



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

(10) **Patent No.:** **US 9,908,485 B2**
(45) **Date of Patent:** **Mar. 6, 2018**

(54) **ACOUSTIC BARRIER ASSEMBLY WITH ACOUSTIC SEAL**

(71) Applicant: **Cadillac Products Automotive Company**, Troy, MI (US)

(72) Inventors: **James Check**, Armada, MI (US);
Kenneth Ritzema, Clarkston, MI (US);
Michael Demo, Macomb, MI (US)

(73) Assignee: **Cadillac Products Automotive Company**, Troy, MI (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.: **14/933,174**

(22) Filed: **Nov. 5, 2015**

(65) **Prior Publication Data**
US 2016/0129855 A1 May 12, 2016

Related U.S. Application Data

(60) Provisional application No. 62/075,942, filed on Nov. 6, 2014.

(51) **Int. Cl.**
B60R 13/08 (2006.01)
B32B 3/26 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC **B60R 13/083** (2013.01); **B32B 3/266** (2013.01); **B60R 13/0846** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC B60R 13/083; B60R 13/0815; B60R 13/0846; B60R 13/0884; B32B 3/266;
(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,083,595 A * 4/1978 Maier B60R 13/0846
181/290
4,655,496 A * 4/1987 Gahlau B60R 13/083
181/204

(Continued)

FOREIGN PATENT DOCUMENTS

FR 2745034 A1 * 8/1997 B29C 44/1271
FR 2913805 A1 * 9/2008 G10K 11/168

Primary Examiner — Edgardo San Martin

(74) *Attorney, Agent, or Firm* — Harness, Dickey & Pierce, P.L.C.

(57) **ABSTRACT**

An acoustic barrier assembly for a vehicle and a method of manufacturing the same is disclosed. A decoupler layer surrounds a pass-through opening in a wall of the vehicle to defining a decoupler aperture that is open to the pass-through opening. A barrier layer abuts the decoupler layer and defines a barrier aperture that is also open to the pass-through opening. An acoustic seal is integrally formed in the barrier layer. The acoustic seal defines an exposed region of the barrier layer that is not bounded by the decoupler layer. The exposed region of the barrier layer directly contacts the wall around the pass-through opening and seals around a penetrating member that extends through the pass-through opening. The acoustic seal thus reduces flanking noise traveling through a gap between the penetrating member and the pass-through opening.

21 Claims, 11 Drawing Sheets

