit the contours of any interspace without the need to sacrifice any vertebral bone to accommodate the prosthesis. These and other objects of the present invention will be apparent from review of the following specifications and the accompanying drawings.

Brief description of the Drawings

Figure 1 is a top right perspective view of the implant (cervical type).

Figure 1a is a front view of the implant of Fig. 1.

Figure 1b is a rear view of the implant of Fig. 1.

Figure 1c is a top view of the implant of Fig. 1.

Figure 1d is a side view of the implant of Fig. 1.

Figure 1e is a bottom view of the implant of Fig. 1.

Figure 2 is a side sectional view of the implant viewed along lines 2-2 of Fig. 1d.

Figure 3 is the implant Figure 1 showing the attachment to the driver and driver.

Figure 4 is a front perspective view showing the implant being driven into the disc space.

Figure 4a is a front perspective view of the implant located in the spine.

Figure 5 is a side view of the implant in the spine attached to the driver.

Figure 5a is a close up partial sectional view of the implant and driver.

Figure 6 is a perspective view of a series of implants placed in the cervical intervertebral space.

Figure 6A is an alternative embodiment of a rectangular solid implant.

Figure 7 is a side sectional view of the vertebrae and implant viewed along lines 7-7 of Figure 6.

Figure 7A is a side sectional view of the vertebrae structure showing a third embodiment of the rectangular solid implant in place.

Figure 8 is an exploded perspective view of another embodiment of the present invention.

Figure 9 is a side sectional view of the vertebrae structure and implant viewed along lines 9-9 of Fig. 8.

Figure 10 is a side sectional view of the implant of Figure 8, in a contracted position.

Figure 11 is a side sectional view of the implant of Figure 10, in an expanded position.

Figure 12 is a perspective view of an alternative embodiment of the implant of Figure 9.

Figure 13 is an alternative embodiment of a hollow rectangular solid implant.

Figure 14 is a cross sectional view of the hollow rectangular solid implant of Figure 13 viewed along lines 14-14 of Fig. 13.

Figure 15 is an alternative embodiment of an expandable implant in its extended position.

Figure 16 is an expandable implant of Figure 15 in its retracted position.

Figure 17 is an expandable implant of Figure 16 located in the disc space.

Referring to Figures 1 through 5 an implant for use in the disc space and associated apparatus used for inserting the implant 10 is shown. The implant 10 is shown as a substantially rectangular hollow configuration, having a tapered forward portion.

The implant 10 has an upper surface 12 and a parallel lower surface 14. The two side walls 16 and 18 are parallel to one another and have a series of small sized openings 20 of 1mm-3mm through the side walls 16 and 18.

The front wall 22 is slightly convex and has a depressed portion 24 with a central threaded opening 26 for receiving the engaging end 28 of a driving member 30.

The upper surface 12 has a threaded cap 32, which has opening 33 there through, with a central allen wrench opening 34 for engagement with an allen wrench A of Figure 3. The cap 32 covers the opening into the hollow implant 10 and permits the insertion of autogenous bone material into the hollow portion of the implant 10. The cap 32 is surrounded by a series of small sized openings 36 of 1mm to 3mm passing through the upper surface and into the central hollow portion of the implant 10.

The rear wall 38 is convex so as to conform to the rear of the disc space.

The driving member 30, shown in figure 3, comprises a substantially hollow tubular member 40 having a long internal rod 42 having a turning knob 44 at one end and a threaded portion 46 at the other end for threadably engaging the threaded opening 26 of the implant 10. The engaging end 28 of the driving member 30 has a slightly convex surface to complement the slightly convex surface of the front wall 22. The engaging end 28 has an extension 48 for fitting within the depressed portion 24 on the front wall 22 of the implant 10. The engaging end 28 also has restriction members 47 and 49 to restrict the depth of penetration of the driver 30.

In use, the cap 32 is removed from the implant 10 and autogenous bone material is inserted into the hollow portion of the implant 10. The cap is then replaced. Various methods of packing the implant 10 with the autogenous bone material may be used to obtain a completely packed implant 10.

Referring to Figures 4, 4a, 5 and 5a, the method of inserting the implant is shown. The threaded end 46 of the internal rod 42 of the driving member 30 is attached to the threaded opening 26 of the implant 10 by turning of the knob 44. Once the engaging end 28 is in place, the fitting of the extended portion 48 into the depressed portion 24 prevents movement of the implant 10 in relationship to the driving member 30.

The implant is then placed at the entrance to the disc space between the two adjacent vertebrae V. The knob 44 is then tapped with hammer H sufficiently hard enough to

drive the implant 10 into the disc space. The restriction members 47 and 49 which are wider than the disc space, prevent over penetration of the implant.

The size of the implant 10 is substantially the same size as the disc space that it is replacing and thus will be larger or smaller depending on the disc space in which it is to be used. In the preferred embodiment the implant 10 is approximately 32mm wide.

Referring to Figures 4A and 5 the implant 10 is shown in place in the disc space after removal of the driving member once the implant was inserted in place.

The autogenous bone material that was packed within the hollow portion of the implant 10 serves to promote bone ingrowth between the implant and the adjacent vertebrae. Once the bone ingrowth occurs, the implant 10 will be a permanent fixture preventing dislodgement of the implant as well as preventing any movement between the adjacent vertebrae.

Referring to Figure 6 an alternative embodiment of the implant is disclosed. The implant 61 comprises a substantially rectangular member having a series of ridges 62 on the upper and lower surfaces of the implant 60. One or more grooves 64 are placed on the upper and lower surfaces as well. As indicated in Figure 6, a series of such implants 61 are used as the interbody spinal implant, each placed closely adjacent one another to approximate the size of the removed disc. A series of micro sized opening 63 perforate the implant 61, to promote bone ingrowth.

The implant of Figure 6 is inserted as follows: the disc is substantially removed by conventional means. The implants 61 are then inserted in the intervertebral space between the two vertebrae.

The size of the implant 61 of Figure 6 is approximately 26 millimeters in length and is wide enough so that four of them will substantially fill the intervertebral space, depending on which vertebras are fused.

In Figure 6a a "bullet nosed" implant 67 having a open front portion 69 to facilitate insertion of implant 67 is shown.

Referring to Figures 7 and 7a alternative embodiments of the implant 61 of Figure 6 is shown in place between two vertebrae V.

In Figure 7 the implant 70 is shown with the ridges 62 shown in the form of teeth facing the anterior. These ridges serve to prevent the implant 60 from 'walking' out of the space between the vertebrae.

In Figure 7a an embodiment of the implant 70 of Figure 6 is shown having opposed ridges 72 and 74. This serves to maintain the alignment of the vertebrae when the two vertebrae V are improperly aligned with respect to one another.

Referring to Figure 8 an adjustable implant 81 having means for adjusting the width of the implant 81 is shown. The implant 81 comprises a lower member 82 and an upper member 84 which when fitted together form an essentially rectangular implant. The upper member 84 and the lower member 82 have hollow portions that face one another and receive tapered wedges 86 and 88 that fit within the hollow portion of the upper and lower members 82 and 84. The wedges 82 and 84 are such that at their large and they are higher than the combined hollow space between the upper and lower members 84 and 82, and shallower at the other end than the hollow space between the upper and lower members.

The wedges 86 and 88 have a central threaded opening 90 and 92 in alignment with each other for receiving threaded screw 94. Deformable burrs 95 on the head 98 of the screw 94 are used for locking the screw in place. The implant has a series of holes 100 throughout the body of the implant to assist in the ingrowth process.

Referring to Figures 9 through 11 the expandable implant 81 is shown positioned between the two vertebrae V. In Figure 10 the expandable implant 81 is illustrated in its contracted position. The wedges 86 and 88 abutt the interior sloped surfaces 104 of the upper and lower members 82 and 84.

As the screw 94 is turned, as shown in Figure 11, the wedges 86 and 88 are drawn together, and the sloped portions of the wedges force the upper member 82 away from

the lower member 84. Once the screw 94 has been turned sufficiently, the screw head 98 is hit, causing the deformable burrs to be crimped so as to prevent the reverse rotation of the screw 94.

In Figure 12, another alternative embodiment of the expandable implant 81 is illustrated with spike projections 106 extending from the top and bottom members to dig into the vertebrae and assist in maintaining it in place.

In use, the disc is removed, and the implant 81 is placed between the vertebrae. The screw 94 is then turned expanding the implant. In the preferred embodiment, the width is from 8 millimeters to 18 millimeters.

Referring to Figures 13 and 14, another alternative embodiment of the invention is shown in which the implant 200 comprises a rectangular hollow member having a slightly tapered forward section 202. The cross section, shown in Figure 14, shows the rectangular configuration of the implant.

In use of the implant the interior of the implant is filled with a paste made of autogenous bone, and inserted in the place of the former disc. The strength of the material used to make the implant is such that, even though it is substantially hollow, it does have sufficient strength to withstand the forces of the vertebrae compressing the implant.

Referring to Figures 15-17, another alternative embodiment is shown in which the implant has movable projections which are movable from a first positon within the implant to a second position extending outside of the implant.

The implant 300 is of a generally rectangular configuration. The top surface 302 and the bottom surface 304 of the implant have slots 306 for permitting pivotal member 307 having spikes 308 at their ends to project through said slots 306. The spikes 308 are pinned at one end 310 within the implant 300.

Opposing wedge shaped members 312 and 314 having a central threaded opening 316 for receiving a threaded screw 318 having a head 320 and a slot 322. The wedges are

facing each other so that upon turning of the screw will draw the two wedges together, causing the wedges to cause the spikes 308 to pivot about their end 310 and cause the spikes to project out of the implant through the aligned slots 306. The depressions 329 in the pivotal member 307 engage the wedges 314 and 312 to lock the pivotal members 307 in place. A series of holes 324 for promoting bone ingrowth and fusion are provided in the implant 300.

In use, after the removal of the disc material, the implants with the spikes 308 in their withdrawn position, are inserted into the disc space. Then the screw 318 is turned until the spikes 308 are forced to enter the vertebrae material, as shown in Figure 17. The implant 300 is thus held firmly in place.

These implants have a surface configuration so as to induce bone ingrowth through the implant, and into the wall of the vertebrae in effect inducing fusion from one vertebrae V joint to the other, thereby eventually making the implant itself superfluous as the bone would do the work.

The implant itself, because of its being made of stronger material than bone, would provide structural support to the two vertebrae while awaiting bone ingrowth. Once the bone ingrowth occurred, however, the implant would be firmly and permanently fixed in place.

While the invention has been described with regards to the preferred embodiment and a number of alternative embodiments, it is recognized that other embodiments of the present invention may be devised which would not depart from the scope of the present invention.

What is claimed is:

1. An implant for fusion of two adjacent vertebrae in the spine said implant comprising a generally rectangular member, said member having a plurality of openings therein for promoting bone ingrowth with the implant and fusion of said vertebrae.

2. The implant of Claim 1 in which said rectangular member has a plurality of ratchet like members facing in the same direction on the upper and lower surfaces of said member for engagement with adjacent vertebrae.

3. The implant of Claim 2 in which said ratchet like members on the upper and lower faces face in different directions to prevent movement of the adjacent vertebrae relative to each other.

4. The implant of Claim 1 in which said implant has a tapered portion at one end.

5. The implant of Claim 1 in which the rectangular member is separable into an upper portion and a lower portion, and comprises a wedge means fitted between said upper portion and said lower portion for forcing said upper portion away from said lower portion.

6. The implant of claim 5 in which said wedge means comprises a central threaded opening with a threaded screw connecting two of said wedges, whereby turning said threaded screw draws said wedges together and forces said upper portion and lower portion of said implant away from each other.

7. The implant of claim 6 in which said implant has a plurality of openings therethrough.

8. The implant of claim 6 in which said upper and lower surface of said implant has projections for engaging the vertebrae.

9. The implant of claim 1 in which said implant has a plurality of slots in the upper and lower surfaces and a plurality of pivotal members movable between a first position within said implant and a second position outside of said implant through said slots.

10. A spinal implant comprising a hollow rectangular member, said rectangular member having a removable cap for covering said opening.

11. The implant of claim 10 in which said implant has a plurality of openings through the walls of said implant.

12. The implant of claim 10 in which said implant is substantially the same shape and dimensions as a disc.

13. The implant of claim 10 in which said implant comprises a front surface having an threaded opening therein for engagement with a threaded driving member.

14. The implant of claim 13 in which said front surface has a driver engaging portion.

15. The implant of claim 14 in which said engaging means comprises a depression on the front surface.

16. The implant of claim 10 in which said removable cap includes threads for attachment to said implant.

17. A driving member for driving a spinal implant comprising a first hollow tubular member, said hollow member having an irregular end for confirming to the external shape of a front surface of a spinal implant, and a second rod member fitted within said hollow tubular member said rod member having a threaded protion at one end and an enlarged knob portion at the other end.

18. The driver member of claim 17 in which said irregular end comprises an extended portion for fitting within a depressed portion of a spinal implant.

19. A spinal implant comprising a generally rectangular ember having a dimension of less than the width of a disc space, whereby a plurality of said implants of different widths have a width of the size of a disc space.

20. A plurality of spinal implants, the combined width of said spinal implants approximating the width of the disc space.

21. A method for replacing a disc in the spine comprising removing the disc and inserting into the resulting disc space a plurality of implants having a combined width approximating the width of the disc space.

22. The method of claim 21 in which said implants are inserted into the disc space one at a time.

23. The method of claim 21 in which said implant is made of a material that promotes bone ingrowth.

24. The method of claim 21 including the step of inserting autogenous bone material within said implant before implanting.

fig. 1.

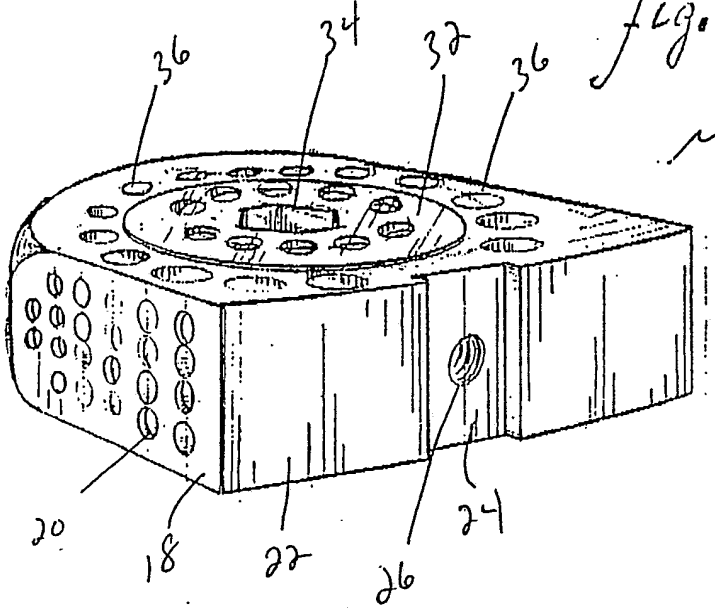


fig. 1a.

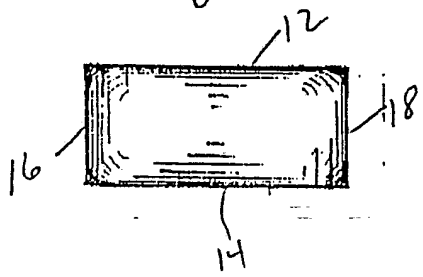
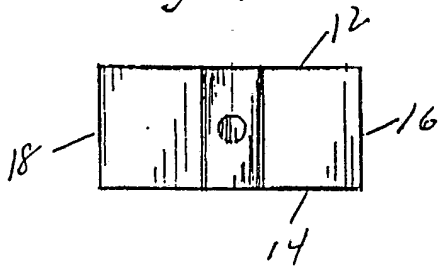


fig. 1b.



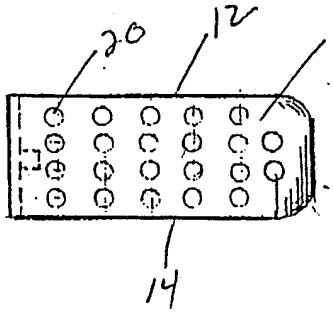


fig. 1c.

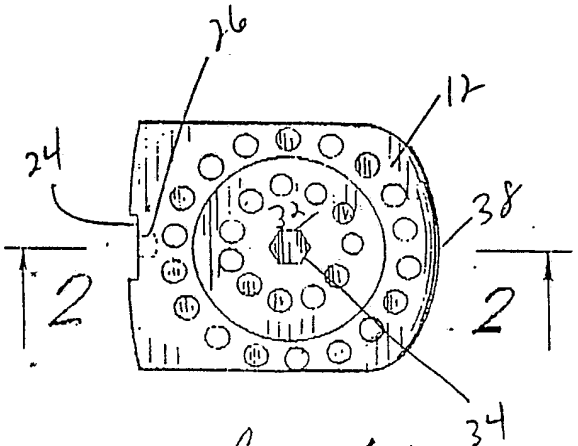


fig. 1d.

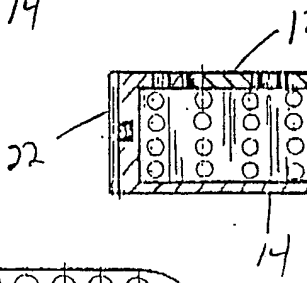


fig. 2.

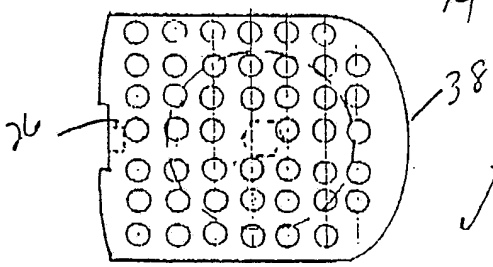


fig. 1e.

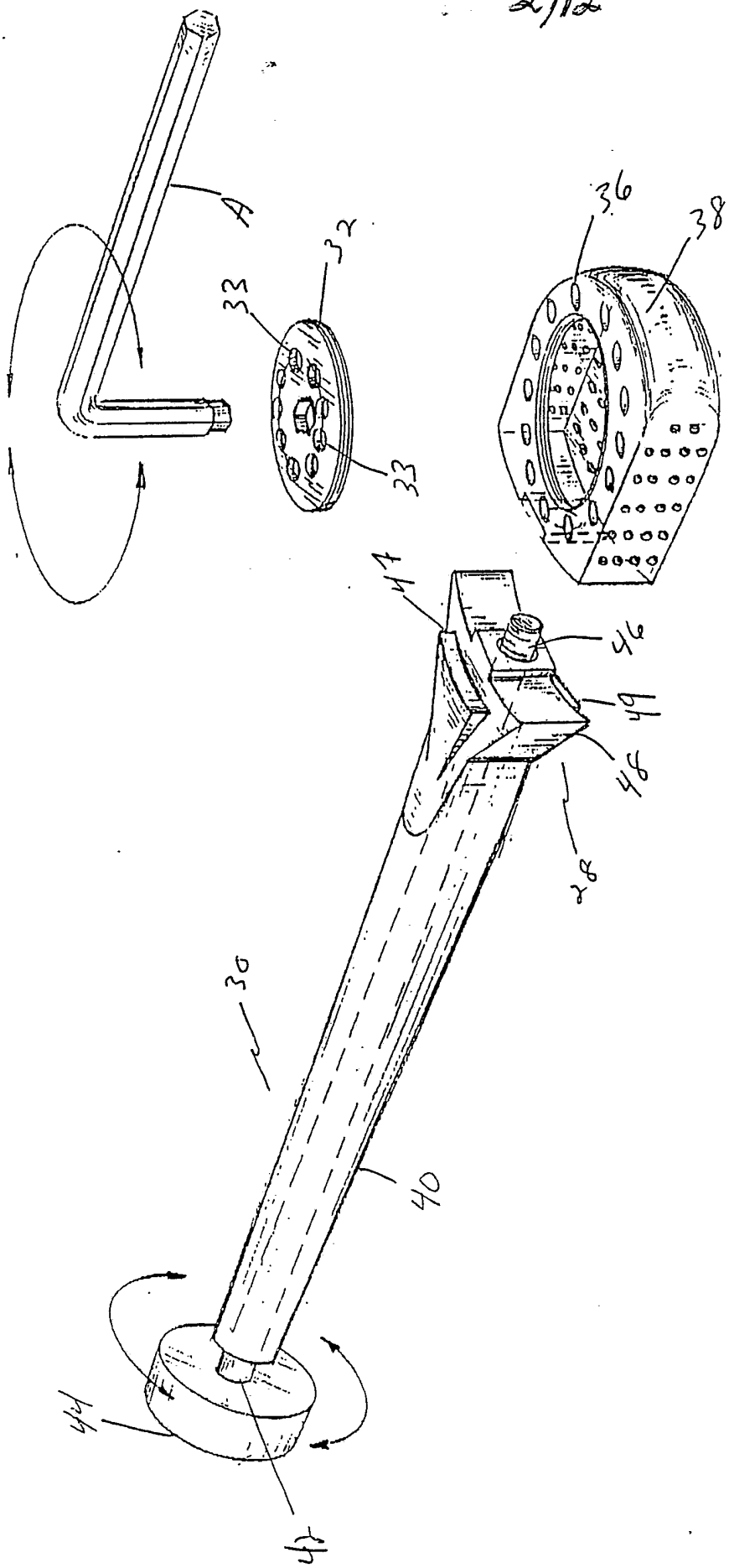


FIG. 3.

