
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ZF NORTH AMERICA, INC., ZF ACTIVE SAFETY US INC.,
Petitioners,

v.

STONERIDGE CONTROL DEVICES, INC.,
Patent Owner.

Inter Partes Review No. IPR2023-00273
Patent No. 7,021,415

**PATENT OWNER STONERIDGE CONTROL DEVICES, INC.'S
PRELIMINARY RESPONSE**

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2001	Statutory disclaimer under 35 U.S.C. 253(a)
2002	FR 2 693 779 to Ralf-Michael, <i>et al.</i>
2003	Certified Translation of FR 2 693 779
2004	Government Accountability Office Report to the Subcommittee on Courts, Intellectual Property, and the Internet, Committee on the Judiciary, House of Representatives

I. INTRODUCTION

The primary issue in this case is whether Petitioners have established that it would have been obvious to modify the prior art to include an isolator in a particular location. The main modifying reference relied on by Petitioners, however, actually teaches a reader to place an isolator in a different location than what is claimed. Petitioners have not discussed or acknowledged the disparate teachings of their modifying reference. Because Petitioners have chosen to ignore the full scope and content of the prior art, contrary to what is required by *Graham* and *KSR*, Petitioners have not satisfied their burden of showing a reasonable likelihood of success.

This case relates to electronic parking brake actuators (EPBAs) for an automobile. An EPBA is attachable to a brake caliper and is used to operate the brake caliper as a parking brake. The claims recite EPBAs including components mounted to a sub-frame. Mounting various components to the sub-frame provides the EPBA with a number of benefits, including increasing the ease of assembly and testing. The sub-frame and other components of the EPBA are subject to vibrations, which cause noise. In order to reduce the vibrations and noise, the EPBA includes isolators, which are structures that absorb vibrations and isolate those vibrations from being transmitted to other components of the EPBA.

Patent Owner has disclaimed some claims of the '415 Patent to streamline this matter. The remaining claims recite one or more isolators coupled to the sub-frame and another EPBA component.

At best, the Petition establishes that isolators were known in a general sense. Patent Owner does not dispute that isolators were known in the mechanical and automotive arts before the '415 Patent. What Patent Owner disputes is whether Petitioners have demonstrated that it would have been obvious to place an isolator in the claimed locations—namely, relative to a sub-frame. Significantly, the art relied on in the Petition neither discloses nor teaches an isolator coupled to a sub-frame.

Petitioner's main modifying reference, Boucheret, teaches one to mount isolators in a location radially outward of a motor between lugs and a motor housing—that is, not relative to a sub-frame. Boucheret even teaches that its radially-mounted isolators are able to absorb all vibrations—radial, axial, and tangential—from the radially-outer location and without the need for a sub-frame.

So why are Petitioners seeking to place isolators in other locations when Boucheret's disclosure teaches that radially-outer isolators without sub-frames can absorb all vibrations? One would expect Petitioners to comment on this discrepancy, but they do not. Petitioners silence makes it so they cannot succeed on the merits.

II. BACKGROUND OF THE '415 PATENT

A. Generally

Patent Owner is an innovative company that designs, manufactures, and markets electrical and electronic systems, components and modules, primarily for the automotive markets.

The '415 Patent relates to an EPBA system for a vehicle. Conventionally, a brake caliper includes one or more pistons configured squeeze a pair of brake pads against a brake disc in response to a user applying a force to the brake pedal, for example, thereby arresting rotational movement of the brake disc and the attached vehicle wheel. *See, e.g.*, Ex. 1001 at 1:24-45; 2:57-67; 3:1-9. In this arrangement, an EPBA can be used to actuate the piston in response to an electrical signal from a parking brake switch. *Id.* At its most basic level, an EPBA may be thought of as an advancement relative to a mechanical park brake actuator, in which a user pulls a lever that is attached to the parking brake actuator through a cable. *See* Ex. 1001 at 1:25-34.

The EPBA system 100 includes an actuator 102 configured to receive electrical power and drive a brake caliper 106 to control the parking brake function of a vehicle. Ex. 1001 at 2:60-3:35; Figure 3 (annotated below).

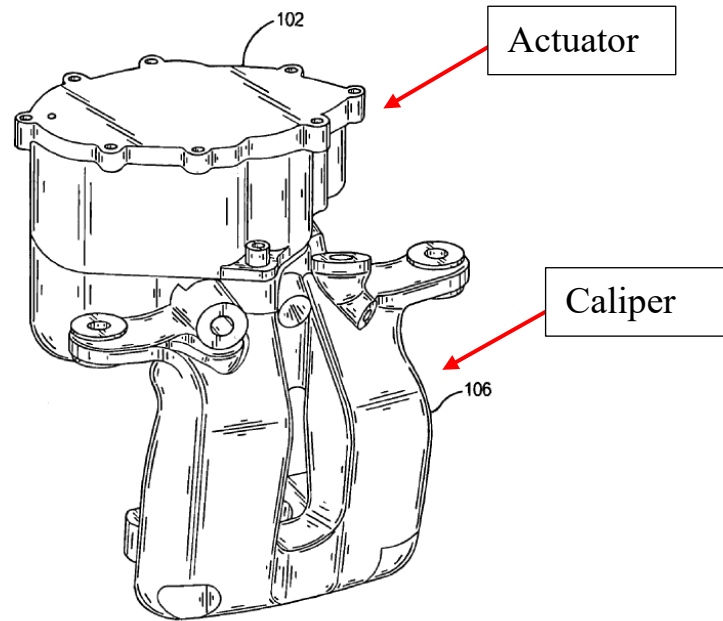
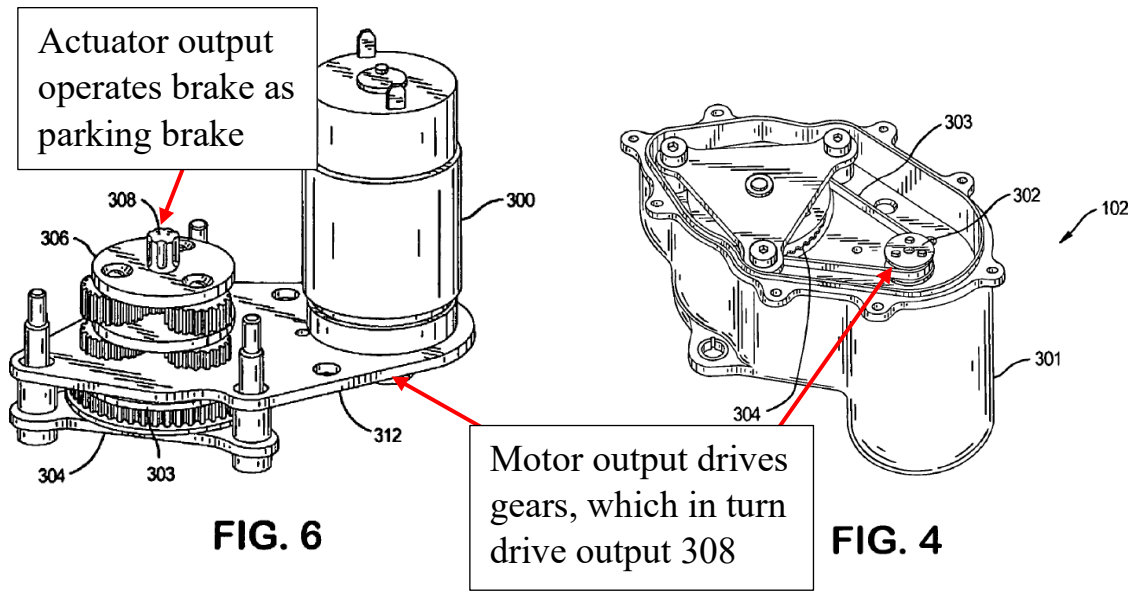


