

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ZF NORTH AMERICA, INC. and ZF ACTIVE SAFETY US INC.,¹
Petitioner,

v.

STONERIDGE CONTROL DEVICES, INC.,
Patent Owner.

IPR2023-00273
Patent 7,021,415 B2

Before BARRY L. GROSSMAN, GEORGE R. HOSKINS, and
SCOTT C. MOORE, *Administrative Patent Judges*.

MOORE, *Administrative Patent Judge*.

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

¹ The panel is using the caption that Petitioner provided in the Petition and other documents (e.g., Papers 1, 2, and 8). We note, however, that in the Petition, Petitioner defined nine different entities as the “ZF Entities,” and then identified the ZF Entities as the Petitioner. *See* Paper 2, v, 1. If Petitioner intended to identify all nine ZF Entities as Petitioner, it should file updated mandatory notice information to that effect.

I. INTRODUCTION

A. *Background and Summary*

ZF North America, Inc. and ZF Active Safety US Inc. (collectively “Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–25 of U.S. Patent No. 7,021,415 B2 (Ex. 1001, “the ’415 Patent”). Paper 2 (“Pet.”). Stoneridge Control Devices, Inc. (“Patent Owner”) filed a Disclaimer in Patent, under 37 C.F.R. § 1.321(a), disclaiming claims 1–4, 6, 9–13, and 20–23 of the ’415 Patent. Ex. 2001. As explained below, Patent Owner’s disclaimer eliminates claims 1–4, 6, 9–13, and 20–23 from the scope of this proceeding. Patent Owner also filed a Preliminary Response opposing institution as to remaining claims 5, 7, 8, 14–19, 24, and 25 (“the challenged claims”). Paper 7 (“Prelim. Resp.”). We authorized additional briefing to address the Board’s jurisdiction over an expired patent. *See* Ex. 1020. Accordingly, Petitioner filed a Reply to Patent Owner’s Preliminary Response. Paper 8 (“Reply”). Patent Owner elected not file a sur-reply to Petitioner’s Reply.

We have authority under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a) to determine whether to institute review. We may institute an *inter partes* review when “the information presented in the petition . . . 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). If we institute an *inter partes* review, the trial must encompass all claims and grounds identified in the Petition. 37 C.F.R. § 42.108(a) (“When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”)

For the reasons set forth below, we conclude that there is a reasonable likelihood that Petitioner will prevail in establishing the unpatentability at least one of the challenged claims. We, therefore, institute *inter partes* review of claims 5, 7, 8, 14–19, 24, and 25 on the grounds asserted in the Petition.

We base our findings and conclusions on the preliminary evidentiary record before us at this stage of the proceeding. This is not a final written decision, and the Board has not made a final determination as to the patentability of any challenged claim or any underlying factual or legal issue. We will base our final written decision on the record as fully developed during trial.

B. Real Parties in Interest

Petitioner identifies the real parties in interest as ZF Friedrichshafen AG, ZF North America, Inc., ZF TRW Automotive Holdings Corp., ZF Automotive US Inc., ZF Active Safety and Electronics US LLC, ZF Restraints US Inc., ZF Gainesville, LLC, ZF Active Safety US Inc., ZF Axle Drives Marysville, LLC, and Oechsler AG. Pet. v. Patent Owner identifies Stoneridge Control Devices, Inc. and Stoneridge, Inc. as the real parties in interest. Paper 6, 1.

C. Related Matters

The parties identify *Stoneridge Control Devices, Inc. v. ZF North America, Inc. et al.*, Case No. 2:22cv10289 (E.D. Mich., filed Feb. 11, 2022) as a related matter. Pet. v; Paper 6, 1.

D. The '415 Patent

The '415 Patent, titled “Electro-Mechanical Actuator for an Electrically Actuated Parking Brake,” issued Apr. 4, 2006 from U.S. Application No. 10/712,764, filed November 13, 2003, as a continuation-in-

part of U.S. Application No. 10/061,940, filed February 1, 2002. Ex. 1001, codes (22), (45), (54), (63). The term for the '415 Patent expired February 1, 2022.²

The '415 Patent is directed “to an actuator assembly for controlling . . . parking brake function within passenger vehicles.” Ex. 1001, code (54), 1:21–22. According to the '415 Patent, “audible noise is a significant feature differentiating actuators in parking brake systems and many other actuation applications” (*id.* at 1:34–36) and there is a “need for a method of tuning the actuator for audible noise performance” (*id.* at 1:43–44). To address this need, the '415 Patent discloses an actuator including an isolator that has an effective spring constant and damping constant and is coupled to a component (e.g., motor) to isolate it from the rest of the actuator. *Id.* at 1:56–61. The effective spring and damping constants can be tailored so as to tune the audible noise of the actuator. *Id.* at 1:61–63.

Figure 1 of the '415 Patent, reproduced below, depicts a block diagram of an exemplary electronic parking brake actuator (EPBA) system. Ex. 1001, 2:30–32.

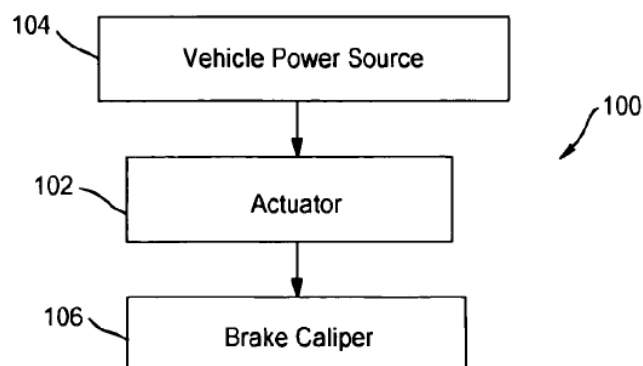


FIG. 1

² The parties acknowledge that the '415 Patent is expired. Pet. vi; Prelim. Resp. 39.

Figure 1 depicts EPBA system 100 including actuator 102, which receives electrical energy from vehicle power source 104 (e.g., battery). *Id.* at 2:58–63. Actuator 102 converts electrical energy to mechanical energy to drive brake caliper 106. *Id.* at 2:63–67.

Figure 7 of the '415 Patent, reproduced below, provides an exploded view of an exemplary actuator. Ex. 1001, 2:44–45.

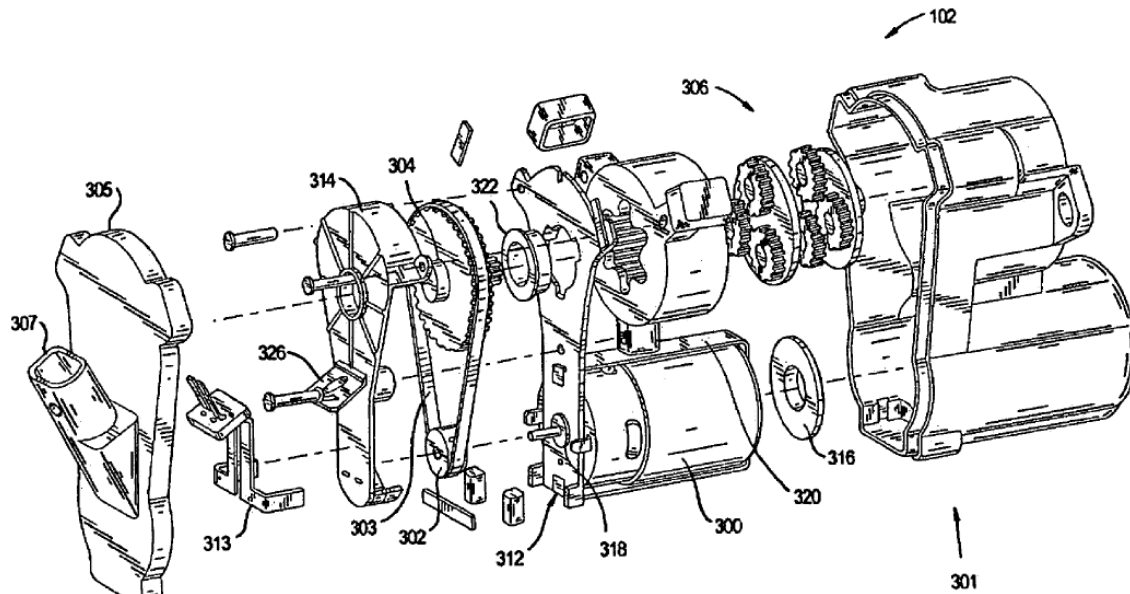


FIG. 7

Figure 7 shows the mechanical assembly of actuator 102, which includes motor 300 mounted to sub-frame 312 (e.g., mid plate). *Id.* at 4:23–25, 29–31. Motor 300 includes a shaft that carries drive pulley 302, which drives driven pulley 304 via drive belt 303. *Id.* at 4:31–34. Driven pulley 304 drives double planetary gear set 306 via a shaft that extends through sub-frame 312. *Id.* at 4:34–39. Housing top portion 305 is positioned on actuator housing 301 to substantially enclose the actuator. *Id.* at 4:55–58. Actuator 202 also includes output 308 (not shown) extending from actuator housing 301. *Id.* at 4:16–22.

Actuator housing 301 may define a first portion of a motor isolation cavity, into which motor 300 is disposed, and which may be covered by sub-frame 312. *Id.* at 5:59–67. In addition, first isolation bushing 316 and second isolation bushing 318 may be provided at associated ends of motor 300 to prevent vibrations from being transmitted to other components of the actuator, and, thereby, reduce audible noise. *Id.* at 6:1–9. According to the ’415 Patent, “the audible noise may be adjusted by selection of the isolation bushing material to provide appropriate spring and damping constants.” *Id.* at 6:9–11.

