

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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**BMW OF NORTH AMERICA, LLC AND BAYERISCHE MOTOREN WERKE  
AKTIENGESELLSCHAFT,  
Petitioners,**

**v.**

**THEODORE & ASSOCIATES, LLC,  
Patent Owners**

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*Case No.:* IPR2017-01380  
U.S. Patent No. 9,045,163 B2

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**PETITIONERS' NOTICE OF APPEAL**

Notice is hereby given, pursuant to 35 U.S.C. §§ 141(c), 142, 319; 37 C.F.R. §§ 90.2(a), 90.3(a), that BMW of North America, LLC and Bayerische Motoren Werke Aktiengesellschaft (collectively “Petitioners”) appeal from the Patent Trial and Appeal Board’s (“PTAB’s”) Final Written Decision entered on November 20, 2018 (Paper No. 35) in the above-captioned *inter partes* review of U.S. Patent No. 9,045,163 to the United States Court of Appeals for the Federal Circuit. This notice is timely filed within 63 days of the PTAB’s Final Written Decision. 37 C.F.R. § 90.3(a)(l).

Petitioners’ appeal includes any underlying orders, decisions, rulings, and opinions as well as any issues raised during these proceedings. In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Petitioners further indicate that the issues on appeal include, without limitation: (i) the PTAB’s determination that the Greil reference (JP No. 5-69854) is not prior art to claims 6, 8–10, 32–34, 36, 37, and 43; (ii) the PTAB’s obviousness analysis and claim construction with respect to claim 3; (iii) the PTAB’s disposition of Petitioners’ motion to exclude; and (iv); any finding or determination supporting or related to the above-mentioned issues as well as all other issues decided adversely to Petitioners including in any orders, decisions, rulings, and/or opinions.

Simultaneous with this submission, Petitioners are filing a true and correct copy of this Notice of Appeal with the Director of the U.S. Patent and Trademark

Office and electronically filing the same, along with the required docketing fees, with the Clerk of the Federal Circuit as set forth in the accompanying Certificate of Filing.

Date: January 22, 2019

Respectfully submitted,

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## CERTIFICATE OF FILING

The undersigned hereby certifies that, in addition to being filed with the PTAB through the PTAB E2E electronic filing system, a true and correct copy of the above-captioned PETITIONERS' NOTICE OF APPEAL is being filed with the Director of the U.S. Patent and Trademark Office on January 22, 2019 by Priority Mail Express® at the following address:

**Office of the General Counsel  
United States Patent and Trademark Office  
P.O. Box 1450, Alexandria, Virginia 22313-1450**

The undersigned also hereby certifies that a true and correct copy of the above-captioned PETITIONERS' NOTICE OF APPEAL and the filing fee is being filed via the electronic filing system, CM/ECF, with the Clerk's Office of the U.S. Court of Appeals for the Federal Circuit on January 22, 2019.

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## **CERTIFICATE OF SERVICE**

The undersigned certifies that, on this 22nd day of January, 2019, a true and correct copy of the foregoing document was served by Petitioners on the Patent Owner in accordance with the service information provided by Patent Owner.

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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BMW OF NORTH AMERICA, LLC AND BAYERISCHE MOTOREN  
WERKE AKTIENGESELLSCHAFT,  
Petitioner,

v.

THEODORE & ASSOCIATES, LLC,  
Patent Owner.

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Case IPR2017-01380  
Patent 9,045,163 B2

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Before MITCHELL G. WEATHERLY, FRANCES L. IPPOLITO, and  
SEAN P. O'HANLON, *Administrative Patent Judges*.

WEATHERLY, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. BACKGROUND

BMW of North America, LLC and Bayerische Motoren Werke Aktiengesellschaft (collectively “Petitioner”) filed a petition (Paper 2, “Pet.”) to institute an *inter partes* review of claims 1–4, 6–14, 16–37, and 43–49 of U.S. Patent No. 9,045,163 B2 (Ex. 1001, “the ’163 patent”).

35 U.S.C. § 311. Petitioner supported the Petition with a Declaration from Donald D. Parker (Ex. 1003). Theodore & Associates, LLC (“Patent Owner”) timely filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). On November 21, 2017, based on the record before us at the time, we instituted an *inter partes* review of claims 2–4, 6, 8–10, 19, 23, 24, 27–37, 43–46, 48, and 49.<sup>1</sup> Paper 8, 30 (“Institution Decision” or “Dec.”). We instituted the review on the following challenges to the claims:

References	Basis	Claims
German Patent Publication No. DE 102009038834 A1 (Ex. 1016, “Greil”)	§ 103	6, 8–10, 19, 23, 24, 43–46, 48, and 49
Greil and Japanese Patent Publication No. 5-69854 (Ex. 1017, “Hiroshima”)	§ 103	32–34, 36, and 37
Greil and German Patent Publication No. DE 102010018725 A1 (Ex. 1018, “Brandt”)	§ 103	2–4 and 27–31
Greil, Hiroshima, and Brandt	§ 103	35

After we instituted this review, Patent Owner filed a Patent Owner Response in opposition to the Petition (Paper 12, “PO Resp.”) that was supported by a Declaration from Scott Kunselman (Ex. 2012). Petitioner filed a Reply in support of the Petition (Paper 19, “Reply”). Patent Owner did not move to amend any claim of the ’163 patent.

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<sup>1</sup> Patent Owner filed a disclaimer of claims 1, 7, 11–14, 16–18, 20–22, 25, 26 and 47 of the ’163 patent under 35 U.S.C. § 253(a) that was effective as of August 22, 2017. Dec. 2–4; Ex. 2002. Accordingly, we did not institute review of these claims, which were no longer part of the ’163 patent on the date of our Institution Decision, and we do not address the patentability of these claims in this Decision.

Both parties have filed motions to exclude evidence in this proceeding and both motions have been fully briefed with oppositions and replies, respectively. *See* Papers 26, 29, 32 (briefing relating to Petitioner’s Motion to Exclude); Papers 28, 30, 31 (briefing relating to Patent Owner’s Motion to Exclude).

We heard oral argument on August 15, 2018. A transcript of the argument has been entered in the record (Paper 34, “Tr.”).

We have jurisdiction under 35 U.S.C. § 6(c). The evidentiary standard is a preponderance of the evidence. *See* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons expressed below, we conclude that Petitioner has demonstrated by a preponderance of evidence that claims 2, 4, 19, 23, 24, 27–31, 35, 44–46, 48, and 49 are unpatentable, but has failed to do so for claims 3, 6, 8–10, 32–34, 36, 37, and 43.

#### B. RELATED PROCEEDINGS

The parties have identified as a related proceeding the co-pending district court proceeding of *Theodore & Associates, LLC v. BMW of North America, LLC and Bayerische Motoren Werke AG*, Case No. 2:16-cv-14253-VAR-DRG (E.D. Mich.). Pet. 90; Paper 3, 2. Petitioner also filed another petition challenging the same claims of the ’163 patent in IPR2017-01379. Pet. 90.

#### C. THE ’163 PATENT

The ’163 patent is directed to “a universal chassis apparatus for an automotive vehicle” that “includes a battery and/or fuel storage compartment in a rigid backbone structure.” Ex. 1001, 1:42–45. A fuel tank can



optionally be attached to the rear structure. *Id.* at 6:29–31. The backbone structure connects a front structure with a front suspension to a rear structure with a rear suspension. *Id.* at 6:46–51. The front and rear suspensions are:

rigidly affixed to the front and rear structures (or backbone mounting structures) such that the suspension loads (in the preferred embodiment) stress the engine block and transaxle case, to create a complete, self-supporting chassis without the need for a separate frame, or the need to attach the front and rear suspension subassemblies to a rigid uni-body.

*Id.* at 1:50–55. The universal chassis is purportedly lighter than a traditional automotive frame and “particularly well suited for Battery Electric Vehicles (BEVs) and Plug-in Hybrids (PHEVs), since the battery pack can be mounted inside the backbone—eliminating the need for a separate battery box—thus reducing cost and weight.” *Id.* at 2:21–47.

Claims 27, 32, 43, and 44 are the independent claims among the challenged claims. Claim 27 is illustrative and recites:

27. An automotive vehicle chassis apparatus comprising:

a single central chassis structure spanning between a front set of wheels and a rear set of wheels, the central chassis structure further comprising a hollow longitudinally elongated segment and a hollow laterally crossing segment defining a substantially T-shape when viewed from above; and

a set of batteries being removeably located within the segments of the central chassis structure.

