US009408710B2

(12) **United States Patent**
Purcell et al.

(10) **Patent No.: US 9,408,710 B2**
(45) **Date of Patent: Aug. 9, 2016**

(54) **INTERVERTEBRAL DEVICE AND METHODS OF USE**

(75) Inventors: **Thomas Purcell**, Del Mar, CA (US); **Morgan Lorio**, Bristol, TN (US)

(73) Assignee: **Morgan Packard Lorio**, Bristol, TN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 36 days.

(21) Appl. No.: **13/252,427**

(22) Filed: **Oct. 4, 2011**

(65) **Prior Publication Data**

US 2012/0083889 A1 Apr. 5, 2012

Related U.S. Application Data

(60) Provisional application No. 61/389,862, filed on Oct. 5, 2010.

(51) **Int. Cl.**

A61F 2/44	(2006.01)
A61F 2/28	(2006.01)
A61F 2/30	(2006.01)

(52) **U.S. Cl.**

CPC ***A61F 2/442*** (2013.01); ***A61F 2/447*** (2013.01); *A61F 2002/2817* (2013.01); *A61F 2002/2835* (2013.01); *A61F 2002/30471* (2013.01); *A61F 2002/30579* (2013.01); *A61F 2002/30673* (2013.01); *A61F 2002/30841* (2013.01); *A61F 2002/30904* (2013.01); *A61F 2002/448* (2013.01); *A61F 2002/4415* (2013.01); *A61F 2002/4475* (2013.01); *A61F 2310/00017* (2013.01); *A61F 2310/00023* (2013.01); *A61F 2310/00161* (2013.01)

(58) **Field of Classification Search**

CPC A61F 2/4611; A61F 2/442; A61F 2/4425; A61F 2002/4445

USPC 623/17.11–17.16; 606/105, 246–249

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,877,020	A	10/1989	Vich	
5,176,587	A *	1/1993	Mott	474/216
5,549,679	A	8/1996	Kuslich	
5,571,189	A	11/1996	Kuslich	
5,782,832	A	7/1998	Larsen et al.	
6,039,761	A *	3/2000	Li	A61B 17/70 623/17.16
6,126,689	A	10/2000	Brett	
6,409,766	B1 *	6/2002	Brett	A61F 2/4455 623/17.15
6,488,710	B2	12/2002	Besselink	
6,527,804	B1	3/2003	Gauchet et al.	

(Continued)

FOREIGN PATENT DOCUMENTS

WO	WO 2007/076377	7/2007
WO	WO 2008/152501	12/2008

(Continued)

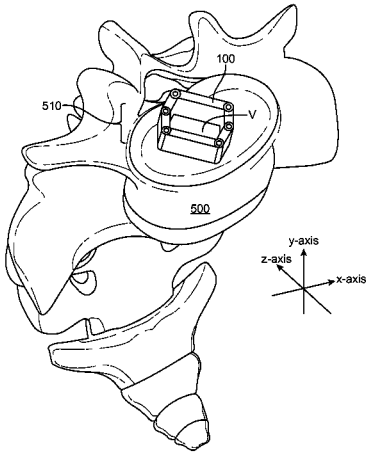
OTHER PUBLICATIONS

International Search Report and Written Opinion for PCT/US2011/054001 in 15 pages dated Jan. 17, 2012.

(Continued)

Primary Examiner — Ellen C Hammond
Assistant Examiner — Christina Negrellirodrigue
(74) *Attorney, Agent, or Firm* — Michael R. Shevlin

(57) **ABSTRACT**

An intervertebral device comprises a plurality of struts that are rotatably associated with each adjacent strut to form a modifiable inner volume V for bone graft containment.

16 Claims, 10 Drawing Sheets