E. Challenged Claims

Petitioner initially challenged claims 1–25 of the ’415 Patent. Pet. 1. However, Patent Owner subsequently filed a statutory disclaimer for claims 1–4, 6, 9–13, and 20–23. Ex. 2001. The disclaimer eliminates claims 1–4, 6, 9–13, and 20–23 from the ’415 Patent, leaving the patent as if those claims never existed. *See Sanofi-Aventis U.S., LLC v. Dr. Reddy’s Labs., Inc.*, 933 F.3d 1367, 1373 (Fed. Cir. 2019). Thus, claims 1–4, 6, 9–13, and 20–23 are no longer part of this proceeding, and only claims 5, 7, 8, 14–19, 24, and 25 remain challenged in this proceeding.

Of the challenged claims, claims 5, 8, 16, and 17 are independent. Claim 7 depends from, and thus incorporates, disclaimed independent claim 6. Claims 14 and 15 depend from, and thus incorporate, disclaimed independent claim 13. Claims 18 and 19 depend from independent claim 17. Claims 24 and 25 depend from, and thus incorporate, disclaimed independent claim 20.

Claim 5, reproduced below with Petitioner's bracketed identifiers and formatting added (*see* Pet. 88), is illustrative of the challenged claims.

5. [5A] An electrically actuated parking brake system comprising:
- [5B] a vehicle power source;
 - [5C] an electromechanical actuator comprising a motor having a drive shaft, a drive gear coupled to said drive shaft, a driven gear coupled to said drive gear,
 - [5D] at least one planetary gear set coupled to said driven gear for driving an actuator output, and
 - [5E] a sub-frame, said motor being mounted on said sub-frame,
 - [5F] said actuator further comprising a component isolator having a spring constant and a damping constant, said isolator coupled between said motor and said sub-frame; and
 - [5G] a brake caliper coupled to said actuator output, said actuator output being configured for driving said brake caliper between an engaged position and a released position.

Ex. 1001, 9:25–40.

Independent claim 8 is similar to claim 5, except that claim 8 recites that the isolator is “coupled between said sub-frame and a remainder of said actuator.” Ex. 1001, 10:3–5. Independent claim 17 is similar to claim 5, except that claim 17 recites that the isolator is “disposed between said sub-frame and an actuator housing.” Ex. 1001, 11:15–16.

Independent claim 16 is directed to “[a]n electro-mechanical actuator” including features similar to the electromechanical actuator element recited in independent claim 17. Ex. 1001, 10:64–11:5.

F. Asserted Grounds

Petitioner asserts the following grounds of unpatentability for the challenged claims:³

Ground ⁴	Claims Challenged	35 U.S.C. § ⁵	Reference(s)/Basis
1	5, 7, 8, 14–19	103(a)	Poertzgen ⁶ , Boucheret ⁷
2	5, 7, 8, 14–19	103(a)	Poertzgen, Boucheret, Drennen ⁸
3	5, 7, 8, 14–19	103(a)	Poertzgen, Boucheret, Weiler ⁹
4	24, 25	103(a)	Weiler
5	24, 25	103(a)	Weiler, Boucheret

³ The Petition provides various grounds that apply only to disclaimed claims 1–4, 6, 9–13, and 20–23. *See* Pet. 15 (Grounds A, C, D, and F). As these claims are no longer part of this proceeding, we address only the asserted grounds that apply to remaining challenged claims 5, 7, 8, 14–19, 24, and 25. *See id.*

⁴ For purposes of this decision, we will refer to grounds that pertain to challenged claims 5, 7, 8, 14–19, 24, and 25 (i.e., Grounds B, E, G, H, and I in the Petition) as Grounds 1–5.

⁵ The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. We apply the pre-AIA version of § 103 here because the patent issued before the effective date of the AIA. *See* Ex. 1001, code (45).

⁶ German Pat. No. 19732168 C1, issued Jan. 7, 1999 (Ex. 1008). Petitioner filed a certified English translation of Poertzgen as Exhibit 1007 (“Poertzgen”).

⁷ U.S. Pat. No. 6,098,948, issued Aug. 8, 2000 (Ex. 1010, “Boucheret”).

⁸ U.S. Pat. No. 6,390,247 B1, issued May 21, 2002 (Ex. 1011, “Drennen”).

⁹ PCT App. Pub. No. WO 00/61962, published Oct. 19, 2000 (Ex. 1013). Petitioner filed a certified English translation of Weiler as Exhibit 1012 (“Weiler”).

Pet. 15. Petitioner also relies on the Declaration of Dr. Bruno Lequesne.
Ex. 1002. Patent Owner has not submitted declaration testimony at this stage of the proceeding.

II. ANALYSIS

A. *Discretionary Denial Under 35 U.S.C. § 314(a)*

Patent Owner argues that various factors of *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential), 2020 WL 2126495 (“*Fintiv*”), weigh in favor of exercising our discretion under § 314(a) to deny the Petition. Prelim. Resp. 39–40. Petitioner does not present any argument regarding discretionary denial. *See generally* Pet. Upon consideration of the relevant *Fintiv* factors as applied to the record in this case, discussed below, we find that the factors do not weigh in favor of exercising our discretion under § 314(a).

Fintiv instructs us to consider whether to deny institution in certain circumstances when there is parallel district court litigation, upon consideration of six factors:

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board’s exercise of discretion, including the merits.

Fintiv, Paper 11 at 6.

Our analysis of *Fintiv* is guided by the USPTO Director’s Memorandum issued on June 21, 2022, titled “Interim Procedure for Discretionary Denials in AIA Post Grant Proceedings with Parallel District Court Litigation” (“Director’s Memo”).¹⁰ We now turn to the *Fintiv* factors.

1. *Factor 1: Stay*

A district court’s stay of a parallel litigation pending resolution of a PTAB trial “has strongly weighed against exercising the authority to deny institution.” *Fintiv*, Paper 11 at 6. Similarly, a denial of stay but with a willingness to reconsider if the PTAB institutes review, weighs against discretionary denial of institution. *Id.* at 6–7.

Patent Owner represents that Petitioner is seeking a stay in the parallel district court proceeding involving the ’415 Patent, but “as of the date of this Patent Owner Preliminary Response a stay has not been granted.” Prelim. Resp. 39.

On this record, we decline to speculate on how the court would rule on a stay. Accordingly, this factor is neutral.

2. *Factor 2: Proximity to Trial Date*

The Parties make no representations as to a trial date for the district court proceeding, but Patent Owner concedes that this parallel proceeding “is in its relatively early stages.” Prelim. Resp. 39.

On this record, we determine that factor 2 weighs against exercising discretion to deny institution.

¹⁰ Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf

3. *Factor 3: Investment in Parallel Proceeding*

Patent Owner concedes that the parallel district court proceeding “is in its relatively early stages,” and makes no specific representation as to the amount of investment by the parties to date. Prelim. Resp. 39.

On this record, we find that factor 3 weighs against exercising discretion to deny institution.

4. *Factor 4: Overlap with Parallel Proceeding*

Patent Owner argues that Petitioner has “not stipulated in the corresponding district court proceeding that [it] will not seek to invalidate the ’415 Patent on grounds that were raised or could have been raised in this Petition if this matter is instituted.” Prelim. Resp. 39. According to Patent Owner, Petitioner is “seeking to litigate the proposed grounds of rejection on two parallel fronts.” *Id.* Patent Owner, however, does not offer any evidence as to the scope of the alleged overlap. *See id.*

On this record, it is unclear the extent to which issues in the instant proceeding overlap with those in the parallel district court proceeding. Accordingly, this factor is neutral.

5. *Factor 5: Whether Petitioner and Defendant are the Same Party*

“If a petitioner is unrelated to a defendant in an earlier court proceeding, the Board has weighed this fact against exercising discretion to deny institution” *Fintiv*, Paper 11 at 13–14.

Here, Petitioner is also a defendant in the parallel district court proceeding. *See Pet. v.* Thus, this factor weighs marginally in favor of exercising our discretion to deny institution. *See Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 19 (Dec. 1, 2020) (precedential at to § II.A).

6. *Factor 6: Merits and Other Considerations*

Patent Owner argues that “the Petition sets forth insufficient evidence of whether the claims would have been obvious.” Prelim. Resp. 39. However, as discussed below, Petitioner has met its burden of demonstrating a reasonable likelihood that it would prevail in showing that at least one of the challenged claims of the ’415 Patent is unpatentable. *See infra* § II.B.4. Accordingly, we disagree with Patent Owner’s assertion that the Petition sets forth insufficient evidence to support Petitioner’s contentions of obviousness.

Patent Owner also argues that exercising our discretion to deny institution in this proceeding would preserve administrative efficiency. Prelim. Resp. 40. In particular, Patent Owner asserts that a purpose of an IPR is to protect the public’s interest against monopolies, and this “purpose is not served by allowing IPR of an expired patent to proceed because any monopoly attached to it has already ended.” *Id.* (citing *Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. 261, 279–80 (2016)). According to Patent Owner, it would “be a waste of the Board’s efforts to consider whether an expired patent is unpatentable.” *Id.* We do not find this argument persuasive, particularly where, as here, the expired patent continues to be asserted and challenged in litigation. *See* Pet. v; Paper 6, 1. “[A]n expired patent may form the basis of an action for past damages subject to the six-year limitation under 35 U.S.C. § 286.” *Genetics Institute, LLC v. Novartis Vaccines and Diagnostics, Inc.*, 655 F.3d 1291, 1299 (Fed. Cir. 2011); *see* 35 U.S.C. § 286 (stating that the statutory time limitation for past damages is “six years prior to the filing of the complaint”). Here, the ’415 Patent expired less than six years ago in 2022, and can continue to be asserted by Petitioner for several more years. *See In re Morgan*, 990 F.2d

1230, 1232 (Fed. Cir. 1992) (“[A] patent does have value beyond its expiration date.”).

Under these circumstances, we find that factor 6 weighs slightly against exercising our discretion to deny institution.