FIG. 3

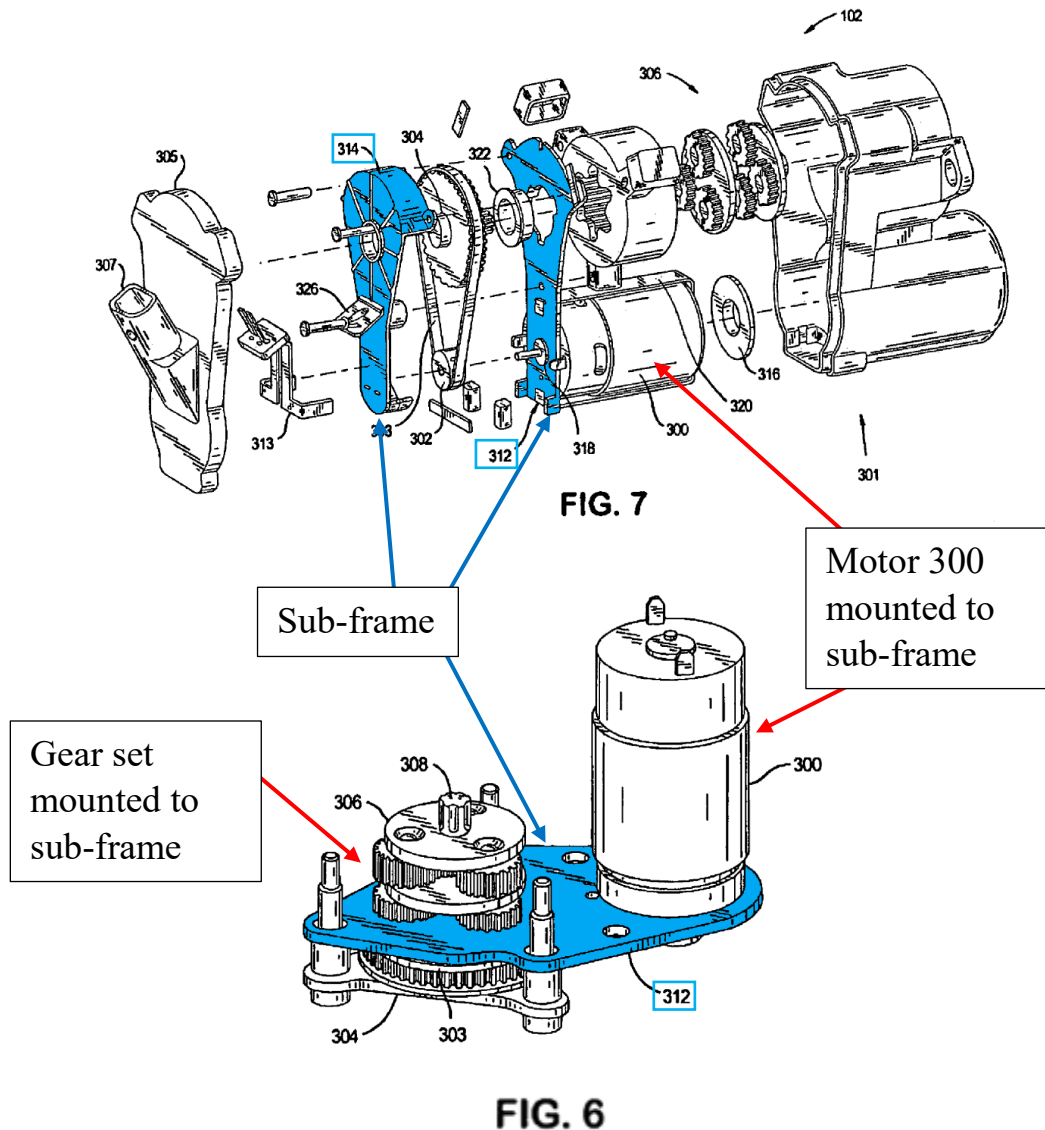
With reference to Figures 4 and 6, annotated below, the actuator 102 includes a motor 300 received in an actuator housing 301. Ex. 1001 at 4:7-6:11; Figures 4 and 6 (annotated below). The shaft of the motor 300 is coupled directly to a drive pulley 302, which drives a driven pulley 304 via a drive belt 303. *Id.* The driven pulley 304 in turn drives a planetary gear set 306, which drives an output 308 that is ultimately used to operate the caliper 106 as a parking brake. *Id.*



B. Sub-Frame

Various components of the actuator 102, including the motor 300 and drive train are mounted to a sub-frame. A sub-frame is a frame for select components, which here includes the motor 300 and gear train shown above. In other words, the sub-frame is a *frame* for a *sub*-assembly, hence the term sub-frame.

In a particular embodiment of this disclosure, the sub-frame is shown as including a sub-frame lower portion 312 (blue) and sub-frame top portion 314 (blue). *Id.* at 4:7-64; Figures 6 and 7 (annotated below). The claims are not limited to a sub-frame having upper and lower portions.



Mounting the motor 300 and gears 306 to the sub-frame 312 has a number of benefits, including increasing the ease of assembly, handling, and facilitating testing of the actuator 102. *Id.* at 4:44-54. For instance, the motor/gear assembly can be removed from the rest of the actuator as a package (or sub-assembly) without needing to decouple the motor from the gears. Conversely, the motor and gears can

be assembled to one another and to the sub-frame outside of the actuator and then installed in the actuator as a package.

Petitioners themselves acknowledge the purpose of the sub-frame when stating that attaching “mechanical components (the motor, gears, etc.)” to “a sub-frame[] essentially form[s] a module that is then placed in a housing.” Petition at 1. Patent Owner agrees with this characterization of a sub-frame. Patent Owner does not agree that Petitioners have demonstrated the claimed combinations were known or would have been obvious, however.

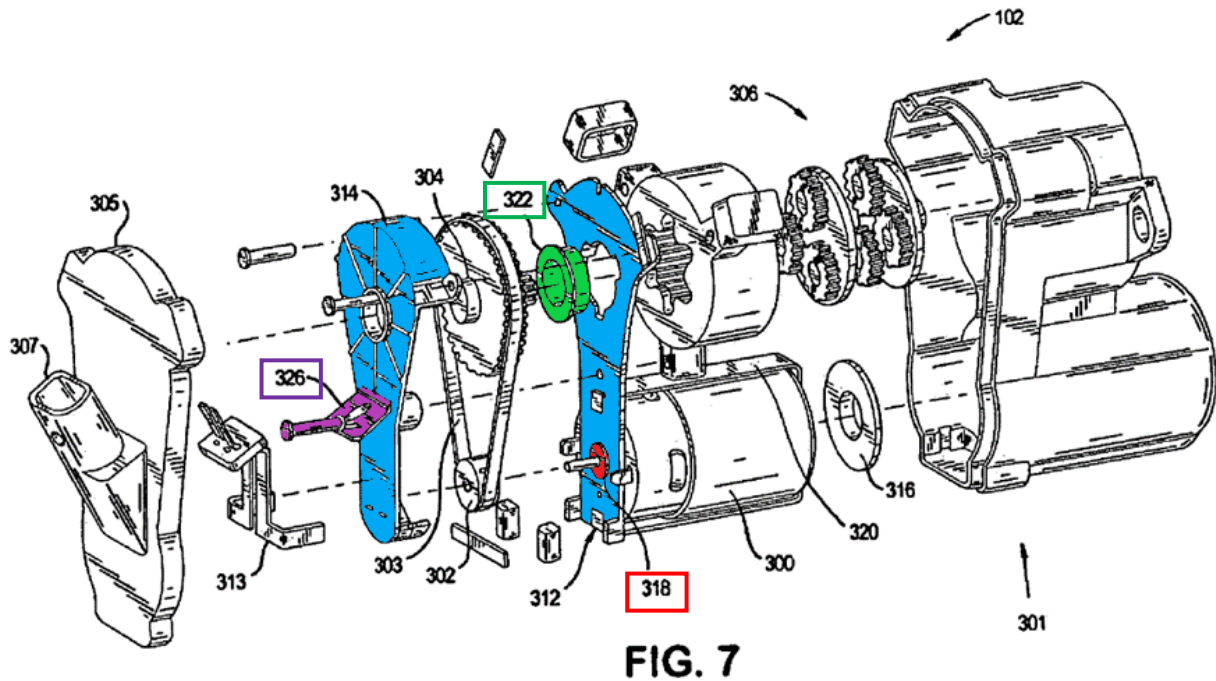
C. Isolators

The claims at issue in this case relate to isolators between the sub-frame and another component of the actuator. The combination of the sub-frame and its associated isolators reduces noise and vibration by isolating the EPBA components from the structure to which the EPBA is mounted. *Id.* at 5:44-8:29. Importantly, while EPBAs were known, and isolators were known in a general sense, the claimed relationships between isolators and a sub-frame were not. The “genius of invention is often a combination of known elements which in hindsight seems preordained.” *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 711 F.3d 1348, 1368 (Fed. Cir. 2013) (quoting *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351 (Fed. Cir. 2001)).

The claims at issue in this case recite an isolator in one of three locations, as summarized in the below table:

Isolator location	Claim
Sub-frame/motor (red)	5, 14, 19, 24
Sub-frame/gear set (green)	7
Sub-frame/housing (purple)	8, 16, 17, 18, 25

Examples of these isolators are shown in Figure 7 as bushing 318 (red), bushing 322 (green), and isolator 326 (purple). *See* Figure 7 (annotated below).



1. Sub-frame/motor

Some claims relate to an isolator coupled between a sub-frame and motor, such as bushing 318 (red). The bushing 318 is shown below in annotated Figure 7. The bushing 318 is also modeled in the schematic of Figure 10.

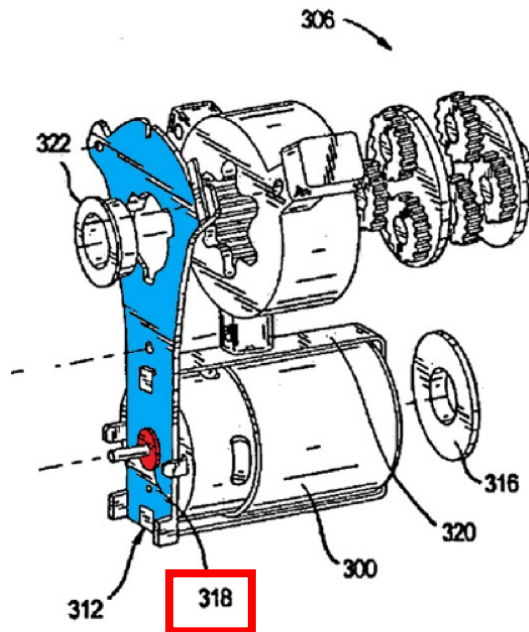


FIG. 7

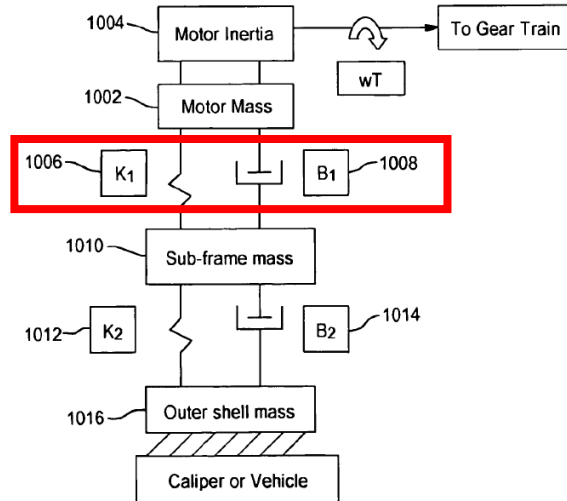


FIG. 10

As shown above, bushing 318 is coupled between the motor 300 and the sub-frame lower portion 312 at an axial end of the motor 300. Ex. 1001 at 6:1-11. Bushing 318 minimizes transmission of vibrations and noise from the motor 300 to the sub-frame and other actuator components. *Id.*

Independent claim 5 is an example sub-frame/motor claim and recites, in relevant part, “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.” Claims 14 and 24 also relate to an isolator between a sub-frame and a motor, similar to claim 5.

