



US009038773B2

(12) **United States Patent**
Banter

(10) **Patent No.:** **US 9,038,773 B2**
(45) **Date of Patent:** **May 26, 2015**

(54) **ACOUSTIC COVER ASSEMBLY**

(75) Inventor: **Chad Banter**, Lincoln University, PA
(US)

(73) Assignee: **W. L. Gore & Associates, Inc.**, Newark,
DE (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 40 days.

(21) Appl. No.: **13/589,711**

(22) Filed: **Aug. 20, 2012**

(65) **Prior Publication Data**

US 2014/0048351 A1 Feb. 20, 2014

(51) **Int. Cl.**

E04B 1/82 (2006.01)

G10K 11/00 (2006.01)

G10K 11/18 (2006.01)

H04R 1/02 (2006.01)

H04R 1/08 (2006.01)

H04R 25/00 (2006.01)

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

CPC **G10K 11/002** (2013.01); **Y10T 156/10**
(2015.01); **G10K 11/18** (2013.01); **H04R 1/023**
(2013.01); **H04R 1/086** (2013.01); **H04R**
25/654 (2013.01)

(58) **Field of Classification Search**

CPC **E04B 1/82**

USPC **181/286**

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,953,566 A 4/1976 Gore
4,013,810 A * 3/1977 Long 428/313.9
4,110,392 A 8/1978 Yamazaki

4,187,930 A 2/1980 James
5,146,047 A * 9/1992 Nagata et al. 174/388
5,183,545 A 2/1993 Branca et al.
5,476,589 A 12/1995 Bacino
5,536,910 A * 7/1996 Harrold et al. 181/290
5,581,019 A * 12/1996 Minor et al. 73/114.77
5,828,012 A * 10/1998 Repolle et al. 181/175
5,916,671 A 6/1999 Dauber et al.
6,512,834 B1 * 1/2003 Banter et al. 381/386
6,932,187 B2 8/2005 Banter et al.
7,095,864 B1 8/2006 Billson et al.
7,249,653 B2 * 7/2007 Sheng et al. 181/290
7,306,729 B2 * 12/2007 Bacino et al. 210/500.22
8,157,048 B2 * 4/2012 Banter et al. 181/198
8,172,035 B2 * 5/2012 Fehervari et al. 181/167
8,443,934 B2 * 5/2013 Akino 181/290
2005/0077102 A1 * 4/2005 Banter et al. 181/149
2010/0247857 A1 9/2010 Sanami et al.
2010/0270102 A1 10/2010 Banter et al.

FOREIGN PATENT DOCUMENTS

EP 0 730 017 4/1996
JP 10-165787 6/1998

OTHER PUBLICATIONS

International Search Report for PCT/US2013/054269 dated Nov. 26,
2014.

* cited by examiner

Primary Examiner — Forrest M Phillips

(74) Attorney, Agent, or Firm — Amy L. Miller

(57) **ABSTRACT**

An acoustic protective cover assembly comprising a porous membrane and an acoustic gasket is disclosed. The porous membrane is bonded to the acoustic gasket at a peripheral region, the membrane is left unhandled at a central region. The acoustic gasket comprises a composite of a porous polytetrafluoroethylene (PTFE) polymer matrix of polymeric nodes interconnected by fibrils, resilient expandable microspheres embedded within the matrix.

15 Claims, 7 Drawing Sheets