7. *Conclusion on Fintiv Factors*

Based on a holistic analysis of the *Fintiv* factors taking into consideration “whether efficiency and integrity of the system are best served by denying or instituting review” (*Fintiv*, Paper 11 at 6), we decline to exercise our discretion under 35 U.S.C. § 314(a) to deny institution of *inter partes* review.

B. *Obviousness under 35 U.S.C. § 103*

1. *Principles of Law*

An invention is not patentable under 35 U.S.C. § 103 “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and, (4) where in evidence, so-called secondary considerations, including commercial success, long-felt but unsolved needs, and failure of others.¹¹ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

¹¹ At this stage of the proceeding, neither party has directed us to evidence of such secondary considerations.

When evaluating a combination of teachings, we must also “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

2. *Level of Ordinary Skill in the Art*

The level of skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (“the level of skill in the art is a prism or lens through which a judge, jury, or the Board views the prior art and the claimed invention”). Petitioner asserts that a person of ordinary skill in the art “at the time of the alleged invention would have had a bachelor’s degree (or equivalent) in mechanical engineering, electrical engineering, automotive engineering, or a similar discipline, and at least two years of experience with electromechanical devices such as actuators.” Pet. 16 (citing Ex. 1002 ¶¶ 17–20). At this stage of the proceeding, Patent Owner does not dispute Petitioner’s formulation regarding the level of ordinary skill in the art. *See* Prelim. Resp. 12. For purposes of this Decision, we accept and apply Petitioner’s formulation regarding the level of ordinary skill in the art.

3. *Claim Construction*

We apply “the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b).” 37 C.F.R. § 42.100(b). Thus, the *Phillips* claim construction standard applies in this case. *See Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

Under the *Phillips* standard, words of a claim generally are given their ordinary and customary meaning. *Phillips*, 415 F.3d at 1312. “[T]he ordinary and customary meaning of a claim term is the meaning that the

term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1313. The person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification. *Id.*

“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Matal*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

In this case, Petitioner asserts that “[n]o construction of any terms is necessary for the purposes of this proceeding.” Pet. 16. Patent Owner argues that, in the asserted grounds based on Weiler, Petitioner improperly construes the claim term “actuator housing” to encompass Weiler’s brake caliper. Prelim. Resp. 12. Patent Owner asserts that this “interpretation conflicts with how the two terms are used in Patent Owner’s specification and claims, and also conflicts with the way the prior art uses the two terms.” *Id.* at 12–13. This argument is not persuasive for reasons described below in our discussion of Ground 4.

Patent Owner also states that it “does not agree with the manner in which Petitioner reads ‘sub-frame’ on the prior art,” but, “[f]or purposes of this Patent Owner Preliminary Response only, Patent Owner does not traverse Petitioners’ reading of ‘sub-frame.’” Prelim. Resp. 13.

On this preliminary record, we decline to adopt specific constructions of any claim terms.

4. *Scope and Content of the Prior Art; Differences Between Claimed Subject Matter and Prior Art*

a) *Ground 1: Obviousness of Claims 5, 7, 8, and 14–19 Over Poertzgen and Boucheret*

(1) *Summary of Poertzgen*

Poertzgen is directed to “a hydraulic vehicle brake.” Ex. 1007, 2:2. Poertzgen explains that “[t]he underlying task of the invention is to provide a hydraulic vehicle brake that can be used both as a service brake and a parking brake, and the design of which is more compact than that of the [prior art] vehicle brake.” *Id.* at 2:12–13. Poertzgen describes that the hydraulic vehicle brake has a space-saving arrangement including a reduction gear connected between an electric motor and a spindle. *Id.* at 2:20–23.

Figure 1 of Poertzgen, reproduced below, is a partial section view of an exemplary hydraulic vehicle parking brake. Ex. 1007, 7:4–5.

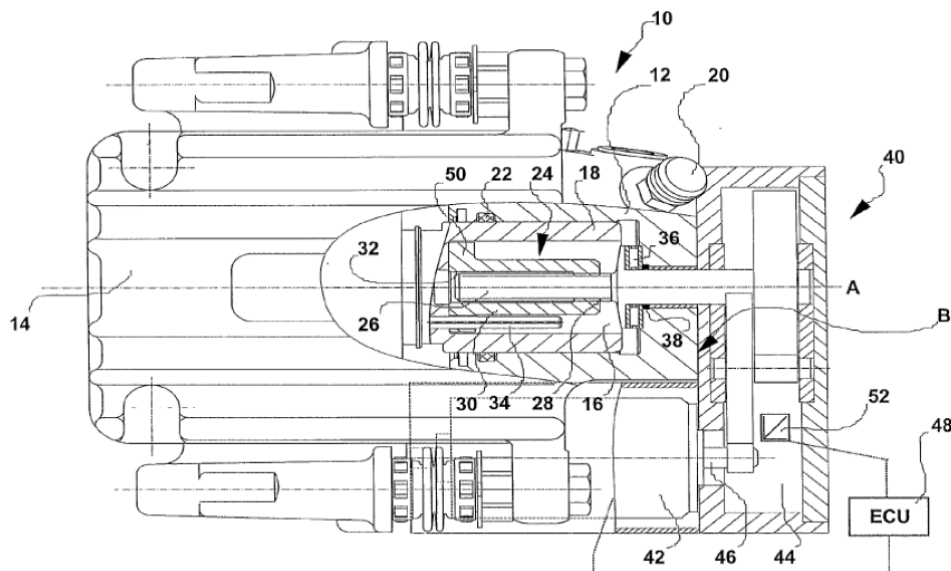


Fig. 1

Figure 1 shows vehicle brake 10 including housing 12 with an integrally-formed floating caliper 14 that straddles a brake disk (not shown). *Id.* at

7:8–10. Vehicle brake 10 includes spindle/nut arrangement 24 that converts rotational movement of spindle 26, which is arranged coaxial to axis A and includes male thread 28, into translational movement of nut 30, which includes a corresponding female thread 32. *Id.* at 7:26–34. Spindle 26 is rotationally-driven by unit 40, which is a subassembly including electric motor 42 driving reduction gears 44 via driveshaft 46. *Id.* at 8:5–7, 9–11; *see also id.* at 2:31–33 (describing that the reduction gear may be a planetary gear). In order to lock vehicle brake 10, electronic control unit 48 drives electric motor 42 so that output shaft 46 rotates reduction gear 44 and spindle 26 in a first direction. *Id.* at 8:17–21. Rotating spindle 26 causes nut 30 to move linearly along axis A, and annular flange 50 contacts brake piston 18 and forces it to engage friction pads and the brake disk (not shown). *Id.* at 8:21–24. Electric motor 42 can be switched off, and spindle/nut arrangement 24 will maintain in its position due to male thread 28 and female thread 32 being self-locking. *Id.* at 8:24–27.

(2) *Summary of Boucheret*

Boucheret is directed to “a device for the resilient fastening of an electric motor within a housing, especially one adapted to supply an electric current to a motorised fan unit in a motor vehicle.” Ex. 1010, 1:6–9.

Boucheret describes, in particular, “a fastening device for a motor having radial fastening lugs which receive damping elements adapted to be lodged within matching cavities defined within the housing.” *Id.* at 1:10–13.

Figure 3 of Boucheret, reproduced below, shows an exemplary fastening device. Ex. 1010, 2:54–56.

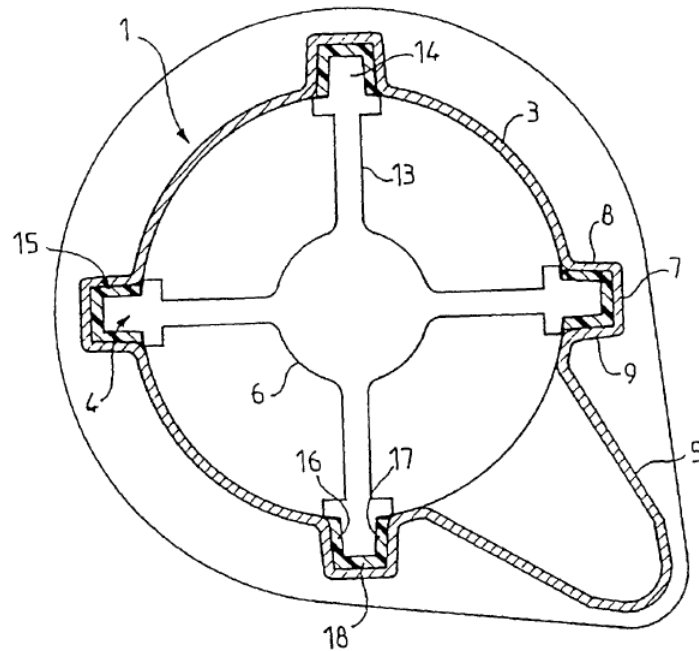


FIG. 3

Figure 3 depicts housing 1, which includes side surface 3 having four cavities 4 projecting radially outward. *Id.* at 2:62–3:2. Motor 6 is equipped with four fastening lugs 13 extending radially and comprising end portions 14 having a shape that matches cavities 4. *Id.* at 3:11–14. Each end portion 14 includes removable damping element 15 comprising resilient material. *Id.* at 3:15–19. Damping elements 15 serve as vibration dampers between electric motor 6 and housing 1. *Id.* at 3:20–22.

(3) *Analysis of Claim 5*

Petitioner contends that the combination of Poertzgen and Boucheret renders obvious independent claim 5. Pet. 40–42. Petitioner's contentions are supported by testimony from Dr. Lequesne. Ex. 1002 ¶¶ 174–182.

[5A] *An electrically actuated parking brake system*

Petitioner contends that Poertzgen discloses an electrically actuated parking brake system of the type recited in the preamble of claim 5. Pet. 30–

31 (citing Ex. 1007, code (57), 2:2–30, 4:30–5:10, 6:7–13, 7:26–8:32, Fig. 1; Ex. 1002 ¶ 87).¹²

Patent Owner does not dispute Petitioner’s assertion based on Poertzgen as to limitation [5A]. *See* Prelim. Resp. 21–29. On this record, we determine Petitioner has made a sufficient showing for purposes of institution that Poertzgen discloses this limitation of claim 5.