2. Sub-frame/gear set

One claim at issue in this matter relates to an isolator coupled between the sub-frame and a planetary gear set. Bushing 322 is coupled between the sub-frame bottom portion 312 and the planetary gear set 306, which minimizes the transmission of noise and vibration between the planetary gear set 306 and the sub-frame bottom portion 312. Ex. 1001 at 6:59-7:3. Bushing 322 is shown below in green in an annotated version of Figure 7.

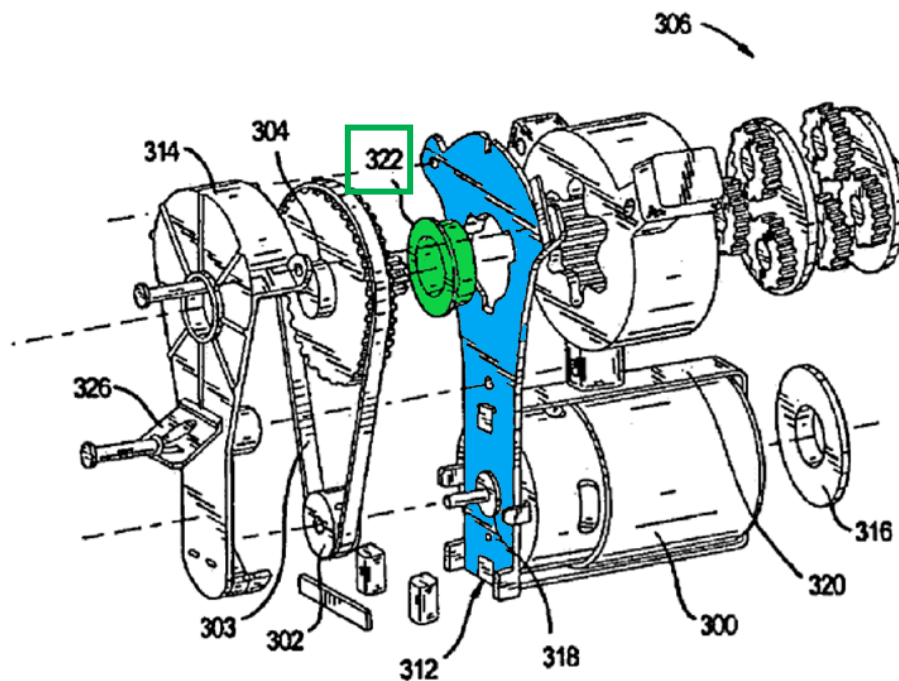
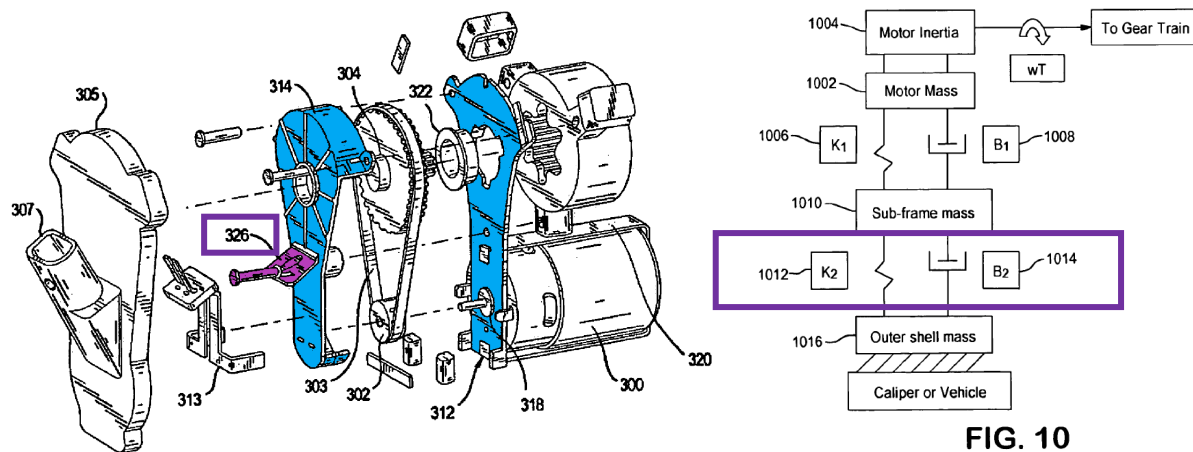


FIG. 7

Dependent claim 7, the sole sub-frame/gear set claim, recites “a component isolator having a spring constant and a damping constant, said isolator coupled between said at least one planetary gear set and said sub-frame.”

3. Sub-frame/housing

Finally, other claims at issue in this matter relate to an isolator between the sub-frame and the actuator housing. An example is isolator 326. In the below embodiment, the isolator 326 (purple) is coupled between the sub-frame top portion 314 and the housing 305. *Id.* at 7:4-15. Isolator 326 is shown below in an annotated version of Figure 7 and is schematically represented in Figure 10.



Claim 8 is an exemplary sub-frame/housing claim, and recites in part “said actuator further comprising a sub-frame isolator having a spring constant and a damping constant, said isolator coupled between said sub-frame and a remainder of said actuator.” Further, claim 16 recites in part “a sub-frame isolator having a spring constant and a damping constant, said isolator disposed between said sub-frame and an actuator housing.” Similar combinations are recited in claims 17 and 25.

4. Other isolators are recited, but only in combination with a sub-frame isolator

Other claims recite other isolators, such as claims 15 and 24 which additionally recite isolators coupled to the motor 300, such as bushing 316 in Figure 7. The claims at issue in this matter, however, all recite an isolator mounted relative to a sub-frame.

D. Prosecution History

Patent Owner does not believe the prosecution history of the '415 Patent bears significantly on the issues raised in the Petition or in this Patent Owner Preliminary Response.

III. LEVEL OF ORDINARY SKILL

For purposes of this Patent Owner Preliminary Response only, Patent Owner agrees with Petitioners' statement of the level of ordinary skill.

IV. CLAIM CONSTRUCTION

While Petitioners have not identified any terms for construction, Patent Owner believes that one term may require construction.

Patent Owner believes it is improper to construe the term "actuator housing" as encompassing a brake caliper. Patent Owner explains this point in greater detail relative to Grounds H and I, in which Petitioners read the claimed "actuator housing" on Weiler's brake caliper. As noted below, Petitioners' 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.

Patent Owner believes there is another reason to deny institution relative to Grounds H and I regardless of whether "actuator housing" is construed so as to not encompass a brake caliper. Therefore, it may be unnecessary for the Board to construe the term.

Patent Owner also reserves the right to present additional claim constructions at a later stage, if necessary. For instance, Patent Owner does not agree with the manner in which Petitioner reads "sub-frame" on the prior art. Quite simply, a sub-frame is a *frame* for a *sub*-assembly, which has a particular meaning in this context. A sub-frame does not refer to an actuator housing or a caliper body, etc., as Petitioners seemingly argue. Despite this, Patent Owner believes the Petition has failed to demonstrate the requisite "reasonable likelihood" even when Petitioners' inaccurate reading of "sub-frame" is accepted. For purposes of this Patent Owner Preliminary Response only, Patent Owner does not traverse Petitioners' reading of "sub-frame."

V. GROUNDS RENDERED MOOT BY DISCLAIMER

Solely to reduce the issues before the Board, Patent Owner has filed a disclaimer of claims that do not recite an isolator coupled to a sub-frame. Specifically, Patent Owner has disclaimed claims 1-4, 6, 9-13, and 20-23 of the '415

Patent. Ex. 2001. This renders grounds A, C, D, and F moot. Grounds B, H, and I are moot-in-part.

Remaining claims 5, 7, 8, 14-19, 24, and 25 are patentably distinct relative to the disclaimed claims because the remaining claims recite an isolator coupled to a sub-frame.

Patent owner does not concede that disclaimed claims 1-4, 6, 9-13, and 20-23 would have been unpatentable in light of the grounds raised by the Petition. Furthermore, the disclaimer is not a request for adverse judgment as to disclaimed claims 1-4, 6, 9-13, and 20-23, because this disclaimer has been filed before any institution. *Pfizer, Inc. v. Uniqure Biopharma B.V.*, IPR2020-00388, Paper 52 at 3-4 (March 25, 2021).

The below chart summarizes the status of each ground raised in the Petition.

Ground	Originally challenged claims	Remaining claims corresponding to Ground	Result
A	2, 6, 9-13	None	Moot
B	3-5, 7, 8, 14-19	5, 7, 8, 14-19	Partially moot
C	1	None	Moot
D	6, 10-13	None	Moot
E	5, 7, 8, 14-19	5, 7, 8, 14-19	No change
F	6, 10-13	None	Moot
G	5, 7, 8, 14-19	5, 7, 8, 14-19	No change
H	20-25	24, 25	Partially moot
I	23-25	24, 25	Partially moot

VI. NO REASONABLE LIKELIHOOD

Remaining grounds B, E, G, H, and I should be dismissed because the Petition fails to show “that there is a reasonable likelihood” that the Petitioners would prevail with respect to at least one of the claims corresponding to those grounds. 35 U.S.C. § 314(a); *see also* 37 C.F.R. § 42.108(c).

