

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VOLKSWAGEN GROUP OF AMERICA, INC.,
Petitioner,

v.

YECHEZKAL EVAN SPERO,
Patent Owner.

IPR2023-00336
Patent 9,955,551 B2

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

MELVIN, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Volkswagen Group of America, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1–4, 7, 8, and 10–18 of U.S. Patent No. 9,955,551 B2 (Ex. 1001, “the ’551 patent”). Yechezkal Evan Spero (“Patent Owner”) filed a Preliminary Response. (Paper 6, “Prelim. Resp.”). In the Preliminary Response, Patent Owner identifies that it has disclaimed claims 1–4. Prelim. Resp. 1 (citing Ex. 2001). Thus, this proceeding involves claims 7, 8, and 10–18 (“the challenged claims”). As authorized, Petitioner filed a Preliminary Reply (Paper 7 (“Prelim. Reply”)), and Patent Owner filed a Preliminary Sur-Reply (Paper 8 (“Prelim. Sur-Reply”)). Pursuant to 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a), we have authority to determine whether to institute review.

An *inter partes* review may not be instituted unless “the information presented in the petition . . . and any response . . . 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.” 35 U.S.C. § 314(a). For the reasons set forth below, we conclude that Petitioner has not shown a reasonable likelihood it would prevail in establishing the unpatentability of at least one challenged claim, and we do not institute *inter partes* review.

A. REAL PARTIES IN INTEREST

Petitioner identifies itself as the real party in interest. Pet. 89. Patent Owner also identifies itself as the real party in interest, noting that Torchlight Technologies LLC is the exclusive licensee of the ’551 patent. Paper 4, 1 (Patent Owner’s Mandatory Notices).

B. RELATED MATTERS

Patent Owner identifies the following related federal district court litigations of the '551 patent: *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). Paper 4, 1.

Patent Owner identifies the following PTAB *inter parte* reviews of the '551 patent: *Volkswagen Group of America, Inc., v. Yechezkal Evan Spero*, IPR2023-00315; *Volkswagen Group of America, Inc., v. Yechezkal Evan Spero*, IPR2023-00318. Paper 4, 2.¹

C. THE '551 PATENT

The '551 patent is titled “Detector Controlled Illuminating System” and relates to an “illuminating device” whereby “illumination intensity and spectrum” are varied to illuminate “areas according to the principles of correct lighting practice,” e.g., “adapt to ambient lighting, movement, visual tasks being performed, and environmental and personal conditions.” Ex. 1001, codes (54), (57). The specification 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 18:18–22.

The specification further describes transportation vehicle applications. *Id.* at 50:38–57:37. One such application involves a DLF headlamp device that includes a cluster of LEDs for flexible illumination. *Id.* at 50:50–58. With LEDs having a

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 (identifying IPR2022-01500, IPR2022-01586, IPR2023-00197, IPR2023-00328, IPR2023-00335, 16/858,342, 90/014,815).

variety of aims, the headlamp's light distribution pattern may be controlled based on a number of factors, including detected oncoming vehicles. *See id.* at 51:43–47, 52:59–65.

D. CHALLENGED CLAIMS

Petitioner challenges claims 7, 8, and 10–18. *See* Pet. 3; Ex. 2001 (disclaiming claims 1–4). Claim 7 depends from canceled claim 6 and is reproduced below, with limitation identifiers consistent with Petitioner's appendix (Pet., Appx B):

- [.P] 6. An illuminating device having automatic control of the light provided to an illuminated area comprising:
 - [.A] a structure for incorporating illuminating device elements;
 - [.B] one or more light sources incorporated in the structure and in communication with a power source;
 - [.C] electronic circuitry apparatus for the controlled powering of the light source and other illuminating device elements;
 - [.D] one or more cameras placed on the structure for detecting coordinate-specific information about the illuminated area, said camera in communication with power and control device elements;
 - [.E] a controller integrated with the structure, in communication with the light source controlling power circuitry, said controller arranged to process[] the information communicated from the camera and automatically control the light provided to the illuminated area.
- 7. The illumination device of claim 6, where one or more light sources are directional wherein
 - [7.] the one or more detectors are configured to sense a presence of glare on a person's eyes in the illuminated area, and wherein the controller is programmed to adjust an intensity of the directional light sources to reduce the glare.