[5B] a vehicle power source;

Petitioner contends that Poertzgen’s control unit 48, which drives electric motor 42, is a “a vehicle power source,” as recited in claim 5. Pet. 17–18 (citing Ex. 1007, code (57), 2:2–30, 4:30–5:10, 6:7–13, 7:26–8:32, Fig. 1; Ex. 1002 ¶¶ 88–90).

Patent Owner does not dispute Petitioner’s assertion based on Poertzgen as to limitation [5B]. *See* Prelim. Resp. 15–27. On this record, we determine Petitioner has made a sufficient showing for purposes of institution that Poertzgen discloses this limitation of claim 5.

[5C] an electromechanical actuator comprising a motor having a drive shaft, a drive gear coupled to said drive shaft, a driven gear coupled to said drive gear,

Petitioner contends that Poertzgen’s electric motor 42 (with output shaft 46) is “an electromechanical actuator comprising a motor having a

¹² The discussion of claim 5 in the Petition refers back to earlier sections of the Petition discussing similar limitations appearing in disclaimed claims 2, 3, and 6. *See* Pet. 40–41 (asserting that various limitations recited in claim 5 are “identical” to limitations recited in claims 2, 3, and 6, which Patent Owner subsequently disclaimed (*see* Ex. 2001)). Accordingly, our analysis of Petitioner’s contentions for claim 5 necessarily includes citations to portions of the Petition addressing disclaimed claims 2, 3, and 6, despite the fact that these claims are not part of this proceeding.

drive shaft,” and output shaft 46 drives reduction gear 44. Pet. 18 (citing Ex. 1007, code (57), 2:18–3:8, 8:5–8:32, Fig. 1). Petitioner contends that Poertzgen’s reduction gear 44 preferably includes a belt gear or toothed-belt gear. *Id.* at 18–19 (citing Ex. 1007, 2:31–3:8; Ex. 1002 ¶¶ 93–94); *see also id.* at 19 (contending that one of ordinary skill in the art “would have understood that both the preferred belt gear or toothed-belt gear include a drive gear and a driven gear coupled via a drive belt”). According to Petitioner, one of ordinary skill in the art “would have appreciated that Poertzgen teaches that the motor output shaft 46 rotates the drive gear of the belt gear (the ‘*drive gear coupled to said drive shaft*’) that in turn rotates the driven gear of the belt gear (the ‘*driven gear coupled to said drive gear*’).” *Id.* Petitioner also contends that, because “the brake is actuated using the electric motor 42 which drives the various gears 44, Poertzgen also discloses the recited *electromechanical actuator*.” *Id.* at 20 (citing Ex. 1002 ¶ 96).

Patent Owner does not dispute Petitioner’s assertions based on Poertzgen as to limitation [5C]. *See* Prelim. Resp. 15–27. On this record, we determine Petitioner has made a sufficient showing for purposes of institution that Poertzgen discloses this limitation of claim 5.

*[5D] at least one planetary gear set coupled to
said driven gear for driving an actuator output,
and*

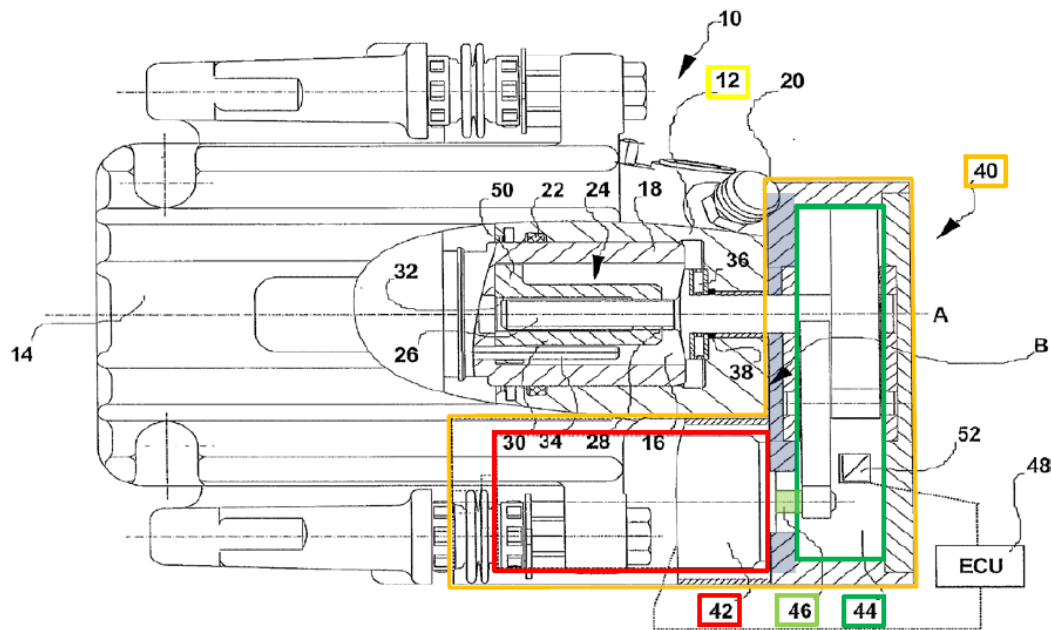
Petitioner contends that Poertzgen’s reduction gear 44 is preferably arranged in two stages including a belt gear and a planetary gear, which may be upstream or downstream of the belt gear. Pet. 21 (citing Ex. 1007, 2:31–3:8). Petitioner contends that Poertzgen discloses an embodiment in which “electric motor 42 drives a belt gear as a first stage of reduction gear 44, the belt gear comprising a drive gear and a driven gear coupled together via a

belt,” and “the driven belt gear in turn drives a planetary gear set, as a second stage of reduction gear 44 (the recited ‘*at least one planetary gear set coupled to said driven gear*’).” *Id.* (citing Ex. 1002 ¶ 101). Petitioner also contends that Poertzgen’s electric motor 42 and reduction gear 44 together form a subassembly (unit 40) that “provides an output that rotates spindle 26, which is what causes nut 30 to move and close and open the brake caliper.” *Id.* (citing Ex. 1007, 7:26–8:32). According to Petitioner, unit 40 provides an “actuator output,” as recited in claim 5. *Id.* at 22 (citing Ex. 1002 ¶¶ 102–104).

Patent Owner does not dispute Petitioner’s assertions based on Poertzgen as to limitation [5D]. *See* Prelim. Resp. 15–27. On this record, we determine Petitioner has made a sufficient showing for purposes of institution that Poertzgen discloses this limitation of claim 5.

[5E] a sub-frame, said motor being mounted on said sub-frame,

Petitioner contends that Poertzgen’s motor 42 and reduction gear 44, together comprise a subassembly (unit 40) that can be manipulated independently and attached to various brakes to be actuated. Pet. 24 (citing Ex. 1007, code (57), 2:24–30, 8:5–16). Petitioner contends that “motor 42 and reduction gear 44 are mounted on a sub-frame that allow them to be separately handled, apart from the remainder of the braking system shown in Figure 1.” *Id.* (citing Ex. 1002 ¶ 115). Poertzgen’s Figure 1, as annotated by Petitioner, is reproduced below.



Ex. 1007, Figure 1 (annotated)

Id. at 25. Referring to annotated Figure 1 of Poertzgen, above, Petitioner contends that “part of the unit 40 (annotated in **orange**) has a plate (**gray**) between the motor and the gears through which the driveshaft 46 (**light green**) passes (all or part of which is the recited ‘sub-frame’), to which the motor 42 and gears 44 are mounted.” *Id.*

Patent Owner does not dispute Petitioner’s assertions based on Poertzgen as to limitation [5E]. *See* Prelim. Resp. 15–27. On this record, we determine Petitioner has made a sufficient showing for purposes of institution that Poertzgen discloses this limitation of claim 5.

[5F] said actuator further comprising a component isolator having a spring constant and a damping constant, said isolator coupled between said motor and said sub-frame; and

Petitioner contends that Poertzgen’s “Figure 1 shows a narrow rectangle between the motor 42 and the plate to which the motor is attached,” but “Poertzgen does not explicitly describe this as an isolator.”

Pet. 35. However, relying on the testimony of Dr. Lequesne, Petitioner contends that “it was within the general knowledge in the art that the transmission of NVH [(noise, vibration, and harshness)] could be reduced by placing an isolator or damping element between automotive components,” and “[t]he simplest such isolators are passive elastic members placed between components to act as cushions and dampen NVH.” *Id.* (citing Ex. 1014,¹³ 198; Ex. 1002 ¶¶ 159–160).

Petitioner also contends that “Boucheret discloses a housing 1 for an electric motor 6, wherein damping members (essentially elastic cushions) 15 are coupled between the motor and the motor housing.” Pet. 35 (citing Ex. 1010, code (57), 1:5–64, 2:30–34, 3:11–40, 4:27–56, Figs. 1–4; Ex. 1002 ¶¶ 161–162). Petitioner contends that one of ordinary skill in the art “would have been motivated to combine the idea of a resilient isolator as taught in Boucheret with the motor mount of Poertzgen so that the isolator is coupled between the motor and a remainder of the actuator or parking brake system, so as to dampen NVH coming from the motor.” *Id.* at 36–37. Petitioner reasons that

[p]lacing a resilient isolator between an electric motor (indeed, any component that might have NVH) and the components to which it is mounted or abuts is nothing more than the use of a known technique (having an isolator between components to reduce NVH) to improve a similar device (Poertzgen’s actuator which has a motor mounted to other actuator components) in the same way (NVH is dampened).

