



US007854298B2

(12) **United States Patent**
Ayle

(10) **Patent No.:** **US 7,854,298 B2**
(45) **Date of Patent:** **Dec. 21, 2010**

(54) **ACOUSTIC SEPTUM CAP HONEYCOMB**

(75) Inventor: **Earl Ayle**, Chandler, AZ (US)

(73) Assignee: **Hexcel Corporation**, Dublin, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **12/151,886**

(22) Filed: **May 9, 2008**

(65) **Prior Publication Data**

US 2008/0251315 A1 Oct. 16, 2008

Related U.S. Application Data

(62) Division of application No. 11/099,337, filed on Apr. 4, 2005, now Pat. No. 7,434,659.

(51) **Int. Cl.**
G10K 11/172 (2006.01)

(52) **U.S. Cl.** **181/292; 181/288; 181/293**

(58) **Field of Classification Search** **181/284, 181/286, 288, 290, 291, 292, 293**
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,095,943	A *	7/1963	Kemp	181/292
3,822,762	A *	7/1974	Crispin et al.	181/292
3,895,152	A *	7/1975	Carlson et al.	428/116
3,952,831	A *	4/1976	Bernard et al.	181/292
4,257,998	A *	3/1981	Diepenbrock et al.	264/156

4,265,955	A *	5/1981	Harp et al.	428/116
5,041,323	A *	8/1991	Rose et al.	428/116
5,490,602	A *	2/1996	Wilson et al.	216/56
5,776,579	A *	7/1998	Jessup et al.	428/73
5,785,919	A *	7/1998	Wilson	264/401
5,997,985	A *	12/1999	Clarke et al.	428/116
6,114,652	A *	9/2000	Clarke et al.	219/121.71
6,220,388	B1 *	4/2001	Sanborn	181/290
6,274,216	B1 *	8/2001	Gonidec et al.	428/116
6,371,242	B1 *	4/2002	Wilson et al.	181/292
6,536,556	B2 *	3/2003	Porte et al.	181/292
2001/0017232	A1 *	8/2001	Hogeboom et al.	181/286

FOREIGN PATENT DOCUMENTS

GB 2252076 A * 7/1992

* cited by examiner

Primary Examiner—Elvin G Enad

Assistant Examiner—Jeremy Luks

(74) *Attorney, Agent, or Firm*—W. Mark Bielawski; David J. Oldenkamp

(57) **ABSTRACT**

An acoustic structure that includes a honeycomb having cells in which septum caps are located. The septum caps are formed from sheets of acoustic material and include a resonator portion and a flange portion. The flange portion has an anchoring surface that provides frictional engagement of the septum caps to the honeycomb cells when the caps are inserted into the honeycomb during fabrication of the acoustic structure. An adhesive is applied to the anchoring surface of the septum caps after the caps have been inserted into the honeycomb cells to provide a permanent bond.

15 Claims, 3 Drawing Sheets