Ex. 1001, 96:17–37. Claim 8 is independent and reproduced below, with limitation identifiers consistent with Petitioner’s appendix:

- [.P] 8. An illuminating device which provides light to meet an illumination requirement of an illuminated area in which visual activities are performed, where different sub-areas of the illuminated area need to be illuminated at a different intensity and/or at a different spectrum than another sub-area of the illuminated area, comprising:
- [.A] a light fixture including a multiplicity of directional light sources including at least two directional light sources pointing in different directions thereby illuminating different sub-areas of the illuminated area,
 - [.B] the light fixture having movable structure for aiming the directional light sources mounted thereon in a defined direction;
 - [.C] a camera for obtaining images of the illuminated area functioning as a detector for at least one of (i) a light detector (ii) a spectrum detector, (iii) a motion detector, (iv) a measuring detector for sensing a geometry of the illuminated area, and (v) a detector for sensing at least one of work surfaces and road objects and at least one of vehicles and people;
 - [.D] a controller for adjusting a light intensity and a direction of each of the directional light sources;
 - [.E] a processor with stored algorithms and data for identifying at least one of (i) tasks being carried out by people, (ii) location of people, (iii) frequency of area usage by people, (iv) traffic density in the illuminated area from the sensed geometry, (v) work surfaces, (vi) road objects, people and/or vehicles, and (vii) roadway surface luminance any of which is used by said processor for determining illumination within the illuminated area using at least one of artificial intelligence, pattern recognition, video analytics, and look-up tables
 - [.F] wherein said processor, upon calculating the required illumination parameters according to best practice standards, directs the controller to adjust the directional light sources that illuminates

the specific sub-areas to meet the illumination requirements of the visual activities.

Id. at 96:38–97:3. Claims 10–18 depend from claim 8, directly or indirectly. *Id.* at 97:13–60.

E. PRIOR ART AND ASSERTED GROUNDS

This proceeding includes the following unpatentability grounds:²

	Claims Challenged	35 U.S.C. § ³	References/Basis
2	7	103	Braun, ⁴ Dowling ⁵
3	8, 10–13, 15–18	103	Braun, Dowling, Bailey ⁶
5	8, 10–18	103	Begemann, ⁷ Lee, ⁸ Pederson ⁹

Pet. 2–3. Petitioner also relies on the Declaration of E. Fred Schubert, Ph.D. Ex. 1003.

II. ANALYSIS

A. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner asserts that an ordinarily skilled artisan “would have had a bachelor’s degree (B.S.) in mechanical engineering, electrical engineering, optical engineering, applied physics, or an equivalent field, as well as at least 2 years of

² We include only the grounds remaining after Patent Owner disclaimed claims 1–4. *See* Ex. 2001.

³ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the application from which the ’551 patent issued was filed before this date, the pre-AIA version of § 103 applies.

⁴ WO 02/04247 A1, published Jan. 17, 2002 (Ex. 1005).

⁵ WO 02/25842 A2, published Mar. 28, 2002 (Ex. 1027).

⁶ US 5,752,766, issued May 19, 1998 (Ex. 1035).

⁷ US 6,250,774 B1, issued June 26, 2001 (Ex. 1006).

⁸ US 7,298,871 B2, filed June 7, 2002 (Ex. 1026).

⁹ US 2002/0048174 A1, published Apr. 25, 2002 (Ex. 1011).

industry experience in the area of automotive lighting and lighting-control systems” and “may work as part of a team” listing an example of such a team. Pet. 9 (citing Ex. 1003 ¶¶ 41–43). Patent Owner presents a different description, proposing that a person of the level of ordinary skill in the art:

would have had a Master’s of Science Degree (or a similar technical Master’s Degree, or higher degree) in an academic area emphasizing electrical engineering, computer engineering, or computer science with experience or education in optics and imaging systems or, alternatively, a Bachelor’s Degree (or higher degree) in an academic area emphasizing electrical, computer engineering or computer science and having two or more years of experience in the field of optical and imaging systems.

Prelim. Resp. 9. Neither party, however, explains the significance of its proposed level of ordinary skill and we determine any difference between the proposed levels of skill does not affect our determination here.

B. CLAIM CONSTRUCTION

The parties agree that no express claim construction is required at this stage. Pet. 10; Prelim. Resp. 10. Although asserting no term requires construction, Petitioner discusses “light[ing] fixture” and “light source.” Pet. 10–12. We do not understand “light[ing] fixture” to affect any issue in this decision. “Light source,” however, may do so.