Id. at 37 (citing Ex. 1002 ¶ 164). Petitioner also contends that one of ordinary skill in the art would appreciate that the benefit of reducing NVH

¹³ Julian Happian-Smith, *An Introduction to Modern Vehicle Design* (2001) (Ex. 1014, “Happian-Smith”).

taught by Boucheret would also apply to Poertzgen, as each reference relates to electric motor actuators used in vehicles and recognizes the benefits of NVH reduction. *Id.* (citing Ex. 1007, 2:12–3:8; Ex. 1010, 1:5–64, 3:20–22, 4:27–56). According to Petitioner, “the use of isolators between components to reduce NVH was well within the general knowledge of the POSA and thus, the POSA would have a reasonable expectation of success in applying an isolator to Poertzgen.” *Id.* (citing Ex. 1002 ¶ 165).

In opposing Petitioner’s contentions, Patent Owner first argues that “Boucheret does not teach one to place isolators at an axial face of a motor, between a motor and a sub-frame.” Prelim. Resp. 21. Patent Owner argues that, instead, Boucheret “would teach one to mount Poertzgen’s motor with radial lugs, and provide grooved dampers between those lugs and the motor housing.” *Id.* at 20. Patent Owner also asserts that “Boucheret’s radially-mounted dampers already achieve the goal of absorbing vibrations acting in all directions.” *Id.* According to Patent Owner, Petitioner has “not addressed whether there would be a reasonable expectation of success in using Boucheret’s grooved damper at an axial end of a motor.” *Id.* at 24; *see also id.* at 26 (asserting that Petitioner “offer[s] no explanation as to how Boucheret’s grooved, radially-mounted dampers would work when applied in the context of Poertzgen”).

On this record, Patent Owner’s arguments are unavailing. It is not necessary to find precise teachings in the prior art directed to the specific subject matter claimed because inferences and creative steps that a person of ordinary skill in the art would employ can be taken into account. *See KSR*, 550 U.S. at 418. Here, Petitioner has offered declaration evidence that Boucheret’s teaching of adding an isolator between an electric motor and a component to which it is mounted in order to reduce NVH would have led

one of ordinary skill in the art to add an isolator between Poertzgen's electric motor 42 and the sub-frame of unit 40. Pet. 36–38. Patent Owner does not argue that the proposed modification would have been beyond level of ordinary skill in the art. *See KSR*, 550 U.S. at 417 (noting that, “if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill”).

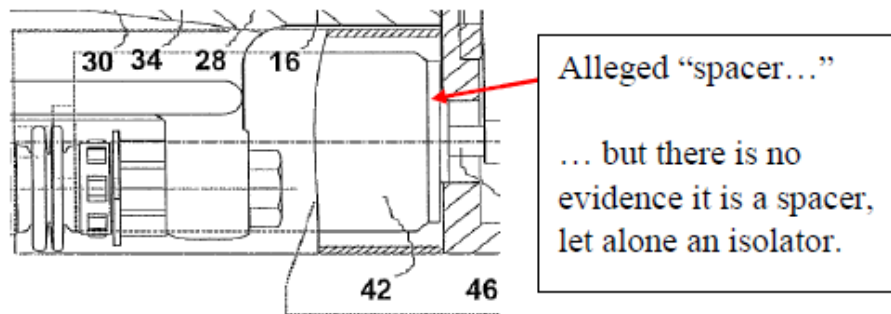
Patent Owner's argument regarding the expectation of success in using Boucheret's grooved radially-mounted dampers at the axial end of Poertzgen's motor (*see* Prelim. Resp. 24, 26) suggests that obviousness could only be shown if Boucheret's dampers could be bodily incorporated into Poertzgen to arrive at the claimed invention. An obviousness analysis is not so constrained. *See, e.g., Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016) (“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference[.]”); *see also In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) (“It is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements.”).

We are also unpersuaded by Patent Owner's assertion that Boucheret would only teach one of ordinary skill in the art to mount Poertzgen's motor using radial lugs and dampers. *See* Prelim. Resp. 20. *See KSR*, 550 U.S. at 421 (“A person of ordinary skill is also a person of ordinary creativity, not an automaton.”). Here, Petitioner has offered declaration testimony that one of ordinary skill in the art would have had reason to add vibration dampers at the location where Poertzgen's motor is mounted to a frame (i.e., the

motor's axial end), and that testimony presently stands unrebutted. *See* Pet. 35–37 (citing Ex. 1002 ¶¶ 161–65).

Next, Patent Owner contests Petitioner's citation of Happian-Smith (Exhibit 1014). Prelim. Resp. 22–23. Patent Owner argues that “the cited portions [of Happian-Smith] do generally discuss vibration damping in the automotive context, [but] they do not teach one to place vibration dampers in the particularly-claimed locations.” *Id.* at 22. Patent Owner asserts that the damping examples described in Happian-Smith concern isolating an engine from a vehicle's structure and controlling crankshaft oscillations. *Id.* (citing Ex. 1014, 206–211; Ex. 1002 ¶ 177). According to Patent Owner, “[i]t is not reasonable to interpret teachings about engines and crankshafts as teaching one to provide isolation features for an EPBA in the specifically-claimed locations, especially considering that doing so conflicts with Boucheret's disclosure.” *Id.* at 22–23. But Petitioner merely relies on Happian-Smith to support the contentions that “it was within the general knowledge in the art that the transmission of NVH could be reduced by placing an isolator or damping element between automotive components” and “[t]he simplest such isolators are passive elastic members placed between components to act as cushions and dampen NVH.” Pet. 35 (citing Ex. 1014, 198; Ex. 1002 ¶¶ 159–160). Petitioner does not rely on Happian-Smith to demonstrate that one of ordinary skill would have placed a vibration damper at the particular location recited in claim 5. Moreover, Patent Owner does not persuasively explain why the context of isolating an engine from a vehicle's structure would make Happian-Smith's vibration damping teachings inapplicable to Poertzgen's electric motor mounting arrangement.

Patent Owner also disputes Petitioner’s interpretation that Poertzgen’s Figure 1 shows a “spacer” between the motor and sub-frame. Prelim. Resp. 22–23 (citing Pet. 35, 38). Poertzgen’s Figure 1, as annotated by Patent Owner, is reproduced below.



Id. at 23. Patent Owner argues that there is no basis for Petitioner to call the rectangular-shaped feature between the motor and sub-frame a spacer. *Id.* According to Patent Owner, instead, the “rectangular-shape could be a section, such as an end cap, of the motor, as opposed to a spacer (let alone an isolator).” *Id.*

On this point, Patent Owner may be correct. Although Petitioner cites testimony to support its interpretation (*see* Pet. 38), this testimony provides only a conclusory parenthetical statement that Figure 1 of Poertzgen shows a “spacer between the motor and the rest of the actuator” (Ex. 1002 ¶ 166). On this record, it appears equally likely, that the rectangular feature is a section of the motor, as argued by Patent Owner. Prelim. Resp. 23. This potential insufficiency, however, is not fatal to Petitioner’s contentions. As discussed above, Petitioner has provided other persuasive reasoning to support its contention that one of ordinary skill in the art would have had reason to locate an isolator between Poertzgen’s motor and subframe.

Based on the current record, we determine that Petitioner provides sufficient reasoning to support its contention that one of ordinary skill in the art would have had reason to combine the teachings of Poertzgen and Boucheret in the manner proposed in the Petition. Namely, Petitioner provides credible evidence and argument that, based on Boucheret's teaching to use vibration dampers between an electric motor and a structure to which it mounts (e.g., a housing), one of ordinary skill in the art would have had reason to modify Poertzgen to include such a vibration damper between electric motor 46 and the sub-frame of unit 40 (i.e., the structure to which the motor mounts) to reduce noise, vibration, and harshness. *See* Pet. 36–37; Ex. 1002 ¶¶ 175–182.

[5G] a brake caliper coupled to said actuator output, said actuator output being configured for driving said brake caliper between an engaged position and a released position.

Petitioner contends that Poertzgen's housing 12 with integrally-formed floating caliper 14 is “a brake caliper coupled to said actuator output,” as claimed. Pet. 22 (citing Ex. 1007, 7:8–10). Petitioner contends that rotating spindle 26 translates nut 30, causing it “to contact the brake piston 18, which causes the caliper to close and the friction pad to contact the brake disk, thus engaging the brake (the recited ‘*engaged position*’ of the brake caliper).” *Id.* at 23 (citing Ex. 1007, code (57), 2:4–11, 4:30–5:7, 6:7–13, 7:26–8:27, Fig. 1). Petitioner also contends that reversing the rotation of spindle 26 causes “nut 30 to translate in the opposite direction, relieving the brake piston of pressure and causing the brake caliper to open (the recited ‘*released position*’ of the brake caliper).” *Id.* (citing Ex. 1007, code (57), 5:8–14, 8:28–32; Ex. 1002 ¶¶ 107–109).

Patent Owner does not dispute Petitioner's assertions based on Poertzgen as to limitation [5G]. *See* Prelim. Resp. 15–27. On this record, we determine Petitioner has made a sufficient showing for purposes of institution that Poertzgen discloses this limitation of claim 5.

(4) *Conclusion for Claim 5*

Based on the current record, Petitioner's contentions (*see* Pet. 40–42) and the supporting testimony of Dr. Lequesne (*see* Ex. 1002 ¶¶ 174–182) demonstrate, in a manner that is sufficiently persuasive for purposes of institution, that the subject matter of claim 5 would have been obvious over the combination of Poertzgen and Boucheret. Accordingly, Petitioner has shown a reasonable likelihood that it will prevail on its argument that claim 5 is unpatentable under 35 U.S.C. § 103(a). We, therefore, institute an *inter partes* review as to all grounds and all challenged claims. 35 U.S.C. § 314(a); 37 C.F.R. § 42.108(a).

(5) *Analysis of Claims 7, 8, and 14–19*

Petitioner's contentions account for each limitation recited in independent claims 8, 16, and 17, and dependent claims 7, 14, 15, 18, and 19 (*see* Pet. 42–52), and are supported by testimony from Dr. Lequesne (*see* Ex. 1002 ¶¶ 183–207).