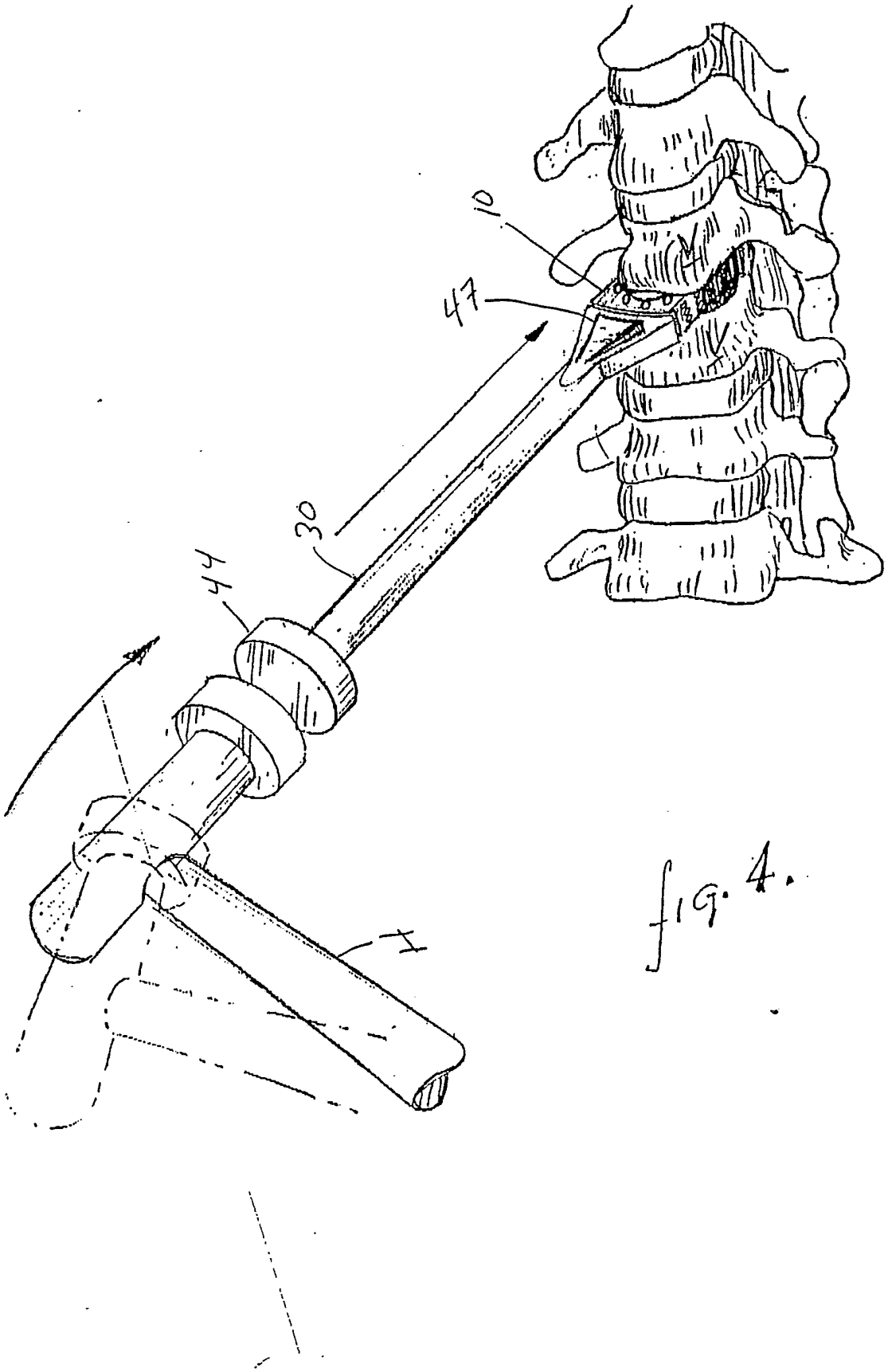


fig. 4.

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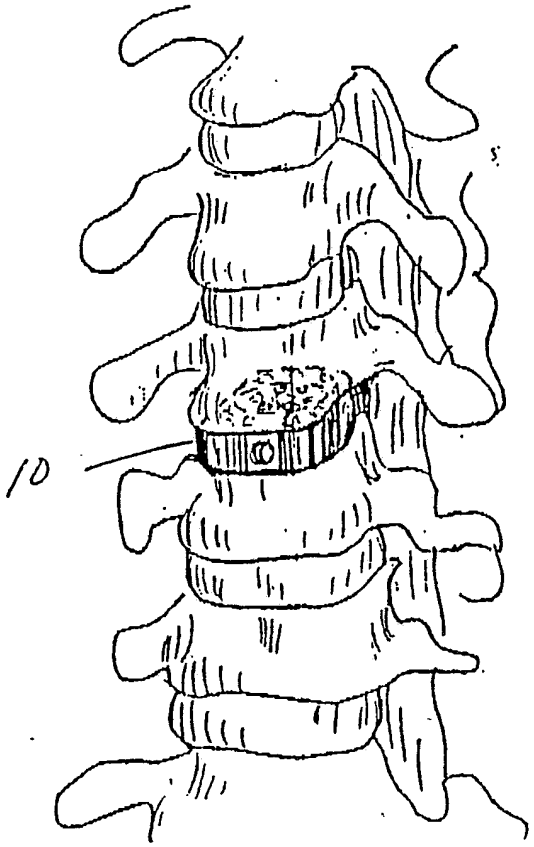
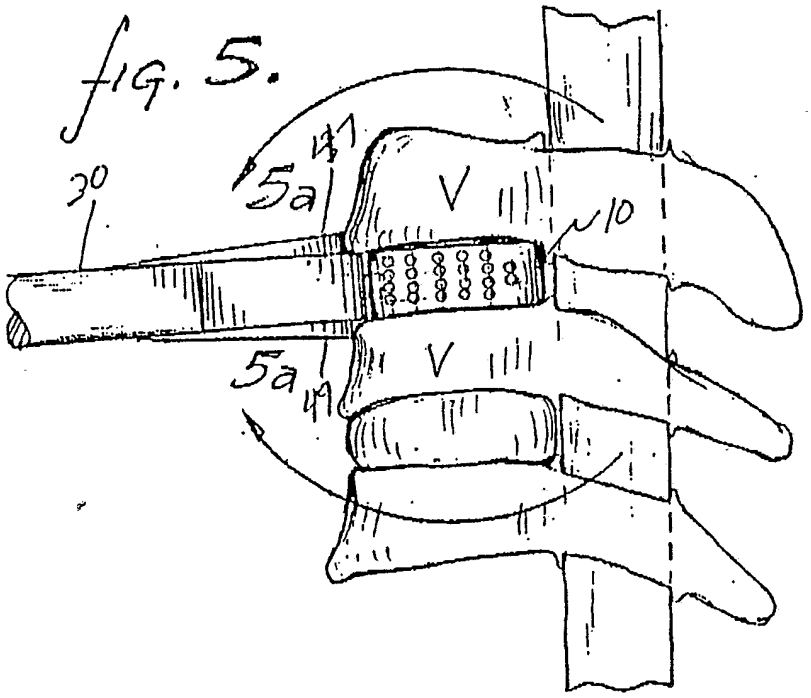


fig. 4a.

fig. 5.



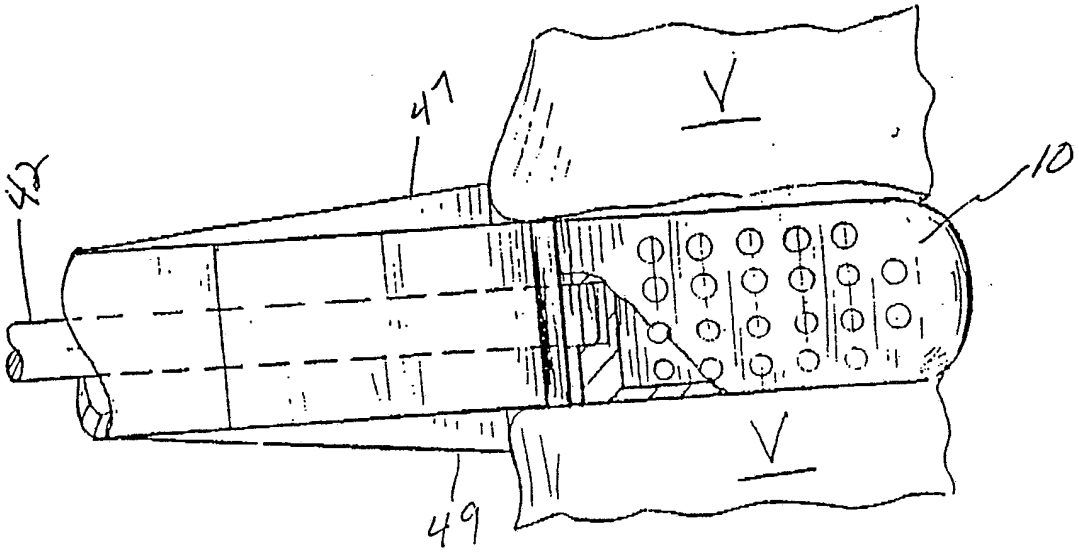


fig. 5a.

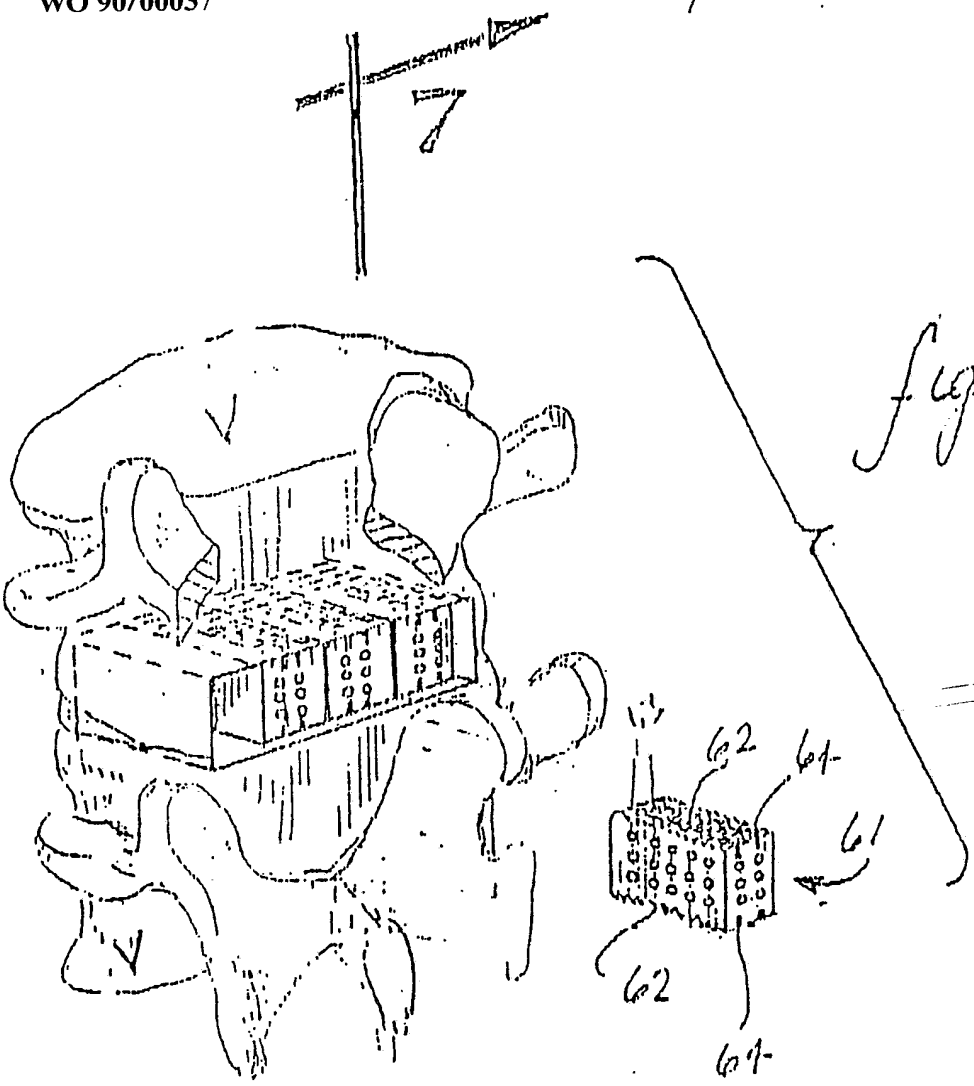


fig. 6.

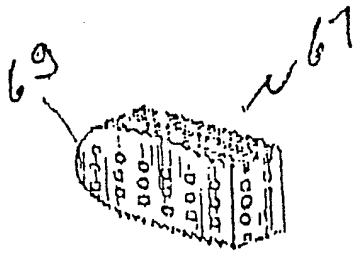


fig. 6A.

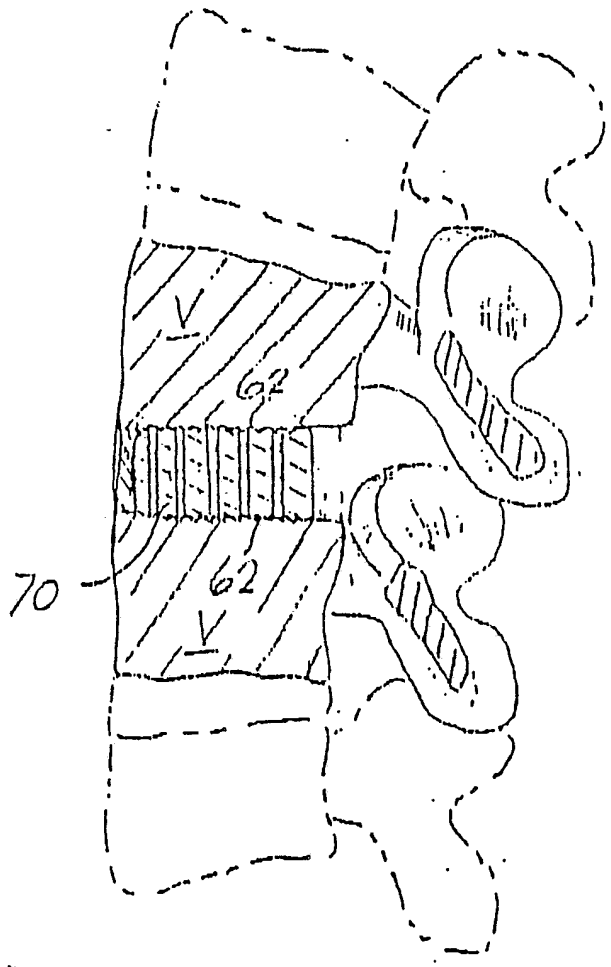


Fig. 7

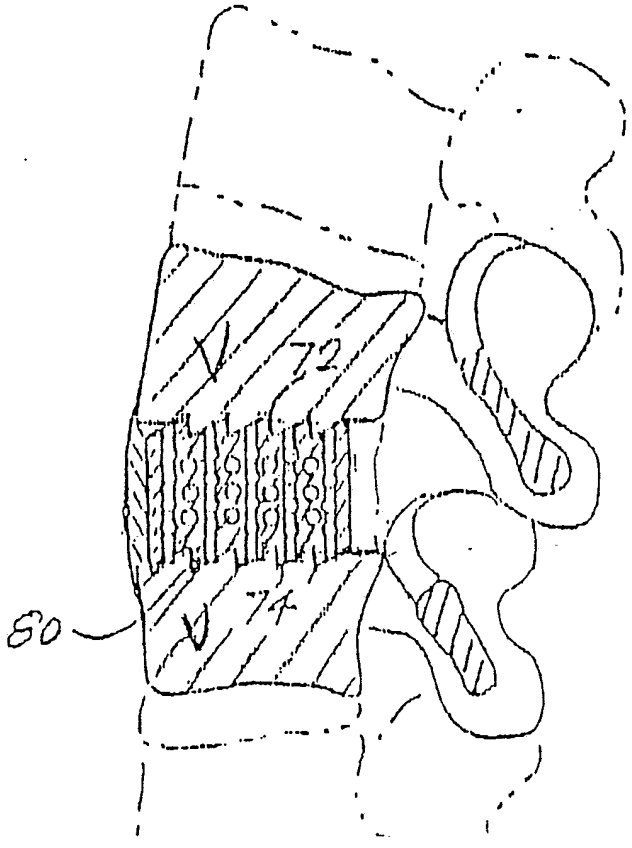


Fig. 7A.

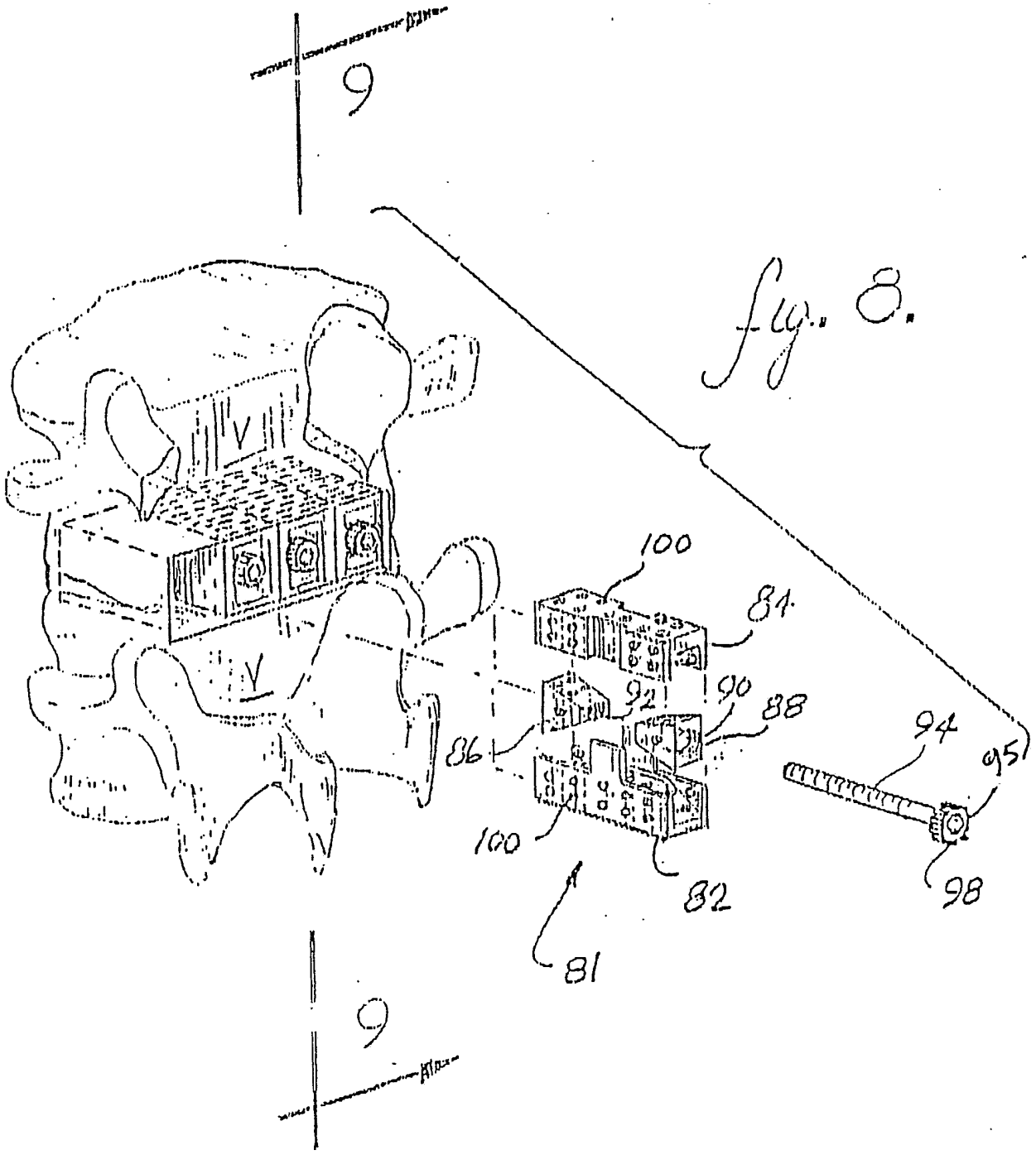


Fig. 8.

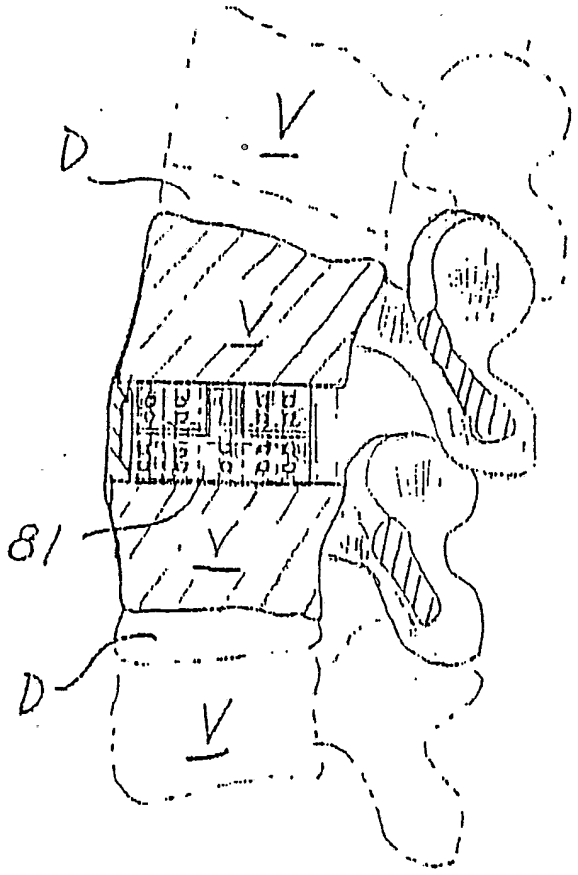


Fig. 9.

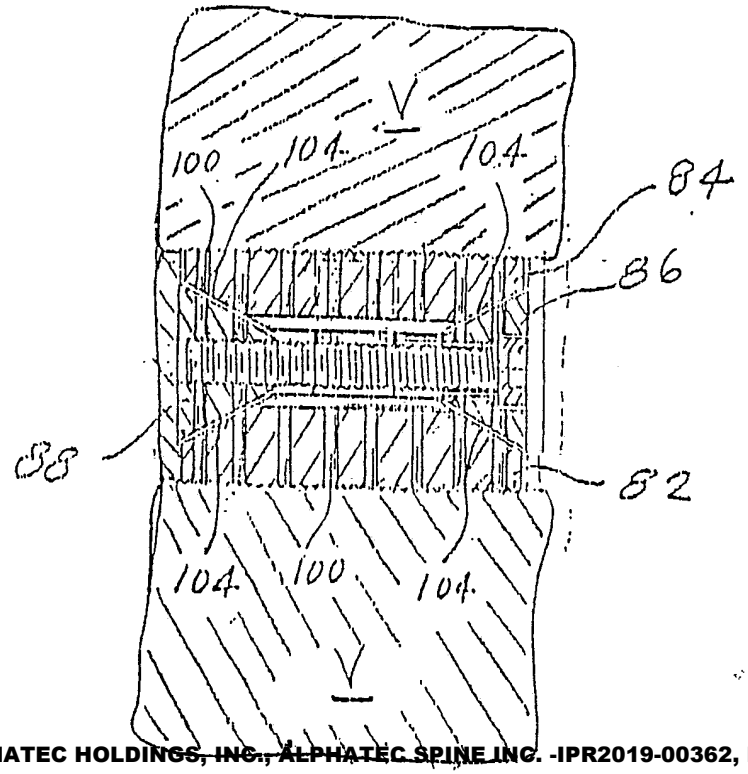


Fig. 10.

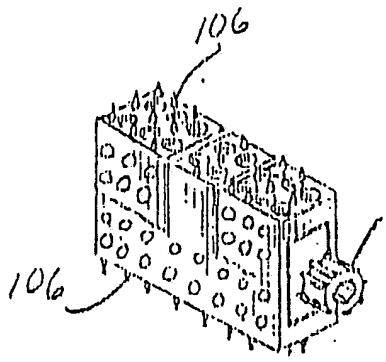


Fig. 12.

Fig. 13.