A. Ground B – Poertzgen in view of Boucheret does not support obviousness of claims 5, 7, 8, or 14-19

In this ground, Petitioners propose modifying a reference without isolators, Poertzgen, to include an isolator in the particularly-claimed locations, as allegedly taught by Boucheret. Petition at 40-52.

1. Poertzgen

Poertzgen (Exs. 1007, 1008) discloses a hydraulic service brake which is usable as a parking brake when selectively driven by motor 42, shown below in annotated Figure 1. Poertzgen does not disclose any isolators mounted relative to the motor 42. Further, Poertzgen does not use the term sub-frame in its disclosure. Petitioners apparently believe the structure to the immediate right-hand side of Poertzgen’s motor 42 is a sub-frame. Petition at 25. (Again, Patent Owner does not agree that Poertzgen discloses a sub-frame but for purposes of this Preliminary Response does not traverse Petitioners’ reading of “sub-frame”.)

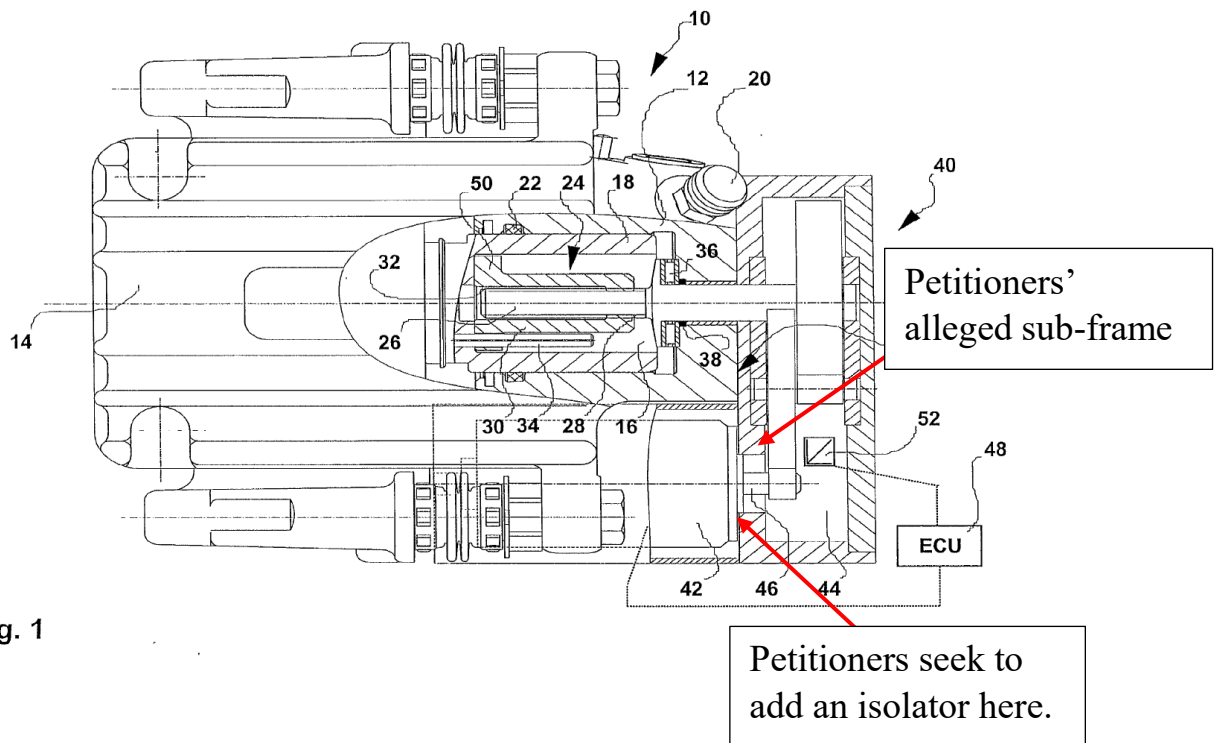


Fig. 1

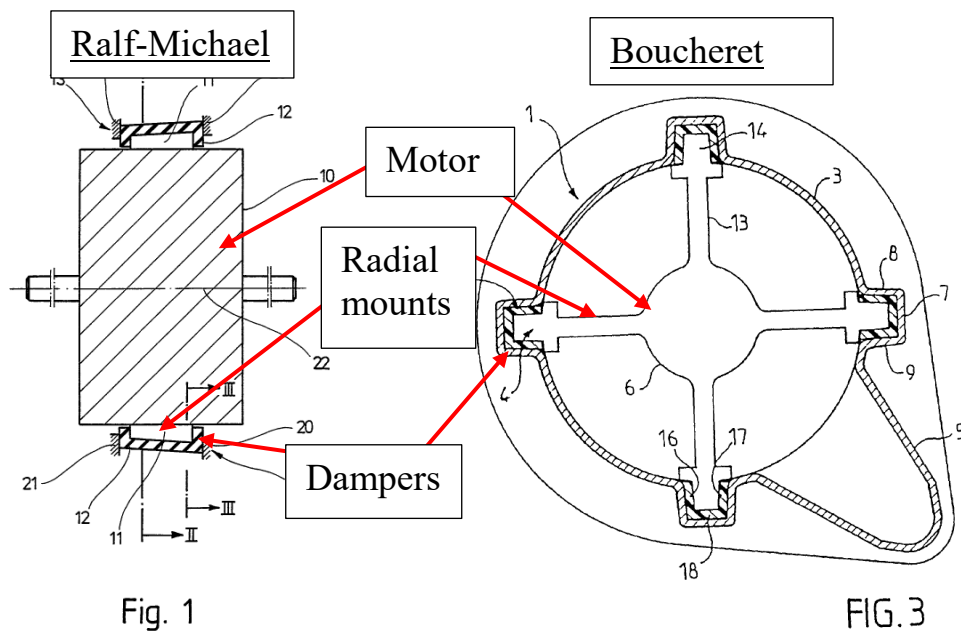
Poertzgen does not disclose any isolation features, such as isolator bushings, mounted relative to what Petitioners have identified as a sub-frame. Petitioners primarily rely on Boucheret as evidence that one would have modified Poertzgen in the claimed manner.

2. Boucheret

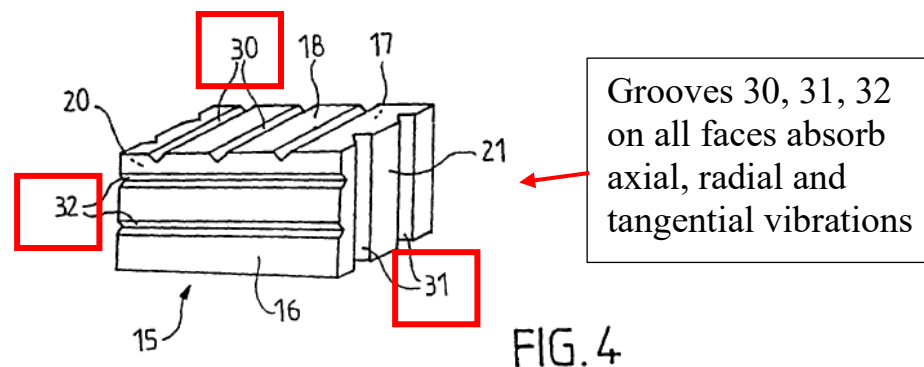
While Poertzgen discloses an electric parking brake actuator (EPBA) assembly, Boucheret (Ex. 1010) does not. Boucheret instead relates to a motor for a fan unit. Ex. 1010 at 1:7; 3:6. More particularly, Boucheret relates to a specific type of motor with “radial fastening lugs” integrated into the motor. Ex. 1010 at 1:10-18.

Boucheret characterizes its disclosure as an improvement over another radially-mounted motor from FR 2 693 779 to Ralf-Michael (Ex. 2002, 2003). *Id.* The annotated Figures below, from Boucheret and Ralf-Michael, show that these two references apply to motors with several radially-projecting lugs arranged around an outer circumference of the motor.

Both motors are mounted to a housing via the lugs. In the left-hand image below, Ralf-Michael's motor 10 has radial ribs 11 for mounting to a housing 20, 21. Damping elements 12 are provided between the ribs 11 and Ralf-Michael's housing 20. In the right-hand image, below, Boucheret likewise discloses a motor 6 with radial lugs 13, which are again used to mount the motor 6 to a housing 1 via damping elements 15. Neither Ralf-Michael nor Boucheret has a sub-frame.



According to Boucheret, the dampers of Ralf-Michael cannot adequately absorb axial vibrations. Ex. 1010 at 1:18-29. Boucheret seeks to improve on this aspect of Ralf-Michael by providing its damping elements 15 with grooves on all outer faces, which, according to Boucheret, makes it possible “to absorb the axial, radial and tangential vibrations and their combinations.” *Id.* at 1:65-2:3. Example grooves 30, 31, and 32 are visible in Boucheret’s annotated Figure 4, below.



To the extent Boucheret’s damping elements can be considered isolators, they are arranged only between the lugs and the surrounding housing, e.g., around the radial circumference of the motor. Boucheret does not include isolators at the axial ends of motor 6 (the flat ends of the cylinder). *See* Boucheret’s Figure 2, annotated below.

