



US009510878B2

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

(10) **Patent No.:** **US 9,510,878 B2**

(45) **Date of Patent:** **Dec. 6, 2016**

(54) **PRE-CURVED INTRAMEDULLARY CLAVICLE NAIL AND METHOD OF USING SAME**

(75) Inventors: **Vipul N. Nanavati**, Towson, MD (US); **James M. Paci**, East Setauket, NY (US); **Frederick W. Werner**, Fayetteville, NY (US); **Levi G. Sutton**, Chicago, IL (US)

(73) Assignee: **THE RESEARCH FOUNDATION FOR THE STATE UNIVERSITY OF NEW YORK**, Albany, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 111 days.

(21) Appl. No.: **13/510,241**

(22) PCT Filed: **Nov. 16, 2010**

(86) PCT No.: **PCT/US2010/056814**

§ 371 (c)(1),
(2), (4) Date: **Oct. 11, 2012**

(87) PCT Pub. No.: **WO2011/060412**

PCT Pub. Date: **May 19, 2011**

(65) **Prior Publication Data**

US 2013/0035689 A1 Feb. 7, 2013

Related U.S. Application Data

(60) Provisional application No. 61/261,396, filed on Nov. 16, 2009.

(51) **Int. Cl.**
A61B 17/72 (2006.01)

(52) **U.S. Cl.**
CPC **A61B 17/7291** (2013.01); **A61B 17/7208** (2013.01)

(58) **Field of Classification Search**

CPC . A61B 17/72; A61B 17/7208; A61B 17/7216; A61B 17/7225; A61B 17/7233; A61B 17/725; A61B 17/7283

USPC 606/62-64
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,579,968 A 12/1951 Rush
3,760,802 A 9/1973 Fischer et al.
3,779,239 A 12/1973 Fischer et al.

(Continued)

FOREIGN PATENT DOCUMENTS

DE 19912696 A1 10/2000
EP 1808143 A1 7/2007

(Continued)

OTHER PUBLICATIONS

International Search Report & Written Opinion for PCT/US2010/056814.

(Continued)

Primary Examiner — Eduardo C Robert

Assistant Examiner — Julianna N Harvey

(74) *Attorney, Agent, or Firm* — Hoffmann & Baron, LLP

(57) **ABSTRACT**

The present invention relates to an intramedullary nail surgically inserted into a long bone, especially the clavicle. Specifically, the present invention is directed to a curved rod that accommodates the majority of human anatomies and is insertable and capable of either being permanently retained therein or removed if desired.

21 Claims, 5 Drawing Sheets