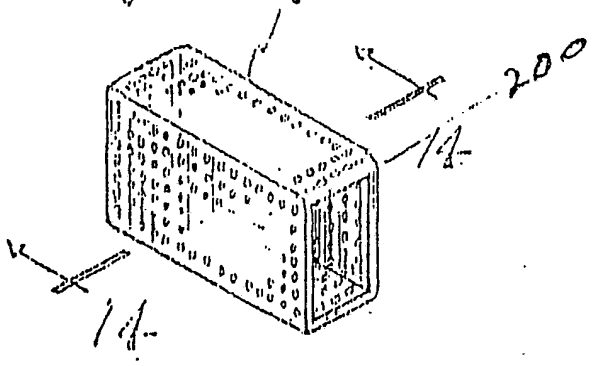
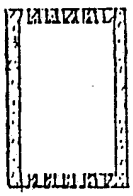


Fig. 14.



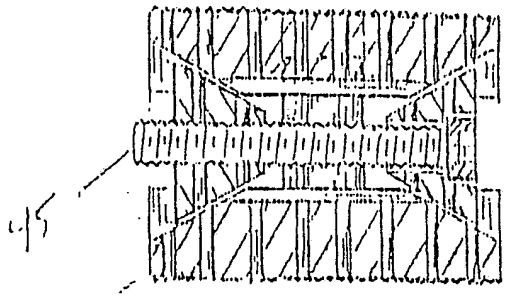


Fig. 11.

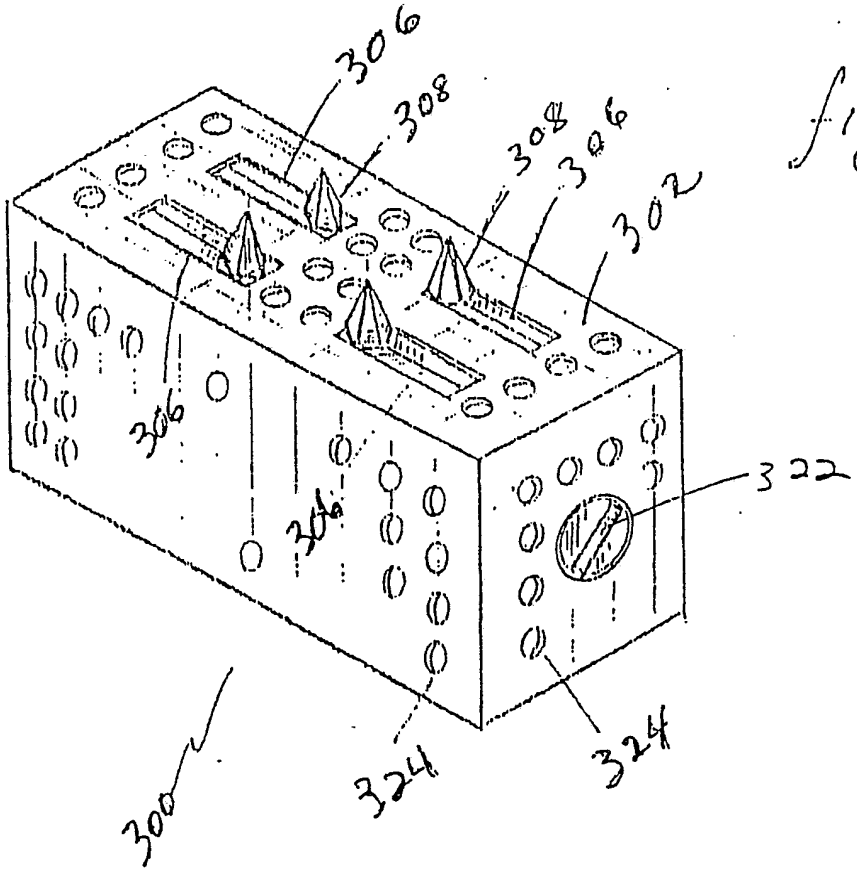

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fig. 15.

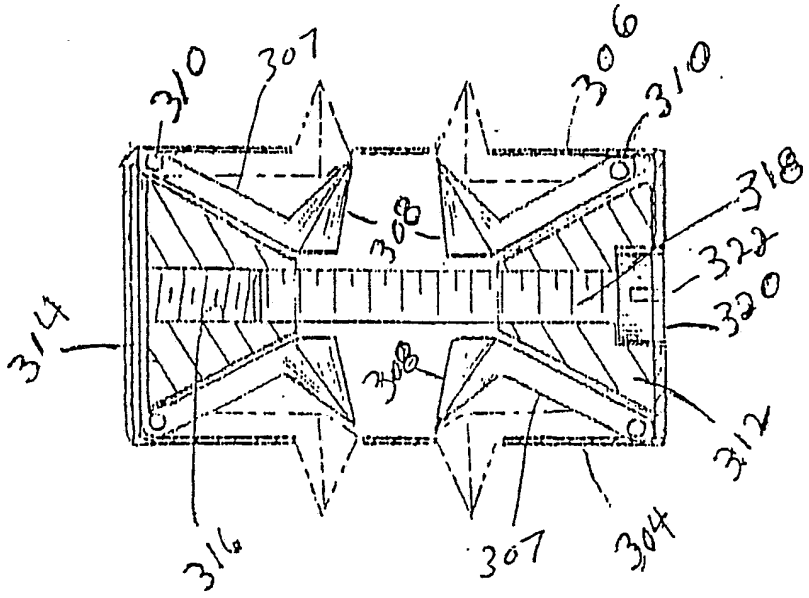
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fig. 16.

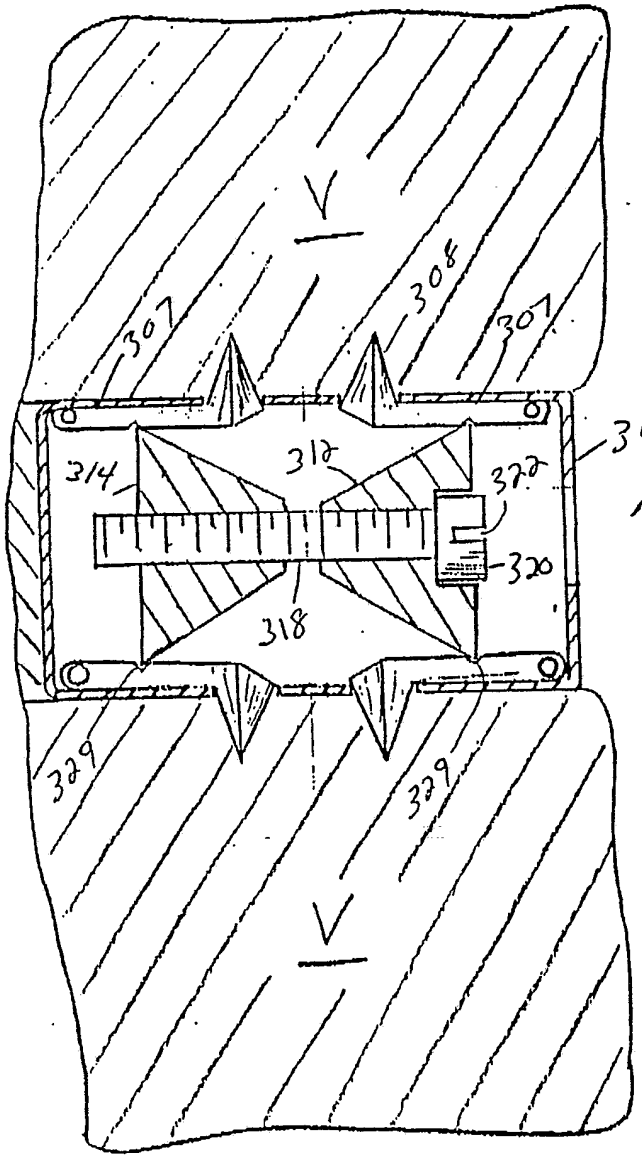

Fig. 17.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/US89/02791

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC (4): A61F 2/44
U.S. Cl. 623/17

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
U.S.	623/16, 17; 128/69, 92YM, 92YY, 92VT; 604/93, 890.1, 891.1, 892

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT [9]

Category *	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
X, P Y, P	US, A, 4,834,757 (BRANTIGAN) 30 May 1989 See Figures; column 6, lines 51-56; column 6, line 66-column 7, line 5.	1-2, 4 3, 5-16, 24
Y	EP, A, 0,260,044 (SHEPPERD) 16 March 1988 See Figures.	5-9
Y	US, A, 4,721,103 (FREEDLAND) 26 January 1988, see Figures.	9
Y	US, A, 4,599,086 (DOTY) 08 July 1986 See Figures.	9
Y	US, A, 3,948,262 (ZAFFARONI) 06 April 1976, see column 7, line 51-column 8, line 24.	10-16
Y	US, A, 4,507,115 (KAMBARA ET AL) 26 March 1985, see Figures; column 1, lines 12-18; column 2, lines 9-11.	10-16
X Y	US, A, 4,714,469 (KENNA) 22 December 1987 See Figures.	17-18, 21-23 24

* Special categories of cited documents: [10]

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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
22 August 1989	27 SEP 1989
International Searching Authority	**Signature of Authorized Officer**
ISA/US	David J. Bender

Form PCT/ISA/210 (second sheet) (Rev.11-87)

FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

X	US, A, 4,349,921 (KUNTZ) 21 September 1982 See Figures 7-10; column 6, lines 39-42.	19-23

V. ☐ OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE [1]

This international search report has not been established in respect of certain claims under Article 17(2) (a) for the following reasons:

1. ☐ Claim numbers . because they relate to subject matter [12] not required to be searched by this Authority, namely:

2. ☐ Claim numbers . . , 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 [13], specifically:

3. ☐ Claim numbers_____, because they are dependent claims not drafted in accordance with the second and third sentences of PCT Rule 6.4(a).

VI. ☐ OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING [2]

This International Searching Authority found multiple inventions in this international application as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application.

2. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:

3. ☐ 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 claim numbers:

4. ☐ As all searchable claims could be searched without effort justifying an additional fee, the International Searching Authority did not invite payment of any additional fee.

Remark on Protest

☐ The additional search fees were accompanied by applicant's protest.

☐ No protest accompanied the payment of additional search fees.

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 5 :		(11) International Publication Number:	WO 92/14423
A61F 2/44	A1	(43) International Publication Date:	3 September 1992 (03.09.92)

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(30) Priority data:

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786,758	1 November 1991 (01.11.91)	US

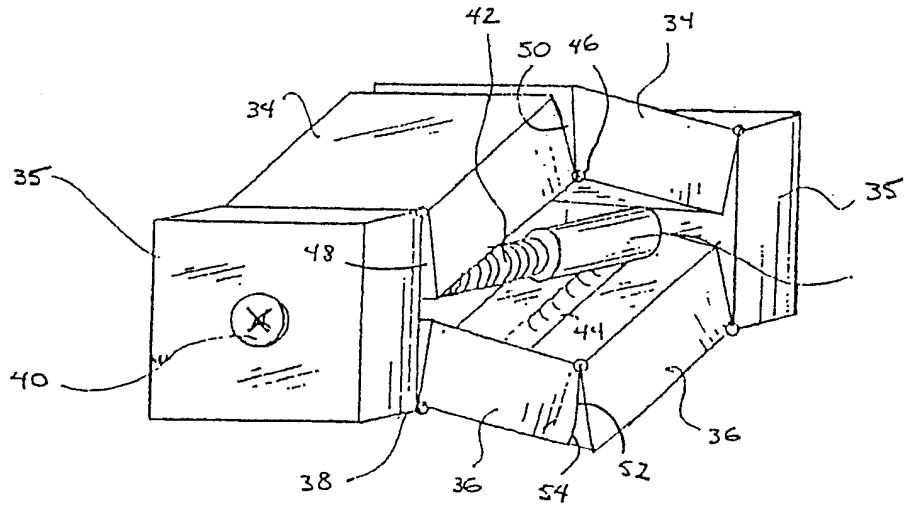
(71)(72) Applicant and Inventor: MADHAVAN, Pisharodi [US/US]; 844 Central Blvd., Suite 1200, Brownsville, TX 78520 (US).

(74) Agents: WISNER, Mark, R. et al.; One Riverway, Suite 1100, Houston, TX 77056-1903 (US).

(81) Designated States: AT, AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH, CH (European patent), CI (OAPI patent), CM (OAPI patent), DE, DE (European patent), DK, DK (European patent), ES, ES (European patent), FI, FR (European patent), GA (OAPI patent), GB, GB (European patent), GN (OAPI patent), GR (European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC (European patent), MG, ML (OAPI patent), MR (OAPI patent), MW, NL, NL (European patent), NO, PL, RO, RU, SD, SE, SE (European patent), SN (OAPI patent), TD (OAPI patent), TG (OAPI patent), US.

Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: MIDDLE EXPANDABLE INTERVERTEBRAL DISK IMPLANT AND METHOD



(57) Abstract

Artificial disk implant and methods for implanting same, the implant having a member (32, 34, 36, 77, 92, 94) for adapting in size and shape to the anatomical space between vertebrae, and apparatus (25, 42, 60, 112) for expanding the implant in the middle portion thereof to conform to the space. In one embodiment, there is provided an artificial intervertebral disk implant having a cylindrical body (20, 41, 56, 88) comprised of cylindrical subunits (32, 34, 36, 92, 94) capable of expansion. In another embodiment, rectangular members (34, 36) or elongate ribs (77) capable of expansion are provided. The implant can be used alone or in various combinations for the purpose of spinal fusion.

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MIDDLE EXPANDABLE INTERVERTEBRAL DISK IMPLANT AND METHOD

BACKGROUND OF THE INVENTION

This invention relates to an intervertebral disk implant and a method of implanting same. More specifically, the present invention relates to cylindrical and rectangular disk implants which are expandable in the middle portion which are used alone or in various combinations for the purpose of spinal fusion.

The spine is a flexible structure comprised of thirty-three vertebrae separated and cushioned from each other by fibrous intervertebral disks. If the spine is injured or becomes diseased, surgical intervention involving removal of one or more disks, and fusion of the adjacent vertebrae, may be indicated. The more frequent injuries are in the lower lumbar and in the lower cervical regions.

Treatment of a herniated disk in the neck and in the lumbar region continues to be a challenging field of medicine. The classical treatment for a ruptured disk continues to be diskectomy, i.e., removal of the disk from between the vertebrae. In this process, all or a portion of the intervertebral disk is removed, leaving a defect which continues to bother the patients throughout the rest of their lives. An additional procedure is to replace the disk space with a bone graft, usually bone chips cut from the patient's iliac crest, bringing about fusion of the vertebrae above and below the disk, eliminating the empty space between the vertebrae.

Theoretically, a diskectomy with fusion is a satisfactory procedure, though not ideal because the replaced bone does not have any of the functions of the cartilage tissue of the disk, i.e. no cushioning effect,

and has complications because of several factors. First, the bone plug used to pack the disk space does not conform to the shape of the disk because the disk bulges maximally in the center. The disk space is wider in the middle and narrower at its anterior and posterior ends. Consequently, a bone plug having its maximum width at the center, e.g., one which is shaped to fit the space, cannot be inserted through the narrow mouth of the disk space. For this reason, the various bone plugs which are currently available commercially have only four contact points, i.e. at the front and back of the disk space. Secondly, access to the disk is from one side or the other of the dorsal spine of the adjacent vertebrae, leaving a space that is "off-center" relative to the bodies of the adjacent vertebrae. An implant inserted into that off-center space, therefore, replaces only a portion of the disk and consequently contacts only a portion of the bodies of the adjacent vertebrae such that the stability of the implant is even more problematical than might be apparent from the limited contact resulting from the shape of the intervertebral space in the first place. Another complication is the possibility of infection or other conditions which may require the removal of the implant. Also, if the bone pieces do not fuse, they may eventually extrude out of the disk space, causing pressure on the nerve roots.

Various prosthetic disk plugs, or implants, are disclosed in the art, but all are characterized by limitations of not conforming to the shape of the disk space, lack of stability when inserted off-center, inability to be removed, or other disadvantages. For instance, U.S. Patent No. 4,863,476 describes an elongated body divided longitudinally into two portions having a cam device movable therebetween for increasing the space between the two body portions. However, that device is

generally cylindrical in shape such that the only contact points are at the front and back of the disk space, creating increased likelihood of instability and generally rendering that device unsuitable for use after partial diskectomy. The art also discloses intervertebral disk prostheses (e.g., U.S. Patent Nos. 3,867,728, 4,309,777, 4,863,477 and 4,932,969 and French Patent Application No. 8816184) which may have more general contact with the adjacent disks, but which are not intended for use in fusion of the disks. The art also includes spinal joint prostheses such as is described in U.S. Patent No. 4,759,769, which is again not indicated for use when fusion is the preferred surgical intervention.

From this prior art, it is apparent that there has long been a need for a disk plug, or implant, capable of supporting the disk space after a simple diskectomy for fusion of adjacent vertebrae, and the object of the present invention is to provide such an implant.

SUMMARY OF THE INVENTION

An intervertebral disk implant is described for implantation into the disk space after surgical removal of all or a portion of a diseased or damaged disk. Implants according to this invention include means for changing the shape of the implant to adapt to the shape of the disk space by expanding the implant to conform to the contour of that space, and are, for that reason, referred to herein as being "middle expandable".

In one embodiment, there is provided an intervertebral disk implant with a cylindrical body comprised of subunits capable of radially outward expansion. In another embodiment, there is provided an implant having a substantially rectangular body likewise comprised of subunits capable of radially outward expansion. Both are disk plugs expandable in the middle portion to provide

contact with substantially the entire area of the disk space against the vertebral bodies.

In the method of the present invention, there is provided a method of fusing two adjacent vertebrae after removal of all or a portion of the disk from therebetween which comprises inserting a disk implant into the space from which the disk has been removed, expanding the middle portion of the implant outwardly in a radial direction, injecting cancellous bone chips into the disk space medial to the implant, and applying a physiologically compatible adhesive over the bone chips medial to the implant to close off the opening of the disk space.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, Figure 1 is a projected view of one embodiment of the disk implant of the present invention.

Figure 2 is a cross sectional view of the disk implant of Fig. 1 taken along the line 2-2 in Fig. 1.

Figure 3 is a projected view of the central axis of the disk implant of Fig. 1 having the members coiled therearound removed therefrom.

Figure 4 is a projected view of the implant of Fig. 1 after expansion of the middle portion thereof.

Figure 5 is a projected, exploded view of a second embodiment of the disk implant of the present invention.

Figure 6 is a projected view of the implant of Fig. 5 showing that implant after expansion thereof.

Figure 7 is a top, plan view of a lumbar vertebra of a human patient having a top, plan view of the implant of Fig. 6 superimposed thereon to show the spatial relationship of the implant to the adjacent vertebrae after insertion into the disk space.

Figure 8 is a projected view of another embodiment of the implant of the present invention.

Figure 9 is a projected view of the disk implant of Fig. 8 after expansion of the middle portion thereof.

Figure 10 is an exploded, projected view of a fourth embodiment of the implant of the present invention.

Figure 10A is a side view of two hinged members comprising the middle portion of the implant of Fig. 10 and removed therefrom.

Figure 11 is a projected view of a fifth embodiment of the disk implant of the present application.

Figure 12 is a cross sectional view of the disk implant of Fig. 11 taken along the line 12-12 in Fig. 11.

Figure 13 is a side view of the disk implant of Fig. 11 showing a portion broken away therefrom.

DETAILED DESCRIPTION OF THE INVENTION

Figure 1 depicts a cylindrical embodiment of the disk implant of the present invention. The disk implant 20 shown in that figure is comprised of a strong, thin non-porous material. Suitable materials for the disk implant 20 include modified carbon, titanium, steel, metals and/or metal alloys having a memory (see below), physiologically inert and/or medically compatible polymers such as a urethane or DELRIN® polymer, or any generally rigid, biologically compatible material used for surgical implants. It is also useful to use a material which is compatible with magnetic resonance imaging (MRI) procedures. The disk implant 20 is comprised of a plurality of longitudinally aligned sections, or subunits 22, 24 and 26, and a screw 28 to which each section is mounted (as described below) is turned to cause differential, radially outward expansion of subunits 24 and 26. The subunits 24 and 26 are preferably comprised of a material capable of maintaining spring tension and are mounted to and wound around an elongate longitudinal axis in the form of central rod 25 (see Figs. 2 and 3) integral with screwhead 28. Because of this structure, each of the subunits is conveniently referred to as including a coiled member as identified at reference numeral 32.

Each coiled member 32 is mounted to central rod 25 by welding, riveting, or by other manner depending upon the material(s) comprising the sheet 32 and central rod 25 as known in the art. In the preferred embodiment shown in Figures 1-4, the central rod 25 is provided with a flat 23 to provide a stable surface for mounting of the member 32 thereto by, for instance, welding. At the other, free end of each coiled member 32, the coiled member 32 is beveled as at reference numeral 33 so as to provide a smooth, generally round exterior surface on each of the subunits 24 and 26 and to facilitate the sliding of the free end of coiled member 32 along the outside surface thereof as the subunits 24 and 26 are expanded radially outwardly as described below.

A Phillips head-type slot 18 is provided in the screwhead 28 for rotation of the rod 25 as described below, and the head 28 is provided with a plurality of teeth 19 for interdigitating with the reciprocal cavities in the lock nut 21 to prevent undesired rotation of central rod 25. The Allen screws 30 are loosened to force lock nut 21 away from the end surface 27 of subunit 22 so that the teeth 19 on the head 28 of central rod 25 are disengaged from the cavities in lock nut 21 to allow rotation of screwhead 28 and rod 25. Alternatively, either or both of rod 25 or lock nut 21 is comprised of a resilient, medically compatible polymer material which allows rotation of the teeth 19 past the cavities in lock nut 21 in one direction but not the other. The expanded shape of a section of the disk implant 20 is shown in Figure 2.

Turning screwhead 28 and central rod 25 using the slot 18 expands the sections 24 and 26, which remain expanded due to the interaction of the teeth 19 and the cavities in lock nut 21 and the compression of the implant 20 between the bodies of the vertebrae above and below the implant 20 once inserted into the disk space. In other words,

engagement of the free end of coiled member 32 by the adjacent vertebrae prevents the slipping of the free end of the coiled member 32 around the outside circumference of implant 20 such that members 32 do not "re-wind" after being expanded.

As shown in Figure 3, central rod 25 is provided with a portion 29 approximately mid-way between the ends thereof having a larger diameter than the rest of the central rod 25. By use of the central rod with sections of different diameters and/or thicknesses of the cylindrically wound member 32, the subunits 24 and 26 are differentially expanded. Turning screw 28 allows for maximal expansion of the subunit 26 and moderate expansion of the subunit 24 because the member 32 comprising subunit 26 is mounted to the rod 25 on the portion 29 of larger diameter while each of the members 32 comprising subunits 22 and 24 is mounted to central rod 25 between the portion 29 and the subunits 22. Turning the central rod 25 uncoils the members 32 because each member 32 is attached to the central rod 25.