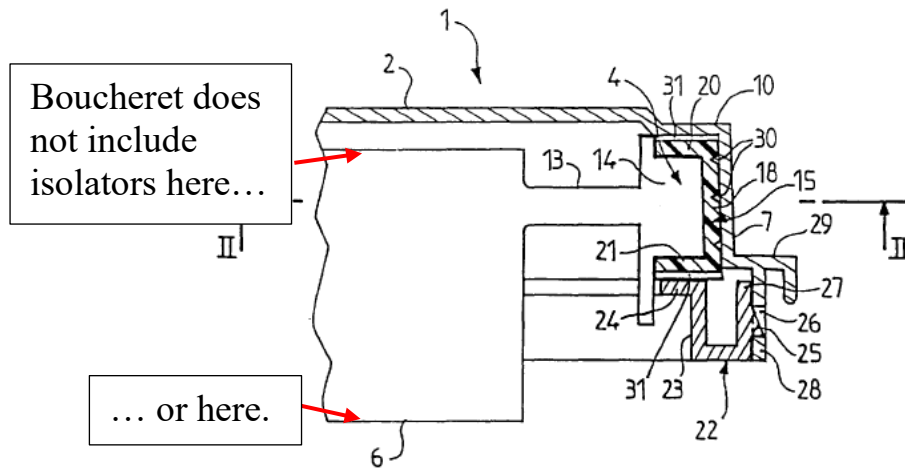


FIG. 2

Again, Boucheret's grooved dampers are able to absorb axial, radial, and tangential vibrations, despite Boucheret's dampers being provided only at a radially-outward location relative to Boucheret's motor 6.

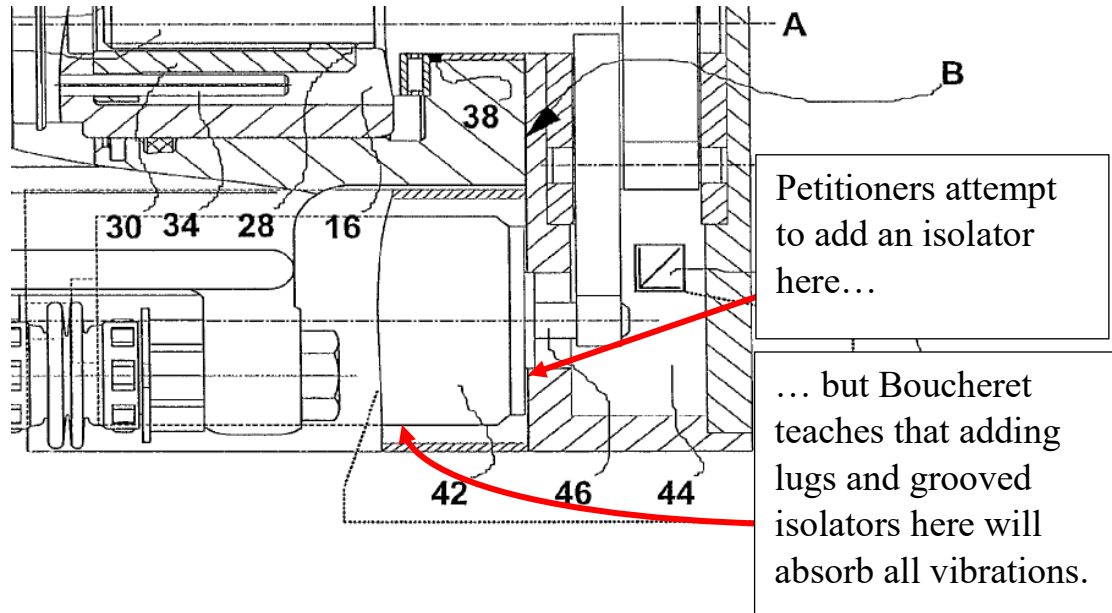
3. Claim 5 is not obvious over Poertzgen and Boucheret

Claim 5 recites, in relevant part, "a sub-frame, said motor being mounted on said sub-frame, 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." Again, an example of such an isolator is bushing 318 (red, above) in Figure 7.

According to Petitioners, it would have been obvious to add an isolator between the motor of Poertzgen and the structure in Poertzgen that Petitioners have

identified as a sub-frame, in view of Boucheret. Specifically, Petitioners propose placing an isolator at the right-hand (relative to Poertzgen's Figure 1) axial end of Poertzgen's motor.

Boucheret, however, would teach one to mount Poertzgen's motor with radial lugs, and provide grooved dampers between those lugs and the motor housing. According to Boucheret, the dampers in this particular arrangement would absorb all axial, radial, and tangential vibrations of the Poertzgen motor. Boucheret cannot stand for the proposition that one would add a damper adjacent an axial end of a motor, between the motor and a sub-frame, as Petitioners suggest because first, Boucheret does not even have a sub-frame, and second, Boucheret's radially-mounted dampers already achieve the goal of absorbing vibrations acting in all directions. There is no need to move Boucheret's dampers as Petitioners suggest. The below image summarizes Patent Owner's point:



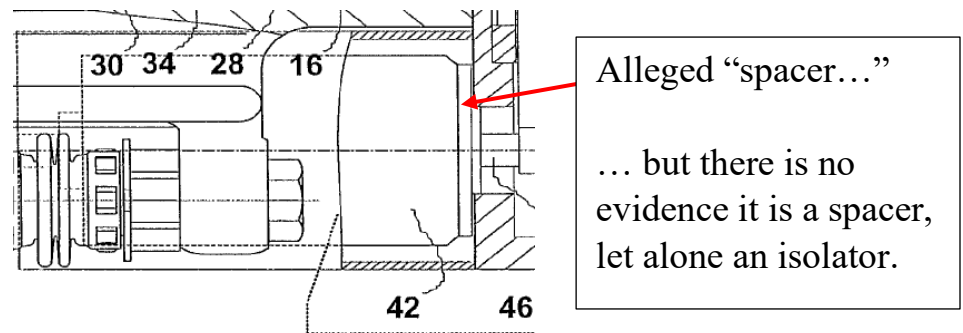
To establish a *prima facie* case of obviousness, the teachings of the prior art should have suggested the claimed subject matter to the person of ordinary skill in the art, and all the claim limitations must be taught or suggested in the references cited by the Examiner. *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000). Here, Petitioners' analysis falls short, and in particular fails to consider the prior art references as a whole. *See W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1552 (Fed. Cir. 1983) (a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention). Boucheret does not teach one to place isolators at an axial face of a motor, between a motor and a sub-frame. Rather, Boucheret teaches an alternate mounting scheme—with grooved dampers surrounding radial lugs that project from the outer circumference of a motor—that provides adequate vibration damping.

Seemingly in an effort to distance themselves from the express teachings of Boucheret, Petitioners also cite to a portion of a book (Ex. 1014), along with their Declarant's interpretation of this book, as evidence that one would have added the claimed isolator between Poertzgen's motor and the alleged sub-frame of Poertzgen. Ex. 1002 at ¶ 181. As an initial matter, Petitioners have not provided the entire book, which is significant because the table of contents indicates there is an entire chapter titled "Braking Systems," which could be relevant to the issues raised by Petitioners. Ex. 1014 at Table of Contents, Chapter 14. Petitioners do not cite to or rely on the missing "Braking Systems" section of the book.

The sections of Ex. 1014 cited by Petitioners do not relate to braking systems. While the cited portions do generally discuss vibration damping in the automotive context, they do not teach one to place vibration dampers in the particularly-claimed locations. When Ex. 1014 does discuss specific damping examples, it refers to examples of: "isolation of [an] engine from the vehicle structure and ... control of torsional oscillation amplitudes in engine crankshafts." Ex. 1002 at ¶ 177 (citing Ex. 1014 at 206-211). It 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. One skilled in the art would not extract from Ex. 1014 a conclusion that an isolator should be mounted in the claimed location.

Outside of Boucheret and the partial book of Ex. 1014, Petitioners attempt to support this ground by referencing an alleged "spacer" in Poertzgen. In particular, Petitioners believe a spacer is present between Poertzgen's motor and the alleged sub-frame. *See* Petition at 35, 38; Figure 1 of Poertzgen (portion of which is annotated below).



Petitioners correctly admit that "Poertzgen does not explicitly describe this as an isolator." *See* Petition at 35. However, Petitioners do not even have a basis for referring to this structure as a "spacer." The above rectangular-shape could be a section, such as an end cap, of the motor, as opposed to a spacer (let alone an isolator). Despite admitting that the above-structure is not disclosed to be an isolator, and with no evidence proving the structure is even spacer, Petitioners claim that "the fact that Figure 1 already shows a spacer between the motor and the rest of the actuator" demonstrates why one would be motivated to make their proposed

modification. *See Id.* at 38. This aspect of the Petitioners’ motivation to combine is wholly unsupported and should be ignored.

Putting aside their reference to the alleged “spacer” of Poertzgen, Petitioners’ only real evidence is Boucheret and the partial book of Ex. 1014. Petitioners seemingly believe that Boucheret and Ex. 1014 establish that isolators were known to be placed at an axial end of a motor between the motor and a sub-frame. But that is not correct. The generic concepts described in Ex. 1014, coupled with the express teachings of Boucheret, do not support an obviousness rejection. The only evidence that goes to the question of where, precisely, one should place an isolator comes from Boucheret. Again, Boucheret teaches one to isolate all vibrations—axial, radial, and tangential—by providing grooved dampers radially outward of a motor, between the motor’s lugs and a housing. But that does not result in claim 5.

Petitioners have also not addressed whether there would be a reasonable expectation of success in using Boucheret’s grooved damper at an axial end of a motor. Specifically, there is no evidence that Boucheret’s grooved damper would be able to absorb vibrations in all three directions when mounted anywhere other than a radially-outward location.

Further, Petitioners set forth a “use of a known technique... to improve a similar device” rationale. *See* Petition at 37. This rationale requires “a finding that

the prior art contained a ‘comparable’ device (method, or product that is not the same as the base device) that has been improved in the same way as the claimed invention.” *See* MPEP § 2143(I)(C). Petitioners allege the “comparable” device is Boucheret, but Boucheret’s motor with radially-projecting lugs surrounded by grooved dampers cannot reasonably be said to “have been improved in the same way as the claimed invention.” As noted above, Boucheret’s device is an improvement over Ralf-Michael and addresses a different problem (improving Ralf-Michael by absorbing axial vibrations for a radially-mounted motor).

