

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

(10) **Patent No.:** **US 9,409,518 B2**
(45) **Date of Patent:** **Aug. 9, 2016**

(54) **SYSTEM AND METHOD FOR ENABLING A DRIVER OF A VEHICLE TO VISIBLY OBSERVE OBJECTS LOCATED IN A BLIND SPOT**

5,668,675	A *	9/1997	Fredricks	359/843
5,694,259	A *	12/1997	Brandin	359/843
5,796,176	A *	8/1998	Kramer et al.	307/10.1
6,880,941	B2 *	4/2005	Suggs	359/843
7,354,166	B2 *	4/2008	Qualich et al.	359/843
2008/0169938	A1 *	7/2008	Madau	340/901
2009/0059403	A1	3/2009	Chang	
2009/0244741	A1 *	10/2009	Schondorf et al.	359/843
2009/0310237	A1	12/2009	Shin et al.	
2010/0220406	A1 *	9/2010	Cuddihy et al.	359/843

(75) Inventors: **Dorel M. Sala**, Troy, MI (US); **Jihan Ryu**, Cary, NC (US); **Jan H. Aase**, Oakland Township, MI (US)

(73) Assignee: **GM GLOBAL TECHNOLOGY OPERATIONS LLC**, Detroit, MI (US)

FOREIGN PATENT DOCUMENTS

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1271 days.

CN	101500874	A	8/2009
CN	101549648	A	10/2009
DE	10260412	A1	7/2004
DE	202004016682	U1	10/2005
JP	2010076660	A	4/2010
KR	20060005124	A	1/2006

* cited by examiner

(21) Appl. No.: **13/328,722**

(22) Filed: **Dec. 16, 2011**

(65) **Prior Publication Data**

US 2013/0155534 A1 Jun. 20, 2013

Primary Examiner — Ricky D Shafer

(74) *Attorney, Agent, or Firm* — Ingrassia Fisher & Lorenz, P.C.

(51) **Int. Cl.**
B60R 1/072 (2006.01)
B60R 1/00 (2006.01)
B60R 1/02 (2006.01)

(57) **ABSTRACT**

A system for enabling a driver of a vehicle to visibly observe objects located in a blind spot includes, but is not limited to, a rear view viewing device that is mounted to the vehicle and configured to be electronically adjustable. The system further includes a sensor that is associated with the vehicle and that is configured to detect a location of an object with respect to the vehicle and to generate a first signal indicative of the location of the object. The system further includes a processor that is communicatively coupled with the sensor and that is operatively coupled with the rear view viewing device. The processor is configured to obtain the first signal from the sensor and to command the rear view viewing device to adjust such that the object is visibly observable to the driver when the processor receives the first signal.

(52) **U.S. Cl.**
CPC . **B60R 1/00** (2013.01); **B60R 1/025** (2013.01); **B60R 1/072** (2013.01)

(58) **Field of Classification Search**
CPC B60R 1/025; B60R 1/06; B60R 1/07; B60R 1/072
USPC 359/843, 877, 900; 701/49
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,318,590	A *	3/1982	Hanley	359/214.1
4,770,522	A *	9/1988	Alten	359/873

12 Claims, 3 Drawing Sheets