Patent Owner argues that claims 7, 8, and 14–19 are not obvious over Poertzgen and Boucheret for the same reasons as independent claim 5. Prelim. Resp. 27–29. These arguments are unavailing for the reasons discussed above. *See supra* § II.B.4.a.3.

b) *Ground 2: Obviousness of Claims 5, 7, 8, and 14–19 Over Poertzgen, Boucheret, and Drennen*

Petitioner contends that the combination of Poertzgen, Boucheret, and Drennen renders obvious claims 5, 7, 8, and 14–19. Pet. 61–63. Petitioner's

contentions are supported by testimony from Dr. Lequesne. Ex. 1002 ¶¶ 236–239.

Patent Owner argues that Ground 2 suffers from the same alleged deficiencies as Ground 1, and Petitioner does “not rely on Drennen in an effort to cure the above-noted deficiencies with respect to the alleged obviousness of the locations of the claimed isolator.” Prelim. Resp. 29. However, for the reasons discussed above, we do not determine on this record that Petitioner’s proposed combination of Poertzgen and Boucheret in Ground 1 is deficient. *See supra* § II.B.4.a.

c) Ground 3: Obviousness of Claims 5, 7, 8, and 14–19 Over Poertzgen, Boucheret, and Weiler

Petitioner contends that the combination of Poertzgen, Boucheret, and Weiler renders obvious claims 5, 7, 8, and 14–19. Pet. 70–71. Petitioner’s contentions are supported by testimony from Dr. Lequesne. Ex. 1002 ¶¶ 259–262.

Patent Owner argues that Ground 3 suffers from the same alleged deficiencies as Ground 1, and Petitioner does “not rely on Weiler in an effort to cure the above-noted deficiencies with respect to the alleged obviousness of the locations of the claimed isolator.” Prelim. Resp. 29–30. However, for the reasons discussed above, we do not determine on this record that Petitioner’s proposed combination of Poertzgen and Boucheret in Ground 1 is deficient. *See supra* § II.B.4.a.

d) Ground 4: Obviousness of Claims 24 and 25 Over Weiler

Petitioner contends that Weiler renders obvious claims 24 and 25. Pet. 80–83; *see also id.* at 72–75 (addressing disclaimed independent claim 20, from which each of claims 24 and 25 depends). Petitioner’s contentions

are supported by testimony from Dr. Lequesne. Ex. 1002 ¶¶ 278–282; *see also id.* ¶¶ 263–282 (addressing disclaimed independent claim 20, from which each of claims 24 and 25 depends).

(1) *Summary of Weiler*

Weiler is directed to “to an electromechanically actuated partially lined disk brake suitable that can be used both to realize a service and a parking brake function.” Ex. 1012, 1:4–5. Weiler describes a brake caliper that includes an electromechanical actuator unit, a multi-stage reduction gear, and an actuator element for bringing a brake lining into engagement with a brake disk surface. *Id.* at 2:19–26. According to Weiler, “[t]his allows a particularly compact design of the brake caliper, wherein the brake caliper is capable of implementing both the service and parking brake functions.” *Id.* at 2:26–28.

Figure 1 of Weiler, reproduced below, shows a partial section view of a brake caliper according to one embodiment. Ex. 1012, 7:7–9.

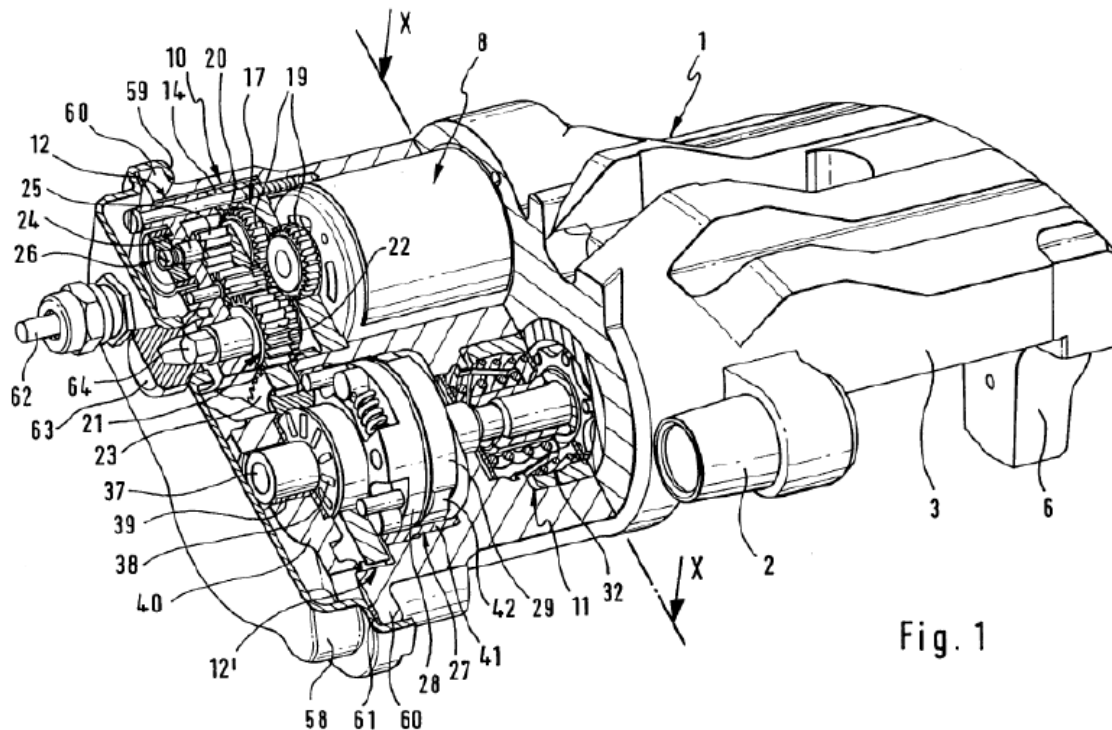


Fig. 1

Figure 1 depicts brake caliper 1 of a partially-lined disk brake. *Id.* at 7:23–24. Brake caliper 1 includes brake piston 5 (identified in Figure 2) connected to brake linings that interact with a brake disk (not shown). *Id.* at 7:27–8:2. Electromechanical actuator unit 8 (i.e., electric motor) provides a parking brake function via multi-stage reduction gear 10 and actuator element 11. *Id.* at 8:16–18, 21–22.

Figure 2 of Weiler, reproduced below, shows a section view of the brake caliper embodiment shown in Figure 1. Ex. 1012, 7:11.

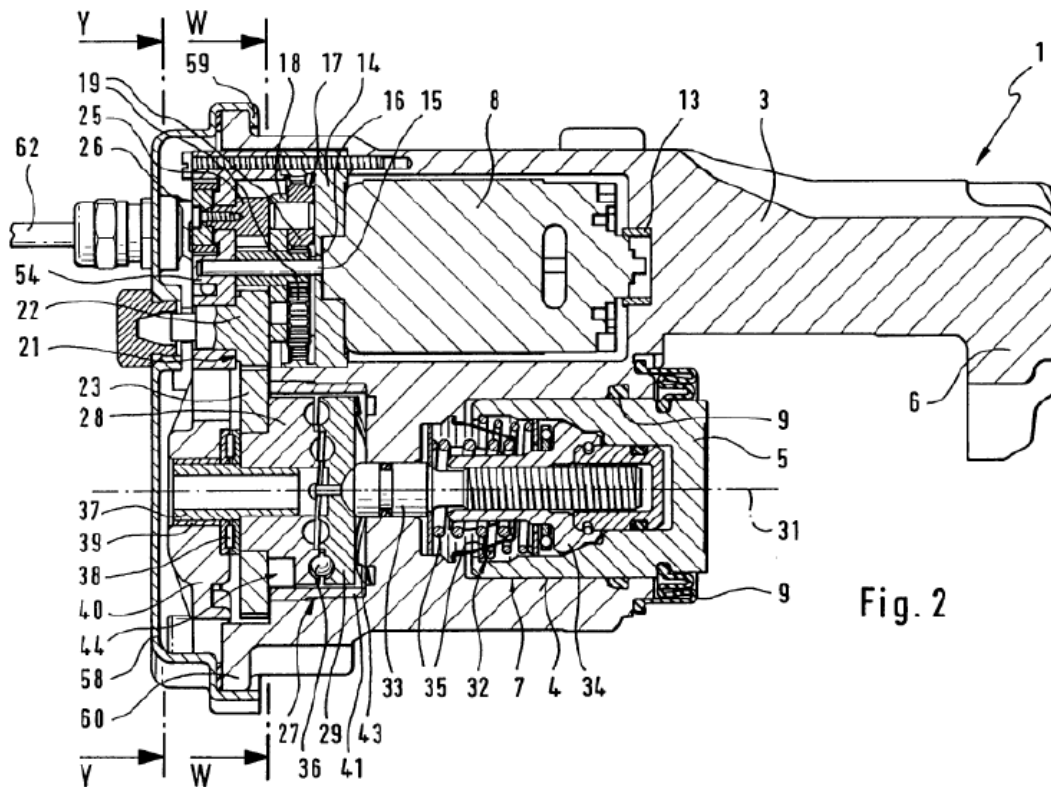


Fig. 2

Figure 2 depicts brake caliper 1 including electromechanical actuator unit 8 arranged parallel to brake piston axis 31 and accommodated on both sides via bearing bushing 13 and bearing plate 14. *Id.* at 8:24–25, 13:28–14:1. A first subassembly comprises electromechanical actuator unit 8 arranged parallel to brake piston axis 31, planetary gear 17, bearing plate 14 with ring gear 20 (not shown), angular position sensor 26, drive wheel 22, and gear cover 54. *Id.* at 13:28–14:4. Brake caliper 1 also includes a second subassembly comprising rolling-element ramp-type gear 27, switchable freewheel 44, output gear 23, and hollow shaft 37, which is mounted via bearing bush 39, bearing 38, and traverse 40. *Id.* at 14:11–14.