Figure 4 illustrates the cylindrical disk implant 20 in its radially expanded form. Once expanded, the implant cannot be removed from the disk space except by turning the allen screws 30 to either back out or remove lock nut 21, thereby allowing rotation of rod 25.

Referring now to Figures 5 and 6, an alternative embodiment of the implant 20 is shown at reference numeral 56. Implant 56 is comprised of a single piece of metal, such as a titanium alloy, or medical grade polymeric plastic, such as DELRIN®, which is resilient and has a memory for the shape in which it is molded, shown in Fig. 6. Implant 56 is molded in the same generally elongate, cylindrical shape as the implant 20 shown in Figs. 1-4, but is molded in a shape in which the middle portion 58 thereof is normally expanded radially outwardly from the central axis of the cylinder. An elongate screw 60 is provided

having two sets of threads 62 and 66 thereon, the former for engaging the threads 68 formed in the bore 70 extending longitudinally through implant 56, the latter for engaging a similarly formed set of threads located in the bore 70 at the other end of implant 56 and therefore not visible in Figures 5 and 6. A slot 72 is formed in the head 74 of screw 60 for turning screw 60 to move the opposite ends 76a and 76b of implant 56 away from each other, thereby extending implant 56 and decreasing the radially outward expansion of the middle 58 thereof as shown in Fig. 5 for insertion into the disk space. Longitudinal slots 75 are molded into implant 56 to form ribs 77 which flex to allow the extension and outward expansion of implant 56 in this manner.

As noted above, the instability of prior implants once inserted into the disk space is problematical, and Fig. 7, showing the implant 56 in place relative to the body 78 of an adjacent lumbar vertebra 80 illustrates how the apparatus of the present invention overcomes this limitation of prior implants. The implant 56 is inserted into the disk space in an anterior-posterior (A-P) orientation, the dorsal spine 82 of vertebra 80 being pointed posterially. As clearly shown in Fig. 7, when so positioned, implant 56 occupies only a portion of the surface area of the vertebral body 78, the remainder of the area being occupied by that portion of the intervertebral disk (not shown) which is not removed during the diskectomy procedure (or, in a fusion procedure, this area is packed with cancellous bone chips). Access to that area is from the posterior aspect of the disk medial to the implant. In addition, the periphery 88 of vertebral body 78 is, as described above, thicker than the central portion 90 of body 78, further limiting access and creating an uneven surface on which the body 78 bears on the implant. However, because of the expansion of only the middle 58 of

implant 56, the implant 56 is stable in the A-P orientation shown. Once implanted, the screw 60 is backed out of the bore 70 in implant 56 and implant 56 assumes the shape shown in Figs. 6 and 7.

Figure 8 depicts a rectangular disk implant 31 constructed according to the present invention. Turning Phillips head 39 of screw 42 encapsulated in a sheath 44 (best shown in Fig. 9) formed in the hinged members 34 and 36 forming intermediate subunits in the same manner as the subunits, or sections, 24 and 26 of implant 20 causes the radially outward expansion of superior hinged members 34 superiorly and inferior hinged members 36 inferiorly. Although shown in Figures 8 and 9 with two of the hinged members 34 and 36, it will be understood by those skilled in the art who have the benefit of this disclosure that the plug, or implant, 31 may be provided with four, eight, or even more of the hinged members 34 and 36 as shown at reference numerals 92 and 94 in Figure 10 and numeral 41 in Figures 11-13. The expanded shape of the rectangular disk plug 31 is illustrated in Figure 9. Hinged members 34 and 36 are secured to an end cap or subunit 33 by hinge 38 and to each other by hinge 46. Upon rotation of screw 42 using a conventional screwdriver and the Phillips head slot 39, the end caps 33 are drawn closer together by movement along the threads of screw 42. To insure that the members 34 and 36 expand radially outwardly from screw 42, the ends 48 of each respective member 34 and 36 abutting the end caps 33 are angled so as to create a force vector outwardly away from screw 42 when end cap 33 exerts pressure on the surface 48, the hinge 38 being mounted in the acute angle formed by surface 48 and end cap 33.

In one embodiment (best shown in Figures 11-13 and discussed below), the tendency of this force vector to cause the members 34 and 36 to expand is increased by angling the face 50 of one member 34 or 36 in the same

direction as the angle in the surface 48. The surface 52 of the opposed member 34 and 36 is similarly angled, but with a bearing surface 54 formed therein that is angled in the same direction as the angle in surface 48 and face 50 so that the face 50 rides upwardly onto bearing surface 54 to translate the opposed, end-to-end force vectors applied to end caps 33 by rotation of screw 42 into a force vector having a radially outward (from screw 42) component. By referring to Figures 11-13, it can be seen that the radially outward expansion of the middle portion of implant 31 caused by rotation of the screw 42 effectively simulates the opening of two opposed umbrellas, and the particular embodiment shown in those figures may be conveniently referred to as having a "double umbrella" configuration.

A threaded lock nut 40 is inserted over Phillips screw head 39 (see Figure 8). Lock nut 40 prevents the members 34 and 36 from moving once expanded. Removing lock nut 40 provides access to screw head 39 to allow members 34 and 36 to return to the position shown in Figure 8.

The above-referenced, double-umbrella configuration of the implant of the present invention is illustrated at reference numeral 88 in Figure 10. In this embodiment, the hinged members 92 and 94 are mounted on pivot pins 96 to the first and second end members 90 and 98, respectively, as well as to each other, most of the pins 96 and all but two sets of the hinged members 92 and 94 being omitted from the figure for purposes of clarity. The pivot pins 96 which mount members 92 and 94 to the ends 90 and 98 are received within the bores 100 and 102 formed in each end member 90 and 98, the bores 100 and 102 being numbered separately to draw attention to their arrangement on the end members 90 and 98. The ears 104 on hinged members 92' and 94' are longer than the ears 106 on hinged members 92'' and 94'' and the bores 100, for receiving the pivot pin 96 are located closer to the end surface 108 of end member 90

(and the corresponding end surface of end member 98 at the opposite end of implant 88) than the bores 102. By this arrangement, the strength of the implant 88 is significantly increased.

Expansion of the middle portion of implant 88 is accomplished by turning the screw 112 using the hex head 114 formed at one end thereof, the other end of screw 112 being received by the threads 115 formed in the second end member 98. To increase the tendency of the hinged members 92 and 94 to expand in the radially outward direction, the holes in the hinged members 92 and 94 in which pivot pins 96 reside are offset along the longitudinal axis of implant 88. The offset holes are better shown in Figure 10A in which one pair of the members 92 and 94 is shown in side view removed from implant 88. The direction of expansion is shown by the arrow 95 in Figure 10A and, as can be seen, the center holes 97 are offset outwardly (e.g., in the direction of arrow 95) relative to the holes 99 at the ends of hinged members 92 and 94 (e.g., in the ears 106).

A lock nut 116 having threads 118 formed in the outside surface thereof is received by the threads 120 formed in the bore 122 in end member 90 through which the screw 112 is received for preventing undesired rotation of screw 112. Lock nut 116 is provided with a hex slot 124 to facilitate insertion and/or removal and hex slot 124 extends all the way through lock nut 116 and is of large enough size that a hex key can be inserted through slot 124 and into hex head 114 for turning screw 112 without adjustment of lock nut 116.

Another embodiment of the double-umbrella configuration of the implant of the present invention is shown at reference numeral 41 in Figures 11-13. As is the case with the implant 88 shown in Figure 10, the implant 41 is generally cylindrical in shape, yet utilizes the hinged member 34 and 36 construction of implant 31 shown in

Figures 8 and 9. Figure 12 shows a projected view of the disk implant 41 shown in Figure 11 having the members 34 and 36 cut in section. This view shows how the hinged members 34 and 36 fit together in the unexpanded position due to their beveled sides 64, giving the implant 41 its generally cylindrical shape. The sides 110 of the hinged members 92 and 94 of implant 88 are similarly beveled (Figure 10).

All of the disk implants of the present invention are expandable in the middle portion, i.e., the portion intermediate the ends, to contact substantially the entire anterior-posterior dimension of the disk space against the vertebral bodies as described above in connection with the description of Figure 7. If a complete intervertebral fusion is being performed, the plug is used in conjunction with intervertebral cancellous bone packing. Because of the support provided by the plug, until fusion is established, the cancellous bone pieces have a better chance of fusion due to the presence of the implant, and the bone pieces and the disk implant have a better chance of staying in the intervertebral disk space. Alternatively, the plug is used to maintain the spacing between vertebrae and can be used in conjunction with intertransverse posterior lateral fusion. In short, the implant acts as a physiological support for the rest of the patient's life or until a bone fusion is established.

The disk implant of the present invention may have additional indications, e.g. short segment scoliosis, where the curvature of the spine can be corrected by distracting the vertebral bodies on the inside of the curvature. By expanding the middle portion of the plug inside the disk space, the vertebral bodies are distracted, thereby helping straighten the spinal column.

If no bone graft is planned, diskectomy can be made minimally through one side exposure so that when the disk

plug is inserted and expanded, it will occupy the empty space. Because there is no further movement at this disk space, the chance of recurrent disk herniation is minimized. Also, the likelihood of recurrent disk herniation due to opening and closing of the space on the side of the diskectomy is reduced because the disk plug closes this mouth. Consequently, in addition to the advantages of a one sided, simple diskectomy, the risk of recurrent disk herniation can be reduced.

The cylindrical 20, 41, 56, and 88 and rectangular 31 implants are inserted after a simple diskectomy. Ordinarily, the size of the disk implant is approximately 2.5 to 3.5 centimeters in length and 1.0 to 1.5 centimeters in height and width. The same plug in smaller dimensions is used in thoracic and cervical levels where indicated.

By reference to the figures, it can be seen that both the rectangular and the cylindrical implants have the common feature of being expandable in the middle without changing the diameter of the dimensions of the two ends. Consequently, surgery is performed as in simple diskectomy, and the disk is exposed through a small laminotomy. The disk material is removed and any nerve root compression is corrected. The posterior longitudinal ligament and disk cartilage are removed until the vertebral surfaces are exposed above and below the disk space. The shape of the disk space determines whether the disk plug used is cylindrical or rectangular. The disk plug is then inserted and hammered into place so that the anterior end of the disk plug almost touches the anterior longitudinal ligament. Subsequently, using a Phillips screwdriver, the posterior screw end is turned. This implant method also gives good distraction to the vertebral bodies. In the case of simple disk problems, no further treatment may be required.

When used in interbody fusion, cancellous bone chips are made into very fine particles and pumped into the disk space medial to the disk plug and packed into the space. The posterior longitudinal ligament is intact to the opposite side and to the center of the disk space. These cancellous bone chips are held tightly in place. Since the mouth of the disk space is closed with the disk plug, the risk of the cancellous bone chips coming out is minimized. Also, the disk plug prevents the opening and closing of the disk space, thus preventing the bone chips coming out. If necessary, a small amount of a physiologically compatible adhesive of a type known in the art is applied over the cancellous bone chips just medial to the disk plug to close off the remaining portion of the opening of the disk space. The patient should be able to ambulate soon after the surgery because of the stability given by the disk plug. Before narrowing of the disk space occurs, the cancellous bone chips will have started the fusion process.

If a posterior lateral intertransverse fusion is desired, this procedure is also done in conjunction with the middle expandable disk plug. The disk plug is applied as explained above and the posterior lateral fusion performed. Since the disk plug provides stability to the spine until the posterior lateral fusion is solid, the patient can ambulate soon after the surgery. This procedure also prevents the disk space narrowing, which is a common problem with posterior lateral fusion.

WHAT IS CLAIMED IS:

1. An implant for disposition in the space between two vertebrae of a patient after removal of a portion of the disk therefrom comprising:

an elongate, threaded rod;

first and second end caps having holes therethrough for receiving said rod, the hole in said second end cap being threaded for engaging the threads on said rod to move said second end cap along said rod relative to said first end cap when said rod is rotated; and

an intermediate portion mounted between said first and second end caps, whereby rotation of said rod causes radially outward expansion of said intermediate portion to conform the shape of the expanded implant to the shape of the anatomical region of the disk space.

2. An implant of claim 1, additionally comprising a lock nut for engaging said rod to prevent the rotation of said rod.

3. An implant of claim 1, wherein said intermediate portion comprises a plurality of members hingedly mounted to said end caps.

4. An implant of claim 3, wherein rotation of said rod causes said second end cap to move along said rod to move said second end cap toward said first end cap, thereby forcing said intermediate portion radially outwardly.

5. An implant of claim 3, wherein the edges of said hinged members are beveled.

6. An implant of claim 3, wherein the hinges between said hinged members are offset so as to cause said hinged members to expand radially outwardly when said rod is rotated.

7. An implant of claim 3, wherein a sheath is formed in said hinged members to allow said hinged members to

close around said rod before said hinged members are expanded so as to minimize the thickness of the implant.

8. An implant of claim 1 wherein said intermediate portion comprises a plurality of spring-tensioned members spaced along the length of and wound around said rod and having one end affixed thereto.

9. An implant of claim 8 wherein said rod is provided with a plurality of different diameters spaced along the length thereof and having the end of one of said spring-tensioned members affixed to each section thereof.

10. A method of maintaining the space between two adjacent vertebrae of a patient after removal of the disk from therebetween comprising the steps of:

inserting an elongate implant into the space between two vertebrae after removal of the disk therefrom, the implant having a length which approximates the anterior-posterior dimension of the body of the vertebrae and a vertical dimension small enough to allow the insertion of the implant;

expanding the implant radially outwardly in the portion intermediate the ends of the implant to conform the shape of the implant to the shape of the anatomical region of the disk space into which the implant is inserted; and

preventing the reversal of the outward radial expansion of the intermediate portion of the implant.

11. A method of claim 10 further comprising injecting cancellous bone chips into said disk space medial to the disk plug.

12. A method for fusing two adjacent vertebrae after removal of a portion of the disk from therebetween comprising the steps of:

inserting an elongate implant through an opening into a space between two adjacent vertebrae of a patient after removal of the disk from between the

vertebrae, the implant having a length which approximates the anterior-posterior dimension of the body of the vertebrae and a vertical dimension small enough to allow insertion of the implant;

expanding the middle portion of the implant outwardly in a radial direction to conform the shape of the implant to the shape of the space from which the disk has been removed;

injecting cancellous bone chips into the space between the vertebrae medial to the implant; and

applying a physiologically compatible adhesive over the cancellous bone chips medial to the disk implant to close off the opening into the space from which the disk has been removed.

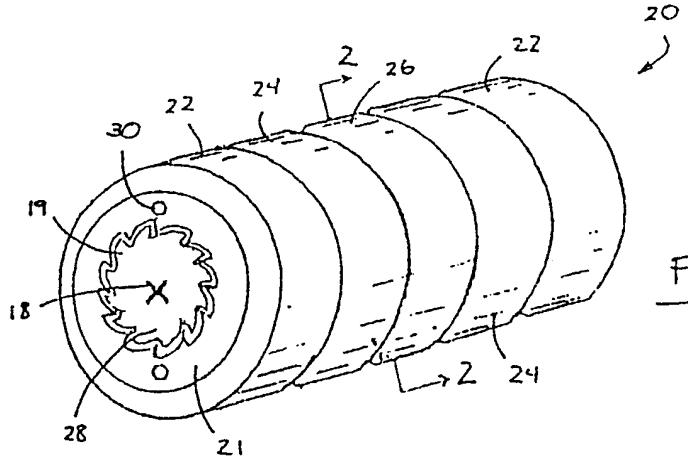


FIG. 1

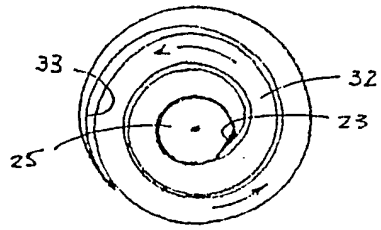


FIG. 2

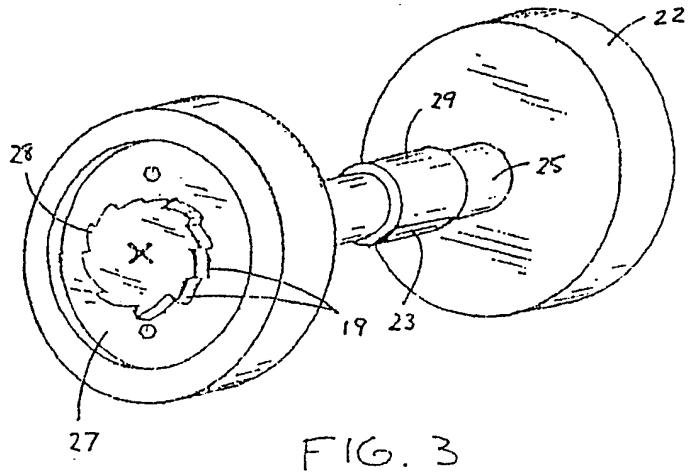
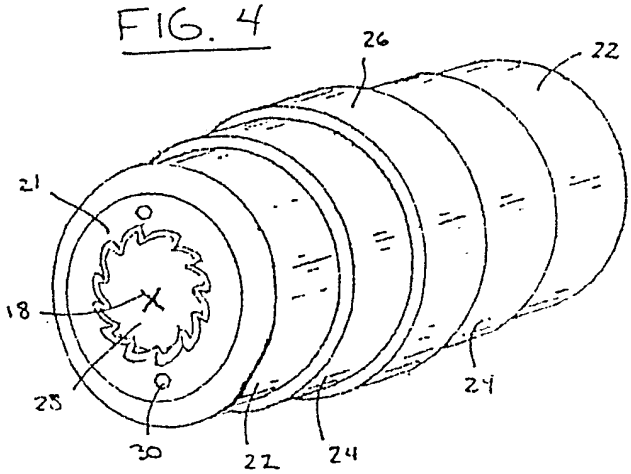


