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Paper 39
Entered: June 25, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TRW AUTOMOTIVE US LLC,
Petitioner,

v.

MAGNA ELECTRONICS INCORPORATED,
Patent Owner.

Case IPR2014-00261
Patent 7,339,149 B1

Before JUSTIN T. ARBES, PATRICK R. SCANLON, and JO-ANNE M. KOKOSKI, *Administrative Patent Judges.*

SCANLON, *Administrative Patent Judge.*

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

I. INTRODUCTION

A. Background

Petitioner, TRW Automotive US LLC, filed a corrected Petition (Paper 17, "Pet.")[1] to institute an *inter partes* review of claims 1–5, 7, 8, 13, and 41 of U.S. Patent No. 7,339,149 B1 (Ex. 1002, "the '149 patent") pursuant to 35 U.S.C. §§ 311–319. Patent Owner, Magna Electronics Inc., subsequently filed a Preliminary Response (Paper 7, "Prelim. Resp."). On June 26, 2014, we instituted an *inter partes* review of claims 1–5, 7, 8, and 13 on three grounds of unpatentability (Paper 19, "Dec. on Inst.").

After institution, Patent Owner filed a Patent Owner Response (Paper 25, "PO Resp."), and Petitioner filed a Reply (Paper 29, "Reply").

An oral hearing was held on February 18, 2015. A transcript of the hearing is included in the record. Paper 38 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6(b). 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 shown by a preponderance of the evidence that claims 1–5, 7, 8, and 13 of the '149 patent are unpatentable.

B. The '149 Patent

The '149 patent, titled "Vehicle Headlight Control Using Imaging Sensor," issued on March 4, 2008. The '149 patent describes a system for "controlling [a] vehicle's headlamps in response to sensing the headlights of oncoming vehicles and taillights of leading vehicles." Ex. 1002, 1:33–35.

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[1] Paper 17 is a corrected Petition for *inter partes* review filed May 9, 2014. The original Petition for *inter partes* review (Paper 1) was accorded a filing date of December 17, 2013. *See* Papers 3, 16.

According to the '149 patent, prior attempts at automatic vehicle headlight controls included a single light sensor, wherein the headlights were dimmed in response to sensed light exceeding a threshold. *Id*. at 1:50–53. The '149 patent states that such systems are ineffective at detecting oncoming headlights at a distance and detecting taillights of leading vehicles. *Id*. at 1:54–62.

The '149 patent describes vehicle headlight dimming control 12 comprising imaging sensor module 14, imaging control circuit or digital signal processor 13, and vehicle lighting control logic module 16. *Id*. at 3:54–58; Fig. 2. Imaging sensor module 14 includes optical device 36, light sensing array 38, and spectral separation device 40 disposed between optical device 36 and light sensing array 38. *Id*. at 4:32–37; Fig. 2. Imaging sensor module 14 may be mounted to, or near, the vehicle's windshield via bracket 34. *Id*. at 4:13–15; Fig. 2. This positioning provides an interior location that substantially eliminates environmental dirt and moisture problems and provides a relatively clear view forward of the vehicle. *Id*. at 4:16–20.

Light sensing array 38 includes a plurality of photosensor elements 42 arranged in a matrix. *Id*. at 4:43–45, Fig. 4. Digital signal processor 13, which receives output 56 from light sensing array 38, includes taillight detection circuit 76 and headlight detection circuit 78. *Id*. at 4:64–5:1, Fig. 3. Taillight detection circuit 76 detects red light sources above a particular threshold, and headlight detection circuit 78 detects white light sources above a particular threshold. *Id*. at 5:12–30. Thus, "the control identifies light sources that are either oncoming headlights or leading taillights by identifying such light sources according to their spectral makeup." *Id*. at 2:50–52.

Vehicle lighting control logic module 16 receives input 20 from digital signal processor 13. *Id*. at 4:6–7, Fig. 2. Vehicle lighting control logic module 16 responds to the input by switching headlights 18 to an appropriate mode. *Id*. at 5:57–59. For instance, the headlights might be switched from high-beam mode to low-beam mode in response to detecting oncoming headlights. *Id*. at 7:47–50.

C. Illustrative Claims

Of the challenged claims in the '149 patent, claims 1 and 7 are independent. Claims 2–5, 8, and 13 depend, directly or indirectly, from claim 1, which is reproduced below:

> 1. A control system for automatically controlling the state of the headlamps of a controlled vehicle, said control system comprising:
>
> an optical system for imaging external sources of light within a predetermined field of view; and
>
> an imaging processing system for processing images from said optical system and providing a control signal for controlling the state of the headlamps as a function of the output of pixels imaging the same spectral band of light.

Ex. 1002, 12:49–58.

Claim 7 recites:

> 7. A control system for automatically controlling the state of the headlamps of a controlled vehicle, said control system comprising:
>
> an optical system for imaging external sources of light within a predetermined field of view, said optical system including an image array sensor containing a plurality of pixels; and
>
> an imaging processing system for processing images from said optical system and providing a control signal for controlling the state of the headlamps as a function of the output of pixels

> imaging the same spectral band of light, wherein said optical system is further configured to spatially segregate light sources having different spectral compositions on said pixel image array sensor.

Ex. 1002, 13:7–20.

D. Prior Art

The pending grounds of unpatentability in this *inter partes* review are based on the following prior art:

1. Japanese Kokai Application No. S62-131837, published June 15, 1987 ("Yanagawa") (Ex. 1005)[2];

2. U.S. Patent No. 4,521,804, issued June 4, 1985 ("Bendell") (Ex. 1006);

3. Oliver Vellacott, *CMOS in camera*, IEE Review, 111–114 (May 1994) ("Vellacott") (Ex. 1007);

4. U.S. Patent No. 4,758,883, issued July 19, 1988 ("Kawahara") (Ex. 1008); and

5. U.S. Patent No. 5,075,768, issued December 24, 1991 ("Wirtz") (Ex. 1009).

E. Pending Grounds of Unpatentability

We instituted the instant *inter partes* review on the following grounds of unpatentability:

[2] Petitioner's Exhibit 1005 contains both the Japanese patent document and an English translation of the document; Petitioner provided an affidavit attesting to the accuracy of the translation. *See* Ex. 1005; 37 C.F.R. § 42.63(b). Our references to Yanagawa in this decision refer to the English translation.

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