Petitioner notes that the specification states that a light source “means any system that is capable of receiving an electrical signal and producing light in response to the signal.” Pet. 11 (quoting Ex. 1001, 17:3–6). The specification also instructs that “a ‘light source’ may refer to a single light emitting diode package including multiple semiconductor LED dies that are individually controlled.” Ex. 1001, 17:13–16. It explains further that “[t]ypically, an LED will come packaged in an optical assembly consisting of a reflector and lens with 8° to 50° spreads

being typical” and that “[a] Surface Mount Device—SMD LED with no optics will still be limited to 180° due to its construction.” *Id.* at 17:59–63. Thus, “light source” as used in the ’551 patent may include optics so long as the optics are packaged with the device that converts an electrical signal to light.

Beyond the “light source” discussed, we agree with the parties and therefore do not further construe the claims for this decision. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms that . . . are in controversy, and only to the extent necessary to resolve the controversy.’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

C. OBVIOUSNESS OVER BRAUN AND DOWLING

Petitioner asserts that claim 7 is unpatentable as obvious over Braun and Dowling. Pet. 34–35, 38–44. Patent Owner asserts that the combination does not teach “one or more detectors . . . configured to sense a presence of glare on a person’s eyes in the illuminated area” as claimed. Prelim. Resp. 24–26. As to that limitation, Petitioner relies on Braun’s disclosure that its controller “automatically adjusts illumination provided by the luxels to prevent glare . . . from blinding a driver of the oncoming vehicle.” Pet. 43 (quoting Ex. 1005, 6:4–7).

We agree with Patent Owner. Petitioner’s contentions do not address the requirement to “sense a presence of glare on a person’s eyes” and instead rely on Braun’s disclosures that its controller “identifies oncoming vehicles.” Ex. 1005, 6:4–7, 12:17–20. Those disclosures do not satisfy the claim language, which requires sensing glare, not vehicles. The ’551 patent’s specification is consistent with the claim language, in that it discusses using a camera vision system to detect glare “by assessing the amount of light reflected back to the camera from the eyes

of room occupants and determining . . . whether or not glare is occurring.” Ex. 1001, 64:31–40. And the specification distinguishes Braun’s approach of setting “light source intensity shining in the direction of the eyes to a level that will not cause glare.” *Id.* at 64:40–42. That alternative approach is not within the scope of claim 7. Thus, we agree that the Petition does not show Braun discloses claim 7’s glare sensing.

Accordingly, we conclude Petitioner has not shown a reasonable likelihood of prevailing with respect to obviousness over Braun and Dowling.

D. OBVIOUSNESS OVER BRAUN, DOWLING, AND BAILEY

Claim 8 requires “a light fixture including a multiplicity of directional light sources including at least two directional light sources pointing in different directions.” Petitioner relies on Braun alone as disclosing that limitation. Pet. 46 (citing Pet. 20–32 (asserting Braun alone renders claims 1–3 obvious)). Specifically, Petitioner points to Braun’s illuminator as including a plurality of “independently controllable light providing regions” also called luxels. Pet. 22.

Braun, however, discloses an illuminator having coplanar luxels all pointed in the same direction, as shown by the flat illuminator 24 depicted in Braun’s Figure 1, reproduced below:

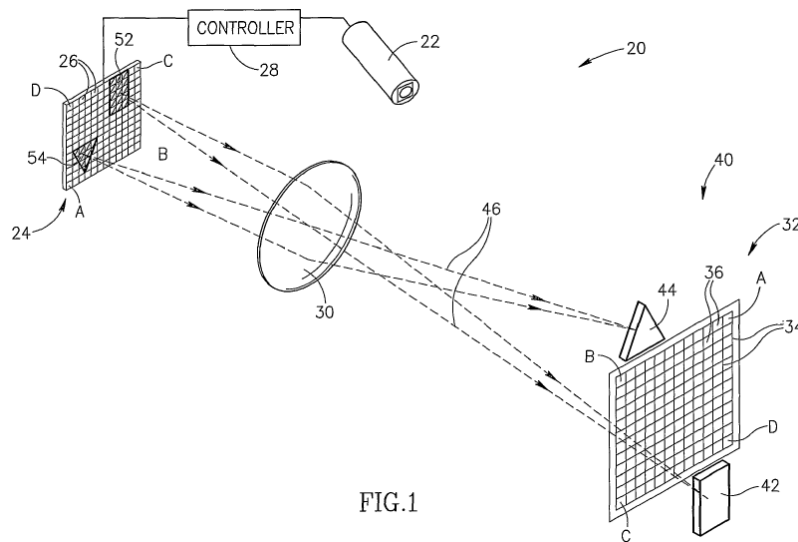


Figure 1 shows illumination system 20 comprising range finder 22, illuminator 24 having luxels, and controller 28. Ex. 1005, 14:12–15, Fig. 1. Although Braun discloses that “[e]ach luxel 26 provides light that illuminates a different region of illumination plane 32” (*id.* at 15:3–4), that effect is a result of lens 30, which “focuses light from luxels 26 to an illumination plane 32” (*id.* at 14:31–33), not a result of the luxels pointing in different directions. Based on our construction above, “light source” does not include separate optics that are not packaged with the light-generating device. *See supra* at 7 (§ II.B).

