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Fridshtand et al.

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(54) **HIP STEM PROSTHESIS**

(71) Applicant: **Zimmer, Inc.**, Warsaw, IN (US)

(72) Inventors: **Natalia Fridshtand**, Ringwood, NJ (US); **Douglas W. Gabel**, Pompton Plains, NJ (US); **Steven Charlebois**, West Lafayette, IN (US); **David L. Glass**, Silver Lake, IN (US); **Steven Zawadzki**, Leesburg, IN (US); **Jeffrey P. Matney**, Pierceton, IN (US)

(73) Assignee: **Zimmer, Inc.**, Warsaw, IN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 90 days.

This patent is subject to a terminal disclaimer.

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

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(58) **Field of Classification Search**

CPC A61F 2/3662–2002/3698

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,536,894	A	8/1985	Galante et al.
4,650,489	A	3/1987	Thompson

(Continued)

FOREIGN PATENT DOCUMENTS

FR	2678509	A3	1/1993
FR	2683450	A1	5/1993

(Continued)

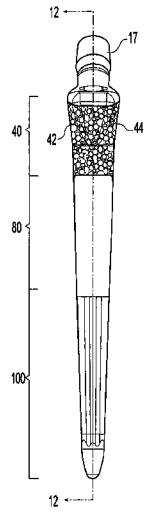
OTHER PUBLICATIONS

Machine Translation of EP 0974317, accessed Mar. 2, 2106, pp. 1-17.*

(Continued)

Primary Examiner — Yashita Sharma
Assistant Examiner — Rebecca Preston
(74) *Attorney, Agent, or Firm* — Schwegman Lundberg & Woessner, P.A.

(57) **ABSTRACT**

A hip stem prosthesis is provided for treating a deficient hip joint.

15 Claims, 3 Drawing Sheets