(2) *Analysis of Claim 24*

Claim 24 depends from, and thus incorporates, disclaimed independent claim 20. *See* Ex. 1001, 12:22–23. Petitioner contends that

Weiler renders obvious claim 24. Pet. 80–81.¹⁴ Petitioner’s contentions are supported by testimony from Dr. Lequesne. Ex. 1002 ¶¶ 264–267, 275–280.

[20A]¹⁵ A method of assembling an actuator comprising:

Petitioner contends that Weiler discloses assembling an actuator for an electronic parking break. Pet. 72 (citing Ex. 1012, code (57), 1:4–14, 2:12–28, 5:17–25, 6:10–7:2, 8:16–9:18, 13:28–14:29, Figs. 1–4; Ex. 1002 ¶ 264).

Patent Owner does not dispute Petitioner’s assertion based on Weiler as to this limitation of claim 24. *See* Prelim. Resp. 30–37. On this record, we determine Petitioner has made a sufficient showing for purposes of institution that Weiler discloses the above limitation of claim 24.

[20B] mounting a motor and a gear train to a sub-frame;

Petitioner contends that Weiler discloses motor 8 and gears 16–19 mounted on bearing plate 14. Pet. 72 (citing Ex. 1012, 2:17–28, 5:17–25, 6:10–7:2, 8:16–9:1, 13:28–14:29, Figs. 1–4; Ex. 1002 ¶ 265).

Patent Owner does not dispute Petitioner’s assertion based on Weiler as to this limitation of claim 24. *See* Prelim. Resp. 30–37. On this record, we determine Petitioner has made a sufficient showing for purposes of institution that Weiler discloses the above limitation of claim 24.

¹⁴ Petitioner’s discussion of claim 24 refers back to earlier sections of the Petition discussing limitations appearing in disclaimed claims 20 and 23. Accordingly, our analysis of Petitioner’s assertions for claim 24 necessarily references portions of the Petition concerning disclaimed claims 20 and 23.

¹⁵ We refer to the bracketed claim limitation identifiers used in the Petition.

[20C] coupling said sub-frame to a portion of an actuator housing to at least partially enclose said motor in a motor isolation cavity defined by said portion of said actuator housing and said sub-frame;

Petitioner contends that Weiler discloses a brake caliper having a housing-like recess in which motor 8, reduction gear, and actuator element are disposed. Pet. 74 (citing Ex. 1012, code (57), 2:17–28, 6:10–7:2, 8:16–25, 13:28–14:9). Petitioner provides an annotated version of Weiler’s Figure 2, reproduced below, to support its contentions.

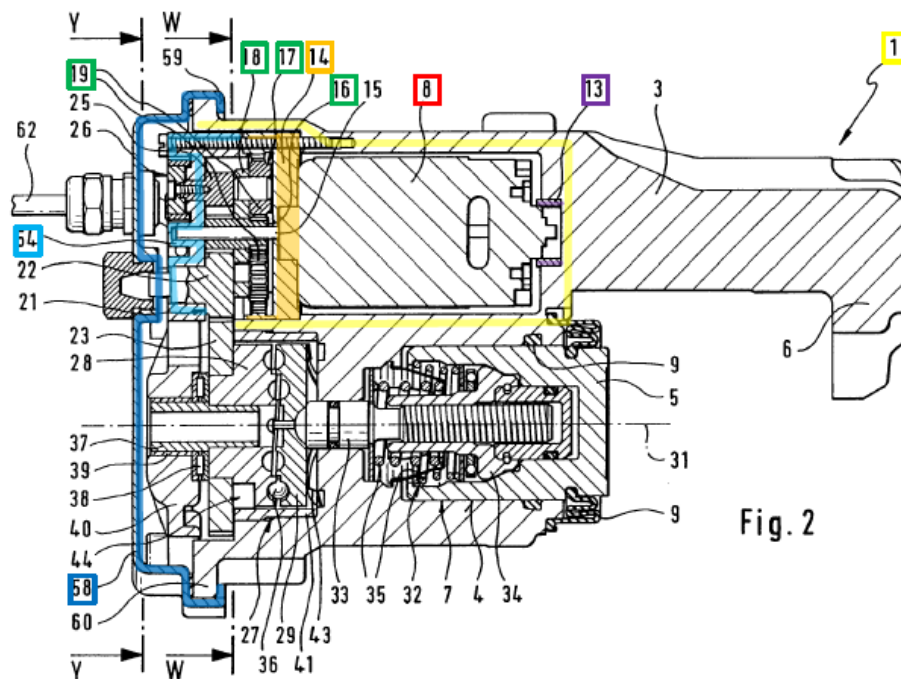


Fig. 2

Id. Petitioner contends, with reference to annotated Figure 2 of Weiler, that “[t]he ‘motor isolation cavity’ is defined by a portion of the ‘actuator housing’ (the housing around the recess, **yellow**) and the sub-frame (bearing plate 14, **orange**, coupled over the cavity to enclose the motor).” *Id.* Petitioner also contends that one of ordinary skill in the art “would have understood from Weiler that the portion of the brake caliper surrounding the

‘housing-like recess 12,’ houses the actuator’s motor and is a portion of the actuator housing.” *Id.* (citing Ex. 1012, 8:18–21; Ex. 1002 ¶ 266).

Patent Owner argues that the portion of Weiler’s brake caliper 1 identified by Petitioner is not an “actuator housing” of the type required by claim 24. Prelim. Resp. 32 (citing Pet. 74). According to Patent Owner, the term “actuator housing” should be construed as limited to a structure separate from the “caliper” because the ’415 Patent uses the terms “caliper” and “actuator housing” to refer to distinct structures, and “[t]he term ‘actuator housing’ is never used to refer to a brake caliper or a portion of a brake caliper.” *Id.* at 33. Patent Owner also argues that “[m]any claims in the ’415 Patent recite both an ‘actuator housing’ and a ‘brake caliper,’” and these “[d]ifferent claim terms are presumed to have different meanings.” *Id.* at 34 (citing Ex. 1001, claim 17; *CAE Screenplates, Inc. v. Heinrich Fiedler GmbH & Co. Kg*, 224 F.3d 1308, 1317 (Fed. Cir. 2000)). Patent Owner further argues that, “[t]o the extent the Board wishes to consider extrinsic evidence on this point, Weiler itself specifically refers to its actuator unit as being provided in a ‘brake caliper’ as opposed a structure that one would consider an actuator housing.” *Id.* at 34–35 (citing Ex. 1012, 2:17–19).

We are not persuaded by Patent Owner’s arguments. Weiler discloses that electric motor 8 is housed within brake caliper 1. *See* Ex. 1012, 8:24–25 (“Within the brake caliper 1, the electric motor 8 . . . is accommodated on both sides via a bearing bush 13 and a bearing plate 14.”). Although the “actuator housing” identified by Petitioner in Weiler’s annotated Figure 2 (*see* Pet. 74 (yellow box)) is indeed a portion of Weiler’s brake caliper 1, challenged claims 24 and 25 do not recite a brake caliper, much less require that the recited “actuator housing” be a structure separate from the brake caliper. Patent Owner also fails to identify any lexicographic definition or

disclaimer sufficient to limit the claim term “actuator housing” to a structure separate from a brake caliper. On the facts presented here, it appears that Weiler’s brake caliper 1 is an actuator housing, because it at least partially encloses motor 8 of Weiler’s actuator.

On this record, we determine Petitioner has made a sufficient showing for purposes of institution with respect to this claim limitation.

[24B] providing a first motor isolation bushing between said portion of said actuator housing and said motor, and

Petitioner contends that “Weiler discloses that motor 8 is accommodated between bearing bush 13 (**purple**) (the recited *motor isolation bushing*) and bearing plate 14,” and “bearing bush 13 is positioned between the motor 8 and the actuator housing.” Pet. 78 (citing Ex. 1012, 8:16–25, Fig. 2; Ex. 1002 ¶¶ 275–276); *see also id.* at 79 (including annotated reproduction of Figure 2 of Weiler showing bearing bush 13 color coded in purple). Petitioner contends that one of ordinary skill “would have recognized that the bearing bush 13 is physically interposed between the motor and the housing (*i.e.*, isolates the motor from the housing) similar to the bushing 316 in the ’415 [P]atent.” *Id.* at 79.

Patent Owner does not dispute Petitioner’s assertion based on Weiler as to this limitation of claim 24. *See* Prelim. Resp. 30–37. On this record, we determine Petitioner has made a sufficient showing for purposes of institution that Weiler discloses the above limitation of claim 24.

[24C] providing a second motor isolation bushing between said sub-frame and said motor.

Petitioner contends that “having an isolator bushing between the motor and the sub-frame is equally as obvious as having one between the motor and the housing.” Pet. 80 (citing Pet. § V). Petitioner contends that

one of ordinary skill in the art “would have understood that the bushing 13 between the motor and the housing in Weiler helped isolate the motor, and that having another bushing between the motor and sub-frame would further isolate the motor.” *Id.* Petitioner reasons that adding a bushing between the motor and sub-frame amounts to “using a known technique (bushings between parts for isolation) disclosed in Weiler in a similar device (Weiler’s own actuator) in the same way (to isolate the motor).” *Id.* (citing Ex. 1002 ¶ 279).