*Id.* at 15:16–24. This claimed arrangement is illustrated, for example, in Figure 36, which we reproduce below.

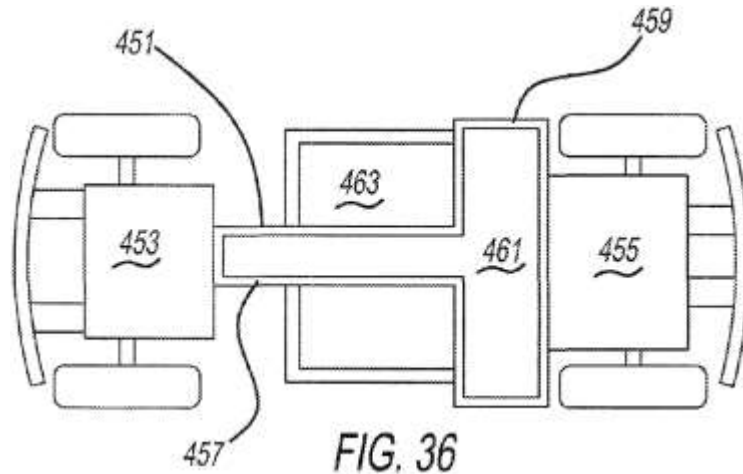


Figure 36 is a diagrammatic top view of a universal chassis with a T-shaped backbone 451.

*Id.* at 11:63–65.

## II. ANALYSIS

### A. THE PARTIES' POST-INSTITUTION ARGUMENTS

In our Institution Decision, we concluded that the argument and evidence adduced by Petitioner demonstrated a reasonable likelihood that claims 2–4, 6, 8–10, 19, 23, 24, 27–37, 43–46, 48, and 49 were unpatentable as obvious based on the challenges identified in the table in Part I.A above. Dec. 30. We must now determine whether Petitioner has established by a preponderance of the evidence that the specified claims are unpatentable over the cited prior art. 35 U.S.C. § 316(e). We previously instructed Patent Owner that “any arguments for patentability not raised in the [Patent Owner Response] will be deemed waived.” Paper 9, 6; *see also In re Nuvasive, Inc.*, 842 F.3d 1376, 1381 (Fed. Cir. 2016) (holding that patent owner’s failure to proffer argument at trial as instructed in scheduling order constitutes waiver). Additionally, the Board’s Trial Practice Guide states that the Patent Owner Response “should identify all the involved claims that

are believed to be patentable and state the basis for that belief.” Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012).

#### B. THE LEVEL OF ORDINARY SKILL IN THE ART

Petitioner contends that an ordinarily skilled artisan would have a degree in mechanical engineering or an equivalent field and at least two years of industry experience with a working knowledge of vehicle chassis structural properties and propulsion system and drivetrain packaging and attributes for electric and hybrid electric technologies. Pet. 35 (citing Ex. 1003 ¶ 20).

Patent Owner disagrees regarding the level of industry experience possessed by an ordinarily skilled artisan, which Patent Owner asserts to be “at least ten years,” because a “vehicle chassis is one of the most important components of a vehicle.” PO Resp. 18. Patent Owner relies on Mr. Kunselman, who opines that because “chassis architecture is selected in the advanced stages of the design process,” the selection is performed by a “team” with “both a broad and appropriately deep understanding of vehicle systems and their effect on performance.” Ex. 2012 ¶¶ 18–19. He also opines that members of such a team typically “include engineers who are the most seasoned and skilled veterans who also have a broad set of experiences.” *Id.* ¶ 19. Mr. Kunselman thus concludes that an ordinarily skilled artisan “would have a minimum of 10 years of experience, having also a breadth that would include specific experience in Chassis and Vehicle Development” and “additional experience in Body and Powertrain.” *Id.* ¶ 21. Patent Owner further contends that an ordinarily skilled artisan “would also have experience in Body and Powertrain” without explaining precisely what is meant by “Body and Powertrain.” PO Resp. 18.

Petitioner responds that Patent Owner’s alleged level of skill is “extraordinary” rather than “ordinary.” Reply 20. Petitioner contends that Mr. Kunselman incorrectly focuses on the skill level of a team of designers rather than a “*person* having ordinary skill.” *Id.* Mr. Parker opines that

Expertise in the selection of a chassis architecture and having ordinary skill in the art of chassis design are two different things. A chassis selection team would consider external influences such as market trends, customer preferences, competitor offerings and perhaps even the financial strength and position of an OEM. One of ordinary skill in the art of chassis design need not have that breadth of experience as most of it is beyond the actual nuts and bolts of designing a chassis.

Ex. 1061 ¶ 12. Mr. Parker thus deemphasizes the wide-ranging consequences on manufacturing processes and tooling that designing a modular chassis that is adaptable across an entire automotive product line. Instead, he reduces the inquiry about the appropriate level of skill to the skill required to design the “nuts and bolts” of a chassis after a “chassis selection team” settles on a design concept.

Both parties rely wholly upon testimony from either Mr. Parker or Mr. Kunselman, neither of whom supports his opinion with objective evidence. Pet. 35 (citing Ex. 1003 ¶ 20); PO Resp. 11–12 (referring to Mr. Kunselman’s opinion appearing at Ex. 2012 ¶¶ 15–21); Reply 20–21 (citing Ex. 1003 ¶ 20; Ex. 1061 ¶¶ 11–13). The level of skill is determined “in the art to which the claimed invention pertains,” 35 U.S.C. § 103, and neither party identifies that art explicitly.

The Specification describes the field of invention as follows: “This invention is related to the field of automotive chassis design and more specifically to the area of interchangeable chassis for use with many models of vehicles.” Ex. 1001, 1:17–19. The Specification repeatedly refers to the

chassis as having “universal” characteristics. *Id.* at Title, *passim*. The Specification also describes an advantage of its chassis as having “an ability to adapt to different bodies and body styles,” *id.* at 2:17–21, and criticizes prior art chassis designs that “are not readily adaptable to a wide variety of vehicles without forcing major and expensive redesign work for each vehicle,” *id.* at 1:29–33. Claims 43 and 44 expressly require that the claimed chassis be “universally adapted” for more than one type of vehicular configuration. *Id.* at 16:40–17:19. Based on these descriptions of the chassis and the express requirements in at least some of the claims at issue, we determine that the art to which the claimed invention pertains is the design of interchangeable chassis for use with many models of vehicles.

We consider Mr. Kunselman’s testimony on the level of ordinary skill to be tied more closely to this relevant art of designing a chassis for use with many models of vehicles. Accordingly, we adopt Patent Owner’s definition of the level of ordinary skill for purposes of this Decision and evaluate priority of invention and obviousness from that perspective. We note that both Mr. Parker and Mr. Kunselman possess such a skill level. Ex. 1003 ¶¶ 6–13; Ex. 2012 ¶¶ 4–9.

### C. PRIORITY OF CLAIMS AND SCOPE OF PRIOR ART

The ’163 patent issued from U.S. App. 13/950,060, filed July 24, 2013 (“the Final App”), which was a continuation-in-part of U.S. App. 13/397,329, filed February 15, 2012 (“the 2012 CIP”), which is a continuation-in-part of U.S. App. 12/019,490, filed on January 24, 2008 (“the ’490 App”), which claims priority to U.S. Prov. App. 60/897,771, filed on January 26, 2007 (“the ’771 App”). Ex. 1001, (65), 1:7–12. Petitioner contends that claims 32–34, 36, 37, and 43 are entitled only to a priority date

of February 15, 2012, the filing date of the 2012 CIP. Pet. 22–24. Petitioner also contends that claims 2–4, 6, 8–10, 19, 23, 24, 27–31, 35, 44–46, 48, and 49 are entitled only to priority dating back to the filing date of the Final App, July 24, 2013. *Id.* at 24–34. Petitioner provides its analysis on a claim-by-claim basis and supports its contentions with Mr. Parker’s testimony.

Patent Owner argues that Greil is not prior art to claims 6, 8–10, 19, 23, 24, 32–34, 36, 37, and 43 because those claims are entitled to a priority date based on the ’490 App filed on January 24, 2008. PO Resp. 18–30. For the reasons expressed below, we determine that Greil is prior art to claims 2–4, 19, 23, 24, 27–31, 35, 44, 45, 47, and 48, but Greil is not prior art to claims 6, 8–10, 32–34, 36, 37, and 43. We address various materially related subsets of these claims below.

