US009636134B2

(12) **United States Patent**
Werner

(10) **Patent No.: US 9,636,134 B2**
(45) **Date of Patent: May 2, 2017**

(54) **SURGICAL CUTTING DEVICE AND METHODS OF USING SAME**

(71) Applicant: **UNIVERSITY OF ALASKA ANCHORAGE**, Anchorage, AK (US)

(72) Inventor: **Samuel Werner**, Tucson, AZ (US)

(73) Assignee: **University of Alaska Anchorage**, Anchorage, AK (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 225 days.

(21) Appl. No.: **14/516,260**

(22) Filed: **Oct. 16, 2014**

(65) **Prior Publication Data**

US 2015/0112373 A1 Apr. 23, 2015

Related U.S. Application Data

(60) Provisional application No. 61/892,199, filed on Oct. 17, 2013.

(51) **Int. Cl.**

A61B 17/32	(2006.01)
A61B 17/00	(2006.01)
A61B 17/3211	(2006.01)

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

CPC ... ***A61B 17/320068*** (2013.01); *A61B 17/3211* (2013.01); *A61B 2017/00734* (2013.01); *A61B 2017/320072* (2013.01); *A61B 2017/320096* (2013.01)

(58) **Field of Classification Search**

CPC A61B 17/148; A61B 17/320068; A61B 17/22004; A61B 17/22012; A61B 2017/320072; A61B 2017/320096; A61F 9/00745

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,989,588	A *	2/1991	Kubota	A61B 17/22012 601/4
6,267,594	B1 *	7/2001	Hugo	A61B 17/14 433/119
7,758,600	B2	7/2010	Beaupre	
2007/0249942	A1 *	10/2007	Salehi	A61F 9/00745 600/471
2009/0163940	A1 *	6/2009	Sliwa	A61B 17/22012 606/159

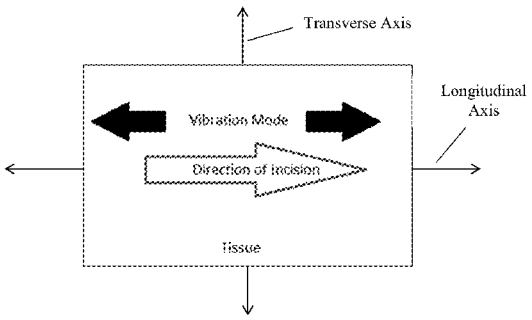
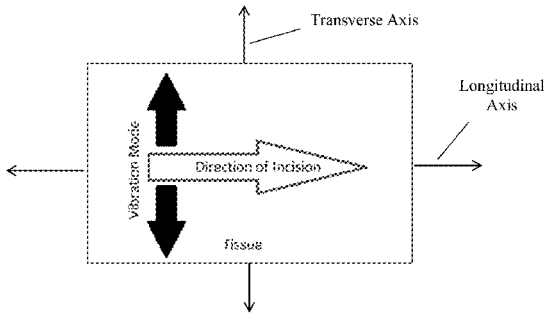
OTHER PUBLICATIONS

Product Data Sheet—Pico Vibe 10mm Vibration Motor—2.7mm Type, Model: 310-103, Precision Microdrives (2013) (6 pages).

* cited by examiner

Primary Examiner — Sarah W Aleman
(74) *Attorney, Agent, or Firm* — Ballard Spahr LLP

(57) **ABSTRACT**

A vibrational assembly for operative coupling to a surgical cutting element. The vibrational assembly receives a portion of the surgical cutting element and imparts vibration to the surgical cutting element within a single plane. In combination, the vibrational assembly and the surgical cutting element form a surgical cutting device.

24 Claims, 7 Drawing Sheets