Accordingly, we conclude the Petition fails to show that Braun discloses claim 8’s limitation requiring light sources pointing in different directions. Because all of the claims challenged in this ground depend from claim 8, directly or indirectly, Petitioner has not shown a reasonable likelihood it would prevail with respect to obviousness over Braun, Dowling, and Bailey.

E. OBVIOUSNESS OVER BEGEMANN, LEE, AND PEDERSON

Claim 8 requires “the light fixture having movable structure for aiming the directional light sources mounted thereon.” Petitioner relies on Begemann’s

lighting units combined with Pederson's gyrator as teaching this limitation.

Pet. 76–78. Petitioner asserts that Begemann discloses a luminaire with lighting units, that Lee discloses a control unit for automatically setting lighting conditions, and that skilled artisans:

would have been motivated to modify Begemann's lighting system to
i) incorporate Lee's digital camera for obtaining the images of the illumination area such that Begemann's control system receives signals from the camera just like receiving signals 551, 552 from other sensors as shown in Figure 12, and ii) incorporate Lee's image recognition software into Begemann's control system for processing the images such that objects (people, rain, snow, fog, traffic density, approaching vehicles) can be identified.

Id. at 58 (citing Ex. 1003 ¶¶ 231–232; Ex. 1006, 8:38–9:29, Fig. 12), 74 (referring to contentions for the Begemann–Lee combination).

Begemann discloses a luminaire with lighting modules, each comprising lighting units that themselves comprise an LED chip and optical system. Ex. 1006, 1:30–40, 5:51–53. The lighting units allow for adjusting the beam direction during manufacture. *Id.* at 4:7–13. Begemann's Figure 2 is reproduced below:

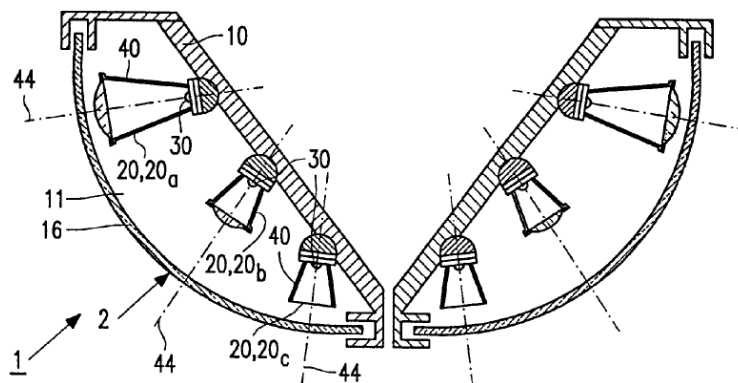


FIG. 2

Figure 2 depicts luminaire 1 with lighting module 2 comprising a set of lighting units 20, which “each comprise an LED chip 30 and an optical system 40.”

Ex. 1006, 5:51–53. Each of Begemann’s lighting units has a hemispherical mounting member that is accommodated in a mating recess, allowing each lighting unit to be set for a desired direction before adhesive fixes the direction during assembly. *Id.* at 6:1–9, Fig. 3.

Petitioner further asserts that Pederson discloses “gyrators to ‘impart motion to’ light having LED light sources” and that skilled artisans “would have been motivated to modify Begemann by i) replacing the mounting member 22 and recess 12 of Begemann’s lighting unit with Pederson’s connecting portion 40 and the attached gyrator” and to “ii) connect Pederson’s gyrator to Begemann’s controller such that the directions of the lighting units can be adjusted automatically.” Pet. 74 (citing Ex. 1003 ¶¶ 297–298; Ex. 1006, Fig. 3; Ex. 1011, Figs. 3, 15).