*1. Legal Standards for Determining Priority*

“It is elementary patent law that a patent application is entitled to the benefit of the filing date of an earlier filed application only if the disclosure of the earlier application provides support for the claims of the later application, as required by 35 U.S.C. § 112.” *In re Chu*, 66 F.3d 292, 297 (Fed. Cir. 1995). “While a prior application need not contain precisely the same words as are found in the asserted claims, the prior application must indicate to a person skilled in the art that the inventor was ‘in possession’ of the invention as later claimed.” *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1306 (Fed. Cir. 2008) (citations omitted). Upon a showing that a reference is prior art based on the filing date of the application resulting in a claim at issue, the burden of coming forward with evidence to prove that the claim is entitled to priority based on an earlier-filed application rests upon the patent owner. *Id.* at 1305–06. Priority is

determined on a claim-by-claim basis, *X2Y Attenuators, LLC v.*

*International Trade Commission*, 757 F.3d 1358, 1366 (Fed. Cir. 2014).

While the meaning of terms, phrases, or diagrams in a disclosure is to be explained or interpreted from the vantage point of one skilled in the art, all the limitations must appear in the specification. The question is not whether a claimed invention is an obvious variant of that which is disclosed in the specification. Rather, a prior application itself must describe an invention, and do so in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention as of the filing date sought.

*Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997); *see also Martin v. Mayer*, 823 F.2d 500, 505 (Fed. Cir. 1987) (holding that the written description requirement is “not a question of whether one skilled in the art *might* be able to construct the patentee’s device from the teachings of the disclosure. . . . Rather, it is a question whether the application necessarily discloses that particular device”).

## 2. Claims 9, 32–37, and 43: Wire Claims

Petitioner argues that claims 9, 32–37, and 43 are not entitled to priority earlier than February 15, 2012. Pet. 22–24; *see also id.* at 22, n.5 (including claim 9 in the analysis). Each of these claims requires an “electrical wire located within the central spine”<sup>2</sup> or an “electrical wire located within and extending the entire length of the central spine.”<sup>3</sup> Claim 9 also recites “a wire . . . within a longitudinal length of the backbone structure.” Ex. 1001, 14:2–3. Petitioner contends that none of the priority

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<sup>2</sup> Because independent claim 32 recites this limitation, Ex. 1001, 15:47, claim 32 and its dependent claims 33–37 include the limitation.

<sup>3</sup> Claim 43 recites this limitation. Ex. 1001, 16:44–45.

applications filed before the filing of the 2012 CIP provided written description support for the claimed electrical wire. Pet. 22–24. Petitioner correctly notes that any express discussion of wiring first appears in the 2012 CIP and only then as follows: “[t]he backbone structure also provides a secure environment to pass electrical wiring, fuel lines and brakes lines through the bearing supports so that these components are protected from the environment and impact (crash) events.” Ex. 1008, 2:27–31; *see also* Ex. 1010, 2 (illustrating changes made in 2012 CIP). Petitioner relies upon Mr. Parker’s testimony to establish that the applications preceding the 2012 CIP do not inherently describe using electrical wire within the backbone structure. Pet. 22–23 (citing Ex. 1003 ¶¶ 62–65). Mr. Parker testifies that an ordinarily skilled artisan would have known of many ways for connecting batteries together other than using wire including: “soldered metal tabs, cables, buss bars, printed circuits, and other types of common electrical conductors.” Ex. 1003 ¶ 65.

In response, Patent Owner contends that Mr. Parker recants his declaration testimony and was “forced to concede that only wires have been used to connect[] batteries to an engine.” PO Resp. 30 (citing Ex. 2013, 85:24–86:23). However, the testimony includes no such concession. At the end of the cited testimony, Patent Owner asks, “Are you aware of any printed circuit boards that connect batteries to any of an ignition system, starter motor [for an engine]?” Ex. 2013, 86:15–17. Mr. Parker answers, “It seems like a very odd context, but within the limited scope of that context, no, I guess I’m not aware of other methods.” *Id.* at 86:20–23. At most, it seems that Mr. Parker concedes that he is unaware of connecting batteries to an ignition system or starter motor via a printed circuit board.



Patent Owner also argues that the '490 App describes the wire recited in claims 9 and 32–43 when it states that: “During attachment of the central backbone between the front and rear structures, the operational components (e.g., quill shaft for conventional vehicle, battery for electric or hybrid vehicle), are suitably coupled or connected.” Ex. 1006 ¶ 43. Based on this disclosure in the '490 App, Mr. Kunselman opines without citing any objective evidence in support that: “The only suitable connection it could be is a wire and a cable. No other option has ever been used, not a metal tab, buss bar, or printed circuit board.” Ex. 2012 ¶ 75 (citing Ex. 1006 ¶ 43). Because the testimony cited by the parties on this issue leads to stalemate, we examine other aspects of the '490 App and other evidence.

Figure 16 of the '490 App, reproduced at right, illustrates batteries located in a central structure that connects one end of a chassis with a generator to the other end of the chassis with an electric motor. Mr. Parker testifies that components such as wires

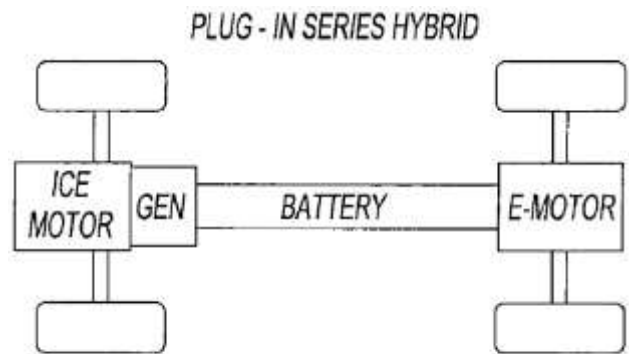


Fig-16

connecting batteries were “conventional components” that were “well known” and “found in almost all vehicles decades before the '163 patent was filed.” Ex. 1003 ¶ 61. Figure 16 illustrates batteries within the central spine of the plug-in hybrid chassis, along with the generator on one end, which would charge those batteries, and an e-motor on the other end, which would be powered by those batteries. Ex. 1006, Figure 16. Both experts agree that an electrical wire is a well known type of electrical connection that would be suitable. Ex. 1003 ¶ 61, Ex. 2012 ¶ 75.

On the record before us, we determine that Figure 16 in the '490 App, along with the description of batteries being “suitably coupled and connected” constitutes a description of an electrical connection spanning the batteries within the central spine and to components connected to opposite ends of that spine. This is especially true given the high degree of skill possessed by an ordinarily skilled artisan. Such an artisan would have no trouble recognizing that the '490 App described using wire to connect batteries located within the central structure and that those wires would span the entire central spine. Ex. 2012 ¶ 75. For this reason, we determine that the wire features of claims 9, 32–37, and 43 are supported by the description in the '490 App.

For claims 32–37 and 43, we conclude that Greil is not prior art. For claim 9, we must analyze Petitioner’s other challenge to the priority date discussed in Part II.C.3 below before determining whether Greil is prior art to claim 9. For claim 35, we must analyze Petitioner’s other challenge to the priority date discussed in Part II.C.5 below before determining whether Greil is prior art to claim 35.

*3. Claims 2–4, 6, 8–10: “Primarily Transmitted”*

Claims 2–4, 6, 8–10, all of which depend from disclaimed independent claim 1, recite a backbone structure in which “ride, handling and impact crash loads are primarily transmitted” between the structures connected to opposite ends of the backbone. Ex. 1001, 13:23–36. Petitioner argues that claims 2–4, 6, and 8–10 are entitled only to the filing date of the Final App because none of the priority applications describes backbone structures that “primarily transmit” loads between the front and rear wheels. Pet. 32–34. Petitioner contends that the earlier applications exclusively

describe the backbone as solely transmitting loads between the front and rear structures. *Id.* at 33 (citing, *e.g.*, Ex. 1006 ¶ 35, claim 15). Petitioner relies on the following passage from the '163 patent, which also appears in the '490 App:

Because the uni-chassis 10 does not incorporate a conventional frame, the backbone structure 18 forms the connection between the front and rear structures 14 and 16. The chassis loads are therefore transmitted solely by the backbone structure 18 between the first and second structures 14 and 16.

