

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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TOYOTA MOTOR CORPORATION  
Petitioner,

v.

AMERICAN VEHICULAR SCIENCES  
Patent Owner.

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Case IPR2013-00424  
Patent 5,845,000

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Before JAMESON LEE, TREVOR M. JEFFERSON, and  
BARBARA A. PARVIS, *Administrative Patent Judges*.

JEFFERSON, *Administrative Patent Judge*.

DECISION  
Institution of *Inter Partes* Review  
*37 C.F.R. § 42.108*

## I. INTRODUCTION

On July 8, 2013, Toyota Motor Corporation (“Toyota” or “Petitioner”) filed a petition requesting an *inter partes* review of claims 10, 11, 16, 17, 19, 20, and 23 of U.S. Patent No. 5,845,000 (Ex. 1001, “the ’000 patent”). Paper 2 (“Pet.”). American Vehicular Sciences (“AVS” or “Patent Owner”) filed a preliminary response (Paper 13, “Prelim. Resp.”) on October 17, 2013. We have jurisdiction under 35 U.S.C. § 314.

The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a) which provides as follows:

THRESHOLD -- The Director may not authorize an *inter partes* review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.

Upon consideration of Toyota’s petition and AVS’s preliminary response, we determine that there is a reasonable likelihood that Toyota would prevail in showing the unpatentability of each of claims 10, 11, 16, 17, 19, 20, and 23 of the ’697 patent. Accordingly, pursuant to 35 U.S.C. § 314, we institute an *inter partes* review as to claims 10, 11, 16, 17, 19, 20, and 23 of the ’000 patent.

### A. *Related Proceedings*

Toyota indicates that the ’000 patent has been asserted by AVS in the following district court cases: (1) *American Vehicular Sciences LLC v. Toyota Motor Corp.*, Civil Action No. 6:12-CV-406 (E.D. Tex.); (2) *American Vehicular Sciences LLC v. BMW Grp. A/K/A BMW AG*, Civil Action No. 6:12-CV-413 (E.D. Tex.); and (3) *American Vehicular Sciences*

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*LLC v. Mercedes-Benz U.S. Intl., Inc.*, Civil Action No. 6:13-CV-308 (E.D. Tex.). Pet. 1.

*B. The '000 Patent*

The disclosed invention of the '000 patent is directed to a vehicle interior monitoring system that monitors, identifies, and locates occupants and other objects in the passenger compartment of a vehicle and objects outside of the vehicle. Ex. 1001, Abstract: 1-4. Objects are illuminated with electromagnetic radiation, and a lens is used to focus the illuminated images onto the arrays of a charge coupled device (CCD). *Id.* at Abstract: 1-9; col. 7, ll. 26-40. Computational means using trained pattern recognition analyzes the signals received at the CCD to classify, identify, or locate the contents of external objects, which, in turn, are used to affect the operation of other vehicular systems. *Id.* at Abstract: 10-12. The '000 patent discloses that a vehicle computation system uses a “trainable or a trained pattern recognition system” which relies on pattern recognition to process signals and to “identify” an object exterior to the vehicle or an object within the vehicles interior. *Id.* at col. 3, ll. 21-44.

Figures 7 and 7A, reproduced below, illustrate portions of the sensor system that use transmitters, receivers, circuitry, and processors to perform pattern recognition of external objects in anticipation of a side-impact collision:

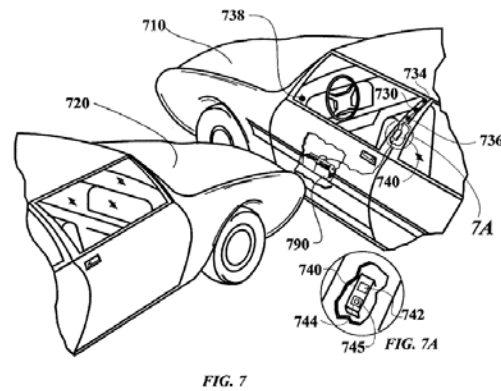


Figure 7, with Figure 7A inset, depicts vehicle 720 approaching the side of another vehicle 710 and shows transmitter 730 and receivers 734 and 736. Ex. 1001, col. 9, ll. 48-52; col. 18, ll. 28-40. Figure 7A provides a detailed view of the electronics that drive transmitter 730 and circuitry 744 containing neural computer 745 to process signals reflected or received from the external object using pattern recognition. *Id.* at col. 18, ll. 33-40.

Figure 8 also illustrates an exterior monitoring system and is reproduced below:

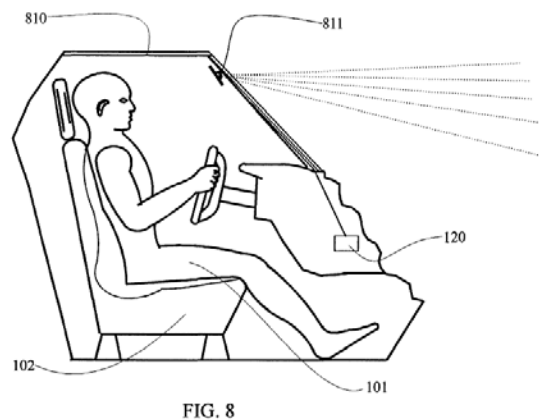


Figure 8 depicts a system for detecting the headlights or taillights of other vehicles used in conjunction with an automatic headlight dimming system. Ex. 1001, col. 9, ll. 54-58. CCD array in Figure 8 is designed to be sensitive

to visible light and does not use a separate source of illumination as depicted in Figure 7. *Id.*

The Summary of the Invention discusses an invention related to detection of object in the interior of the vehicle and objects external to the vehicle. *Id.* at col. 7, ll. 25-30. Specifically, external objects are illuminated with “electromagnetic, and specifically infrared, radiation,” and lenses are used to focus images onto one or more CCDs arrays. *Id.* The disclosure further states that the invention provides (1) an “anticipatory sensor” located within the vehicle to “identify about-to-impact object[s] in the presence of snow and/or fog”, (2) “a smart headlight dimmer system” to sense and identify headlights and taillights and distinguish them from other reflective surfaces, and (3) blind spot detection. *Id.* at col. 8, ll. 37-53.

### *C. Exemplary Claims*

Petitioner challenges independent claims 10, 16, and 23. The remaining challenged claims are dependent claims 11, 17, 19, and 20, which each depend directly on either claim 10 or claim 16. Claims 10, 16, and 23 are reproduced below:

10. In a motor vehicle having an interior and an exterior, a monitoring system for monitoring at least one object exterior to said vehicle comprising:
  - a) transmitter means for transmitting electromagnetic waves to illuminate the at least one exterior object;
  - b) reception means for receiving reflected electromagnetic illumination from the at least one exterior object;
  - c) processor means coupled to said reception means for processing said received illumination and creating an electronic signal characteristic of said exterior object based thereon;
  - d) categorization means coupled to said processor means for categorizing said electronic signal to identify said exterior

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