



US009409536B2

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

(10) **Patent No.:** **US 9,409,536 B2**
(45) **Date of Patent:** ***Aug. 9, 2016**

(54) **CONNECTOR ASSEMBLY WITH
AUTOMATIC SECONDARY LOCK**

(71) Applicant: **DELPHI INTERNATIONAL
OPERATIONS LUXEMBOURG
S.A.R.L.**, Bascharage (LU)

(72) Inventors: **Michael Gunreben**, Schwanstetten
(DE); **Vincent Regnier**, Nuremberg
(DE)

(73) Assignee: **Delphi International Operations
Luxembourg SARL**, Luxembourg (LU)

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

This patent is subject to a terminal dis-
claimer.

(21) Appl. No.: **14/435,818**

(22) PCT Filed: **Mar. 15, 2013**

(86) PCT No.: **PCT/EP2013/055480**
§ 371 (c)(1),
(2) Date: **Apr. 15, 2015**

(87) PCT Pub. No.: **WO2014/072081**
PCT Pub. Date: **May 15, 2014**

(65) **Prior Publication Data**
US 2015/0232055 A1 Aug. 20, 2015

Related U.S. Application Data

(60) Provisional application No. 61/725,234, filed on Nov.
12, 2012.

(51) **Int. Cl.**
B60R 21/01 (2006.01)
B60R 21/16 (2006.01)

(Continued)

(52) **U.S. Cl.**
CPC **B60R 21/16** (2013.01); **B60R 21/20**
(2013.01); **H01R 13/627** (2013.01); **H01R**
13/639 (2013.01); **H01R 13/70** (2013.01);
B60R 2021/01006 (2013.01); **H01R 2201/26**
(2013.01)

(58) **Field of Classification Search**
CPC H01R 13/627; H01R 13/6273; H01R
13/6277; H01R 13/639; H01R 13/641; H01R
13/70; H01R 13/7032; H01R 13/713; H01R
4/48; H01R 2201/26; B60R 16/02; B60R
2021/01006
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,275,575 A * 1/1994 Cahaly H01R 13/7032
200/51.1
5,370,543 A * 12/1994 Hamada H01R 13/641
439/188

(Continued)

FOREIGN PATENT DOCUMENTS

DE 10005858 A1 8/2001
DE 10202920 A1 8/2003

(Continued)

OTHER PUBLICATIONS

International Search Report for Int'l Appl. No. PCT/EP2013/055480,
published Jul. 11, 2013.

Primary Examiner — Laura Freedman

(74) *Attorney, Agent, or Firm* — Robert J. Myers

(57) **ABSTRACT**

The present invention relates to a connector assembly in
particular for airbag connection systems, including a connec-
tor housing and a secondary lock. The housing is further
provided with a spring, such that the secondary lock is mov-
able between a first and a second position and the spring
forces the secondary lock into its second position when the
connector housing is fully mated with a corresponding mat-
ing connector.

15 Claims, 6 Drawing Sheets