Ex. 1006 ¶ 35; Ex. 1001, 7:9–14. Mr. Parker opines that an ordinarily skilled artisan would understand this passage to mean that the “backbone decouples chassis loads (*e.g.*, ride and handling loads) from body loads and absorbs crash loads in the backbone rather than the body.” Ex. 1003 ¶ 71.

Petitioner further argues that solely transmitting loads is a narrower concept than primarily transmitting loads because primarily transmitting loads encompasses the possibility of structures other than the backbone assisting the backbone in transmitting loads. Pet. 34 (citing Ex. 1003 ¶¶ 70–75). Petitioner concludes, that because the broader concept of “primarily transmitting” is not described until the filing date of the Final App, July 24, 2013, claims reciting this concept are not entitled to an earlier priority date. *Id.* at 34.

Patent Owner responds that the claims in this group<sup>4</sup> are entitled to priority dating back to the '490 App because that application sufficiently

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<sup>4</sup> Patent Owner expressly addresses the priority date for claims 8 and 10 but mentions “claim 1 and its dependent claims” in the heading for its argument. PO Resp. 20. Accordingly, we consider Patent Owner’s argument regarding claims 8 and 10 also to apply to claims 2–4 and 9, which through their dependency upon claim 1, also recite the same disputed concepts.

described the concept of the central backbone providing the primary rather than the sole structural connection between the front and rear structures. PO Resp. 20–28. More specifically, Patent Owner argues that the ’490 App describes the manner in which the chassis backbone and body share “ride, handling and impact crash loads” as recited in claim 1 as follows:

With reference to FIGS. 10 and 11, various exemplary body mounts 90 are shown. A vehicle body 92 includes a lateral beam or cross-member 94 coupled to the backbone structure 18. As can be appreciated, the vehicle body 92 can comprise various body components, such as seats 96. The cross-member 94 can be suitably attached to the backbone structure 18 at or near a torsional node defined in the tube 64. The uni-chassis 10 of the present invention allows various loads associated with the vehicle body 92 to be substantially de-coupled from various loads associated with the uni-chassis 10.

PO Resp. 24 (quoting Ex. 1006 ¶ 39). Precisely the same passage appears in the ’163 patent. Ex. 1001, 7:49–59.

Based on our review of the record, we determine that the ’490 App sufficiently describes the concept of “ride, handling and impact crash loads [being] primarily transmitted between the first and second structures by the central backbone structure” as required in claim 1 and its dependent claims 2–4, 6, and 8–10. The ’490 App indicates that a vehicle body 92 will be connected via body mounts 90 and cross-member 94 to the backbone structure 18. Ex. 1006 ¶ 39. Although this coupling “allows various loads associated with the vehicle body 92 to be substantially de-coupled from various loads associated with the uni-chassis 10,” both experts agree that the body is not completely decoupled from the backbone. Ex. 2012 ¶ 36; Ex. 2013, 39:25–40:14. Because the body and backbone are coupled to some degree, we determine that an ordinarily skilled artisan would

understand that the body and backbone of the '490 App (and the '163 patent) would share some of the “ride, handling and impact crash loads.” Ex. 2012 ¶ 36. Because claims 6 and 8–10 are entitled to priority based upon the filing date of the '490 App, Greil is not prior art to these claims. For claims 2–4, we must analyze Petitioner’s other challenge to the priority date discussed in Part II.C.5 below before determining whether Greil is prior art to claims 2–4.

*4. Claims 19, 23 and 24: “Fluid Fuel Compartment”*

Claims 19, 23, and 24 depend directly from claim 11, which recites: “an energy storage compartment located inside of the central chassis structure; and at least one of: a battery and fluid fuel located in the energy storage compartment.” Ex. 1001, 14:14–18. Petitioner argues that none of the '771 App, '490 App, or the 2012 CIP describes a fluid fuel compartment in the backbone and that the concept was first introduced in the Final App by the addition of Figures 38–40 and the accompanying text. That text reads: “[f]uel 513 may be either directly contained within an enclosed wall section of backbone structure 501, as is shown in FIG. 39, or an additional fuel tank 515 is mounted within the universal chassis backbone structure 501, as is illustrated in FIG. 40.” *Id.* at 12:32–36. Petitioner concludes that claims 19, 23, and 24, therefore, are only entitled to a priority date of July 24, 2013, the filing date of the Final App.

Patent Owner contends that claims 19, 23, and 24 exclude fuel because all three claims recite that the energy storage compartment holds a battery. PO Resp. 28. Because the '490 App illustrates and describes batteries within the backbone (Ex. 1006 ¶ 42, Figures 15, 16) and claims 19, 23, and 24 recite batteries in the backbone, Patent Owner concludes that the

claims are entitled to priority based on the filing date of the '490 App. PO Resp. 28–29.

Patent Owner's argument is unpersuasive because we disagree that claims 19, 23, and 24 exclude fluid fuel in the backbone. Claim 11, like claims 19, 23, and 24, all encompass a backbone having an "energy storage compartment" that must have "at least one of: a battery and fluid fuel." Ex. 1001, 14:14–17. Accordingly, all these claims cover a chassis that has either a battery or fluid fuel or both. None of claims 19, 23, and 24 expressly excludes fluid fuel in the energy storage compartment. Moreover, the only mention of which we are aware in the priority applications to a fuel tank occurs in the 2012 CIP, which states: "the fuel tank and rear energy management structure (not specifically shown) can be attached to the rear structure 16," Ex. 1006 ¶ 32, which is not within the backbone. To be entitled to priority, the specification must describe the full scope of the claimed invention. Therefore, we determine that Petitioner has sufficiently established that claims 19, 23, and 24 are not entitled to priority earlier than July 24, 2013. Accordingly, Greil is prior art to claims 19, 23, and 24.

*5. Claims 2–4, 27–31, and 35: "T-shaped"*

Claim 2 recites that its backbone has a "T-shape as viewed from above," and claims 3 and 4 include the same limitation through dependency from claim 2. Ex. 1001, 13:41–51. Independent claim 27 similarly recites that its central chassis structure has "T-shape when viewed from above," and claims 28–31 include the same limitation through dependency from claim 27. *Id.* at 15:15–41. Claim 35 recites that its central spine has "a T-shape when viewed from above." *Id.* at 15:58–61. Petitioner contends that the concepts of a T-shaped central structure were "newly added" in the

'163 patent as Figures 30, 36, and 37 and the accompanying text. Pet. 27 (citing Ex. 1011, 5, 12, 13, Figures 30, 36, 37). Because none of the priority applications describes the concept of a T-shaped central structure, Petitioner argues that claims 2–4, 27–31, and 35 are entitled only to the filing date of the Final App.

Patent Owner does not contest Petitioner's contentions on this issue. Based on our review of the Final App as compared to the priority applications, Petitioner persuades us by a preponderance of evidence that claims 2–4, 27–31, and 35 are only entitled to priority based on the filing date of the Final App. Accordingly, Greil is prior art to claims 2–4, 27–31, and 35.

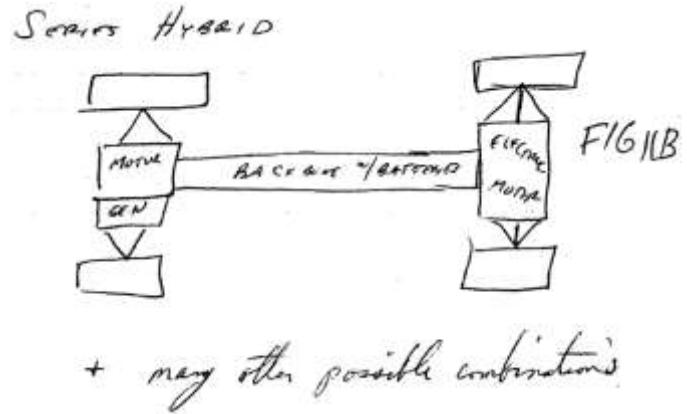
*6. Claims 44, 45, 46, 48 and 49: "Vehicle Configuration"*

Independent claim 44 is directed to an automobile vehicle chassis "comprising a single, closed section backbone structure universally adapted to be the primary structural connection between front and rear wheels for at least two of the following vehicular configurations." Ex. 1001, 16:49–53. Claim 44 then lists seventeen different "vehicular configurations" that are denominated as "(a)" through "(q)." *Id.* at 16:55–17:18. Claims 45, 46, 48, and 49 depend directly from claim 44. *Id.* at 18:1–17.