Petitioners’ rationale of combining “prior art elements (the isolator of Boucheret and the components of Poertzgen) according to known methods” likewise fails because that rationale requires a finding “the prior art included each element claimed” and that one “could have combined the elements as claimed by known methods.” *See* Petition at 37; MPEP § 2143(I)(A). The prior art does not teach an isolator mounted to a sub-frame, and there is no evidence that there was a known method by which to apply an isolator relative to a sub-frame. Again, the only evidence that goes to the question of where, precisely, an isolator should be placed is Boucheret, and Boucheret would not lead one to place an isolator where Petitioners allege.

To summarize, not only does Boucheret not support Petitioners' proposed ground, but Petitioners ignore the teachings of Boucheret. Petitioners offer no explanation as to how Boucheret's grooved, radially-mounted dampers would work when applied in the context of Poertzgen.

Moreover, if Boucheret's dampers can absorb vibrations in all three directions from a radially-outer location, why would Petitioners place Boucheret's dampers in another location? Petitioners do not address this question. Indeed, Petitioners do not even acknowledge the fact that Boucheret teaches one to place a damper between radial lugs of a motor and the housing, not a sub-frame. Petitioners have therefore failed to consider the scope and content of the prior art and have also failed to appreciate the differences between the claims and the content of the prior art, violating *Graham* and *KSR* (and their progeny). *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

The rationale underlying an obviousness rejection must be made explicit, and Petitioners' silence as to the content of Boucheret cannot favor Petitioners. Since Petitioners have not addressed the full content of Boucheret, the Petition effectively contains nothing more than mere conclusory statements. *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016) ("To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner

must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.”) (citations omitted).

Here, by virtue of their silence, Petitioners have not established they are likely to succeed on the merits.

4. Claim 7 is not obvious over Poertzgen and Boucheret

Claim 7 recites “a component isolator having a spring constant and a damping constant, said isolator coupled between said at least one planetary gear set and said sub-frame.” An example is the green bushing 322, above.

As noted, Poertzgen does not disclose isolators at all, and Boucheret merely teaches one to provide grooved dampers radially outward of a motor, surrounding lugs that project from a motor. Neither reference teaches an isolator mounted to a gear set or a sub-frame, let alone both, as required by the claims. One would not couple an isolator between a sub-frame and planetary gear set in light of these teachings. The logical leaps and hand-waving Petitioners go through in an effort to reach claim 7 is divorced from the evidence in the record, for essentially the same reasons as explained relative to claim 5. There is no *prima facie* case of obviousness for claim 7.

5. Claim 8 is not obvious over Poertzgen and Boucheret

Claim 8 recites “said actuator further comprising a sub-frame isolator having a spring constant and a damping constant, said isolator coupled between said sub-frame and a remainder of said actuator.” An example is purple isolator 326, above.

Again, Poertzgen does not disclose isolators at all, and Boucheret merely teaches one to provide grooved dampers radially-outward of a motor, surrounding lugs that project from a motor. Neither reference teaches one to mount an isolator to a sub-frame at all, let alone between a sub-frame and a remainder of an actuator. For essentially the same reasons discussed above, there is no *prima facie* case of obviousness of claim 8.

6. Claims 14 and 15 are not obvious over Poertzgen and Boucheret

Claim 14 recites an isolator disposed “between said sub-frame and said motor,” similar to claim 5, and is non-obvious for the same reasons as claim 5. Claim 15 depends from claim 14 and is non-obvious for the same reasons as claim 14.

7. Claim 16 is not obvious over Poertzgen and Boucheret

Claim 16 recites “a component isolator having a spring constant and a damping constant disposed between said sub-frame and an actuator housing.” An example is purple isolator 326. Whereas Boucheret teaches one to mount a damper radially outward of a motor, surrounding lugs that project from a motor, this teaching

would not lead one to add an isolator between a sub-frame and an actuator housing, as claimed. For essentially the same reasons set forth above with respect to claim 8, there is no *prima facie* case of obviousness relative to claim 16.

8. Claims 17-19 are not obvious over Poertzgen and Boucheret

Claim 17 recites “a component isolator having a spring constant and a damping constant disposed between said sub-frame and an actuator housing.” As noted relative to claims 8 and 16, this combination of features is not obvious over Poertzgen in view of Boucheret. Claims 18 and 19 are non-obvious at least because they depend from claim 17.

B. Ground E – Poertzgen in view of Boucheret and Drennen does not support obviousness of claims 5, 7, 8, or 14-19

Ground E is similar to Ground B except Petitioners now add Drennen into the combination “[t]o the extent that Patent Owner argues Poertzgen lacks the required sub-frame.” Petition at 62. Petitioners do 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. As such, Ground E suffers from the same flaws as Ground B.

C. Ground G – Poertzgen in view of Boucheret and Weiler does not support obviousness of claims 5, 7, 8, or 14-19

Ground G is similar to Grounds B and E except Petitioners now add Weiler instead of Drennen “[t]o the extent that Patent Owner argues Poertzgen lacks the required sub-frame.” Petition at 70. Petitioners do not rely on Weiler in an effort to

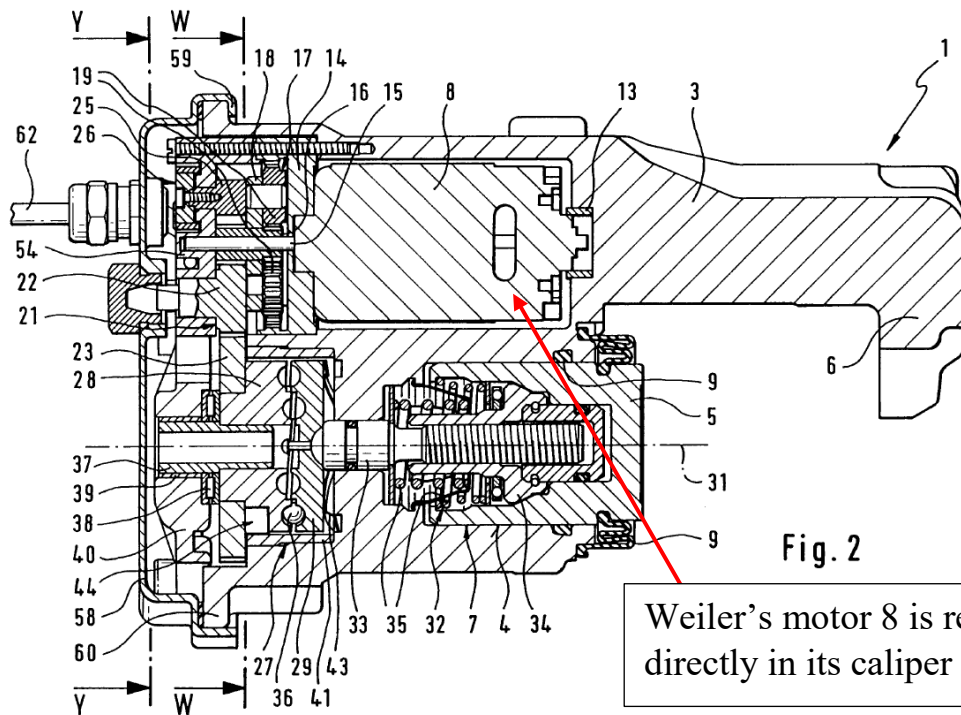
cure the above-noted deficiencies with respect to the alleged obviousness of the locations of the claimed isolator. As such, Ground G suffers from the same flaws as Grounds B and E.

D. Ground H – Weiler does not support obviousness of claims 24 or 25

The grounds of rejection involving Weiler are improper for a number of reasons. First, Weiler does not disclose the claimed “actuator housing”—rather, Weiler merely discloses a brake caliper, and one would understand an “actuator housing” to be distinct from a brake caliper. And second, Weiler does not teach isolators mounted relative to a sub-frame at all, and Petitioners have not addressed whether adding isolators would be redundant in the context of Weiler’s disclosure.

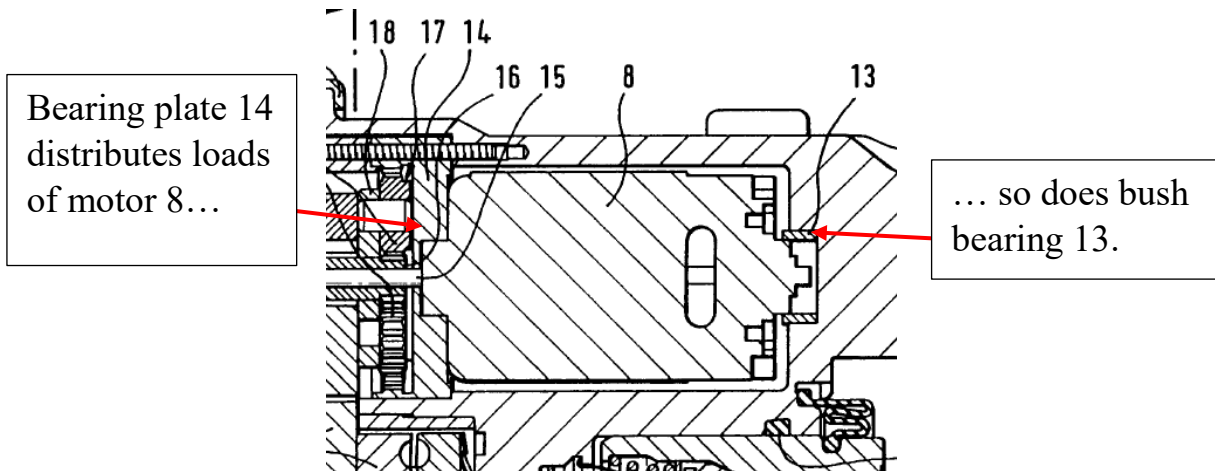
1. Weiler

Weiler (Exs. 1012, 1013) teaches a vehicle brake with an electric actuator configured to operate the vehicle brake as a parking brake. The actuator includes a motor 8 that is received directly within the caliper 1, as opposed to a separate actuator housing.