Patent Owner argues that “adding the claimed isolators to Weiler would be redundant in view of Weiler’s existing isolation or load dissipation features.” Prelim. Resp. 35. Patent Owner asserts that Weiler’s “bush bearings 13 and bearing plates 14 are known to accomplish at least some, if not all, of the functions of the isolator Petitioners seek to add to Weiler.” *Id.* at 36. According to Patent Owner, “[a]dding another bushing between the motor 8 and bearing plate 14 would be unnecessary or redundant in view of Weiler’s existing bush bearing 13 and bearing plate 14.” *Id.*

Based on the preliminary record, we are unpersuaded by Patent Owner’s argument. At this stage of the proceeding, Patent Owner has not provided declaration testimony to support its assertions. As a result, Patent Owner’s assertions are founded mostly on unpersuasive attorney argument. *See Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1043 (Fed. Cir. 2017) (“Attorney argument is not evidence.”).

Petitioner’s contentions and the supporting evidence demonstrate in a manner that is sufficiently persuasive for purposes of institution that one of ordinary skill in the art would have had reason to modify Weiler as proposed. Accordingly, Petitioner has shown a reasonable likelihood that it

will prevail on its argument that claim 24 is unpatentable under 35 U.S.C. § 103(a).

(3) *Analysis of Claim 25*

Claim 25 depends directly from, and thus incorporates, disclaimed independent claim 20. Ex. 1001, 12:28–29. Petitioner contends that “Weiler teaches claim 20 for the reasons discussed in Section XI.A [of the Petition].” Pet. 81–82; *see also id.* at 72–75 (discussing independent claim 20).

Claim 25 also recites “providing at least one isolation bushing between said portion of said actuator housing and said sub-frame.” Ex. 1001, 12:30–31. Petitioner contends that one of ordinary skill “would have understood that the bushing between the motor and the housing in Weiler helped to isolate the motor, and that having another between the housing and the sub-frame would serve to further isolate the motor.” Pet. 82; *see also id.* at 83 (citing Ex. 1002 ¶¶ 281–282). According to Petitioner, such a modification amounts to the mere application of a known technique to improve a similar device in the same way. *Id.* at 82 (citing Ex. 1002 ¶ 281).

Patent Owner argues that Petitioner has not explained why one of ordinary skill would have added another isolation bushing between Weiler’s bearing plate 14 and the actuator housing. Prelim. Resp. 37. However, Petitioner provides reasoning and evidence for the proposed modification of Weiler. *See* Pet. 81–82; Ex. 1002 ¶¶ 281–282. Patent Owner’s argument is unpersuasive because it is not adequately developed or explained, and is not responsive to Petitioner’s contentions as presented.

Petitioner’s contentions and the supporting evidence demonstrate in a manner that is sufficiently persuasive for purposes of institution that one of ordinary skill in the art would have had reason to modify Weiler as proposed. Accordingly, Petitioner has shown a reasonable likelihood that it

will prevail on its argument that claim 25 is unpatentable under 35 U.S.C. § 103(a).

e) Ground 5: Obviousness of Claims 24 and 25 Over Weiler and Boucheret

Petitioner contends that the combination of Weiler and Boucheret renders obvious claims 24 and 25. Pet. 83. Petitioner's contentions are supported by testimony from Dr. Lequesne. Ex. 1002 ¶¶ 283–285.

In contesting this ground, Patent Owner relies on the arguments presented against Petitioner's Ground 4. *See* Prelim. Resp. 38 (asserting that "Ground [5] fails for the same reasons as Ground [4] despite the addition of Boucheret"). However, for the reasons discussed above, we do not determine on this record that Petitioner's Ground 4 is deficient. *See supra* § II.B.4.d.

C. Jurisdiction over Expired Patents

Patent Owner argues that the Board does not have jurisdiction over expired patents. Prelim. Resp. 41–43. In particular, Patent Owner asserts:

When a patent expires, . . . the public franchise ceases to exist and the franchisee (e.g., the patent owner) no longer has the right to exclude others. At most, the franchisee may be entitled to collect damages from the public franchise that formerly existed through an infringement action in district court. But because the public franchise no longer exists, the PTO has nothing in its authority to cancel or amend. Expiration removes the patent from the PTO's jurisdiction and returns it to the sole jurisdiction of the Article III courts, which have exclusive authority to govern claims for damages. If this were not so, the PTO would purport to have authority to retroactively modify a public franchise that no longer exists, in a setting where the expired public franchise does not enjoy any presumption of validity and in which amendment of claims is no longer permitted.

Id. at 41–42. Patent Owner also argues that a Patent Owner’s ability to move to amend its claims is integral to the IPR process. *Id.* at 42 (citing 35 U.S.C. § 316(a)(9); 37 C.F.R. § 42.121). Patent Owner asserts that “[t]his opportunity for amendment explains the lower burden of proof required to invalidate a patent in an IPR as compared to in an Article III proceeding in district court, where the patent-in-suit cannot be amended.” *Id.* According to Patent Owner, “[i]t is clear that Congress did not intend to grant the Board jurisdiction to consider IPR of an expired patent” because “expired patents would be subject to the lower burden of proof for invalidation without the justification of the opportunity to amend the expired patents.” *Id.* at 43. We disagree.

“Inter partes review is ‘a second look at an earlier administrative grant of a patent.’” *Oil States Energy Servs., LLC v. Greene’s Energy Grp., LLC*, 138 S. Ct. 1365, 1374 (2018) (quoting *Cuozzo*, 136 S. Ct. at 2144)). Our reviewing court has affirmed final determinations of the Board with respect to expired patents in an *inter partes* review. *See, e.g., Wasica Fin. GmbH v. Cont’l Auto. Sys., Inc.*, 853 F.3d 1272, 1279 (Fed. Cir. 2017) (noting that “[t]he Board construes claims of an expired patent in accordance with *Phillips*”).

The statutes governing *inter partes* review also do not limit the proceedings to non-expired patents. For example, 35 U.S.C. § 311(b), which sets forth the scope of *inter partes* review, merely refers to patents, with no mention of the expiration date. Further, 35 U.S.C. § 311(c) entitled “Filing Deadline” makes no mention of the expiration date of the patent. Elsewhere, 35 U.S.C. § 315 does limit the filing of IPRs based on civil actions and the serving of complaints, but again makes no mention of the expiration date of

the patent. Patent Owner does not identify any statute that expressly limits *inter partes* review to non-expired patents.

Patent Owner additionally fails to adequately explain why the requirement to establish procedures to allow for amendments to a patent means that expired patents are not subject to *inter partes* review. For example, the statute does not mandate that amendments to the patent be allowed in all cases.

For the above reasons, we do not agree that the Board lacks jurisdiction over expired patents in *inter partes* reviews.

D. Constitutional Challenges

1. Due Process

Patent Owner argues that *inter partes* review proceedings violate due process rights because the Board allegedly has a financial incentive to favor institution and has an unconstitutional structural bias. Prelim. Rep. 43–44. Patent Owner asserts that “the same people making decisions about the merits of an IPR also participate in making financial decisions about the operation of the Board.” *Id.* at 44 (citing *Mobility Workx, LLC v. Unified Patents, LLC*, 15 F.4th 1146, 1154 (Fed. Cir. 2021); *id.* at 1165 (Newman, J., dissenting)).

But, the Federal Circuit’s holding in *Mobility Workx* directly rejected the argument that Patent Owner attempts to raise here. *See Mobility Workx*, 15 F.4th at 1154 (explaining that even the “leadership APJs’ role in budgeting is . . . too remote to constitute a due process violation” and that “[t]he role of other APJs in the budgetary process is even more remote, and even less a due process problem”), 1155 (stating that “congressional control of the USPTO’s budget renders any agency interest in fee generation too tenuous to constitute a due process violation”), 1156 (“*Mobility* has

therefore failed to establish that APJs have an unconstitutional financial interest in instituting AIA proceedings.”). In view of this controlling precedent, Patent Owner’s argument is not persuasive.

2. *Appointments Clause*

Patent Owner argues that the Director’s delegating authority to institute *inter partes* review to the Board is in conflict with the Supreme Court’s decision in *United States v. Arthrex, Inc.*, 141 S. Ct. 1970 (2021). Prelim. Resp. 46. In particular, Patent Owner argues that “Board judges are not princip[al] officers and therefore they cannot act alone on behalf of the USPTO by rendering final institution decisions.” *Id.* (citing *Arthrex*, 141 S. Ct. at 1985). However, the Federal Circuit already addressed and rejected this argument. *See In re Palo Alto Networks, Inc.*, 44 F.4th 1369, 1377 (Fed. Cir. 2022) (“We conclude that the delegation of authority as to whether to institute IPR and PGR proceedings to the Board and the Director’s policy refusing to accept party requests for Director rehearing of decisions not to institute do not violate the Appointments Clause.”) In view of this controlling precedent, Patent Owner’s argument is not persuasive.

III. CONCLUSION

For the reasons discussed above, Petitioner has shown a reasonable likelihood it will succeed in demonstrating that at least one challenged claim of the ’415 Patent is unpatentable under 35 U.S.C. § 103(a). We, therefore, institute an *inter partes* review as to claims 5, 7, 8, 14–19, 24, and 25 on all grounds set forth in the Petition against those claims.¹⁶ 35 U.S.C. § 314(a); 37 C.F.R. § 42.108(a).

¹⁶ *See supra* n.2.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED, pursuant to 35 U.S.C. § 314(a), that an *inter partes* review of claims 5, 7, 8, 14–19, 24, and 25 of U.S. Patent No. 7,021,415 B2 is instituted with respect to all grounds set forth in the Petition against those claims; and

FURTHER ORDERED, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), that this *inter partes* review shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

IPR2023-00273
Patent 7,021,415 B2

FOR PETITIONER:

John R. Hutchins
Paul T. Qualey
Shambhavi Patel
BANNER & WITCOFF, LTD.
jhutchins@bannerwitcoff.com
pqualey@bannerwitcoff.com
spatel@bannerwitcoff.com

FOR PATENT OWNER:

Timothy J. Murphy
Jessica Fleetham
CARLSON, GASKEY & OLDS, P.C.
tmurphy@cgolaw.com
jfleetham@cgolaw.com