Petitioner argues that none of the '771 App, '490 App, or 2012 CIP expressly or inherently describes configurations (a)–(f), all of which are directed to a form of hybrid drivetrain with varying combinations of the location of the engines and whether the front or rear pair of wheels is driven. Pet. 29–30; *see also* Ex 1001, 16:55–67 (reciting configurations (a)–(f)). Petitioner contends that the only mention of hybrid configurations in any of the priority applications appears in the '771 App, which states: "[s]everal

variations of the basic chassis embodiment are disclosed to accommodate rear wheel drive, front wheel drive, four wheel drive, as well as internal combustion, electrical and hybrid powered vehicles.” Pet. 30 (quoting Ex. 1004, Abstract). The ’771 App also includes Figure 11B, reproduced at right, which includes an annotation of “+ many other possible

combinations.” Figure 11B is a schematic diagram that illustrates a “Series Hybrid” chassis having an internal combustion engine and generator located in the structure on one end, batteries located in the backbone, and an electric motor shown in the structure on the opposite end, with all four wheels driven. Ex. 1004,



10, Figure 11B. Petitioner argues that the cited portions of the ’771 App fail, however, to describe expressly configurations (a)–(f) and that a reference to “many other possible combinations” is insufficient to provide the required express description of configurations (a)–(f). Pet. 30–31. Petitioner concludes that claim 44 and its dependent claims 45, 46, 48, and 49 are, therefore, entitled only to priority of July 24, 2013, the filing date of the Final App. *Id.* at 32.

Patent Owner does not address the priority date to which claims 44–46, 48, and 49 are entitled. Configurations (a)–(f) are all hybrid drive vehicles with either the front or rear pair of wheels driven. Ex. 1001, 16:55–67. Based on our review of the ’490 App, we determine that the ’490 App does not describe at least configurations (b)–(f), and Patent Owner has not identified any such express description in any priority application. “[A]



prior application itself must describe an invention, and do so in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention as of the filing date sought.” *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997). None of the priority applications describe all of configurations (a)–(f). Therefore, we determine that Petitioner has sufficiently established that claims 44–46, 48, and 49 are not entitled to priority earlier than July 24, 2013. Accordingly, Greil is prior art to claims 44–46, 48, and 49.

### 7. Conclusion

For the reasons expressed above, we determine that Greil is prior art to claims 2–4, 19, 23, 24, 27–31, 35, 44, 45, 47, and 48, but Greil is not prior art to claims 6, 8–10, 32–34, 36, 37, and 43.

### D. CLAIM INTERPRETATION

“A claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the patent in which it appears.” 37 C.F.R. § 42.100(b) (2016); *see also* *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016) (affirming that USPTO has statutory authority to construe claims according to Rule 42.100(b)). When applying that standard, we interpret the claim language as it would be understood by one of ordinary skill in the art in light of the specification, and absent any special definition, we give claim terms their ordinary and customary meaning. *See In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010); *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) (“The ordinary and customary meaning is the meaning that the term would have to a person of ordinary skill in the art in question.” (internal quotation marks omitted)). Only terms which are in controversy need to be construed, and then only to

the extent necessary to resolve the controversy. *See VividTechs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Patent Owner contends that “chassis” means “a self-supporting structure that includes front and rear suspensions, axles, hubs, a steering mechanism, an engine, and transmission and final drive differential axles.” PO Resp. 13. Patent Owner quotes at length, a passage from the ’163 patent without explaining how that passage supports its position. *Id.* at 13–14. The quoted passage states:

a universal chassis apparatus for an automotive vehicle includes a battery and/or fuel storage compartment in a rigid backbone structure. In another aspect of the universal chassis apparatus, the unique features of this invention include the combination of a rigid backbone structure connecting front and rear structures (in the preferred embodiment, the front engine and rear transaxle), in combination with the front and rear suspensions rigidly affixed to the front and rear structures (or backbone mounting surfaces) such that suspension loads (in the preferred embodiment) stress the engine block and transaxle case, to create a complete, self-supporting chassis without the need for a separate frame, or the need to attach the front and rear suspension subassemblies to a rigid uni-body.

Ex. 1001, 1:43–55.

Patent Owner also contends that the ’163 patent distinguishes a chassis from a “frame” but that a “frame” may be a component of a “chassis.” PO Resp. 14 (citing Ex. 2012 ¶ 26). The testimony from Mr. Kunselman upon which Patent Owner relies cites no objective evidence to support Mr. Kunselman’s opinion. *See* Ex. 2012 ¶ 26 (citing no objective evidence). Nevertheless, we do not discern Patent Owner to be proposing a complete definition of “chassis” but merely pointing out structures that may or may not be part of the chassis of a particular vehicle.

Petitioner responds that the passage quoted at length above fails to lexicographically define “chassis” but merely describes “another aspect of the universal chassis apparatus.” Reply 17–18. We agree. To act as its own lexicographer, a patentee must “clearly set forth a definition of the disputed claim term” other than its plain and ordinary meaning. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed.Cir.2002). It is not enough for a patentee to simply disclose a single embodiment or use a word in the same manner in all embodiments, the patentee must “clearly express an intent” to redefine the term. *Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1381 (Fed.Cir.2008); *see also Kara Tech. Inc. v. Stamps.com*, 582 F.3d 1341, 1347–48 (Fed.Cir.2009). At most, we understand the passage quoted by Patent Owner to be describing aspects of the “universal chassis apparatus” rather than providing a lexicographical definition of “chassis.”

Petitioner also contends that an ordinarily skilled artisan would understand that “chassis” generally refers to the supporting structure or frame upon which the vehicle’s body, drive train, and suspension components are mounted. Reply 18 (citing Ex. 1003 ¶ 31). Petitioner notes that such an understanding is consistent with the definitions of “chassis” provided in two automotive industry dictionaries, one of which is provided by Patent Owner. *Id.* at 18–19 (citing Ex. 2024;<sup>5</sup> Ex. 1063, 45:4–46:2, 46:20–47:14, 52:15–24; Ex. 1061, ¶ 25); *see also* Ex. 1052, 3 (defining “chassis” as the “[s]tructural lower part of a vehicle to which the *running*

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<sup>5</sup> Exhibit 2024 is an excerpt of a 1993 publication entitled “Auto Dictionary” in which “chassis” is defined as follows: “Lower structure of a vehicle to which the running gear and body are attached. On older cars, the chassis was a separate part of the vehicle with its own frame but, today, it is usually an integral part of the body structure.” Ex. 2024, 3.

*gear*<sup>6</sup> and body is attached.”). Mr. Kunselman testifies that “a variety of possible definitions for a chassis” exist. Ex. 1063, 74:12–14. Petitioner also points out that Patent Owner’s proffered definition for “chassis” conflicts with the Abstract of the ’163 patent, which indicates that “other components” including the suspension are attached to—and therefore separate from—a “vehicle chassis.” Reply 19 (citing Ex. 1001, Abstract, Ex. 1061 ¶ 26).

Based on our review of the entire record, we conclude that “chassis” is neither precisely defined in the Specification nor understood by an ordinarily skilled artisan to have a precise universally agreed upon definition. Rather, “chassis” refers generally to the supporting structure or frame upon which the vehicle’s body, drive train, and suspension components are mounted.