The motor 8 is supported at one axial end by a bearing bush 13 and is supported at another axial end by a bearing plate 14 as shown in annotated Figure 2 above. Bush bearings and bearing plates are known to distribute loads. Petitioners' Declarant states that the bearing bush 13 serves an isolation function. *See* Ex. 1002 at ¶ 276. While Weiler discloses a bush bearing 13 and bearing plate 14 that may reduce friction, absorb vibrations, and distribute the loads of the motor 8, as shown in annotated portion of Figure 2 below, Petitioners seek to add additional isolation features relative to Weiler's bearing plate 14. Petitioners do not explain why one would want to add more isolators to Weiler. As an aside, Patent Owner does not

believe Weiler's bearing plate 14 is a sub-frame, but does not traverse this aspect of this ground for purposes of this Patent Owner Preliminary Response.



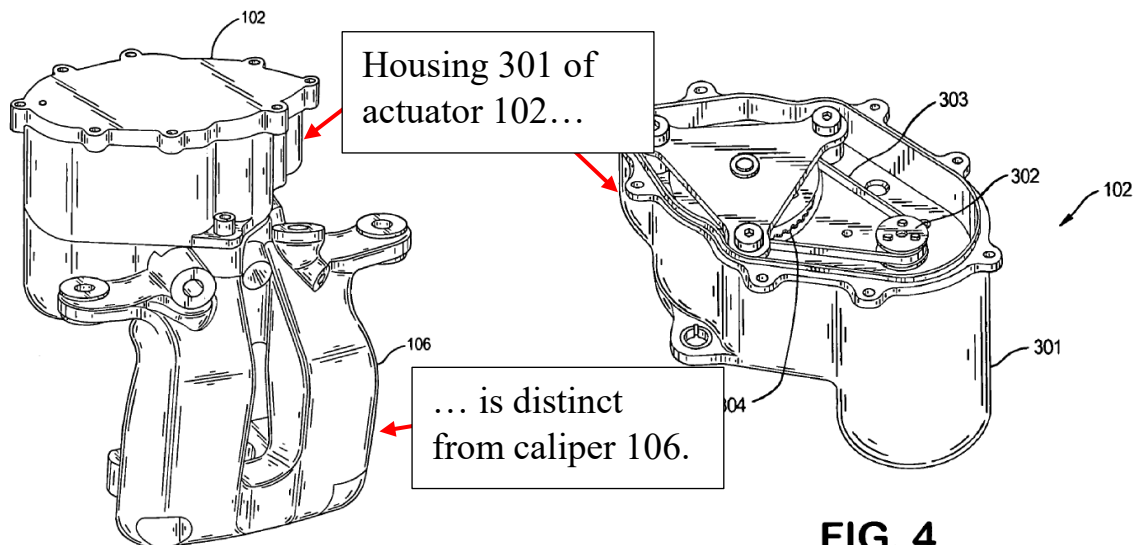
Petitioners have not addressed whether adding the claimed isolators to Weiler would be redundant in view of Weiler's existing structures. Further, and before getting to that issue, Petitioners have not properly identified an "actuator housing" as distinct from a brake caliper in Weiler.

2. The "actuator housing" does not read on Weiler's caliper

Dependent claim 24 depends from claims 20 and 23, and recites "providing a first motor isolation bushing between said portion of said actuator housing and said motor; and providing a second motor isolation bushing between said sub-frame and said motor." Claim 25 recites "providing at least one isolation bushing between said portion of said actuator housing and said sub-frame."

Petitioners read the claimed “actuator housing” on the area within a yellow box (Petition at 74), which is a portion of Weiler’s brake caliper 1. One would not read the claimed “actuator housing” on a brake caliper.

The ’415 Patent uses the terms “actuator housing” and “caliper” to refer to different structures. The term “actuator housing” is used to refer to the housing 301 of actuator 102. *See* Ex. 1001 at 4:7-21. The ’415 Patent describes the actuator 102 as a structure that is attachable to the caliper 106. *See Id.* at 3:1-9; *see also* Figures 3 and 4 (annotated below).



The term “actuator housing” is never used to refer to a brake caliper or a portion of a brake caliper. Patent Owner is not seeking to import limitations from the specification into the claims—rather, Patent Owner only references the specification to highlight the distinction between an actuator housing and a caliper.

Phillips v. AWH Corp., 415 F.3d 1303, 1313 (Fed. Cir. 2005) (“Importantly, 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.”); *In re Smith Int’l, Inc.*, 871 F.3d 1375, 1383-84 (Fed. Cir. 2017) (even under the broadest reasonable interpretation standard, a “body” was distinguishable from various other structures based on the descriptions of the same in the specification).

Many claims in the ’415 Patent recite both an “actuator housing” and a “brake caliper.” *See, e.g.*, Ex. 1001 at claim 17 (reciting both an “actuator housing” and a “brake caliper”). Different claim terms are presumed to have different meanings. *CAE Screenplates, Inc. v. Heinrich Fiedler GmbH & Co. Kg*, 224 F.3d 1308, 1317 (Fed. Cir. 2000) (“In the absence of any evidence to the contrary, we must presume that the use of these different terms in the claims connotes different meanings.”) (citations omitted). In light of the different claim terms, coupled with the remainder of the disclosure, it is improper to read an “actuator housing” on a “brake caliper.”

The intrinsic evidence discussed above demonstrates that an “actuator housing” cannot be read on a caliper. To 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. Ex. 1012 at 2:17-29 (“the actuator unit... and actuator element are disposed in a housing-like recess of the brake caliper”). Weiler also cites to Poertzgen, which includes a parking brake actuator subassembly that is mountable to a brake (Ex. 1007 at 8:5-16), and Weiler refers to Poertzgen as a “complex overall structural design.” Ex. 1012 at 1:26-2:10. So, Weiler acknowledges the distinction between subassemblies mounted to a brake caliper and the brake caliper itself. While Weiler is extrinsic evidence, it supports that one would not read “actuator housing” on a caliper. *Am. Radio LLC v. Qualcomm Inc.*, 578 F. App’x 975, 980 (Fed. Cir. 2014) (district court did not err in using prior art to demonstrate how a disputed term is used by those skilled in the art) (citing *Vitronics Corp. v. Conceptronics*, 90 F.3d 1576, 1584 (Fed. Cir. 1996)).

In light of the above, it is unreasonable for Petitioners to read the claimed “actuator housing” on a portion of a brake caliper, as they have done relative to Weiler. Petitioners do not otherwise attempt to modify Weiler to address this defect. There is no *prima facie* case of obviousness for at least this reason.

3. Petitioners have not addressed redundancy

Even if the claimed “actuator housing” could read on Weiler’s brake caliper, adding the claimed isolators to Weiler would be redundant in view of Weiler’s existing isolation or load dissipation features. Petitioners do not address this problem.

Again, dependent claim 24 recites a sub-frame/motor isolator (“providing a second motor isolation bushing between said sub-frame and said motor,” such as red bushing 318) and claim 25 recites a sub-frame/housing isolator (“providing at least one isolation bushing between said portion of said actuator housing and said sub-frame,” such as purple isolator 326).

Petitioners read the claimed sub-frame on Weiler’s bearing plate 14. Weiler does not disclose a separate isolation bushing between its bearing plate 14 and its motor 8, as required by claim 24. Further, Weiler does not disclose an isolator bushing between its bearing plate 14 and its alleged actuator housing, as required by claim 25.

With respect to claim 24, Petitioners argue that since Weiler includes a bush bearing 13 at the opposite end of its motor 8, it would be obvious to provide one at the opposite end of its motor 8, between the motor 8 and the bearing plate 14 as a matter of duplicating a known element. Petition at 80-81. But 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. Adding 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. Petitioners have not refuted, and cannot refute, this point. There is no *prima facie* case of obviousness for this

separate reason. *TRW Automotive U.S. LLC v. Magna Electronics, Inc.*, IPR2015-00972, Paper 9 at 12 (September 16, 2015) (denying institution of IPR when finding no reason to combine where “the camera in [the ’094 patent] already is mounted to the windshield using a bracket and does not require the direct optical coupling provided by the fastening device in [the ’633 patent]”); *see also Stryker Corp. v. Karl Storz Endoscopy America, Inc.*, IPR2015-00764, Paper 13 at 13 (September 2, 2015) (denying institution of IPR because “we fail to see, and Petitioner does not adequately explain, why it would be obvious to add a translator to redundantly perform the function that Petitioner maintains is performed by the interconnect devices and network computer located within the surgical network.”).

With respect to claim 25, Petitioners argue that it would have been obvious to add another bushing between the bearing plate 14 and the alleged actuator housing. Petition at 82. However, Petitioners have not explained why one would have wanted to do so, nor whether adding such a bushing would have been redundant in view of Weiler’s existing isolation features.

Petitioners seemingly acknowledge the weaknesses in relying on Weiler, alone, to teach the specifically-claimed isolation bushings because Petitioners alternatively rely on Boucheret to supply the missing isolation bushings in the next ground. Boucheret does not support Petitioners’ position, however.

E. Ground I – Weiler in view of Boucheret does not support obviousness of claims 24 or 25

Petitioners introduce Ground I to address the possibility that “Patent Owner argues Weiler fails to teach the required isolation bushings.” Petition at 83. Indeed, that is one of Patent Owner’s arguments.

Patent Owner maintains, regardless of the teachings of Boucheret, that Petitioners have not properly accounted for the claimed “actuator housing” for the same reasons outlined above. Petitioners do not attempt to cure this deficiency in Weiler using the teachings of Boucheret. There is no *prima facie* case of obviousness for at least this reason.