FIG. 3

FIG. 4



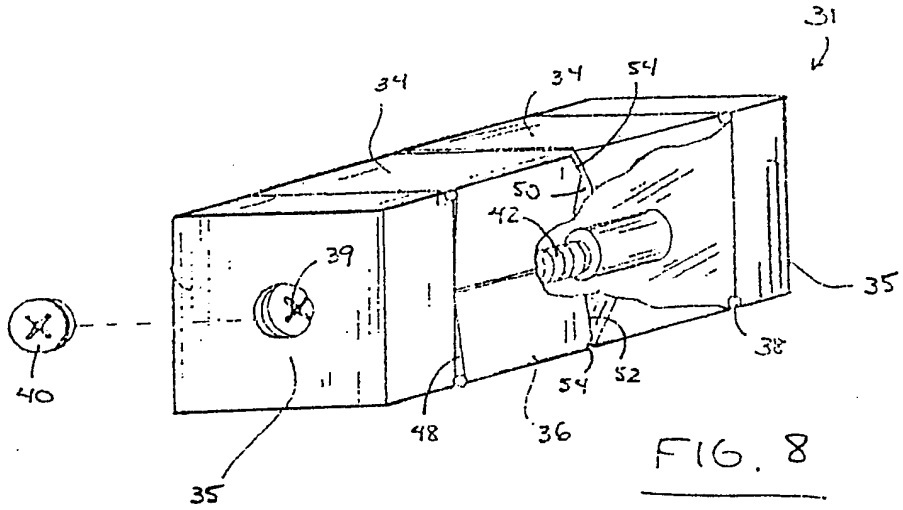


FIG. 8

FIG. 6

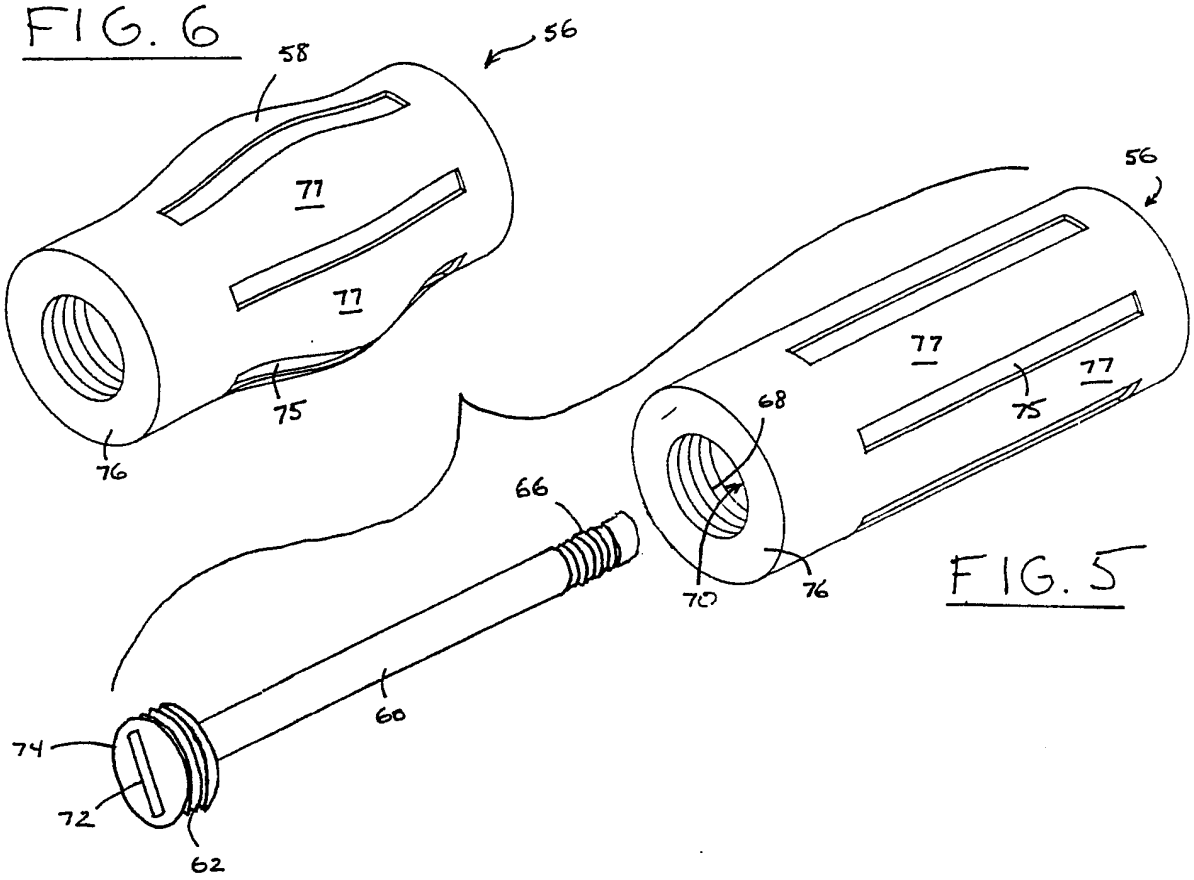


FIG. 5

FIG. 7

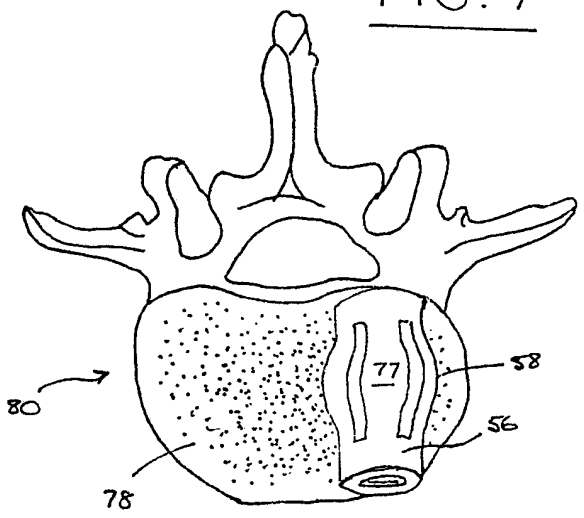


FIG. 9

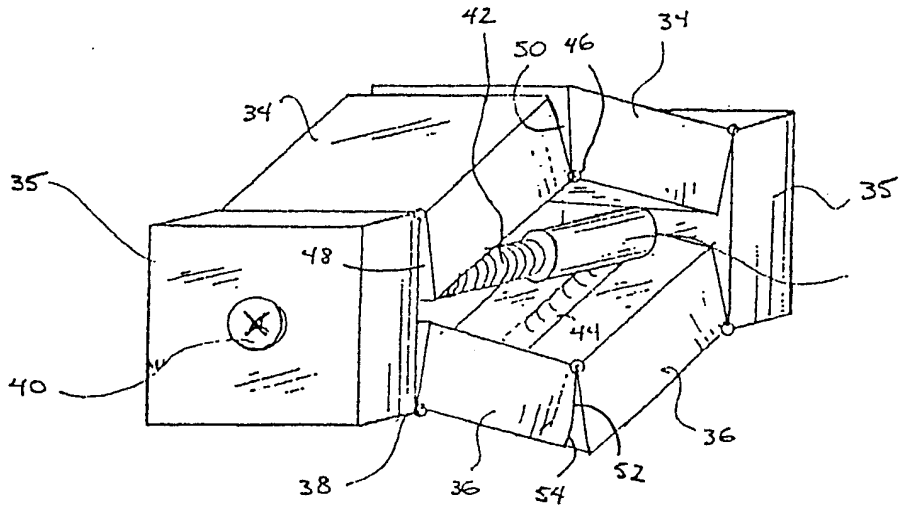


FIG. 11

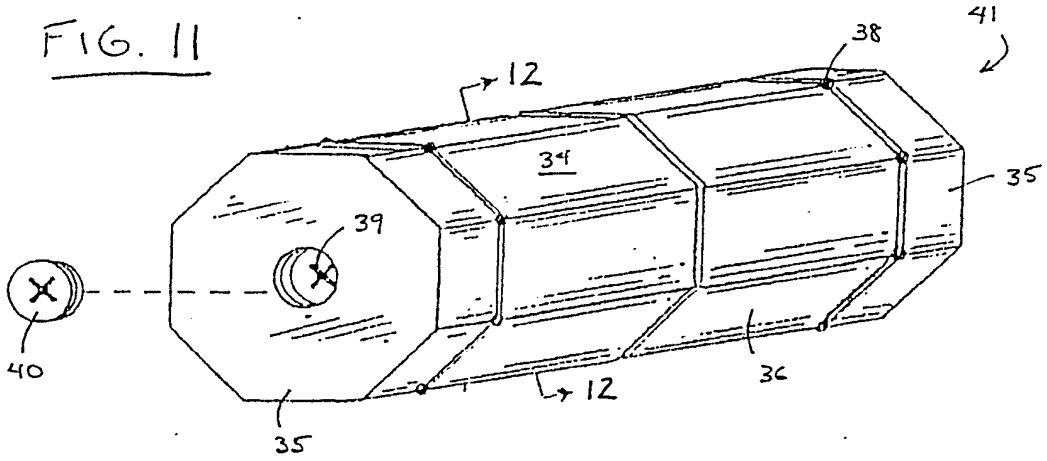


FIG. 12

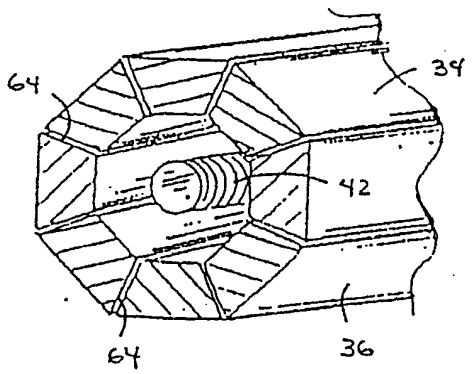
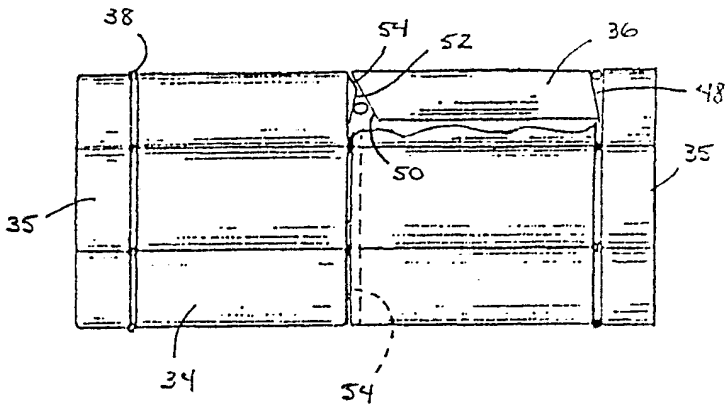


FIG. 13



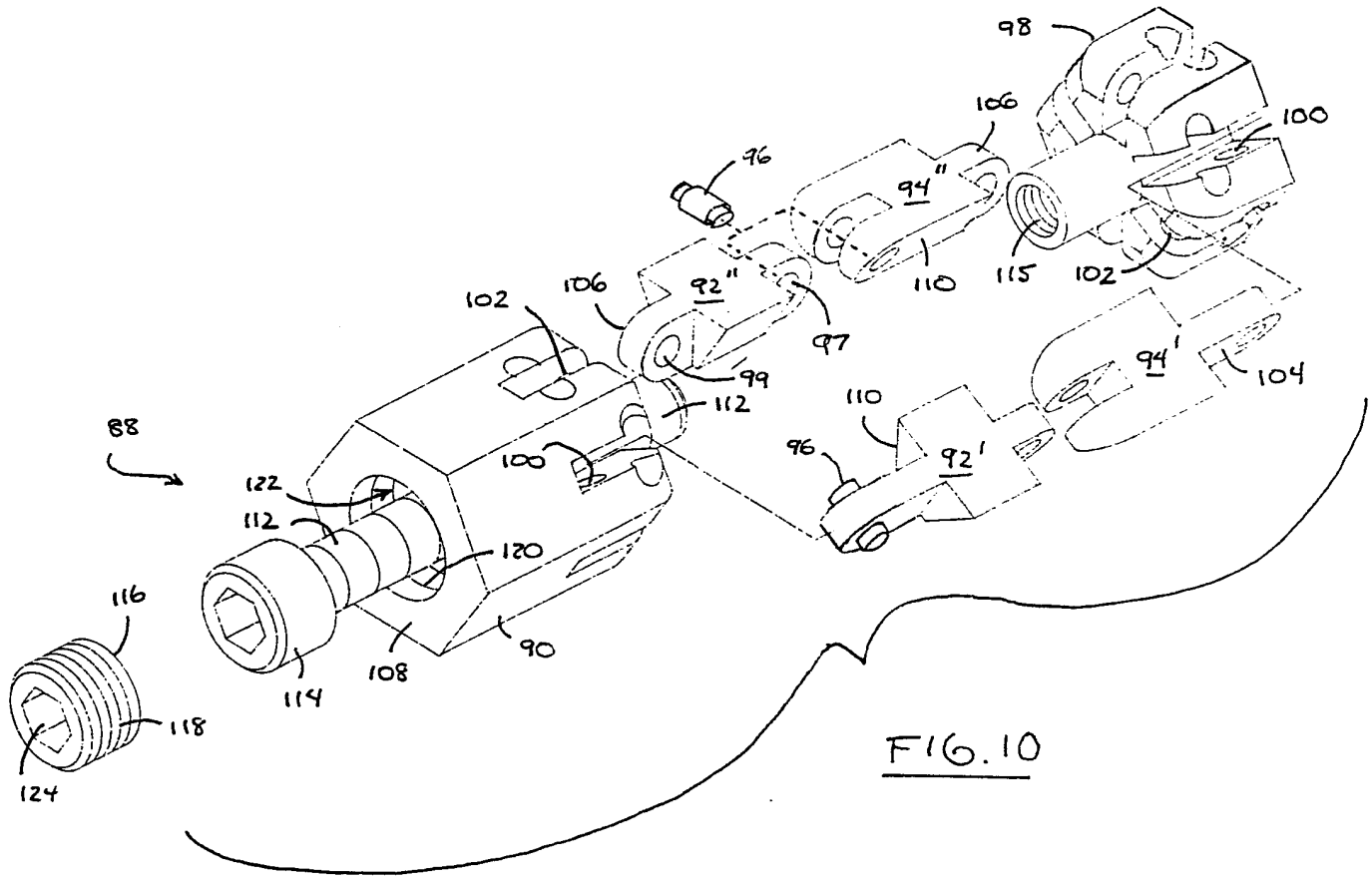


FIG. 10

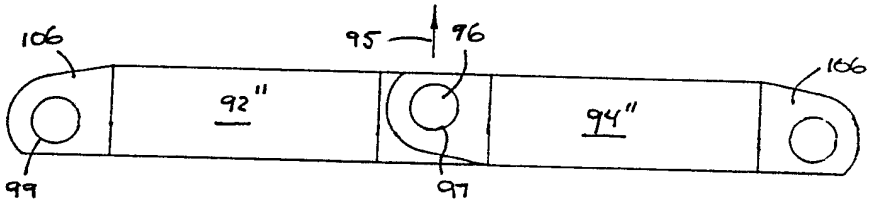


FIG. 10A

INTERNATIONAL SEARCH REPORT

International Application No PCT/US 92/01397

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl.5 A 61 F 2/44

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
Int.Cl.5	A 61 F A 61 B

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched[8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category °	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No.[13]
A	EP,A,0260044 (SHEPPERD) 16 March 1988, see abstract; figure 2 (cited in the application)	1
A	EP,A,0304305 (CEDAR SURGICAL) 22 February 1989, see column 4, lines 50-62; figure 1	1

° Special categories of cited documents : [10]

"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

"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

IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
05-06-1992	14. 07. 92
International Searching Authority	**Signature of Authorized Officer**
EUROPEAN PATENT OFFICE	Els Vonk

Form PCT/ISA/210 (second sheet) (January 1985)

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. US 9201397 SA 58198

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
The members are as contained in the European Patent Office EDP file on 03/07/92
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A- 0260044	16-03-88	JP-A- 63145650	17-06-88
		US-A- 4863476	05-09-89
EP-A- 0304305	22-02-89	US-A- 4772287	20-09-88
		JP-A- 1070041	15-03-89
		US-A- 4904260	27-02-90

EPO FORM P0479

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

Doc Code: TRAN.LET

Document Description: Transmittal Letter

PTO/SB/21 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission	12

Application Number	11/093,409
Filing Date	March 29, 2005
First Named Inventor	Matthew Curran
Art Unit	3733
Examiner Name	Elana Beth Fisher
Attorney Docket Number	104US1

ENCLOSURES (*Check all that apply*)

- ☑ Fee Transmittal Form
  - ☑ Fee Attached
- ☑ Amendment/Reply
  - ☑ After Final
  - ☐ Affidavits/declaration(s)
- ☑ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) _____
  - ☐ Landscape Table on CD
- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☑ Other Enclosure(s) (please Identify below):
  Request for Continued Examination

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	NUVASIVE INC.		
Signature	/Jennifer Risser/		
Printed name	Jennifer Risser		
Date	November 18, 2010	Reg. No.	60,059

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature			
Typed or printed name		Date	

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	11093409
Filing Date:	29-Mar-2005
Title of Invention:	Systems and methods for spinal fusion
First Named Inventor/Applicant Name:	Matthew Curran
Filer:	Jennifer Lynn Risser
Attorney Docket Number:	104US1

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt

EFS ID:	9203688
Application Number:	11093409
International Application Number:	
Confirmation Number:	6640
Title of Invention:	Systems and methods for spinal fusion
First Named Inventor/Applicant Name:	Matthew Curran
Customer Number:	30328
Filer:	Jennifer Lynn Risser
Filer Authorized By:	
Attorney Docket Number:	104US1
Receipt Date:	10-JAN-2011
Filing Date:	29-MAR-2005
Time Stamp:	23:22:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$180
RAM confirmation Number	6763
Deposit Account	502040
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Information Disclosure Statement (IDS) Filed (SB/08)	2011-01-10-SupplementalIDS104US1.pdf	613386 11ab68f6107f65ebb22cdd1141caf3b7b2198e5a	no	6
Warnings:					
Information:					
2	Foreign Reference	WO1990000037A1.pdf	917824 f3749d9e322fed8f3a2d9bc13aea22023dbe51a2	no	35
Warnings:					
Information:					
3	Foreign Reference	WO1992014423A1.pdf	683387 5b0541c7f41927bc20b449c7059194af2600fc77	no	25
Warnings:					
Information:					
4	NPL Documents	Baulot.pdf	2092847 3bdb52d5bd196ffaca8f70914f3ef246c6efe1dd	no	6
Warnings:					
Information:					
5	NPL Documents	Berry.pdf	322776 5b8aca5ba082438377b6eada3c4a20e5c1167581	no	6
Warnings:					
Information:					
6	NPL Documents	Crock1.pdf	5360727 63eb26d74567fef63ce7b1156a5dd4e5f29b2cf9	no	13
Warnings:					
Information:					
7	NPL Documents	Edeland.pdf	370458 44d387ba99c6b8fc227e7d982509298b50601a26	no	6
Warnings:					
Information:					
8	NPL Documents	KEMP.pdf	2380605 89962bdfb44b9ac178166b5aca763cedbae8fad5	no	20
Warnings:					
Information:					
9	NPL Documents	2010-06-14NUCorrectedFinalInvalidityContentions.pdf	282155 7de5c29b25facbaf8604fccbf9a30d997d5f2a51	no	17
Warnings:					
Information:					

10	NPL Documents	AppendixB3.pdf	348228 7bcc3a9020d2140aaceab074af49f7f13640ca12	no	55
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Information:					
11	NPL Documents	AppendixB4.pdf	419619 bf19e6e6f900390b978556228835adaf8052e325	no	61
Warnings:					
Information:					
12	NPL Documents	AppendixB5.pdf	436072 d57e8021e3cebe3995b28e31542a180baba143ad	no	51
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Information:					
13	NPL Documents	AppendixB6.pdf	464373 e4dbb13be0c1512c1f4ab2cbdad329d6c764496d	no	73
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Information:					
14	NPL Documents	AppendixB8.pdf	472690 79607812e04c0d14bce455cacd99847c19850751	no	53
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Information:					
15	NPL Documents	AppendixB9.pdf	375628 0edf514124a35c50188dfc184dc2f33b817d2b86	no	43
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Information:					
16	NPL Documents	AppendixB1.pdf	371014 b4438bbb9dcdb58be9c83b5c26fdaad49b610c9b	no	63
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17	NPL Documents	AppendixB2.pdf	474505 5ba6ddd3d4cbfb799fff6ee1f9aabfa56ec337cd	no	61
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Information:					
18	NPL Documents	AppendixB7.pdf	549703 27b0018a70c882a6f8df2daf479dff8cd9db34e5	no	61
Warnings:					
Information:					

19	NPL Documents	AppendixB10.pdf	610507 24dfc8559f57a871a564e981dbe2e5f7d503aea5	no	60
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20	NPL Documents	AppendixB17.pdf	194806 5d7ba819881d2406187b1a355fe2ddf5afa92626	no	12
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Information:					
21	NPL Documents	AppendixB18.pdf	334824 25078bafc71cb282e01f3374fe2ae9f288bc0caa	no	14
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Information:					
22	NPL Documents	AppendixB19.pdf	190770 9f4a1b2381d258e199c3314d30f8acc845f93985	no	13
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Information:					
23	NPL Documents	AppendixB20.pdf	144693 4a8d5c375a8cb13bf88ec8e95109941705a993ca	no	12
Warnings:					
Information:					
24	NPL Documents	AppendixB21.pdf	331377 2d3ad2c8fe6f9b195bd781a59518b9e94645462e	no	13
Warnings:					
Information:					
25	NPL Documents	AppendixB22.pdf	151916 d735bb0243584743bf7ca119921a7bb33396959c	no	13
Warnings:					
Information:					
26	NPL Documents	AppendixB23.pdf	174355 b4c4476e1391d6466a779e16554e432b370f2af5	no	13
Warnings:					
Information:					
27	NPL Documents	AppendixB11.pdf	852209 2bd8b4b3ee856ca0c1efdefdd8a29128635e2926	no	78
Warnings:					
Information:					

28	NPL Documents	AppendixB14.pdf	696703 c75b99e735a34a18efeb3a410812e50e8ccd36b8	no	27
Warnings:					
Information:					
29	NPL Documents	AppendixB15.pdf	787792 3e5d9d45a98553b142f3a80f68f344a6bf383b1a	no	50
Warnings:					
Information:					
30	NPL Documents	Crock2_1.pdf	25316757 44d5d5acd8609cef8d24065a1ad355ce9f0313c7	no	100
Warnings:					
Information:					
31	NPL Documents	Crock2_2.pdf	20403592 b5846f0ee91966fa031c25ac07db002c335f8050	no	100
Warnings:					
Information:					
32	NPL Documents	Crock2_3.pdf	25981756 180bd4719b7fd4316a850768130d4bf833ead5c6	no	100
Warnings:					
Information:					
33	NPL Documents	Crock2_4.pdf	7046782 6cfcf673b99d9fcdafcffa60c5d450987af1be33	no	52
Warnings:					
Information:					
34	Transmittal Letter	2010-11-18-Transmittal104US1.pdf	262867 e567d5e1cabd243aeaed42b009637b30e3f14f64	no	2
Warnings:					
Information:					
35	NPL Documents	AppendixB16.pdf	1087937 532d442534c20eaba01b01e1e29e1ccc0cdef280	no	35
Warnings:					
Information:					
36	Fee Worksheet (PTO-875)	fee-info.pdf	29928 3fdab96a661bdd6d004b28ecdb8acbbf54e8c407	no	2
Warnings:					
Information:					

Total Files Size (in bytes):	101535568

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	11093409	Filing Date	2005-03-29	Docket Number (if applicable)	104US1	Art Unit	3733
First Named Inventor	Matthew Curran			Examiner Name	Elana Beth Fisher		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☒ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☐ Other _____

☒ Enclosed

☒ Amendment/Reply

☐ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 502040

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Signature of Registered U.S. Patent Practitioner			
Signature	/Jennifer Risser/	Date (YYYY-MM-DD)	2010-11-18
Name	Jennifer Risser	Registration Number	60059

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Matthew Curran	Art Unit:	3733
Serial No.:	11/093,409	Examiner:	Elana Beth Fisher
Filing Date:	March 29, 2005		
Title:	Systems and Methods for Spinal Fusion		

AMENDMENT AFTER FINAL REJECTION

Mail Stop Amendment
Commissioner for Patents
PO Box 1450
Alexandria VA 22313-1450

Dear Sir:

In response to the Advisory Action mailed October 8, 2010 and the Office Action mailed May 18, 2010, please amend the above-identified application as set forth below. The shortened statutory period for reply was set to expire on August 18, 2010. A petition for extension of time for 3 month is submitted herewith, extending the period for reply to November 18, 2010. Accordingly, this response is timely filed.

Amendments to the claims begin on page 2 of this paper.

Applicant Remarks begin on page 8 of this paper.

IN THE CLAIMS:

1. (Currently Amended) A spinal fusion implant positionable within an interbody space between a first vertebral endplate and a second vertebral endplate, said interbody space being at least partially defined by a posterior aspect, [[and]] an anterior aspect, and opposing lateral aspects, the implant being positionable from a lateral approach to extend from one lateral aspect to the other, said implant comprising:

a top surface including a plurality of ridges to engage said first vertebral endplate when said implant is positioned within the interbody space, a bottom surface including a plurality of ridges to engage said second vertebral endplate when said implant is positioned within the interbody space, a distal side, a proximal side, a first side wall defining an anterior side when said implant is positioned within the interbody space, and a second side wall defining a posterior side when said implant is positioned within the interbody space;

wherein said implant has a length extending from said proximal side to said distal side, a width extending from said first side wall to said second side wall, and a height extending from said top surface to said bottom surface;

wherein said implant has a length extending from said proximal side to said distal side, a width extending from said first side wall to said second side wall, and height extending from said top surface to said bottom surface;

wherein said length is at least two and half times greater than said width;

wherein said width is greater than said height;

said implant further including first and second fusion apertures that each extend between the top and bottom surfaces and permit bone growth between the first vertebral endplate and the second vertebral endplate when said implant is positioned within the interbody space, said first and second fusion apertures being adjacent to one another and separated by a medial support extending parallel to said promixal and said distal sides and between said top and bottom surfaces;

said implant further including at least ~~one~~ three radiopaque ~~marker~~ markers situated between said top and bottom surfaces; wherein a first of the at least three radiopaque markers is disposed within said distal side of the implant, a second of the at least three radiopaque markers

is disposed within said proximal side and a third of the at least three radiopaque markers is disposed within said medial support.

2. (Previously Presented) The spinal fusion implant of Claim 1, wherein said implant is substantially radiolucent and composed of non-bone material.

3. (Previously Presented) The spinal fusion implant of Claim 1, wherein said implant includes at least one visualization aperture extending through at least one of said first side wall and said second side wall.

4. (Previously Presented) The spinal fusion implant of Claim 1, wherein the top and bottom surfaces of the implant are at least one of generally parallel with respect to each other, and generally angled with respect to each other to better match the natural curvature of the spine.

5. (Previously Presented) The spinal fusion implant of Claim 1, wherein said first and second fusion apertures are one of generally rectangular and generally oblong in shape.

6.-30. (Canceled)

31. (Previously Presented) The spinal fusion implant of Claim 1, further including at least one receiving element at least partially defined along said proximal side.

32. (Previously Presented) The spinal fusion implant of Claim 31, wherein said receiving element is engageable with an insertion instrument.

33. (Previously Presented) The spinal fusion implant of Claim 32, wherein said receiving element comprises a threaded aperture.

