

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 LLC,  
Patent Owner.

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Case IPR2013-00424  
Patent 5,845,000

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Before JAMESON LEE, TREVOR M. JEFFERSON,  
and LYNNE E. PETTIGREW, *Administrative Patent Judges*.

JEFFERSON, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

## I. INTRODUCTION

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.”). On January 14, 2014, we instituted an *inter partes* review of claims 10, 11, 16, 17, 19, 20, and 23 on three grounds of unpatentability. Paper 16 (“Dec. on Inst.”). American Vehicular Sciences (“AVS” or “Patent Owner”) filed a Patent Owner Response (Paper 29, “PO Resp.”) and Petitioner filed a Reply To Patent Owner’s Response (Paper 34, “Reply”).

Patent Owner did not file a motion to amend the claims.

A consolidated oral hearing for IPR2013-00419 and IPR2013-00424, both involving the same Petitioner and the same Patent Owner, was held on August 18, 2014. A transcript of the joint hearing was entered in the record. Paper 49 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6(c). This final written decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons that follow, we determine that Petitioner has not shown by a preponderance of the evidence that claims 10, 11, 16, 17, 19, 20, and 23 of the ’000 patent are unpatentable.

### A. *Related Proceedings*

Petitioner and Patent Owner notify us 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.) (filed June 25, 2012); (2) *American Vehicular Sciences LLC*

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*v. BMW Grp. A/K/A BMW AG*, Civil Action No. 6:12-CV-413 (E.D. Tex.) (filed June 25, 2012); and (3) *American Vehicular Sciences LLC v. Mercedes-Benz U.S. Intl., Inc.*, Civil Action No. 6:13-CV-308 (E.D. Tex.) (filed April 3, 2013). Pet. 1; Paper 23, 2–3.

*B. The '000 Patent*

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, 7:26–40. 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 vehicle’s interior. *Id.* at 3:21–44.

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:

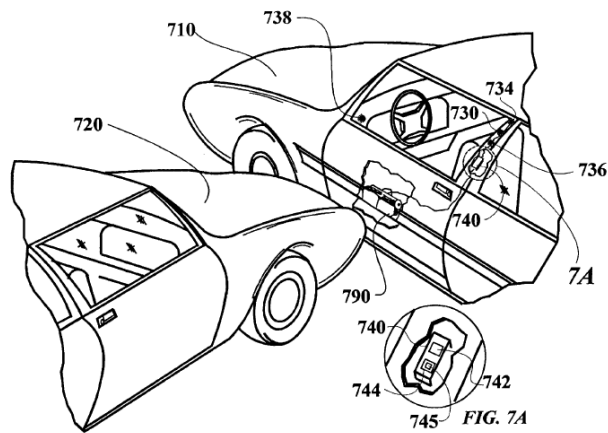


FIG. 7

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, 9:48–52, 18:28–40. Figure 7A provides a detailed view of the electronics that drive transmitter 730 and circuitry 744 containing neural computer 745 to process signals returned from the receivers using pattern recognition. *Id.* at 18:33–40.

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

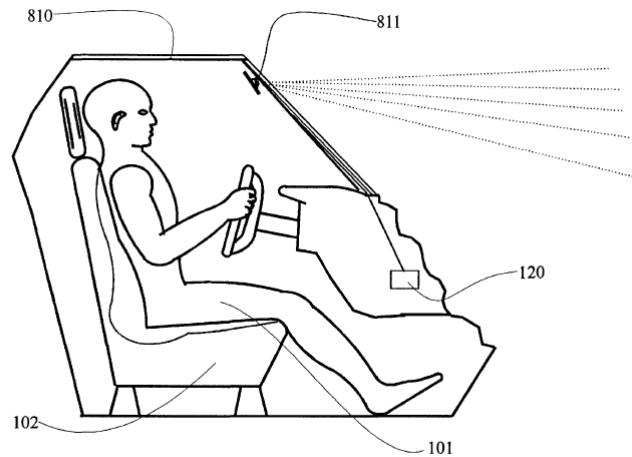


FIG. 8

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, 9:54–58. 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 objects in the interior of the vehicle and objects external to the vehicle. *Id.* at 7:25–30. Specifically, external objects are illuminated with “electromagnetic, and specifically infrared, radiation,” and lenses are used to focus images onto one or more CCD 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 8:37–53.

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