Further, Petitioners have still not adequately addressed whether adding the claimed isolation bushings to Weiler, which already includes a bearing bush 13 and bearing plate 14, would be redundant. In this regard, Ground I fails for the same reasons as Ground H despite the addition of Boucheret.

And further, because Boucheret teaches one to mount a motor with radial lugs, and to absorb axial, tangential, and radial vibrations with radially-mounted dampers, Boucheret’s teachings would not lead one to the claimed combinations. If anything, one would seemingly be taught to remove Weiler’s bush bearing 13 and bearing plate 14 and to instead mount Weiler’s motor with radial lugs and grooved dampers, as in Boucheret. Doing so would not result in the claimed combinations.

VII. DISCRETIONARY DENIAL

A. *Fintiv*

Various factors favor denial of the Petition. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (March 20, 2020) (Precedential). Among them, Patent Owner has streamlined this matter by disclaiming a number of claims, rendering some of the Petition's grounds completely moot and others partially moot. Of the remaining grounds, the Petition sets forth insufficient evidence of whether the claims would have been obvious.

Further, while the related district court proceeding (*Stoneridge Control Devices, Inc. v. ZF North America, Inc. et al.*, U.S. District Court for the Eastern District of Michigan, Case No. 2:22cv10289) is in its relatively early stages and Petitioners are seeking a stay, as of the date of this Patent Owner Preliminary Response a stay has not been granted, and Petitioners have not stipulated in the corresponding district court proceeding that they 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. Thus, at present, Petitioners are seeking to litigate the proposed grounds of rejection on two parallel fronts.

Further, the '415 Patent is expired.

These factors support a discretionary denial of the Petition.

B. Administrative Efficiency

Even aside from the application of *Fintiv*, the Board has direction to, and should, deny the instant Petition to preserve administrative efficiency.

The purpose of IPR is not only to resolve disputes between petitioners and patent owners, but also to “protect the public’s paramount interest in seeing that patent monopolies are kept within their legitimate scope.” *Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. 261, 279-80 (2016) (internal citations and quotation marks omitted). This latter purpose is not served by allowing IPR of an expired patent to proceed because any monopoly attached to it has already ended. To the extent the patent owner may pursue damages for infringement of an expired patent, the damages are retrospective only and are limited by the statute of limitations for patent claims. 35 U.S.C. § 286. It would thus be a waste of the Board’s efforts to consider whether an expired patent is unpatentable. Under these circumstances, the Board should decline to institute IPR. 35 U.S.C. § 314(a); *Mylan Labs. Ltd. v. Janssen Pharmaceutica, N.V.*, 989 F.3d 1375, 1382 (Fed. Cir. 2021) (“the Director is free... to determine that for reasons of administrative efficiency an IPR will not be instituted”); *see also Biodelivery Scis. Int’l, Inc. v. Aquestive Therapeutics, Inc.*, 935 F.3d 1362, 1365 (Fed. Cir. 2019) (collecting cases).

VIII. NO JURISDICTION

Taking the above point a step further, Patent Owner believes the Board lacks jurisdiction over expired patents. In *Oil States*, the Supreme Court explained that the “decision to grant a patent is a matter involving public rights—specifically, the grant of a public franchise.” *Oil States Energy Servs., LLC v. Greene's Energy Grp., LLC*, 138 S. Ct. 1365, 1373 (2018). “Specifically, patents are public franchises that the Government grants to the inventors of new and useful improvements.” *Id.* (internal quotation marks omitted). The Court explained that “Congress [has] significant latitude to assign [the] adjudication of public rights to entities other than Article III courts.” *Id.* (citations omitted). In exercising its significant latitude, Congress grants public franchises “subject to the qualification that the PTO has the authority to reexamine—and perhaps cancel—a patent claim in an inter partes review.” *Id.* at 1374 (internal quotation marks omitted). Accordingly, so long as the public franchise exists, the PTO may have jurisdiction to amend and cancel the claims of the patent (e.g., via *inter partes* review).

When a patent expires, however, 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.

This is further confirmed by the statutory scheme governing IPRs. Integral to the IPR process is the ability of a Patent Owner to move to amend its claims. 35 U.S.C. § 316(a)(9); 37 C.F.R. § 42.121. This 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. *Compare* 35 U.S.C. § 316(e) (“In an *inter partes* review instituted under this chapter, the petitioner shall have the burden of proving a proposition of unpatentability by a preponderance of the evidence.”); *Microsoft Corp. v. i4i Ltd. P'ship*, 564 U.S. 91, 95 (2011) (invalidity defense to patent infringement in district court must be proved by clear and convincing evidence). The patent at issue in this

IPR is expired. As a result, a motion to amend would be fruitless¹ and the Board would have discretion to deny it on that basis. 37 C.F.R. § 42.121(d)(3).

It is clear that Congress did not intend to grant the Board jurisdiction to consider IPR of an expired patent. Otherwise, expired patents would be subject to the lower burden of proof for invalidation without the justification of the opportunity to amend the expired patents. Considering the validity of expired patents must be left to Article III courts applying the higher clear and convincing standard. Since the '415 Patent expired before the Petition was filed, the Board does not have jurisdiction over the '415 Patent, and the IPR should not be instituted as a result.

IX. NOT CONSTITUTIONAL

A. IPRs Violate Due Process Rights

When a petition for IPR is filed, the Petitioner must pay a fee of \$19,000. If the IPR is instituted, the Petitioner must pay a second fee of \$22,500. Since 2021, these post-institution fees have amounted to more than \$20 million per year, and represent about 24% of the Board's total budget and about 40% of the Board's AIA

¹ While the controlling statutes are silent as to amendments of an expired patent, Congress has acknowledged that expired patents cannot be amended before by statutorily prohibiting such action in the analogous *ex parte* reexamination proceeding. 37 C.F.R. § 1.530(j).

trial proceedings budget.² There is thus an incentive for the Board to favor institution. This is especially problematic because Board leadership holds dual executive (financial) and judicial functions. That is, the same people making decisions about the merits of an IPR also participate in making financial decisions about the operation of the Board. *See, e.g., Mobility Workx, LLC v. Unified Patents, LLC*, 15 F.4th 1146, 1154 (Fed. Cir. 2021) (acknowledging that the chief APJ, the Deputy APJ, and the Vice Chief APJs assist the Director of the USPTO in various budgetary functions); *see also Id.* at 1165 (noting with respect to the possibility of structural bias within the Board that it is the Court of Appeals for the Federal Circuit’s responsibility to assure the Board is “adequately scrupulous in their avoidance of bias and the appearance of bias.”) (Newman, P., dissenting).

This is a source of impermissible structural bias within the Board and violates litigants’ due process rights. *See, e.g., Ward v. Vill. of Monroeville*, 409 U.S. 57, 60 (1972) (unconstitutional structural bias existed where substantial institutional funding, there almost half of a village’s income, depended on a particular judicial outcome, there the imposition of certain fines and fees, both overseen by the mayor).

² *See* USPTO Aggregate Revenue Tables, available at <https://www.uspto.gov/about-us/performance-and-planning/fee-setting-and-adjusting>

A recent report by the Government Accountability Office³ has revealed that the management practices of the USPTO and Board affects the independence of the Board judges. 67 percent of judges “reported feeling pressure to change or modify an aspect of their decision in an AIA proceeding” based on internal review procedures, including with respect to institution decisions. Exhibit 2004 at 2, 35, 59. 21 percent of judges indicated they were pressured to change or modify the overall outcome of a proceeding as a result of these internal review procedures. *Id.* at 63. 15 percent of judges indicated that in their opinion, the Board management’s influence on the outcome of a proceeding has been inappropriate all of the time. *Id.* at 68. This information, viewed in light of the structural issues discussed above, underscores due process deficiencies in the IPR procedure.

B. The Institution Procedure Violates the Appointments Clause

The authorizing statutes for IPR granted the Director authority to institute an IPR. 35 U.S.C. § 314. However, shortly after enactment of those statutes the authority to institute IPR was delegated to the Board. *Changes to Implement Inter Partes Review Proceedings, Post-Grant Review Proceedings, and Transitional*

³ Available at <https://www.gao.gov/assets/gao-23-105336.pdf> and attached hereto as Ex. 2004.

Program for Covered Business Method Patents, 77 Fed. Reg. 48612, 48647 (Aug. 14, 2012).

This delegation is in conflict with a recent Supreme Court decision. In *United States v. Arthrex*, the Supreme Court confirmed that final decisions made on behalf of the USPTO in an IPR must be made by a principal officer, one who is appointed by the President with the advice and consent of the Senate. *United States v. Arthrex, Inc.*, 141 S. Ct. 1970, 1985 (2021). At issue in *Arthrex* was a Final Written Decision issued at completion of an IPR, but the same principle stands for institution decisions, which are also final and nonappealable. *See* 35 U.S.C. § 314(d); *Cuozzo*, 579 U.S. at 266 (2016). Board judges are not principle officers and therefore they cannot act alone on behalf of the USPTO by rendering final institution decisions. *Arthrex*, 141 S. Ct. at 1985. This problem has been highlighted by Judge Newman of the United States Court of Appeal for the Federal Circuit, and is ripe for review. *See Mobility Workx*, 15 F.4th at 1161 (Newman, P., dissenting).

X. CONCLUSION

Patent Owner requests that institution be denied.

Respectfully Submitted,

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(b)(1), the undersigned hereby certifies that the foregoing document contains 8,569 words, excluding a table of contents, a table of authorities, mandatory notices under 37 C.F.R. § 42.8, a certificate of service or word count, or appendix of exhibits or claim listing, as measured by the word-processing system used to prepare this paper.

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CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the foregoing document was served electronically via email on March 20, 2023, in its entirety on the following:

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