34. (Previously Presented) The spinal fusion implant of claim 33, wherein said receiving implant further comprises a slot extending from said threaded aperture.

35. (Currently Amended) A spinal fusion implant of non-bone construction ~~postionable~~ positionable via a lateral trans-psoas surgical approach to the spine into a position within an interbody space between a first vertebra and a second vertebra, said interbody space being at least partially defined by a posterior aspect, [[and]] an anterior aspect, and opposing lateral aspects, said implant comprising:

a top surface to contact said first vertebra when said implant is positioned within the interbody space, a bottom surface to contact said second vertebra when said implant is positioned within the interbody space, a distal side, a proximal side, a first side to face said anterior aspect of said disc space when said implant is positioned within the interbody space and a second side to face said posterior aspect of said disc space when said implant is positioned within the interbody space, wherein said implant is generally rectangular in shape having a length extending from said proximal side to said distal side of at least 40mm, a width extending from said first side to said second side of at least 15mm, and a height extending from said top surface to said bottom surface ranging from 8mm to 16mm, said implant further including a pair of fusion apertures comprising one of a generally rectangular and generally oblong shape and extending between said top surface and bottom surface to permit bone growth between the first vertebra and the second vertebra, said pair of fusion apertures being separated by a medial support extending parallel to aid proximal and said distal sides and between said top and bottom surfaces, said implant further including [[a]] at least ~~one~~ three radiopaque ~~marker~~ markers situated between said top and bottom surfaces; wherein a first of the at least three radiopaque markers is disposed within said distal side, a second of said at least three radiopaque markers is disposed within said proximal side and a third of said at least three radiopaque markers is disposed within said medial support.

36. (Previously Presented) The implant of Claim 31, wherein said non-bone material is one of PEEK and PEKK.

37. (Previously Presented) The implant of Claim 31, wherein said implant includes at least one visualization aperture extending through at least one of said posterior side and said lateral side.

38. (Previously Presented) The implant of Claim 31, wherein a portion of said implant adjacent said distal side is tapered.

39. (Previously Presented) The implant of Claim 31, further including at least one anti-migration features comprising at least one of a set of ridges formed in the top surface, a set of ridges formed in the bottom surface, a set of ridges on the top and bottom surfaces, one or more spike elements protruding from the top surface, one or more spike elements protruding from the bottom surface, and one or more spike elements protruding from the top and bottom surface.

40. (Previously Presented) The spinal fusion implant of Claim 35, further including at least one receiving element at least partially defined along said proximal side.

41. (Previously Presented) The spinal fusion implant of Claim 40, wherein said receiving element is engageable with an insertion instrument.

42. (Previously Presented) The spinal fusion implant of claim 41, wherein said receiving element comprises a threaded aperture.

43. (Previously Presented) The spinal fusion implant of Claim 42, wherein said receiving implant further comprises a slot extending from said threaded aperture.

44. (Previously Presented) The spinal fusion implant of Claim 37, wherein said spinal fusion implant includes exactly four visualization apertures in communication with a first of said fusion apertures from said pair of fusion apertures and exactly four visualization apertures in communication with a second of said fusion apertures from said pair of fusion apertures.

45. (Previously Presented) The spinal fusion implant of Claim 44, wherein two of said visualization in communication with said first fusion aperture are situated in said first side, two of said fusion apertures in communication with said first fusion aperture are situated in said second side, two of said visualization apertures in communication with said second fusion

aperture are situated in said first side, and two of said fusion apertures in communication with said second fusion aperture are situated in said second side.

46. (Previously Presented) The spinal fusion implant of Claim 37, wherein said spinal fusion implant includes exactly six visualization apertures in communication with a first of said fusion apertures from said pair of fusion apertures and exactly six visualization apertures in communication with a second fo said fusion apertures from said pair of fusion apertures.

47. (Previously Presented) The spinal fusion implant of Claim 46, wherein three of said visualization apertures in communication with said first fusion aperture are situated in said first side, three of said fusion apertures in communication with said first fusion aperture are situated in said second side, three of said visualization apertures in communication with said second fusion aperture are situated in said first side, and three of said fusion apertures in communication with said second fusion aperture are situated in said second side.

48. (Previously Presented) The spinal fusion implant of claim 1, wherein said spinal fusion implant includes exactly four visualization apertures in communication with said first fusion aperture and exactly four visualization apertures in communication with said second fusion aperture.

49. (Previously Presented) The spinal fusion implant of claim 48, wherein two of said visualization apertures in communication with said first fusion aperture are situated in said first side, two of said fusion apertures in communication with said first fusion aperture are situated in said second side, two of said visualization apertures in communication with said second fusion aperture are situated in said first side, and two of said fusion apertures in communication with said second fusion aperture is situated in said second side.

50. (Currently Amended) The spinal fusion implant of Claim 1, wherein said spinal fusion implant includes exactly six visualization apertures in communication with said first fusion aperture and exactly six visualization apertures in communication with said second fusion aperture.

51. (Previously Presented) The spinal fusion implant of Claim 50, wherein three of said visualization apertures in communication with said first fusion aperture are situated in said first side, three of said fusion apertures in communication with said first fusion aperture are situated in said second side, three of said visualization apertures in communication with said second fusion aperture are situated in said first side, and three of said fusion apertures in communication with said second fusion aperture are situated in said second side.

REMARKS

In the Office Action mailed May 18, 2010, (the "Office Action"), claims 1-5 and 31-51 were rejected.

Claims 1-5 and 31-51 are currently pending. The independent claims have been amended to expediently advance prosecution on the merits without prejudice to pursue the subject matter as originally presented, for example, in a continuation. Applicants respectfully submit that all pending claims are in condition for allowance and an indication to that effect is respectfully requested.

Claim rejections – 35 U.S.C. § 103(a)

Claims 1-5 and 31-51 were rejected under 35 USC §103(a) as being unpatentable over Michelson (US Patent 5,860,973) in view of Boriani et al. (US Patent 6,159,211) and Kuntz (US Patent 4,349,921) for reasons as set forth in detail on pages 2-5 of the Office Action. The instant amendment addresses this issue.

The claims have been amended to include at least three radiopaque markers, a first disposed within the distal side of the implant, a second disposed within the proximal side of the implant and a third within the medial support portion of the implant. Support for the amendments can be found, for example, on pages 13-14 of the specification as filed and Fig. 21. Applicants respectfully submit that the Michelson reference does not teach a spinal fusion implant, positionable from a lateral approach to extend from one lateral aspect of an interbody space to the other, having at least three radiopaque markers disposed within the distal, proximal and medial portions of the implant, respectively. Further, neither the Boriani nor the Kuntz reference cures this defect. Therefore, Applicant respectfully requests that the rejection under 35 USC §103(a) be properly withdrawn.

CONCLUSION

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment. Reconsideration and allowance of the claims in this application is respectfully requested. In the event that there are any questions concerning this Amendment or the application in general, the Examiner is cordially invited to telephone the attorney of record so that prosecution may be expedited.

Respectfully submitted,
NUVASIVE, INC.

By: /Jennifer Risser/
Jennifer Risser, Esq.
Registration No. 60,059
Tel. (858) 320-4537

7475 Lusk Boulevard
San Diego, CA 92121

November 18, 2010

Electronic Patent Application Fee Transmittal

Application Number:	11093409
Filing Date:	29-Mar-2005
Title of Invention:	Systems and methods for spinal fusion
First Named Inventor/Applicant Name:	Matthew Curran
Filer:	Jennifer Lynn Risser
Attorney Docket Number:	104US1

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 3 months with $65 paid	2253	1	490	490

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Request for continued examination	2801	1	405	405
		Total in USD ($)		**895**

Electronic Acknowledgement Receipt

EFS ID:	8871978
Application Number:	11093409
International Application Number:	
Confirmation Number:	6640
Title of Invention:	Systems and methods for spinal fusion
First Named Inventor/Applicant Name:	Matthew Curran
Customer Number:	30328
Filer:	Jennifer Lynn Risser
Filer Authorized By:	
Attorney Docket Number:	104US1
Receipt Date:	18-NOV-2010
Filing Date:	29-MAR-2005
Time Stamp:	21:26:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$895
RAM confirmation Number	7957
Deposit Account	502040
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Transmittal Letter	2010-11-18-Transmittal104US1.pdf	262867 e567d5e1cabd243aeaed42b009637b30e3f14f64	no	2
Warnings:					
Information:					
2	Extension of Time	2010-11-18-EOT104US1.pdf	312838 aada0834477ffb8412774b19a0941493f7585542	no	2
Warnings:					
Information:					
3	Request for Continued Examination (RCE)	2010-11-18-RCERequest104US1.pdf	797439 a8057427f27f20d04dbfacca544c936919397055	no	3
Warnings:					
Information:					
4		2010-11-18-RCEResponse104US1.pdf	45226 d8910359c2426392b5bba05e6b6df331808ed828	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment After Final	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	9

Warnings:					
Information:					
5	Fee Worksheet (PTO-875)	fee-info.pdf	31533 d193c6d197f66b2eb799d447056a950d45252b8a	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	1449903	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: TRAN.LET

Document Description: Transmittal Letter

PTO/SB/21 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission	12

Application Number	11/093,409
Filing Date	March 29, 2005
First Named Inventor	Matthew Curran
Art Unit	3733
Examiner Name	Elana Beth Fisher
Attorney Docket Number	104US1

ENCLOSURES (*Check all that apply*)

- ☑ Fee Transmittal Form
  - ☑ Fee Attached
- ☑ Amendment/Reply
  - ☑ After Final
  - ☐ Affidavits/declaration(s)
- ☑ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) _____
  - ☐ Landscape Table on CD
- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☑ Other Enclosure(s) (please Identify below):
  Request for Continued Examination

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	NUVASIVE INC.		
Signature	/Jennifer Risser/		
Printed name	Jennifer Risser		
Date	November 18, 2010	Reg. No.	60,059

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature			
Typed or printed name		Date	

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/SB/22 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARMENT OF COMMERCE

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a) **FY 2009** (*Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).*)	Docket Number (Optional) 104US1
Application Number 11/093,409	Filed March 29, 2005
For Systems and Methods for Spinal Fusion	
Art Unit 3733	Examiner Elana Beth Fisher

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

		Fee	Small Entity Fee	
☐	One month (37 CFR 1.17(a)(1))	$130	$65	$
☐	Two months (37 CFR 1.17(a)(2))	$490	$245	$
☑	Three months (37 CFR 1.17(a)(3))	$1110	$555	$ 555
☐	Four months (37 CFR 1.17(a)(4))	$1730	$865	$
☐	Five months (37 CFR 1.17(a)(5))	$2350	$1175	$

☑ Applicant claims small entity status. See 37 CFR 1.27.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-2040.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).

☑ attorney or agent of record. Registration Number 60,059

☐ attorney or agent under 37 CFR 1.34.
Registration number if acting under 37 CFR 1.34 _____

/Jennifer Risser/ — Signature

November 18, 2010 — Date

Jennifer Risser — Typed or printed name

858-320-4537 — Telephone Number

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☑ Total of 1 forms are submitted.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
11/093,409	03/29/2005	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☒ RATE ($)	SMALL ENTITY ☒ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT 11/18/2010	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 26	Minus	** 26	= 0	X $26 =	0	OR	X $ =	
Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $110 =	0	OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

AMENDMENT	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/BURNELL L. ROSS/

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/093,409	03/29/2005	Matthew Curran	104US1	6640

30328 7590 10/08/2010

NuVasive
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Minneapolis, MN 55402

EXAMINER	
FISHER, ELANA BETH	
ART UNIT	**PAPER NUMBER**
3733	

MAIL DATE	DELIVERY MODE
10/08/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 11/093,409	**Applicant(s)** CURRAN ET AL.	
	Examiner ELANA B. FISHER	**Art Unit** 3733	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 20 September 2010 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:
   a) ☒ The period for reply expires *3* months from the mailing date of the final rejection.
   b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   (a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);
   (b) ☐ They raise the issue of new matter (see NOTE below);
   (c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: *See Continuation Sheet*. (See 37 CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☒ For purposes of appeal, the proposed amendment(s): a) ☒ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
   The status of the claim(s) is (or will be) as follows:
   Claim(s) allowed: _____.
   Claim(s) objected to: _____.
   Claim(s) rejected: *1-5 and 31-51*.
   Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☐ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.
12. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
13. ☐ Other: _____.

/Eduardo C. Robert/
Supervisory Patent Examiner, Art Unit 3733

/Elana B Fisher/
Examiner, Art Unit 3733

Continuation of 3. NOTE: The amendments to claims 1 and 35 setting first that there are three radiopaque markers along with the positions of the three radiopaque markers on the implant raise new issues that require further search and considereation.

DO NOT ENTER: /E.F./

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Matthew Curran	Art Unit:	3733
Serial No.:	11/093,409	Examiner:	Elana Beth Fisher
Filing Date:	March 29, 2005		
Title:	Systems and Methods for Spinal Fusion		

AMENDMENT AFTER FINAL REJECTION

Mail Stop Amendment
Commissioner for Patents
PO Box 1450
Alexandria VA 22313-1450

Dear Sir:

In response to the Office Action mailed May 18, 2010, please amend the above-identified application as set forth below. The shortened statutory period for reply was set to expire on August 18, 2010. A petition for extension of time for 1 month is submitted herewith, extending the period for reply to September 18, 2010 (which fell on a Saturday). Accordingly, this response is timely filed.

Amendments to the claims begin on page 2 of this paper.

Applicant Remarks begin on page 8 of this paper.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Matthew Curran	Art Unit:	3733
Serial No.:	11/093,409	Examiner:	Elana Beth Fisher
Filing Date:	March 29, 2005		
Title:	Systems and Methods for Spinal Fusion		

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Amendments to the claims begin on page 2 of this paper.

Applicant Remarks begin on page 8 of this paper.

IN THE CLAIMS:

1. (Currently Amended) A spinal fusion implant positionable within an interbody space between a first vertebral endplate and a second vertebral endplate, said interbody space being at least partially defined by a posterior aspect, [[and]] an anterior aspect, and opposing lateral aspects, the implant being positionable from a lateral approach to extend from one lateral aspect to the other, said implant comprising:

a top surface including a plurality of ridges to engage said first vertebral endplate when said implant is positioned within the interbody space, a bottom surface including a plurality of ridges to engage said second vertebral endplate when said implant is positioned within the interbody space, a distal side, a proximal side, a first side wall defining an anterior side when said implant is positioned within the interbody space, and a second side wall defining a posterior side when said implant is positioned within the interbody space;

wherein said implant has a length extending from said proximal side to said distal side, a width extending from said first side wall to said second side wall, and a height extending from said top surface to said bottom surface;

wherein said implant has a length extending from said proximal side to said distal side, a width extending from said first side wall to said second side wall, and height extending from said top surface to said bottom surface;

wherein said length is at least two and half times greater than said width;

wherein said width is greater than said height;

said implant further including first and second fusion apertures that each extend between the top and bottom surfaces and permit bone growth between the first vertebral endplate and the second vertebral endplate when said implant is positioned within the interbody space, said first and second fusion apertures being adjacent to one another and separated by a medial support extending parallel to said promixal and said distal sides and between said top and bottom surfaces;

said implant further including at least ~~one~~ three radiopaque ~~marker~~ markers situated between said top and bottom surfaces; wherein a first of the at least three radiopaque markers is disposed within said distal side of the implant, a second of the at least three radiopaque markers

is disposed within said proximal side and a third of the at least three radiopaque markers is disposed within said medial support.

2. (Previously Presented) The spinal fusion implant of Claim 1, wherein said implant is substantially radiolucent and composed of non-bone material.

3. (Previously Presented) The spinal fusion implant of Claim 1, wherein said implant includes at least one visualization aperture extending through at least one of said first side wall and said second side wall.

4. (Previously Presented) The spinal fusion implant of Claim 1, wherein the top and bottom surfaces of the implant are at least one of generally parallel with respect to each other, and generally angled with respect to each other to better match the natural curvature of the spine.

5. (Previously Presented) The spinal fusion implant of Claim 1, wherein said first and second fusion apertures are one of generally rectangular and generally oblong in shape.

6.-30. (Canceled)

31. (Previously Presented) The spinal fusion implant of Claim 1, further including at least one receiving element at least partially defined along said proximal side.

32. (Previously Presented) The spinal fusion implant of Claim 31, wherein said receiving element is engageable with an insertion instrument.

33. (Previously Presented) The spinal fusion implant of Claim 32, wherein said receiving element comprises a threaded aperture.

34. (Previously Presented) The spinal fusion implant of claim 33, wherein said receiving implant further comprises a slot extending from said threaded aperture.

35. (Currently Amended) A spinal fusion implant of non-bone construction ~~postionable~~ positionable via a lateral trans-psoas surgical approach to the spine into a position within an interbody space between a first vertebra and a second vertebra, said interbody space being at least partially defined by a posterior aspect, [[and]] an anterior aspect, and opposing lateral aspects, said implant comprising:

a top surface to contact said first vertebra when said implant is positioned within the interbody space, a bottom surface to contact said second vertebra when said implant is positioned within the interbody space, a distal side, a proximal side, a first side to face said anterior aspect of said disc space when said implant is positioned within the interbody space and a second side to face said posterior aspect of said disc space when said implant is positioned within the interbody space, wherein said implant is generally rectangular in shape having a length extending from said proximal side to said distal side of at least 40mm, a width extending from said first side to said second side of at least 15mm, and a height extending from said top surface to said bottom surface ranging from 8mm to 16mm, said implant further including a pair of fusion apertures comprising one of a generally rectangular and generally oblong shape and extending between said top surface and bottom surface to permit bone growth between the first vertebra and the second vertebra, said pair of fusion apertures being separated by a medial support extending parallel to aid proximal and said distal sides and between said top and bottom surfaces, said implant further including [[a]] at least ~~one~~ three radiopaque ~~marker~~ markers situated between said top and bottom surfaces; wherein a first of the at least three radiopaque markers is disposed within said distal side, a second of said at least three radiopaque markers is disposed within said proximal side and a third of said at least three radiopaque markers is disposed within said medial support.

36. (Previously Presented) The implant of Claim 31, wherein said non-bone material is one of PEEK and PEKK.

37. (Previously Presented) The implant of Claim 31, wherein said implant includes at least one visualization aperture extending through at least one of said posterior side and said lateral side.

38. (Previously Presented) The implant of Claim 31, wherein a portion of said implant adjacent said distal side is tapered.

39. (Previously Presented) The implant of Claim 31, further including at least one anti-migration features comprising at least one of a set of ridges formed in the top surface, a set of ridges formed in the bottom surface, a set of ridges on the top and bottom surfaces, one or more spike elements protruding from the top surface, one or more spike elements protruding from the bottom surface, and one or more spike elements protruding from the top and bottom surface.

40. (Previously Presented) The spinal fusion implant of Claim 35, further including at least one receiving element at least partially defined along said proximal side.

41. (Previously Presented) The spinal fusion implant of Claim 40, wherein said receiving element is engageable with an insertion instrument.

42. (Previously Presented) The spinal fusion implant of claim 41, wherein said receiving element comprises a threaded aperture.

43. (Previously Presented) The spinal fusion implant of Claim 42, wherein said receiving implant further comprises a slot extending from said threaded aperture.

44. (Previously Presented) The spinal fusion implant of Claim 37, wherein said spinal fusion implant includes exactly four visualization apertures in communication with a first of said fusion apertures from said pair of fusion apertures and exactly four visualization apertures in communication with a second of said fusion apertures from said pair of fusion apertures.

45. (Previously Presented) The spinal fusion implant of Claim 44, wherein two of said visualization in communication with said first fusion aperture are situated in said first side, two of said fusion apertures in communication with said first fusion aperture are situated in said second side, two of said visualization apertures in communication with said second fusion

aperture are situated in said first side, and two of said fusion apertures in communication with said second fusion aperture are situated in said second side.

46. (Previously Presented) The spinal fusion implant of Claim 37, wherein said spinal fusion implant includes exactly six visualization apertures in communication with a first of said fusion apertures from said pair of fusion apertures and exactly six visualization apertures in communication with a second fo said fusion apertures from said pair of fusion apertures.

47. (Previously Presented) The spinal fusion implant of Claim 46, wherein three of said visualization apertures in communication with said first fusion aperture are situated in said first side, three of said fusion apertures in communication with said first fusion aperture are situated in said second side, three of said visualization apertures in communication with said second fusion aperture are situated in said first side, and three of said fusion apertures in communication with said second fusion aperture are situated in said second side.

48. (Previously Presented) The spinal fusion implant of claim 1, wherein said spinal fusion implant includes exactly four visualization apertures in communication with said first fusion aperture and exactly four visualization apertures in communication with said second fusion aperture.

49. (Previously Presented) The spinal fusion implant of claim 48, wherein two of said visualization apertures in communication with said first fusion aperture are situated in said first side, two of said fusion apertures in communication with said first fusion aperture are situated in said second side, two of said visualization apertures in communication with said second fusion aperture are situated in said first side, and two of said fusion apertures in communication with said second fusion aperture is situated in said second side.

50. (Currently Amended) The spinal fusion implant of Claim 1, wherein said spinal fusion implant includes exactly six visualization apertures in communication with said first fusion aperture and exactly six visualization apertures in communication with said second fusion aperture.

51. (Previously Presented) The spinal fusion implant of Claim 50, wherein three of said visualization apertures in communication with said first fusion aperture are situated in said first side, three of said fusion apertures in communication with said first fusion aperture are situated in said second side, three of said visualization apertures in communication with said second fusion aperture are situated in said first side, and three of said fusion apertures in communication with said second fusion aperture are situated in said second side.

REMARKS

In the Office Action mailed May 18, 2010, (the "Office Action"), claims 1-5 and 31-51 were rejected.

Claims 1-5 and 31-51 are currently pending. The independent claims have been amended to expediently advance prosecution on the merits without prejudice to pursue the subject matter as originally presented, for example, in a continuation. Applicants respectfully submit that all pending claims are in condition for allowance and an indication to that effect is respectfully requested.

Claim rejections – 35 U.S.C. § 103(a)

Claims 1-5 and 31-51 were rejected under 35 USC §103(a) as being unpatentable over Michelson (US Patent 5,860,973) in view of Boriani et al. (US Patent 6,159,211) and Kuntz (US Patent 4,349,921) for reasons as set forth in detail on pages 2-5 of the Office Action. The instant amendment addresses this issue.

The claims have been amended to include at least three radiopaque markers, a first disposed within the distal side of the implant, a second disposed within the proximal side of the implant and a third within the medial support portion of the implant. Support for the amendments can be found, for example, on pages 13-14 of the specification as filed and Fig. 21. Applicants respectfully submit that the Michelson reference does not teach a spinal fusion implant, positionable from a lateral approach to extend from one lateral aspect of an interbody space to the other, having at least three radiopaque markers disposed within the distal, proximal and medial portions of the implant, respectively. Further, neither the Boriani nor the Kuntz reference cures this defect. Therefore, Applicant respectfully requests that the rejection under 35 USC §103(a) be properly withdrawn.

