

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VOLKSWAGEN GROUP OF AMERICA, INC. and
PORSCHE CARS NORTH AMERICA, INC.,
Petitioner,

v.

YECHEZKAL EVAN SPERO,
Patent Owner.

IPR2022-01586*
Patent 11,208,029 B2

Before JON M. JURGOVAN, JASON W. MELVIN, and
AARON W. MOORE, *Administrative Patent Judges*.

MELVIN, *Administrative Patent Judge*.

JUDGMENT

Final Written Decision

Determining Some Challenged Claims Unpatentable

35 U.S.C. § 318(a)

Dismissing Petitioner's Motion to Exclude Evidence

37 C.F.R. § 42.64(c)

* Porsche Cars North America, Inc, which filed a petition in IPR2023-01122,
has been joined as a party to this proceeding.

I. INTRODUCTION

Volkswagen Group of America, Inc. (“Volkswagen”) filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1–33 of U.S. Patent No. 11,208,029 B2 (Ex. 1001, “the ’029 patent”). Yechezkal Evan Spero (“Patent Owner”) filed a Preliminary Response. Paper 6. We instituted review. Paper 7 (“Institution Decision” or “Inst.”). Following institution, Porsche Cars North America, Inc. (“Porsche”), filed a petition for *inter partes* review and a Motion for Joinder in IPR2023-01122, requesting that Porsche be joined as a petitioner to this proceeding. IPR2023-01122, Papers 2, 3. We instituted trial in IPR2023-01122, granted the Motion for Joinder, and added Porsche as a petitioner here. *Id.*, Paper 10. A copy of that decision was entered into the record of this proceeding. Paper 25. Thus, Volkswagen and Porsche are, collectively, “Petitioner” here.

Patent Owner filed a Response (Paper 13, “PO Resp.”), Petitioner filed a Reply (Paper 17, “Pet. Reply”), and Patent Owner filed a Sur-Reply (Paper 20, “PO Sur-Reply”).

Petitioner filed a Motion to Exclude Evidence (Paper 27, “Mtn. Exclude”), which Patent Owner opposed (Paper 28, “Opp. Mtn. Exclude”), and Petitioner filed a Reply (Paper 29, “Reply Mtn. Exclude”).

We held an oral hearing on February 22, 2024. Paper 32 (“Tr.”).

For the reasons below, we conclude that Petitioner has proven claims 1–8, 10–19, 21–30, 32, and 33 unpatentable but has not proven any of claims 9, 20, and 31 unpatentable.

A. REAL PARTIES IN INTEREST

Petitioner Volkswagen identifies itself as the real party in interest. Pet. 95. Petitioner Porsche identifies itself and its affiliate Dr. Ing. h.c. F.

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Porsche Aktiengesellschaft as the real parties in interest. IPR2023-01122 Paper 2, 93. Patent Owner identifies itself as the real party in interest, noting that Torchlight Technologies LLC is the exclusive licensee of the '029 patent. Paper 4, 1 (Patent Owner's Mandatory Notices).

B. RELATED MATTERS

The parties identify the following related litigation: *Torchlight Techs. LLC v. Daimler AG et al.*, Case No. 1:22-cv-00751 (D. Del.); *Torchlight Technologies LLC v. General Motors LLC et al.*, No. 1:22-cv-00752 (D. Del). *See* Pet. 95; Paper 4, 1. They also identify *Unified Patents, LLC v. Torchlight Technologies LLC*, IPR2022-01500 (PTAB Sept. 22, 2022). *See* Pet. 95; Paper 4, 1.¹

C. THE '029 PATENT

The '029 patent is titled “Adaptive Headlight System” and relates to motor vehicle headlamps with LED light sources and a processor to control the headlamp light pattern. Ex. 1001, codes (54, 57). The specification more generally describes a lighting device that “incorporates one or more discrete light sources and their ancillary optical and electrical control equipment in an integrated illuminating element.” *Id.* at 13:34–36. The combined unit is referred to as a Digital Lighting Fixture (DLF). *Id.* at 18:29–33.

The specification further describes transportation vehicle applications. *Id.* at 50:49–57:35. One such application involves a DLF headlamp device that includes a cluster of LEDs to illuminate around a curve. *Id.* at 51:54–63,

¹ Patent Owner further lists matters involving two different patents related to the '029 patent, including several IPRs, a pending reissue, and a completed *ex parte* reexamination. Paper 4, 2.

54:8–15. With LEDs having a variety of aims, the headlamp’s light distribution pattern may be controlled based on a number of factors, including location data from a GPS system, providing information about upcoming curves in the road. *See id.* at 51:54–67, 54:15–22.

D. CHALLENGED CLAIMS

Petitioner challenges all thirty-three claims of the ’029 patent. Pet. 4. Claim 1 is independent and is reproduced below:

1. A system, for a motor vehicle, comprising:
 - a plurality of headlamps, each comprising a plurality of LED light sources;
 - one or more processors; and
 - a memory storing instructions that, when executed by one or more of the one or more processors, enable the one or more processors to:
 - receive first data, including at least map data, indicating a road curvature upcoming along a road on which the motor vehicle is traveling;
 - [²] determine a light change, the change adapting a light pattern of the headlamps in at least one of color, intensity or spatial distribution to increase light in a direction of the road curvature ahead of the motor vehicle and shaping light based at least in part on the road curvature; and
 - [³] control at least a first plurality of the LED light sources to provide light based at least in part on the determined light change and prior to the motor vehicle reaching the road curvature.

² Patent Owner refers to these limitations as the “Predictive Curve Determination Element.” PO Resp. 8.

³ Patent Owner refers to these limitations as the “Predictive Curve Control Element.” PO Resp. 8.

Ex. 1001, 95:56–96:8. Claims 2–11 depend, directly or indirectly, from claim 1. *Id.* at 96:9–97:44. Claim 12 is independent and recites limitations similar to claim 1’s. *Id.* at 97:45–62. Claims 13–22 depend, directly or indirectly, from claim 12. *Id.* at 97:63–99:27. Claim 23 is independent and recites limitations similar to claim 1’s. *Id.* at 99:28–43. Claims 24–33 depend, directly or indirectly, from claim 23. *Id.* at 99:44–100:66.

Claim 9, which is reproduced below, depends from claim 8, which depends directly from claim 1. *Id.* at 96:62–97:38.

8. The system of claim 1, further comprising one or more cameras positioned to capture data indicating at least one other vehicle ahead of the motor vehicle;
wherein the instructions include instructions that, when executed by the one or more processors, enable the one or more processors to:
 - determine a position associated with the at least one other vehicle based at least in part on second data captured by at least one of the one or more cameras;
 - and
 - control, based at least in part on the position, a second plurality of LED light sources providing light directed towards an area including at least a portion of the other vehicle to diminish glare to a driver of the other vehicle by a decrease to intensity of light directed towards and illuminating the area, the light that is directed towards and illuminating the area having lower intensity compared to light directed towards points laterally adjacent the area to either side.
9. The system of claim 8, wherein:
 - the first plurality and second plurality of LED light sources include at least one common LED light source;

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