#### E. LEGAL STANDARDS OF OBVIOUSNESS

Petitioner challenges the patentability of the challenged claims on the grounds that the claims are obvious in light of one or more of the following references: Greil, Hiroshima, and Brandt. The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), reaffirmed the framework for determining obviousness as set forth in *Graham v. John Deere Co.*, 383 U.S. 1 (1966). The *KSR* Court summarized the four factual

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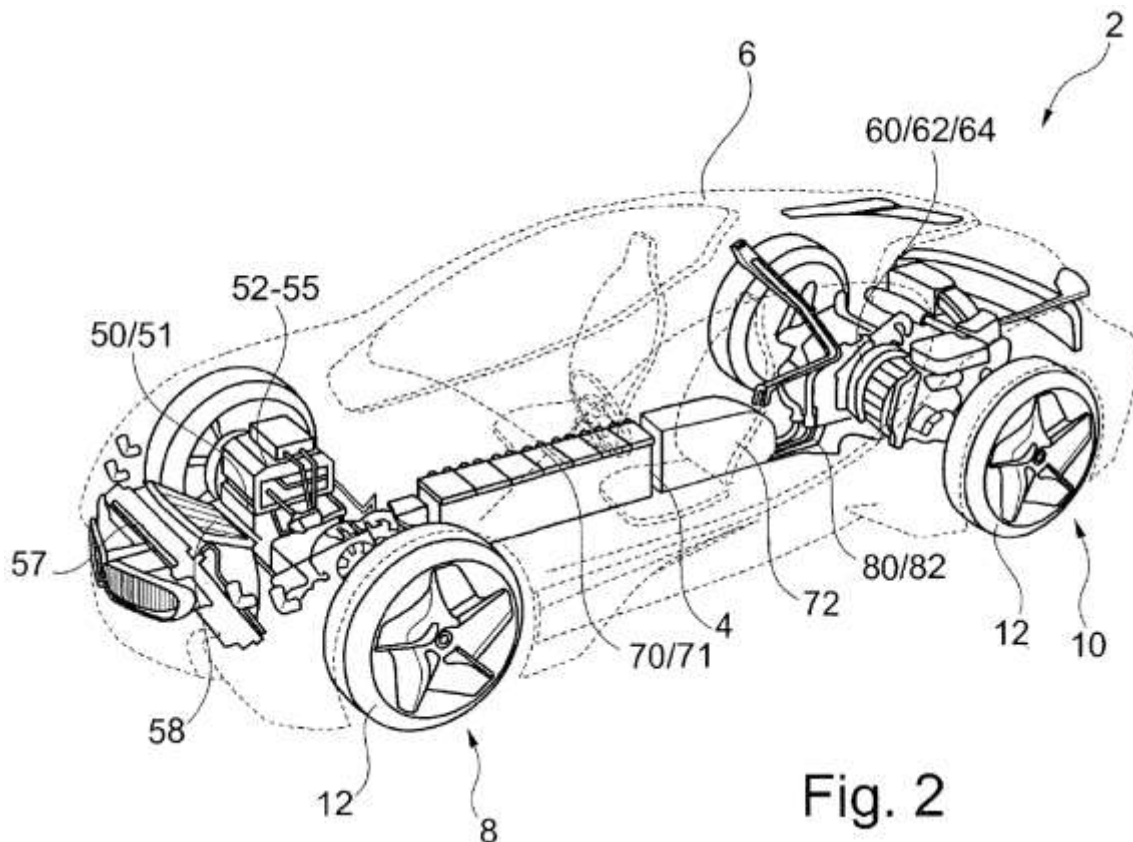
<sup>6</sup> Exhibit 1052 is an excerpt of the Dictionary of Automotive Engineering, Second Edition, published in 1995 by the Society of Automotive Engineers. Ex. 1052, 1–2. The SAE Dictionary defines “running gear” as follows: “(1) The driving, steering and suspension mechanism of a vehicle. This term often implies the unsuspended undercarriage components such as wheels and axles, final drives and steering linkages. (2) The undercarriage of a vehicle.” *Id.* at 5.

inquiries set forth in *Graham* that we apply in determining whether a claim is reasonably likely to be unpatentable as obvious under 35 U.S.C. § 103(a) as follows: (1) determining the scope and content of the prior art, (2) ascertaining the differences between the prior art and the claims at issue, (3) resolving the level of ordinary skill in the pertinent art, and (4) considering objective evidence indicating obviousness or nonobviousness. *KSR*, 550 U.S. at 406. With these standards in mind, we address each challenge below.

F. OVERVIEW OF THE PRIOR ART

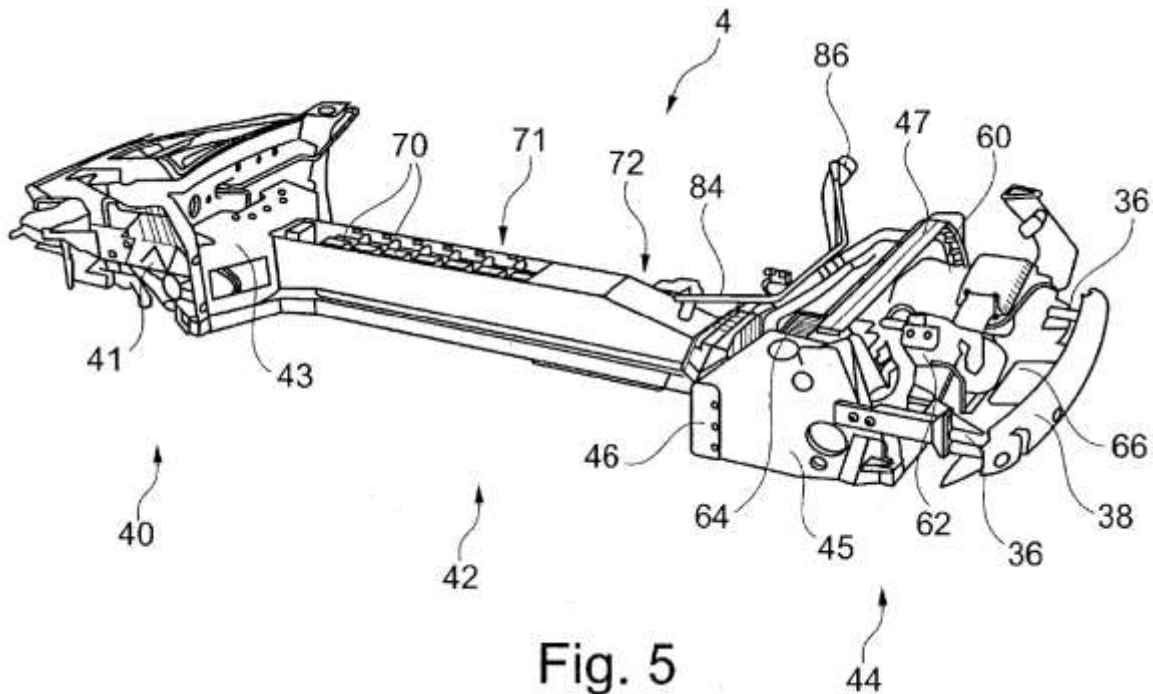
1. Greil

Greil describes a universal vehicle architecture having body 2 attached to chassis frame 4 as shown in Figure 2, reproduced below.



Greil's Figure 2 is a perspective schematic view illustrating the internal components of a vehicle having centrally located chassis frame 4.

Ex. 1016 ¶ 32. “[C]hassis frame 4 can be manufactured as a ready-to-drive unit that will be combined after it is manufactured with a completely preassembled vehicle body 6.” *Id.* ¶ 39. As shown in Greil's Figure 5, reproduced below, chassis frame 4 includes central module 42 that connects front module 40 to rear module 44. *Id.* ¶ 33.



Greil's Figure 5 is a perspective view of chassis frame 4 without wheels or axles.

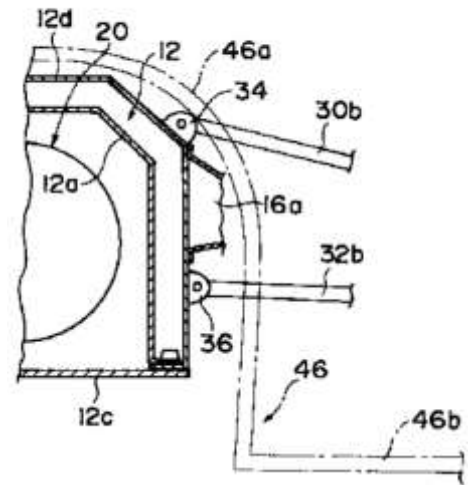
Central module 42 is a “closed, somewhat rectangular cross section” that holds batteries 70 in compartment 71. *Id.* ¶ 38. Central module 42 also holds fuel tank 72. *Id.* Greil was published on March 3, 2011. *Id.* at (43).

2. Hiroshima

Hiroshima describes a backbone-type chassis frame structure that includes a center frame portion 12 to which front frame portion 16 and rear frame portion 18 are connected. Ex. 1017 ¶ 12.

