



US009005249B2

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

(10) **Patent No.:** **US 9,005,249 B2**  
(45) **Date of Patent:** **Apr. 14, 2015**

(54) **SPINAL ROD CONNECTOR ASSEMBLY**

(75) Inventors: **James A. Rinner**, Franksville, WI (US);  
**Michael S. Butler**, St. Charles, IL (US);  
**Seetal K. Erramilli**, Naperville, IL (US)

(73) Assignee: **Life Spine, Inc.**, Huntley, IL (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 197 days.

4,805,602 A	2/1989	Puno et al.
4,863,472 A	9/1989	Tormala et al.
5,047,029 A	9/1991	Aebi et al.
5,092,893 A	3/1992	Smith
5,098,435 A	3/1992	Stednitz et al.
5,129,899 A	7/1992	Small et al.
5,190,543 A	3/1993	Schlapfer
5,261,909 A	11/1993	Sutterlin et al.
5,350,380 A	9/1994	Goble et al.
5,352,226 A	10/1994	Lin
5,423,819 A	6/1995	Small et al.

(Continued)

(21) Appl. No.: **13/546,588**

(22) Filed: **Jul. 11, 2012**

(65) **Prior Publication Data**

US 2013/0018422 A1 Jan. 17, 2013

**Related U.S. Application Data**

(60) Provisional application No. 61/506,373, filed on Jul. 11, 2011.

(51) **Int. Cl.**  
**A61B 17/70** (2006.01)

(52) **U.S. Cl.**  
CPC ..... **A61B 17/7049** (2013.01); **A61B 17/7041** (2013.01)

(58) **Field of Classification Search**  
USPC ..... 606/250-278  
See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

2,414,882 A	1/1947	Longfellow
3,289,290 A	12/1966	Sandor
4,399,814 A	8/1983	Pratt et al.
4,648,388 A	3/1987	Steffee
4,653,489 A	3/1987	Tronzo
4,790,297 A	12/1988	Luque

**FOREIGN PATENT DOCUMENTS**

DE	92 15 561	1/1993
WO	WO-02/36026 A2	5/2002

(Continued)

**OTHER PUBLICATIONS**

“The Trio® Spinal System,” printed Feb. 9, 2005, 2 pages.

(Continued)

*Primary Examiner* — Jan Christopher Merene  
(74) *Attorney, Agent, or Firm* — Foley & Lardner LLP

(57) **ABSTRACT**

A spinal rod connector assembly for use with a vertebral bone screw has an articulating clamp for 1) fixing an orientation of the spinal rod connector assembly relative to and on the vertebral bone screw, and 2) attaching a separate spinal rod onto the spinal rod connector assembly in concert with one another. The articulating clamp resides in a body of the spinal rod connector assembly and transfers a received downward force laterally to a spinal rod component of the spinal rod connector assembly which is configured to abut the spinal rod and hold the spinal rod between itself and a spinal rod holder of the spinal rod connector assembly. The articulating clamp thus improves the force transfer efficacy of the system.

**20 Claims, 2 Drawing Sheets**

