



US006863673B2

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

(10) **Patent No.:** **US 6,863,673 B2**  
(45) **Date of Patent:** **Mar. 8, 2005**

- (54) **METHODS FOR ADJUSTABLE BONE FUSION IMPLANTS**
- (75) Inventors: **Daniel E. Gerbec**, Logan, UT (US); **T. Wade Fallin**, Hyde Part, UT (US); **Tom Faciszewski**, Marshfield, WI (US)
- (73) Assignees: **Movdice Holding, Inc.**, Boulder City, NV (US); **MedicineLodge, Inc.**, Logan, UT (US)

|             |         |                   |
|-------------|---------|-------------------|
| 5,306,310 A | 4/1994  | Siebels           |
| 5,336,223 A | 8/1994  | Rogers            |
| 5,390,683 A | 2/1995  | Pisharodi         |
| 5,405,391 A | 4/1995  | Hednerson et al.  |
| 5,425,772 A | 6/1995  | Brantigan         |
| 5,443,514 A | 8/1995  | Steffee           |
| 5,458,641 A | 10/1995 | Ramirez Jimenez   |
| 5,554,191 A | 9/1996  | Lahille et al.    |
| 5,571,192 A | 11/1996 | Schonhoffer       |
| 5,653,762 A | 8/1997  | Pisharodi         |
| 5,653,763 A | 8/1997  | Errico et al.     |
| 5,658,335 A | 8/1997  | Allen             |
| 5,665,122 A | 9/1997  | Kambin            |
| 5,693,100 A | 12/1997 | Pisharodi         |
| 5,702,455 A | 12/1997 | Saggar            |
| 5,716,415 A | 2/1998  | Steffee           |
| 5,776,198 A | 7/1998  | Rabbe et al.      |
| 5,782,832 A | 7/1998  | Larsen et al.     |
| 5,865,848 A | 2/1999  | Baker             |
| 5,980,522 A | 11/1999 | Koros et al.      |
| 5,989,290 A | 11/1999 | Biedermann et al. |
| 6,015,436 A | 1/2000  | Schonhoffer       |
| 6,045,579 A | 4/2000  | Hochshuler et al. |
| 6,080,193 A | 6/2000  | Hochshuler et al. |
| 6,093,207 A | 7/2000  | Pisharodi         |

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 14 days.

(21) Appl. No.: **10/651,138**

(22) Filed: **Aug. 28, 2003**

(65) **Prior Publication Data**

US 2004/0054412 A1 Mar. 18, 2004

**Related U.S. Application Data**

(63) Continuation of application No. 10/382,010, filed on Mar. 5, 2003, which is a continuation of application No. 10/121,630, filed on Apr. 12, 2002, now Pat. No. 6,562,074, which is a continuation-in-part of application No. 09/981,674, filed on Oct. 17, 2001, now Pat. No. 6,648,917.

(51) **Int. Cl.**<sup>7</sup> ..... **A61B 17/58**

(52) **U.S. Cl.** ..... **606/99**; 606/61; 623/12.15; 128/898

(58) **Field of Search** ..... 623/12.15; 606/61, 606/63, 89, 90, 99; 128/898

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

|             |         |                 |
|-------------|---------|-----------------|
| 4,657,550 A | 4/1987  | Daher           |
| 4,834,757 A | 5/1989  | Brantigan       |
| 4,863,476 A | 9/1989  | Shepperd        |
| 5,059,193 A | 10/1991 | Kuslich         |
| 5,171,278 A | 12/1992 | Pisharodi       |
| 5,290,312 A | 3/1994  | Kojimoto et al. |

(List continued on next page.)

**FOREIGN PATENT DOCUMENTS**

WO WO 02/076335 A2 \* 10/2002

*Primary Examiner*—Pedro Philogene  
*Assistant Examiner*—David A. Bonderer  
(74) *Attorney, Agent, or Firm*—Workman Nydegger

(57) **ABSTRACT**

A method for fusing two adjacent bones or pieces of bone includes positioning an adjustable fusion implant between two adjacent bones or pieces of bone, the fusion implant having a first plate and an opposing second plate. A portion of a tool inserted between the first plate and the second plate of the fusion implant is expanded so as to expand the fusion implant between the bones or pieces of bone. The tool is then removed from the expanded fusion implant.

**31 Claims, 27 Drawing Sheets**