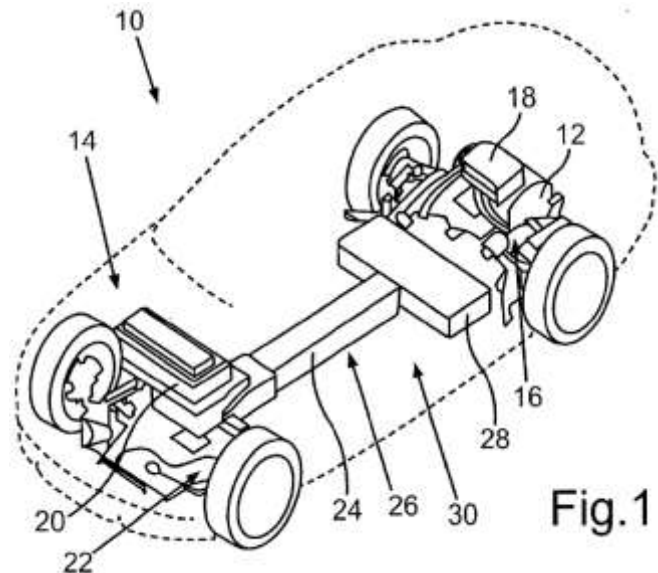
Front frame portion 16 includes engine 14. *Id.* As shown in Figure 5, reproduced at right, Hiroshima's chassis also includes floor panel 46 with tunnel portion 46a that encloses center frame portion 12. *Id.* ¶ 25. Floor panel 46 also includes seat mounting portion 46b which is connected on both sides of tunnel portion 46a. *Id.*

【図5】



3. Brandt

Brandt describes a vehicle chassis with central tunnel 26 that holds battery unit 24. Ex. 1018 ¶ 22. A second battery unit 28 is mounted behind heel plate 40 connected to the rear of central tunnel 26 and extending laterally to form a T-shape structure with central tunnel 26 as shown in Figure 1, reproduced at right. *Id.* ¶ 9, Abstract, Figures 1, 5.



G. CLAIMS 6, 8–10, 19, 23, 24, 43–46, 48, AND 49:  
OBVIOUSNESS IN VIEW OF GREIL

Petitioner contends that Greil renders claims 6, 8–10, 19, 23, 24, 43–46, 48, and 49 unpatentable as obvious. Pet. 46–66. Petitioner specifically

identifies the portions of Greil that describe or suggest each element of claims 6, 8–10, 19, 23, 24, 43–46, 48, and 49. *Id.* (citing Ex. 1016 ¶¶ 4, 8, 12, 33–35, 37–39, 41–45, Figures 1, 2, 4, 5, 6, claim 8). Petitioner also relies upon Mr. Parker’s testimony to support its contentions regarding the alleged obviousness of elements not expressly described by Greil. *Id.* (citing Ex. 1003 ¶¶ 228–35, 239–42, 244, 246, 250–52, 261–63, 265, 268–82).

As explained in Part II.C above, we determine that Greil is not prior art for claims 6, 8–10, and 43. Accordingly, Petitioner’s challenge to claims 6, 8–10, and 43 fails.

However, we have also determined that Greil is prior art for claims 19, 23, 24, 44–46, 48, and 49. Patent Owner does not proffer argument or evidence that claims 44–46, 48, and 49 remain patentable. Tr. 55:21–26; *see* PO Resp. 18–30 (not addressing patentability of claims 44–46, 48, and 49). Nor does Patent Owner proffer argument that Greil fails to describe or suggest all elements of claims 19, 23, and 24. PO Resp. 28–29 (arguing only that Greil is not prior art to claims 19, 23, and 24). We adopt as our own Petitioner’s argument and evidence demonstrating that Greil renders claims 19, 23, 24, 44–46, 48, and 49 unpatentable as obvious.<sup>7</sup> On the record before us, we conclude that Petitioner has proven by a preponderance of evidence that Greil renders claims 19, 23, 24, 44–46, 48, and 49 unpatentable as obvious.

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<sup>7</sup> Pet. 46–66 (citing Ex. 1016 ¶¶ 4, 8, 12, 33–35, 37–39, 41–45, Figures 1, 2, 4, 5, 6, claim 8; Ex. 1003 ¶¶ 228–35, 239–42, 244, 246, 250–52, 261–63, 265, 268–82).



H. CLAIMS 32–34, 36, AND 37:  
OBVIOUSNESS IN VIEW OF GREIL AND HIROSHIMA

Petitioner contends that the combination of Greil and Hiroshima renders claims 32–34, 36, and 37 unpatentable as obvious. Pet. 54–57, 67–71, 78–81.<sup>8</sup> As explained in Part II.C above, we determine that Greil is not prior art for claims 32–34, 36, and 37. Accordingly, Petitioner’s challenge to claims 32–34, 36, and 37 fails.

I. CLAIMS 2–4 AND 27–31:  
OBVIOUSNESS IN VIEW OF GREIL AND BRANDT

Claims 2–4 depend ultimately from disclaimed independent claim 1. Ex. 1001, 13:41–51. Claim 2 depends directly from claim 1 and further recites: “the central backbone structure further comprises a longitudinally elongated section and a laterally crossing section, defining a substantially T-shape as viewed from above.” *Id.* at 13:41–44. Claim 3 depends directly from claim 2 and further recites: “the longitudinal and laterally crossing sections of the backbone structure are contiguously hollow and include the energy storage compartment in both sections thereof.” *Id.* at 13:45–48. Claim 4 depends directly from claim 2 and further recites: “a seat assembly, wherein the laterally crossing section of the backbone structure is located under the seat assembly.” *Id.* at 13:49–51.

Claim 27, which is an independent claim, recites:

27. An automotive vehicle chassis apparatus comprising:

a single central chassis structure spanning between a front set of wheels and a rear set of wheels, the central chassis structure further comprising a hollow longitudinally elongated segment

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<sup>8</sup> Petitioner addresses claims 32–34, 36, and 37 at pages 78–81 of the Petition and refers to earlier arguments and evidence made in connection with claim 17 at pages 67–71 and claims 8 and 11 at pages 54–57.

and a hollow laterally crossing segment defining a substantially T-shape when viewed from above; and

a set of batteries being removeably located within the segments of the central chassis structure.

Ex. 1001, 15:15–24. Claims 28–31 depend directly from claim 27. *Id.* at 15:25–41. Thus, each of claims 2–4 and 27–31 require a “T-shape” backbone.

Petitioner relies upon Greil as describing or suggesting all the elements of disclaimed independent claim 1 and Brandt as describing T-shape of the backbone as recited in dependent claims 2–4 and claims 27–31. Pet. 81–85. Petitioner contends that Brandt describes a T-shaped structure containing battery units 24 and 28. *Id.* at 83 (citing Ex. 1018 ¶¶ 1, 12, 21, 22, Figure 1). Petitioner contends that “it was generally known to arrange batteries for an electric vehicle in a T-shaped central chassis backbone structure.” *Id.* at 84 (citing Ex. 1003 ¶ 332). Relying upon Mr. Parker’s testimony, Petitioner further argues that an ordinarily skilled artisan would have been motivated to modify Greil’s battery compartment into Brandt’s T-shaped battery compartment “to accommodate additional battery cells within its backbone structure, which would have been desirable to provide more power for the vehicle, as well as a longer runtime between charging.” *Id.* (citing Ex. 1003 ¶ 332). Petitioner further contends that an ordinarily skilled artisan “would have been motivated to arrange [Brandt’s] lateral battery unit 28 below the rear seats of Greil’s four-passenger vehicle configuration (FIG. 1), as it would have been the most efficient use of space, and the obvious location for the seats in view of the chassis dimensions.” *Id.* at 85 (citing Ex. 1003 ¶ 333).

*1. Claims 2, 4, and 27–31*

Patent Owner argues that “Brandt does not disclose a chassis and thus does not disclose a T-shaped backbone.” PO Resp. 30. Instead, Patent Owner argues that “Brandt shows two separate battery boxes which are configured into a T-shape.” *Id.* (citing Ex. 2012 ¶ 101). Because the battery boxes of Brandt are expressly associated with the body rather than a backbone, Patent Owner implies that an ordinarily skilled artisan would not have incorporated Brandt’s battery configuration into Greil’s central module 42. Patent Owner’s entire argument rests upon Mr. Kunselman’s testimony, which is unsupported by objective evidence. *See* Ex. 2012 ¶ 101 (citing no objective evidence).