CONCLUSION

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment. Reconsideration and allowance of the claims in this application is respectfully requested. In the event that there are any questions concerning this Amendment or the application in general, the Examiner is cordially invited to telephone the attorney of record so that prosecution may be expedited.

Respectfully submitted,
NUVASIVE, INC.

By: /Jennifer Risser/
Jennifer Risser, Esq.
Registration No. 60,059
Tel. (858) 320-4537

7475 Lusk Boulevard
San Diego, CA 92121

September 20, 2010

Electronic Patent Application Fee Transmittal

Application Number:	11093409
Filing Date:	29-Mar-2005
Title of Invention:	Systems and methods for spinal fusion
First Named Inventor/Applicant Name:	Matthew Curran
Filer:	Jennifer Lynn Risser
Attorney Docket Number:	104US1

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 1 month with $0 paid	2251	1	65	65

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**65**

Electronic Acknowledgement Receipt

EFS ID:	8458355
Application Number:	11093409
International Application Number:	
Confirmation Number:	6640
Title of Invention:	Systems and methods for spinal fusion
First Named Inventor/Applicant Name:	Matthew Curran
Customer Number:	30328
Filer:	Jennifer Lynn Risser
Filer Authorized By:	
Attorney Docket Number:	104US1
Receipt Date:	20-SEP-2010
Filing Date:	29-MAR-2005
Time Stamp:	20:34:54
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$65
RAM confirmation Number	6387
Deposit Account	502040
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Transmittal Letter	2010-09-20-Transmittal104US1.pdf	262380 6a22bb5cb2864721afb79f6ff43bda127ff76c32	no	2
Warnings:					
Information:					
2	Extension of Time	2010-09-20-EOT104US1.pdf	302065 3cf477b4da855371a4ce41375643514be62a7c63	no	2
Warnings:					
Information:					
3		2010-09-20-RAF104US1.pdf	45731 2f0107523521acb861ffa11a29bdb17e54d51c3a	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment After Final	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	9

Warnings:					
Information:					
4	Fee Worksheet (PTO-875)	fee-info.pdf	29480 f5fe3a6da103a773a3c70ff89acbd284c3dc9e99	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	639656	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: TRAN.LET

Document Description: Transmittal Letter

PTO/SB/21 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	11/093,409
Filing Date	March 29, 2005
First Named Inventor	Matthew Curran
Art Unit	3733
Examiner Name	Elana Beth Fisher
Attorney Docket Number	104US1

Total Number of Pages in This Submission: 11

ENCLOSURES (*Check all that apply*)

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☑ Amendment/Reply
  - ☑ After Final
  - ☐ Affidavits/declaration(s)
- ☑ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) _____
  - ☐ Landscape Table on CD
- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☐ Other Enclosure(s) (please Identify below):

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	NuVasive Inc.		
Signature	/Jennifer Risser/		
Printed name	Jennifer Risser		
Date	September 20, 2010	Reg. No.	60,059

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature			
Typed or printed name		Date	

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/SB/22 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARMENT OF COMMERCE

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a) **FY 2009** (*Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).*)	Docket Number (Optional)
Application Number	Filed
For	
Art Unit	Examiner

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	
☐ One month (37 CFR 1.17(a)(1))	$130	$65	$_____
☐ Two months (37 CFR 1.17(a)(2))	$490	$245	$_____
☐ Three months (37 CFR 1.17(a)(3))	$1110	$555	$_____
☐ Four months (37 CFR 1.17(a)(4))	$1730	$865	$_____
☐ Five months (37 CFR 1.17(a)(5))	$2350	$1175	$_____

☐ Applicant claims small entity status. See 37 CFR 1.27.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☐ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number _____.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).

☐ attorney or agent of record. Registration Number _____

☐ attorney or agent under 37 CFR 1.34.
Registration number if acting under 37 CFR 1.34 _____

_____ _____
Signature Date

_____ _____
Typed or printed name Telephone Number

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☐ Total of _____ forms are submitted.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/SB/22 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARMENT OF COMMERCE

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a) **FY 2009** *(Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).)*	Docket Number (Optional) 104451
Application Number 11/093,409	Filed
For Systems and methods for spinal fusion	
Art Unit 3733	Examiner

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	
☑ One month (37 CFR 1.17(a)(1))	$130	$65	$ 65
☐ Two months (37 CFR 1.17(a)(2))	$490	$245	$
☐ Three months (37 CFR 1.17(a)(3))	$1110	$555	$
☐ Four months (37 CFR 1.17(a)(4))	$1730	$865	$
☐ Five months (37 CFR 1.17(a)(5))	$2350	$1175	$

☐ Applicant claims small entity status. See 37 CFR 1.27.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-2040.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).

☑ attorney or agent of record. Registration Number 60,859

☐ attorney or agent under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

Signature	Date
	9/20/2010
Typed or printed name	Telephone Number
Jennifer Risser	858-320-4537

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☑ Total of 1 forms are submitted.

Electronic Acknowledgement Receipt

EFS ID:	8458447
Application Number:	11093409
International Application Number:	
Confirmation Number:	6640
Title of Invention:	Systems and methods for spinal fusion
First Named Inventor/Applicant Name:	Matthew Curran
Customer Number:	30328
Filer:	Jennifer Lynn Risser
Filer Authorized By:	
Attorney Docket Number:	104US1
Receipt Date:	20-SEP-2010
Filing Date:	29-MAR-2005
Time Stamp:	20:57:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Extension of Time	2010-09-20-EOT104US1.pdf	40855 65e8593bfefbc152c79e521b5c531de16bcdabc9	no	1

Warnings:

The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing

Information:

Total Files Size (in bytes):	40855

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
11/093,409	03/29/2005	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☒ RATE ($)	SMALL ENTITY ☒ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT 09/20/2010	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 26	Minus	** 26	= 0	X $26 =	0	OR	X $ =	
Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $110 =	0	OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

AMENDMENT	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/DAWN BREWER/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/093,409	03/29/2005	Matthew Curran	104US1	6640

30328 7590 05/18/2010

NuVasive
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

EXAMINER	
FISHER, ELANA BETH	

ART UNIT	PAPER NUMBER
3733	

MAIL DATE	DELIVERY MODE
05/18/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	11/093,409	CURRAN ET AL.	
	Examiner	Art Unit	
	ELANA B. FISHER	3733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 March 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 31-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 31-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5 and 31-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michelson (U.S. Patent 5,860,973) in view of Boriani et al. (U.S. Patent 6,159,211) and Kuntz (U.S. Patent 4,349,921).

Michelson discloses a spinal fusion implant (900) positionable from a lateral approach to extend from one lateral aspect to the other that is generally rectangular in shape and comprising parallel top and bottom surfaces (902, 904) comprising a plurality of ridges (FIG 16), a tapered distal side, a proximal side, and first and second sidewalls (see diagram provided), such that a length extends between the distal and proximal sides, a width extends between the first and second sidewalls, and a height extends between the top and bottom surfaces (902, 904). The length is at least 40mm, the width is at least 15mm and the height is in the range of 8mm to 16mm (Column 10, lines 42-47). Additionally, the implant includes at least one visualization aperture extending through at least one of the first and second sidewalls (FIG 16).

However, Michelson fails to disclose that the spinal fusion implant (900) includes first and second fusion apertures extending between the top and bottom surfaces. Boriani et al. disclose a spinal fusion implant (12) comprising top and bottom surfaces (14, 16)

including first and second fusion apertures (20) that are adjacent to one another and separated by a medial support (28) extending parallel to proximal and distal sides (18) and between the top and bottom surfaces (FIG 1). The apertures are generally rectangular and oblong in shape. It therefore would have been obvious to one skilled in the art to modify the spinal fusion implant taught by Michelson by adding fusion apertures that extend between the top and bottom surfaces, as is taught by Boriani et al., because the apertures and the medial support promote fusion of upper and lower vertebrae to one another via the addition of packed bone graft material (Boriani et al.; Column 4, line 10-13).

Michelson additionally discloses that the implant (900) includes exactly four or six visualization apertures (906) in communication with a first of said fusion apertures from said pair of fusion apertures and exactly four or visualization apertures (906) in communication with a second of said fusion apertures from said pair of fusion apertures. Two or three of said visualization apertures (906) in communication with said first fusion aperture are situated in said first side, two or three of said visualization apertures (906) in communication with said first fusion aperture are situated in said second side, two or three of said visualization apertures (906) in communication with said second fusion aperture are situated in said first side, and two or three of said visualization apertures (906) in communication with said second fusion aperture are situated in said second side (FIG 16; Column 10)

Michelson further fails to disclose that the implant (900) comprises a least one receiving element. Boriani et al. disclose a spinal fusion implant (12) that additionally

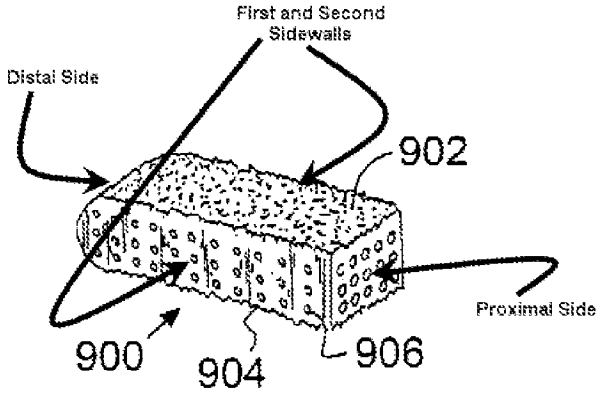
comprising a least one receiving element (22) comprising a threaded aperture engagable with an insertion instrument and a slot extending from the threaded aperture (FIG 7). It therefore would have been obvious to one skilled in the art to modify the implant taught by Michelson by having at least one receiving element along its proximal side, as is taught by Boriani et al., because it allows for an insertion instrument to securely attach to the implant for controlled insertion into the disc space.

Additionally, Michelson fails to disclose the specific material of the implant. Boriani et al. disclose a spinal implant (12) that is made of a radiolucent material (Column 2). Additionally, Kuntz discloses a spinal implant (10) made of a radiolucent material, such as high density polyethylene that additionally comprises a radiopaque marker (Column 7, lines 52-60). It therefore would have been obvious to one skilled in the art to modify the implant taught by Michelson such that it is made up of a radiolucent material and also comprises a radiopaque marker between the top and bottom surfaces, as is taught by Boriani et al. and Kuntz, because the radiolucent material has "high strength and durability" and the radiopaque marker allows for “the position of the posthesis be confirmed radiologically" (Kuntz; Column 7, lines 52-60).

Michelson in view of Boriani et al. and Kuntz further fail to disclose that the length of the implant is at least two and a half times greater that the width of the implant. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the length be at least two and a half times greater than the width, since it has been held that discovering an optimum value of a result effective

variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Finally, Michelson in view of Kuntz et al. and Kuntz fail to disclose that the implant is made of one of PEEK and PEKK. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the material of the implant be one of PEEK and PEKK, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.



Response to Arguments

3. Applicant's arguments with respect to claims 1-5 and 31-43 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELANA B. FISHER whose telephone number is (571)270-3643. The examiner can normally be reached on Monday through Friday from 8:30AM to 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eduardo Robert can be reached on (571)272-4719. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elana B Fisher/
Examiner, Art Unit 3733
/Eduardo C. Robert/
Supervisory Patent Examiner, Art Unit 3733

Notice of References Cited	Application/Control No. 11/093,409	Applicant(s)/Patent Under Reexamination CURRAN ET AL.	
	Examiner ELANA B. FISHER	Art Unit 3733	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,860,973	01-1999	Michelson, Gary Karlin	606/247
*	B	US-4,349,921	09-1982	Kuntz, J. David	623/17.16
*	C	US-6,830,570	12-2004	Frey et al.	623/17.16
*	D	US-6,113,638	09-2000	Williams et al.	128/898
*	E	US-6,159,211	12-2000	Boriani et al.	606/279
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11093409	CURRAN ET AL.
	Examiner	**Art Unit**
	Cumberledge, Jerry	3733

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	02/12/2007	02/27/2008	09/12/2008	08/16/2009	05/15/2010				
	1	÷	✓	✓	✓	✓				
	2	÷	✓	✓	✓	✓				
	3	÷	✓	✓	✓	✓				
	4	÷	✓	✓	✓	✓				
	5	÷	✓	✓	✓	✓				
	6	÷	✓	-	-	-				
	7	÷	✓	-	-	-				
	8	÷	✓	-	-	-				
	9	÷	✓	-	-	-				
	10	÷	✓	-	-	-				
	11	÷	✓	✓	-	-				
	12	÷	✓	✓	-	-				
	13	÷	✓	✓	-	-				
	14	÷	N	N	-	-				
	15	÷	N	N	-	-				
	16	÷	N	N	-	-				
	17	÷	N	N	-	-				
	18	÷	N	N	-	-				
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	22	÷	N	-	-	-				
	23	÷	N	-	-	-				
	24	÷	N	N	-	-				
	25	÷	N	N	-	-				
	26	÷	N	N	-	-				
	27			✓	-	-				
	28			✓	-	-				
	29			N	-	-				
	30			N	-	-				
	31				✓	✓				
	32				✓	✓				
	33				✓	✓				
	34				✓	✓				
	35				✓	✓				
	36				✓	✓				

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11093409	CURRAN ET AL.
	Examiner	**Art Unit**
	Cumberledge, Jerry	3733

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	02/12/2007	02/27/2008	09/12/2008	08/16/2009	05/15/2010				
	37				✓	✓				
	38				✓	✓				
	39				✓	✓				
	40				✓	✓				
	41				✓	✓				
	42				✓	✓				
	43				✓	✓				
	44					✓				
	45					✓				
	46					✓				
	47					✓				
	48					✓				
	49					✓				
	50					✓				
	51					✓				

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11093409	CURRAN ET AL.
	Examiner	Art Unit
	JERRY CUMBERLEDGE	3733

SEARCHED

Class	Subclass	Date	Examiner
623	17.11-17.16	2/27/2008	JLC
606	99	2/27/2008	JLC
	Updated Search	9/12/2008	JLC
	Above Updated	08/16/2009	EF
	Above Updated	05/15/2010	EF

SEARCH NOTES

Search Notes	Date	Examiner
Inventor Name Search Performed	2/27/2008	JLC
EAST classification search	08/16/2009	EF
EAST citation search	08/16/2009	EF
EAST text search	08/16/2009	EF
IDS reference search in EAST	08/16/2009	EF
Above Updated	05/15/2010	EF

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner

/ELANA B FISHER/ Examiner.Art Unit 3733	

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Matthew Curran	Art Unit:	3733
Serial No.:	11/093,409	Examiner:	Elana Beth Fisher
Filing Date:	March 29, 2005		
Title:	Systems and Methods for Spinal Fusion		

Certificate of Transmission: I hereby certify that this paper or fee is being transmitted to the USPTO via EFS-Web on March 1, 2010.

Signature: /Rory Schermerhorn

Name: Rory Schermerhorn

RESPONSIVE AMENDMENT

Mail Stop Amendment
Commissioner for Patents
PO Box 1450
Alexandria VA 22313-1450

Dear Sir:

In response to the Final Office Action mailed on August 27, 2009, having a three-month shortened period for response that expired on February 27, 2010, please amend the application as follows:

IN THE CLAIMS:

1. (Currently Amended) A spinal fusion implant positionable within an interbody space between a first vertebral endplate and a second vertebral endplate, said interbody space being at least partially defined by a posterior aspect, and anterior aspect, and opposing lateral aspects, the implant being positionable from a lateral approach to extend from one lateral aspect to the other, said implant comprising:

a top surface including a plurality of ridges to engage said first vertebral endplate when said implant is positioned within the interbody space, a bottom surface including a plurality of ridges to engage said second vertebral endplate when said implant is positioned within the interbody space, a distal side, a proximal side, a first side wall defining an anterior side when said implant is positioned within the interbody space, and a second side wall defining a posterior side when said implant is positioned within the interbody space;

wherein said implant has a length extending from said proximal side to said distal side, a width extending from said first side wall to said second side wall, and a height extending from said top surface to said bottom surface;

wherein said length is ~~so dimensioned as to extend between said lateral aspects of said interbody space when said implant is positioned within the interbody space and is~~ at least two and a half times greater than said width;

wherein said width is greater than said height;

said implant further including first and second fusion apertures that each extend between the top and bottom surfaces and permit bone growth between the first vertebral endplate and the second vertebral endplate when said implant is positioned within the interbody space, said first and second fusion apertures being adjacent to one another and separated by a medial support extending parallel to said proximal and said distal sides and between said top and bottom surfaces;

said implant further including at least one radiopaque marker situated between said top and bottom surfaces.

2. (Previously Presented) The spinal fusion implant of Claim 1, wherein said implant is substantially radiolucent and composed of non-bone material.

3. (Previously Presented) The spinal fusion implant of Claim 1, wherein said implant includes at least one visualization aperture extending through at least one of said first side wall and said second side wall.

4. (Previously Presented) The spinal fusion implant of Claim 1, wherein the top and bottom surfaces of the implant are at least one of generally parallel with respect to each other, and generally angled with respect to each other to better match the natural curvature of the spine.

5. (Previously Presented) The spinal fusion implant of Claim 1, wherein said first and second fusion apertures are one of generally rectangular and generally oblong in shape.

6– 30. (Cancelled)

31. (Previously Presented) The Spinal fusion implant of claim 1, further including at least one receiving element at least partially defined along said proximal side.

32. (Previously Presented) The spinal fusion implant of claim 31, wherein said receiving element is engageable with an insertion instrument.

33. (Previously Presented) The spinal fusion implant of claim 32, wherein said receiving element comprises a threaded aperture.

34. (Previously Presented) The spinal fusion implant of claim 33, wherein said receiving implant further comprises a slot extending from said threaded aperture.

35. (Currently Amended) A spinal fusion implant of non-bone construction postionable via a lateral trans-psoas surgical approach to the spine into a position within an interbody space between a first vertebra and a second vertebra, ~~wherein~~ said interbody space being at least partially defined by a posterior aspect, and anterior aspect, and opposing lateral aspects, said implant comprising:

a top surface to contact said first vertebra when said implant is positioned within the interbody space, a bottom surface to contact said second vertebra when said implant is positioned within the interbody space, a distal side, a proximal side, a first side to face said anterior aspect of said disc space when said implant is positioned within the interbody space and a second side to face said posterior aspect of said disc space when said implant is positioned within the interbody space, wherein said implant is generally rectangular in shape having a length extending from said proximal side to said distal side of at least 40mm, a width extending from said first side to said second side of at least 15mm, and a height extending from said top surface to said bottom surface ranging from 8mm to 16mm, said implant further including a pair fusion apertures comprising one of a generally rectangular and generally oblong shape and extending between said top surface and bottom surface to permit bone growth between the first vertebra and the second vertebra, <u>said pair of fusion apertures being separated by a medial support extending parallel to said proximal and said distal sides and between said top and bottom surfaces,</u> said implant further including a at least one radiopaque marker situated between said top and bottom surfaces.

36. (Previously Presented) The implant of claim 31, wherein said non-bone material is one of PEEK and PEKK.

37. (Previously Presented) The implant of claim 31, wherein said implant includes at least one visualization aperture extending through at least one of said posterior side and said lateral side.

38. (Previously Presented) The implant of claim 31, wherein a portion of said implant adjacent said distal side is tapered.

39. (Previously Presented) The implant of claim 31, further including at least one anti-migration features comprising at least one of a set of ridges formed in the top surface, a set of ridges formed in the bottom surface, a set of ridges on the top and bottom surfaces, one or more spike elements protruding from the top surface, one or more spike elements protruding from the bottom surface, and one or more spike elements protruding from the top and bottom surface.

40. (Previously Presented) The spinal fusion implant of claim 35, further including at least one receiving element at least partially defined along said proximal side.

41. (Previously Presented) The spinal fusion implant of claim 40, wherein said receiving element is engageable with an insertion instrument.

42. (Previously Presented) The spinal fusion implant of claim 41, wherein said receiving element comprises a threaded aperture.

43. (Previously Presented) The spinal fusion implant of claim 42, wherein said receiving implant further comprises a slot extending from said threaded aperture.

44. (New) The spinal fusion implant of claim 37, wherein said spinal fusion implant includes exactly four visualization apertures in communication with a first of said fusion apertures from said pair of fusion apertures and exactly four visualization apertures in communication with a second of said fusion apertures from said pair of fusion apertures.

45. (New) The spinal fusion implant of claim 44, wherein two of said visualization apertures in communication with said first fusion aperture are situated in said first side, two of said fusion apertures in communication with said first fusion aperture are situated in said second side, two of said visualization apertures in communication with said second fusion aperture are situated in

said first side, and two of said fusion apertures in communication with said second fusion aperture are situated in said second side.

46. (New) The spinal fusion implant of claim 37, wherein said spinal fusion implant includes exactly six visualization apertures in communication with a first of said fusion apertures from said pair of fusion apertures and exactly six visualization apertures in communication with a second of said fusion apertures from said pair of fusion apertures.

47. (New) The spinal fusion implant of claim 46, wherein three of said visualization apertures in communication with said first fusion aperture are situated in said first side, three of said fusion apertures in communication with said first fusion aperture are situated in said second side, three of said visualization apertures in communication with said second fusion aperture are situated in said first side, and three of said fusion apertures in communication with said second fusion aperture are situated in said second side.

48. (New) The spinal fusion implant of claim 1, wherein said spinal fusion implant includes exactly four visualization apertures in communication with said first fusion aperture and exactly four visualization apertures in communication with said second fusion aperture.

49. (New) The spinal fusion implant of claim 48, wherein two of said visualization apertures in communication with said first fusion aperture are situated in said first side, two of said fusion apertures in communication with said first fusion aperture are situated in said second side, two of said visualization apertures in communication with said second fusion aperture are situated in said first side, and two of said fusion apertures in communication with said second fusion aperture are situated in said second side.

50. (New) The spinal fusion implant of claim 1, wherein said spinal fusion implant includes exactly six visualization apertures in communication with said first fusion aperture and exactly six visualization apertures in communication with said second fusion.

51. (New) The spinal fusion implant of claim 50, wherein three of said visualization apertures in communication with said first fusion aperture are situated in said first side, three of said fusion apertures in communication with said first fusion aperture are situated in said second side, three of said visualization apertures in communication with said second fusion aperture are situated in said first side, and three of said fusion apertures in communication with said second fusion aperture are situated in said second side.

REMARKS

Claims 1 and 31 have been amended and new claims 44-51 have been added. The independent claims have been amended to expediently advance prosecution on the merits without prejudice to pursue the subject matter as originally presented, for example, in a continuation. No new subject matter has been added.

Accordingly, claims 1-5 and 31-51are currently pending. Applicants respectfully submit that all pending claims are in condition for allowance and an indication to that effect is respectfully requested.