Pederson discloses a warning signal light that may be rotated or oscillated using mechanical means. Ex. 1011 ¶¶ 37, 183–185. Pederson’s Figure 3 is reproduced below:

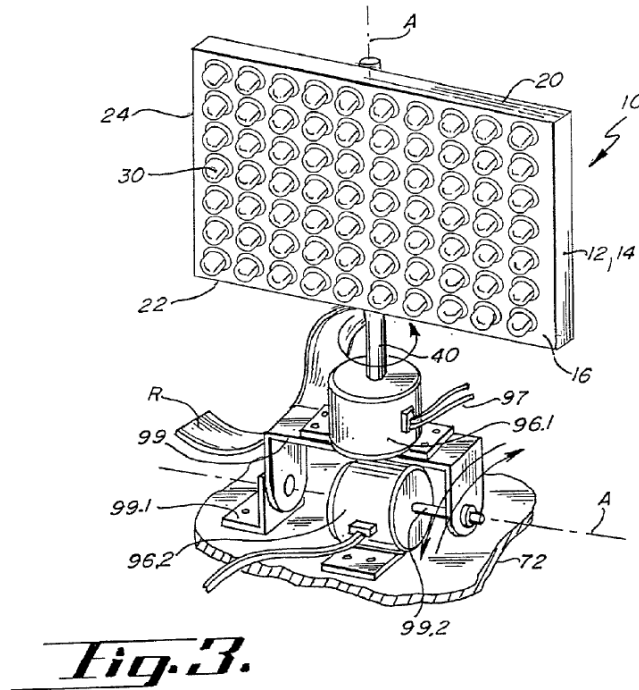


Figure 3 depicts a warning signal light attached to a gyrator. *Id.* ¶ 74. Warning signal light 10 rotates and oscillates about vertical axis A using motor 96.1 and about horizontal axis A using motor 96.2. *Id.* ¶¶ 183–184.

Patent Owner challenges the asserted combination, arguing that Pederson does not teach “that its gyrator 90 ‘aims’ LEDs 30 in any direction at all, let alone a defined direction.” Prelim. Resp. 36, 44–45. Patent Owner argues also that moving Begemann’s lighting units with Pederson’s gyrator “would alter the association between the lighting units 20 and the sections of the road or road area.” *Id.* at 35.

We agree with Patent Owner. While neither party construes claim 8's language "movable structure for aiming the directional light sources mounted thereon in a defined direction," the Petition does not adequately address the limitation. The '551 patent describes movable aiming in several ways, including that light sources may be manually or automatically repositioned, and that aiming

may be adjusted once, when the light is installed, or as needed when lighting requirements change. *See, e.g.*, Ex. 1001, 14:22–45, 61:41–43, 66:38–41, 68:21–32, 69:36–41, 70:49–53, 85:64–67, 89:41–45, 92:25–56. For purposes of this decision, we note that the specification’s examples all relate to pointing the light source in a desired direction.

Pederson, in contrast, does not teach that its gyrator points its light source in a desired direction. Instead it oscillates or rotates to create a warning signal. *See* Ex. 1011 ¶¶ 37, 183–185. Petitioner has not identified how skilled artisans would have adapted Pederson’s structure to aim Begemann’s light sources, rather than oscillating or rotating them. Stated otherwise, the claims require positioning the light sources, while Pederson teaches creating motion in its light sources. Without doubt, positioning requires motion, but it requires motion controlled in a way that Pederson does not teach.

Petitioner does not explain how skilled artisans would have applied Pederson’s teachings to Begemann’s light sources in a way that would allow the light sources to be aimed in a particular direction, as required by claim 8. Because all of the claims challenged in this ground depend from claim 8, directly or indirectly, we conclude Petitioner has not shown a reasonable likelihood it would prevail with respect to obviousness over Begemann, Lee, and Pederson.

III. CONCLUSION

For the reasons discussed above, we conclude Petitioner has not shown a reasonable likelihood of prevailing with respect to at least one claim. We have evaluated all of the parties’ submissions and determine that the record does not support institution.

IV. ORDER

Accordingly, it is

ORDERED that, pursuant to 35 U.S.C. § 314(a), no *inter partes* review of claims 7, 8, and 10–18 of the '551 patent is instituted on the grounds set forth in the Petition.

IPR2023-00336
Patent 9,955,551 B2

For PETITIONER:

Michael D. Specht
Jason A. Fitzsimmons
Daniel E. Yonan
Ian Soule
Min Yang
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
mspecht-ptab@sternekessler.com
jfitzsimmons-ptab@sternekessler.com
dyonan-ptab@sternekessler.com
isoule-ptab@sternekessler.com
myang-ptab@sternekessler.com

For PATENT OWNER:

Sangeeta G. Shah
Jeffrey Szuma
Bernard P. Tomsa
BROOKS KUSHMAN P.C.
sshah@brookskushman.com
jszuma@brookskushman.com
btomsa@brookskushman.com