Patent Owner’s argument is not persuasive for at least three reasons. First, claims 2 and 27 merely require that the backbone have two sections or segments that together define “a substantially T-shape as viewed from above.” Ex. 1001, 13:41–44 (claim 2), 15:15–24 (claim 27). Even with Brandt’s heel plate 40 positioned between the compartments holding battery units 24 and 28, we consider the combination of Brandt’s two compartments to be arranged in “a substantially T-shape as viewed from above” as recited in claims 2 and 27. Additionally, “[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference . . . . Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (citations omitted). Third, both Greil and Brandt describe locating batteries in the lower central portion of a vehicle. Ex. 1016, ¶ 38, Figure 5; Ex. 1018 ¶¶ 21–22, Figure 1. Brandt explicitly suggests arranging batteries in a T-shape

configuration. Ex. 1018 ¶¶ 21–22, Figure 1. We conclude that Petitioner has proven by a preponderance of evidence that the combination of Greil and Brandt renders claims 2, 4, and 27–31 unpatentable as obvious.

## 2. *Claim 3*

Based on our review of the record and arguments presented at this stage of the proceeding, Petitioner has demonstrated a reasonable likelihood of establishing that the combined teachings of Greil and Brandt render claims 2–4 and 27–31 unpatentable as obvious. Claim 3 further recites that “the longitudinal and laterally crossing sections of the backbone structure are contiguously hollow and include the energy storage compartment in both sections thereof.” Ex. 1001, 13:45–48. Brandt separates its T-shaped battery compartment into longitudinal battery unit 24 and lateral battery unit 28, which are separated by heel plate 40. Ex. 1018 ¶¶ 24, 26, Figure 5. Thus, we determine that Brandt does not describe a “longitudinal and laterally crossing sections of the backbone structure” that “are contiguously hollow” as recited in claim 3. Petitioner argues unpersuasively that claim 3 requires only that the sections making up the T-shape battery compartment need only be “contiguous.” Reply 24. Petitioner ignores, however, that claim 3 plainly recites a “contiguously hollow” backbone structure, meaning that the hollow portions of the structure are “contiguous” with each other. Ex. 1001, 13:45–48. Because the combination of Greil and Brandt fails to disclose a “contiguously hollow” T-shaped backbone structure, we conclude that Petitioner has not proven that the combination renders claim 3 unpatentable.

J. CLAIM 35:

OBVIOUSNESS IN VIEW OF GREIL, HIROSHIMA, AND BRANDT

Claim 35 depends from independent claim 32 and further comprises: “a laterally extending segment adjacent a rear end of the central spine, wherein the central spine and the laterally extending segment define a T-shape when viewed from above.” *Id.* at 15:58–61.

Petitioner argues that the combination of Greil, Hiroshima, and Brandt renders claim 35 unpatentable as obvious. Pet. 87–88. Petitioner relies upon its showing regarding independent claim 32, the claim from which claim 35 depends, and further contends that Brandt describes the T-shaped central spine. *See id.* (cross-referencing argument regarding claim 35). Petitioner also supports its argument with citations to Mr. Parker’s testimony. *Id.* (citing Ex. 1003 ¶¶ 343–46).

Patent Owner responds that we should deny Petitioner’s challenge to claim 35 for the same reason discussed in Part II.I above, namely that Brandt fails to describe a T-shaped backbone. PO Resp. 30. As explained in that Part, we find Patent Owner’s argument to be unpersuasive. Based on our review of the record and Petitioner’s arguments, which we adopt as our own, we determine that Petitioner has demonstrated a reasonable likelihood of establishing that the combination of Greil, Hiroshima, and Brandt renders claim 35 unpatentable as obvious.

III. PETITIONER’S MOTION TO EXCLUDE

Petitioner moves to exclude Mr. Parker’s cross examination testimony relating to how batteries can be connected to an engine on three grounds, improper scope under Fed. R. Evid. 611, irrelevance under Fed. R. Evid. 401, and being prejudicially misleading and confusing under Fed. R. Evid. 403. Paper 26, 2–8. Mr. Parker expressed an opinion on whether an

ordinarily skilled artisan would have considered the '490 App to describe a wire in the central structure of the chassis. Ex. 1003 ¶¶ 64–65. He also testified that wires were commonplace features in vehicle chassis. *Id.* ¶ 61. Questions about his own understanding of the use of wires to connect batteries to engine components is fairly within the scope of his direct testimony. Petitioner's objections based on Fed. R. Evid. 611 are therefore denied. Petitioner's objections based on relevance and undue prejudice are also denied. Accordingly, we deny Petitioner's motion because we have analyzed and weighed all the evidence that is the subject of Petitioner's motion and commented as necessary on its probative value in reaching our decision.

Petitioner also moves to exclude allegedly improper “re-redirect” testimony elicited by Patent Owner during Mr. Kunselman's deposition. Paper 26, 9. The testimony Petitioner seeks to exclude relates to his testimony about Brandt. *Id.* (citing 184:14–23). We deny Petitioner's motion because we have analyzed and weighed all the evidence that is the subject of Petitioner's motion and commented as necessary on its probative value in reaching our decision.

#### IV. PATENT OWNER'S MOTION TO EXCLUDE

Patent Owner moves to exclude two Mr. Parker's Supplemental Declaration, Ex. 1061, in its entirety because (1) Mr. Parker reviewed the petition before finalizing his opinions, (2) the testimony reflects a “new theory” of motivation to combine Gastesi and Berghauer, and (3) Patent Owner had no opportunity to respond to Mr. Parker's testimony. Paper 28, 2–4. None of Patent Owner's arguments is persuasive for the reasons that follow.

Patent Owner argues that Mr. Parker's review of the petition while he was forming opinions taints his testimony and renders it improper as not being based upon "reliable principles and methods" under Fed. R. Evid. 702. Mr. Parker testified that he started his analysis before receiving a draft of the Petition, Ex. 2013, 91:22–92:14, and that his opinions expressed in both of his declarations were his own, Ex. 1061 ¶ 68. On balance, we see no reason to exclude Mr. Parker's supplemental declaration simply because he reviewed the Petition before offering the testimony in that declaration. Patent Owner's first argument is unpersuasive.

We also do not find Mr. Parker's supplemental declaration to reflect a "new theory" of motivation to combine teachings of Gastesi and Berghauer. Rather, Mr. Parker's testimony and Petitioner's arguments based on that testimony properly respond to arguments raised in Patent Owner's Response relating to the motivation to combine Gastesi and Berghauer that is stated in the Petition. Patent Owner's second argument is unpersuasive.<sup>9</sup>

We have no evidence that Patent Owner was deprived of an opportunity to cross examine Mr. Parker on the substance of his supplemental declaration, which was timely submitted with Petitioner's Reply. Our Rules expressly require that the proponent of a witness present testimony in the form of a Declaration and make the declarant available for cross examination. 37 C.F.R. § 42.53. Our procedures also permit observations of cross examination of testimony supplied by a Petitioner after

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<sup>9</sup> To the extent that Patent Owner contends that Petitioner's Reply exceeded the scope permitted under our Rules, Patent Owner has raised those concerns in Paper 23, and we have considered Petitioner's response in Paper 24. Based on our review of these Papers, we find that Petitioner's Reply to be properly responsive to arguments raised in Patent Owner's Response.

a Patent Owner Response. Paper 9, Section A7. That Patent Owner availed itself of neither procedure cannot form the basis of a motion to exclude a properly submitted Declaration in support of a Reply. Patent Owner's third argument is unpersuasive.

For all the foregoing reasons, we deny Patent Owner's motion to exclude Exhibit 1061.

## V. CONCLUSION

For the reasons expressed above, we conclude that Petitioner has demonstrated by a preponderance of the evidence that:

- (1) claims 19, 23, 24, 44–46, 48, and 49 are unpatentable as obvious over Greil;
- (2) claims 2, 4, and 27–31 are unpatentable as obvious in view of Greil and Brandt; and
- (3) claim 35 is unpatentable as obvious in view of Greil, Hiroshima, and Brandt.

We also conclude that Petitioner has failed to prove that claims 3, 6, 8–10, 32–34, 36, 37, and 43 are unpatentable.

## VI. ORDER

For the reasons given, it is:

ORDERED, based on a preponderance of evidence, that claims 2, 4, 19, 23, 24, 27–31, 35, 44–46, 48, and 49 of U.S. Patent 9,045,163 B2 are *unpatentable* as obvious under 35 U.S.C. § 103;

FURTHER ORDERED that Petitioner has not proven that claims 3, 6, 8–10, 32–34, 36, 37, and 43 are unpatentable; and



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FURTHER ORDERED because this is a final written decision, the parties to this proceeding seeking judicial review of our Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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