Claim Rejections- 35 U.S.C. 103(a) Michelson, Frey, and Kuntz

Claims 1-5, 31-34, and 48-51

Claim 1 and particular dependents were rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,860,973 to Michelson ("Michelson") in view of US Patent 6,830,570 to Frey et al. ("Frey") and US Patent 4,349,921 to Kuntz et al. ("Kuntz"). The Applicants respectfully submit that even if there was an articulated reason that would have prompted a skilled artisan to combine these references as proposed in the Office Action (an issue that is not conceded herein), the proposed combination of Michelson, Frey, and Kuntz would nevertheless fail to disclose all the elements of claim 1.

Unlike claim 1, none of the Michelson, Frey, or Kuntz references discloses "first and second fusion apertures being adjacent to one another and separated by a **medial support extending parallel to said proximal and said distal sides and between said top and bottom surfaces**." Indeed, the Office Action does not contend that Michelson or Kuntz provides such teaching. Instead the Office Action relies on the Frey reference for disclosure of "fusion apertures (1018a, 1018b, 1020a, 1020b) that are adjacent each other and separated by a medial support (1019, 1024)." (*See* Office Action at pp. 3.) Applicants respectfully submit that Frey fails to disclose the claimed structure. Instead, Frey includes "upper openings 1018a and 1018b separated by an **upper strut** 1019," and "lower openings 1020a and 1020b separated by a **lower strut** 1021," neither of which extend between the top and bottom surfaces as required by claim 1. Furthermore, neither of the upper strut or lower strut are parallel to the proximal and distal

ends.

Accordingly, the subject matter of claim 1 is patentable over Michelson, Frey, Kuntz and all other references cited in the record. Dependent claims 2-5, 31-34, and 48-51 are patentable for at least the same reasons as claim 1 and for the additional inventive combinations described therein.

Claims 35-47

Claim 35 and particular dependents were rejected under 35 U.S.C. 103(a) as being unpatentable over Michelson in view of Frey and Kuntz. The Applicants respectfully submit that even if there was an articulated reason that would have prompted a skilled artisan to combine these references as proposed in the Office Action (an issue that is not conceded herein), the proposed combination of Michelson, Frey, and Kuntz would nevertheless fail to disclose all the elements of claim 35.

Unlike claim 1, none of the Michelson, Frey, or Kuntz references discloses "first and second fusion apertures being adjacent to one another and separated by a "pair of fusion apertures being separated by a **medial support extending parallel to said proximal and said distal sides and between said top and bottom surfaces**." As noted above, the Office Action does not contend that Michelson or Kuntz provide such a teaching, relying instead upon on the Frey reference. (*See* Office Action at pp. 3.) Applicants respectfully submit that neither of the "**upper strut**" and "**lower strut**" which the Office Action points to for the teaching of a medial support extend between the top and bottom surfaces as required by claim 35. Furthermore, neither of the upper strut or lower strut are parallel to the proximal and distal ends as also required by claim 35.

Accordingly, the subject matter of claim 35 is patentable over Michelson, Frey, Kuntz and all other references cited in the record. Dependent claims 36-47 are patentable for at least the same reasons as claim 1 and for the additional inventive combinations described therein.

Conclusion

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment. Applicants specifically reserve the right to pursue the subject matter of independent claims 1 and 35 (prior to amendment herein) in a continuing application.

The foregoing amendments have been submitted to place the present application in condition for allowance. Prompt allowance of claims 1-5 and 31-51 is earnestly solicited. Applicants hereby authorizes a payment of the $555.00 fee for the 3 month Extension of Time Request to be charged to Deposit Account No.: 50-2040 for Customer No.: 30,328. The Applicants have previously paid fees for a total of 26 claims. With the addition of 8 new claims the number of claims now stands at 26. As such, no other fees are believed to be due at this time, however, in the event that there are any additional fees to be charged or payments to be credited, the Applicants hereby request that any charges or credits be made to Deposit Account No.: 50-2040 for Customer No.: 30,328. In the event that there are any questions concerning this Amendment or the application in general, the Examiner is cordially invited to telephone the undersigned attorney so that prosecution may be expedited.

Respectfully submitted,

Date: March 1, 2010

/Rory Schermerhorn/
Rory Schermerhorn, Esq.
Registration No. 58,148

NuVasive, Inc.
7475 Lusk Boulevard
San Diego, CA 92121
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Electronic Patent Application Fee Transmittal

Application Number:	11093409
Filing Date:	29-Mar-2005
Title of Invention:	Systems and methods for spinal fusion
First Named Inventor/Applicant Name:	Matthew Curran
Filer:	Rory A. Schermerhorn
Attorney Docket Number:	104US1

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 3 months with $0 paid	2253	1	555	555

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**555**

Electronic Acknowledgement Receipt

EFS ID:	7118168
Application Number:	11093409
International Application Number:	
Confirmation Number:	6640
Title of Invention:	Systems and methods for spinal fusion
First Named Inventor/Applicant Name:	Matthew Curran
Customer Number:	30328
Filer:	Rory A. Schermerhorn
Filer Authorized By:	
Attorney Docket Number:	104US1
Receipt Date:	02-MAR-2010
Filing Date:	29-MAR-2005
Time Stamp:	01:12:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$555
RAM confirmation Number	8542
Deposit Account	502040
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)					
File Listing:					
Document Number	**Document Description**	**File Name**	**File Size(Bytes)/ Message Digest**	**Multi Part /.zip**	**Pages (if appl.)**
1		104US1RA_3-1-10_f.pdf	53132 8069fa6697d52b08de5a007c3f55e1e6fbf25628	yes	10
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
	Claims		2	7	
	Applicant Arguments/Remarks Made in an Amendment		8	10	
Warnings:					
Information:					
2	Fee Worksheet (PTO-875)	fee-info.pdf	29367 0c3b64b140e2b512f3e8334afa3b8e7213e9dd4b	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	82499		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/093,409	03/29/2005	Matthew Curran	104US1	6640

30328 7590 08/27/2009

NuVasive
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P.O. Box 52050
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EXAMINER	
FISHER, ELANA BETH	
ART UNIT	**PAPER NUMBER**
3733	

MAIL DATE	DELIVERY MODE
08/27/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	11/093,409	CURRAN ET AL.	
	Examiner	Art Unit	
	ELANA B. FISHER	3733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 31-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 31-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/21/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 21, 2009 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5 and 31-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michelson (U.S. Patent 5,860,973) in view of Frey et al. (U.S. Patent 6,830,570) and Kuntz (U.S. Patent 4,349,921).

Michelson discloses a spinal fusion implant (900) that is generally rectangular in shape and comprising parallel top and bottom surfaces (902, 904) comprising a plurality of ridges (FIG 16), a tapered distal side, a proximal side, and first and second sidewalls (see diagram provided), such that a length extends between the distal and proximal sides, a width extends between the first and second sidewalls, and a height extends between the top and bottom surfaces (902, 904). The length is at least 40mm, the width is at least 15mm and the height is in the range of 8mm to 16mm (Column 10, lines 42-47).

Additionally, the implant includes at least one visualization aperture extending through at least one of the first and second sidewalls (FIG 16).

However, Michelson fails to disclose that the spinal fusion implant (900) includes first and second fusion apertures extending between the top and bottom surfaces. Frey et al. disclose a spinal fusion implant (1000) comprising top and bottom surfaces (1010, 1012) including first and second fusion apertures (1018a, 1018b, 1020a, 1020b) that are adjacent to one another and separated by a medial support (1019, 1024), the apertures being generally rectangular and oblong in shape. It therefore would have been obvious to one skilled in the art to modify the spinal fusion implant taught by Michelson by adding fusion apertures that extend between the top and bottom surfaces, as is taught by Frey et al., because the apertures promote fusion of upper and lower vertebrae to one another (Frey et al.; Column 17, line 40).

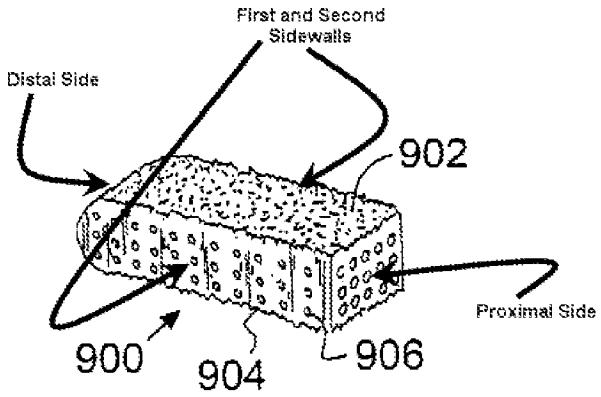
Michelson further fails to disclose that the implant (900) comprises a least one receiving element. Frey et al. disclose a spinal fusion implant (1000) that additionally comprising a least one receiving element (1044) comprising a threaded aperture engagable with an insertion instrument and a slot (1046) extending from the threaded aperture. It therefore would have been obvious to one skilled in the art to modify the implant taught by Michelson by having at least one receiving element (1044) along its proximal side, as is taught by Frey et al., because it allows for an insertion instrument to securely attach to the implant for controlled insertion into the disc space.

Additionally, Michelson in view of Frey et al. fail to disclose the specific material of the implant. Kuntz discloses a spinal implant (10) made of a radiolucent material, such

as high density polyethylene that additionally comprises a radiopaque marker (Column 7, lines 52-60). It therefore would have been obvious to one skilled in the art to modify the implant taught by Michelson in view of Frey et al. such that it is made up of a radiolucent material and also comprises a radiopaque marker between the top and bottom surfaces, as is taught by Kuntz, because the radiolucent material has "high strength and durability" and the radiopaque marker allows for "the position of the posthesis be confirmed radiologically" (Kuntz; Column 7, lines 52-60).

Michelson in view of Frey et al. and Kuntz further fail to disclose that the length of the implant is at least two and a half times greater that the width of the implant. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the length be at least two and a half times greater than the width, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Finally, Michelson in view of Frey et al. and Kuntz fail to disclose that the implant is made of one of PEEK and PEKK. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the material of the implant be one of PEEK and PEKK, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.



Response to Arguments

4. Applicant's arguments with respect to claims 1-5 and 31-43 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELANA B. FISHER whose telephone number is (571)270-3643. The examiner can normally be reached on Monday through Friday from 8:30AM to 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eduardo Robert can be reached on (571)272-4719. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elana B Fisher/
Examiner, Art Unit 3733

/Eduardo C. Robert/

Supervisory Patent Examiner, Art Unit 3733

Notice of References Cited	Application/Control No. 11/093,409	Applicant(s)/Patent Under Reexamination CURRAN ET AL.	
	Examiner ELANA B. FISHER	Art Unit 3733	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,860,973	01-1999	Michelson, Gary Karlin	606/247
*	B	US-4,349,921	09-1982	Kuntz, J. David	623/17.16
*	C	US-6,830,570	12-2004	Frey et al.	623/17.16
*	D	US-6,113,638	09-2000	Williams et al.	128/898
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

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	N					
	O					
	P					
	Q					
	R					
	S					
	T					

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	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11093409	CURRAN ET AL.
	Examiner	**Art Unit**
	Cumberledge, Jerry	3733

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	02/12/2007	02/27/2008	09/12/2008	08/16/2009					
	1	÷	✓	✓	✓					
	2	÷	✓	✓	✓					
	3	÷	✓	✓	✓					
	4	÷	✓	✓	✓					
	5	÷	✓	✓	✓					
	6	÷	✓	-	-					
	7	÷	✓	-	-					
	8	÷	✓	-	-					
	9	÷	✓	-	-					
	10	÷	✓	-	-					
	11	÷	✓	✓	-					
	12	÷	✓	✓	-					
	13	÷	✓	✓	-					
	14	÷	N	N	-					
	15	÷	N	N	-					
	16	÷	N	N	-					
	17	÷	N	N	-					
	18	÷	N	N	-					
	19	÷	N	-	-					
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	23	÷	N	-	-					
	24	÷	N	N	-					
	25	÷	N	N	-					
	26	÷	N	N	-					
	27			✓	-					
	28			✓	-					
	29			N	-					
	30			N	-					
	31				✓					
	32				✓					
	33				✓					
	34				✓					
	35				✓					
	36				✓					

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11093409	CURRAN ET AL.
	Examiner	**Art Unit**
	Cumberledge, Jerry	3733

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
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☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	02/12/2007	02/27/2008	09/12/2008	08/16/2009					
	37				✓					
	38				✓					
	39				✓					
	40				✓					
	41				✓					
	42				✓					
	43				✓					

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11093409	CURRAN ET AL.
	Examiner	Art Unit
	JERRY CUMBERLEDGE	3733

SEARCHED

Class	Subclass	Date	Examiner
623	17.11-17.16	2/27/2008	JLC
606	99	2/27/2008	JLC
	Updated Search	9/12/2008	JLC
	Above Updated	08/16/2009	EF

SEARCH NOTES

Search Notes	Date	Examiner
Inventor Name Search Performed	2/27/2008	JLC
EAST classification search	08/16/2009	EF
EAST citation search	08/16/2009	EF
EAST text search	08/16/2009	EF
IDS reference search in EAST	08/16/2009	EF

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner

/ELANA B FISHER/ Examiner.Art Unit 3733	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	11093409
Filing Date	2005-03-29
First Named Inventor	Matthew Curran
Art Unit	3733
Examiner Name	Jerry L. Cumberledge
Attorney Docket Number	104US1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4950296		1990-08-21	McIntyre, J. L.	
	2	5484437		1996-01-16	Michelson, Gary K.	
	3	5741253		1998-04-21	Michelson, Gary K.	
	4	5860973		1996-10-30	Michelson, Gary K.	
	5	6059829		2000-05-09	Schlapfer, F. et al.	
	6	6120503		2000-09-19	Michelson, Gary K.	
	7	6409766		2002-06-25	Brett, D. C.	
	8	6432140		2002-08-13	Lin, Chih-I	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /E.F./

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Application Number	11093409 11093409 - GAU: 3733
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First Named Inventor	Matthew Curran
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	9	6468311		2002-10-22	Boyd, L. M., et al.	
	10	6491724		2002-12-10	Ferree, B.	
	11	6672019		2004-01-06	Wenz, J. O.	
	12	6676703		2004-01-13	Biscup, R. S.	
	13	6706067		2004-03-16	Shimp, L. A., et al.	
	14	6743255		2004-06-01	Ferree, B.	
	15	6746484		2004-06-08	Liu, M. et al.	
	16	6761739		2004-07-13	Shepard, Y. D.	
	17	6824564		2004-11-30	Crozet, Y.	
	18	6942698		2005-09-13	Jackson, R. P.	
	19	6964687		2005-11-15	Bernard, P. M., et al.	

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	20	6979353		2005-12-27	Bresina, S.	
	21	6984245		2006-01-10	McGahan, T. V., et al.	
	22	6986788		2006-01-17	Paul, D. C., et al.	
	23	6989031		2006-01-24	Michelson, G. K.	
	24	7018416		2006-03-28	Hanson, D. A., et al.	
	25	D472634		2003-04-01	Anderson, B. G.	
	26	D473650		2003-04-22	Anderson, B. G.	
	27	D503801		2005-04-05	Jackson, R. P.	
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Examiner Signature	/Elana Fisher/	Date Considered	08/16/2009

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	28	D530423		2006-10-17	Miles, P. et al.	

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	Examiner Name	Jerry L. Cumberledge
	Attorney Docket Number	104US1

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First Named Inventor	Matthew Curran
Art Unit	3733
Examiner Name	Jerry L. Cumberledge
Attorney Docket Number	104US1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

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☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/roryschermerhorn/	Date (YYYY-MM-DD)	2009-01-21
Name/Print	Rory Schermerhorn	Registration Number	58148

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Electronic Patent Application Fee Transmittal

Application Number:	11093409
Filing Date:	29-Mar-2005
Title of Invention:	Systems and methods for spinal fusion
First Named Inventor/Applicant Name:	Matthew Curran
Filer:	Rory A. Schermerhorn
Attorney Docket Number:	104US1

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 1 month with $0 paid	2251	1	65	65

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Request for continued examination	2801	1	405	405
		Total in USD ($)		**470**

Electronic Acknowledgement Receipt

EFS ID:	4653620
Application Number:	11093409
International Application Number:	
Confirmation Number:	6640
Title of Invention:	Systems and methods for spinal fusion
First Named Inventor/Applicant Name:	Matthew Curran
Customer Number:	30328
Filer:	Rory A. Schermerhorn
Filer Authorized By:	
Attorney Docket Number:	104US1
Receipt Date:	21-JAN-2009
Filing Date:	29-MAR-2005
Time Stamp:	21:11:50
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$470
RAM confirmation Number	7060
Deposit Account	502040
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Document Number	**Document Description**	**File Name**	**File Size(Bytes)/ Message Digest**	**Multi Part /.zip**	**Pages (if appl.)**
1		104US1-RAF-1-21-08.pdf	48242 81d7a97e81dbc77cdadbc0425e0341467cc c9816	yes	9
	Multipart Description/PDF files in .zip description				
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	Amendment Submitted/Entered with Filing of CPA/RCE		1	1	
	Claims		2	5	
	Applicant Arguments/Remarks Made in an Amendment		6	9	
Warnings:					
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2	Request for Continued Examination (RCE)	104US1-RCE-1-21-08.pdf	697334 6bcde52558e23bd033005aeea4ffdaefe34d 8a8f	no	3
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Filed (SB/08)	104US1-IDS-1-21-08-1.pdf	610263 35987dce6a79d2014f2114f15b46f2b08758 e81e	no	6
Warnings:					
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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Matthew Curran	Art Unit:	3733
Serial No.:	11/093,409	Examiner:	Jerry L. Cumberledge
Filing Date:	March 29, 2005		
Title:	Systems and Methods for Spinal Fusion		

Certificate of Transmission: I hereby certify that this paper or fee is being transmitted to the United States Patent and Trademark Office, via EFS-Web, on January 21, 2008.

Signature: /roryschermerhorn/

Name: Rory Schermerhorn

RESPONSE AFTER FINAL WITH RCE

Mail Stop RCE
Commissioner for Patents
PO Box 1450
Alexandria VA 22313-1450

Dear Sir:

In response to the Final Office Action mailed on September 17, 2008, having a three-month shortened period for response that expires on December 17, 2008, please amend the application as follows:

IN THE CLAIMS:

1. (Currently amended) A spinal fusion ~~system~~ implant positionable within an interbody space between a first vertebral endplate and a second vertebral endplate, said interbody space being at least partially defined by a posterior aspect, and anterior aspect, and opposing lateral aspects, said implant comprising:

~~an interbody spinal fusion implant, including at least in part~~ a top surface including a plurality of ridges to engage said ~~for contacting a~~ first vertebral endplate when said implant is positioned within the interbody space, a bottom surface including a plurality of ridges to engage said ~~for contacting a~~ second vertebral endplate when said implant is positioned within the interbody space, ~~at least one fusion aperture extending between the top surface and the bottom surface to allow bony fusion between the first vertebral end plate and the second vertebral endplate,~~ a distal side, a proximal side, ~~having a pair of receiving apertures separated by a distance and situated within the boundaries of the proximal side for engaging an insertion instrument, and two lateral sides; and~~ a first side wall defining an anterior side when said implant is positioned within the interbody space, and a second side wall defining a posterior side when said implant is positioned within the interbody space;

wherein said implant has a length extending from said proximal side to said distal side, a width extending from said first side wall to said second side wall, and a height extending from said top surface to said bottom surface;

wherein said length is so dimensioned as to extend between said lateral aspects of said interbody space when said implant is positioned within the interbody space and is at least two and a half times greater than said width;

wherein said width is greater than said height;

said implant further including first and second fusion apertures that each extend between the top and bottom surfaces and permit bone growth between the first vertebral endplate and the second vertebral endplate when said implant is positioned within the interbody space, said first and second fusion apertures being adjacent to one another and separated by a medial support;

said implant further including at least one radiopaque marker situated between said top and bottom surfaces.

~~an insertion instrument, including a generally elongated tubular member having a distal opening and a proximal opening, a generally elongated shaft member having a distal end and a proximal end and being generally dimensioned to be inserted through the elongated tubular member such that the distal end extends beyond the distal opening and the proximal end extends beyond the proximal opening, and the distal end including an implant engagement feature; and~~

~~a securing mechanism for releasably securing the engagement feature in one or more receiving apertures of the implant.~~

2. (Currently amended) The spinal fusion ~~system~~ implant of Claim 1, wherein ~~the~~ said implant is substantially radiolucent and composed of non-bone material.

3. (Currently amended) The spinal fusion ~~system~~ implant of Claim 1, wherein ~~the~~ said implant includes at least one visualization aperture extending through at least one of said first side wall and said second side wall ~~the lateral sides~~.

4. (Currently amended) The spinal fusion ~~system~~ implant of Claim 1, wherein the top and bottom surfaces of the implant are at least one of generally parallel with respect to each other, and generally angled with respect to each other to better match the natural curvature of the spine.

5. (Currently amended) The spinal fusion ~~system~~ implant of Claim 1, wherein ~~the implant further includes anti-migration features to increase friction between the implant and vertebral endplate minimizing unwanted movement~~ said first and second fusion apertures are one of generally rectangular and generally oblong in shape.

6– 30. (Cancelled)

31. (New) The Spinal fusion implant of claim 1, further including at least one receiving element at least partially defined along said proximal side.

32. (New) The spinal fusion implant of claim 31, wherein said receiving element is engageable with an insertion instrument.

33. (New) The spinal fusion implant of claim 32, wherein said receiving element comprises a threaded aperture.

34. (New) The spinal fusion implant of claim 33, wherein said receiving implant further comprises a slot extending from said threaded aperture.

35. (New) A spinal fusion implant of non-bone construction postionable via a lateral trans-psoas surgical approach to the spine into a position within an interbody space between a first vertebra and a second vertebra, wherein said interbody space being at least partially defined by a posterior aspect, and anterior aspect, and opposing lateral aspects, said implant comprising:

a top surface to contact said first vertebra when said implant is positioned within the interbody space, a bottom surface to contact said second vertebra when said implant is positioned within the interbody space, a distal side, a proximal side, a first side to face said anterior aspect of said disc space when said implant is positioned within the interbody space and a second side to face said posterior aspect of said disc space when said implant is positioned within the interbody space, wherein said implant is generally rectangular in shape having a length extending from said proximal side to said distal side of at least 40mm, a width extending from said first side to said second side of at least 15mm, and a height extending from said top surface to said bottom surface ranging from 8mm to 16mm, said implant further including a pair fusion apertures comprising one of a generally rectangular and generally oblong shape and extending between said top surface and bottom surface to permit bone growth between the first vertebra and the second vertebra, said implant further including a at least one radiopaque marker situated between said top and bottom surfaces.

36. (New) The implant of claim 31, wherein said non-bone material is one of PEEK and PEKK.