

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BMW OF NORTH AMERICA, LLC,
BAYERISCHE MOTOREN WERKE AKTIENGESELLSCHAFT

Petitioners

v.

THEODORE & ASSOCIATES, LLC

Patent Owner

Case IPR2017-01379
Patent 9,045,163 B2

**PATENT OWNER
THEODORE & ASSOCIATES, LLC'S
NOTICE OF APPEAL
TO THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT**

Case IPR2017-01379
Patent No. 9,045,163 B2

Director of the United States Patent and Trademark Office
c/o Office of the General Counsel
Madison Building East, Room 10B20
600 Dulany Street
Alexandria, VA 22314

Notice is hereby given, pursuant to 37 C.F.R. § 90.2(a), that Patent Owner Theodore & Associates, LLC (“Theodore”) hereby appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision entered by the Patent Trial and Appeal Board (the “Board”) as Paper No. 37 on November 20, 2018 (the “Final Written Decision,” a copy of which is attached hereto as Exhibit A), and from all underlying orders, decisions, rulings and opinions which adversely affect Theodore.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Theodore further indicates that the issues on appeal include, without limitation, the Board’s:

1. Determination of unpatentability of claims 6, 8–10, 32–34, 36, and 37 of U.S. Patent 9,045,163 B2, issued on June 2, 2015 (“the ’163 patent”) as obvious under 35 U.S.C. § 103;
2. Claim construction determinations;
3. Application of its claim construction to the facts of record;
4. Consideration of the record evidence including, but not limited to, expert testimony;
5. Analysis with respect of objective indicia of non-obviousness;

6. Analysis regarding motivations for and reasons to combine in support of its obviousness conclusions;

7. Findings and determinations supporting or related to those issues, as well as any other issues decided adversely to Theodore in any orders, decisions, rulings and opinions; and

8. Erring in determining that Petitioners BMW of North America, LLC and Bayerische Motoren Werke Aktiengesellschaft proved by a preponderance of the evidence that Claims 6, 8–10, 32–34, 36, and 37 of the '163 patent are unpatentable as obvious under 35 U.S.C. § 103, along with all reasons, findings, opinions, and orders leading to or underlying that determination.

Simultaneously with this submission, an electronic copy of this Notice of Appeal is being filed with the Board and an electronic copy, along with the required docketing fee, is being filed with the United States Court of Appeals for the Federal Circuit.

Case IPR2017-01379
Patent No. 9,045,163 B2

Date: January 18, 2019

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 90.2, the undersigned hereby certifies that a true and correct copy of the foregoing “Patent Owner Theodore & Associates, LLC’s Notice of Appeal to the United States Court of Appeals for the Federal Circuit” is being filed electronically through the Patent Trial and Appeal Board’s End to End (PTAB E2E) system and that the original is being delivered by hand on January 18, 2019 to the Director of the United States Patent and Trademark Office at the following address:

Director of the United States Patent and Trademark Office
c/o Office of the General Counsel
Madison Building East, Room 10B20
600 Dulany Street
Alexandria, Virginia 22314

The undersigned further certifies that, pursuant to 37 C.F.R. § 1.983, that a true and correct copy of the foregoing “Patent Owner Theodore & Associates, LLC’s Notice of Appeal to the United States Court of Appeals for the Federal Circuit” is being submitted electronically together with the payment of prescribed fees on January 18, 2019 with the United States Court of Appeals for the Federal Circuit.

Furthermore, pursuant to 37 C.F.R. § 42.6(e), the undersigned hereby certifies that a copy of the foregoing “Patent Owner Theodore & Associates, LLC’s Notice of Appeal to the United States Court of Appeals for the Federal

Case IPR2017-01379
Patent No. 9,045,163 B2

Circuit” is being served electronically on January 18, 2019 upon the following
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EXHIBIT A

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

Petitioner,

v.

THEODORE & ASSOCIATES, LLC,

Patent Owner.

Case IPR2017-01379

Patent 9,045,163 B2

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 6 (“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 49.¹ Paper 9, 28 (“Institution Decision” or “Dec.”). We instituted the review on the following challenges to the claims:

References	Basis	Claims
U.S. Patent No. 5,833,269 (Ex. 1012, “Gastesi”)	§ 103	6 and 9
Gastesi and German Patent Publication No. DE 42 43 455 A1 (Ex. 1013, “Berghauer”)	§ 103	8, 10, 19, 23, 24, 26, 32–34, 36, 37, 43–46, 48, and 49
Gastesi, EV1, 97–98, Body/Collision Service Manual (Ex. 1014, “Service Manual”), and Popular Mechanics, October 1986, pp. 82–84 (Ex. 1015, “Popular Mechanics” and (collectively with Service Manual, “EV1”))	§ 103	2–4
Gastesi, Berghauer, and EV1	§ 103	27–31 and 35

After we instituted this review, Patent Owner filed a Patent Owner Response in opposition to the Petition (Paper 13, “PO Resp.”) that was supported by a Declaration from Scott Kunselman (Ex. 2025). Petitioner

¹ 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.

filed a Reply in support of the Petition (Paper 20, “Reply”). Patent Owner did not move to amend any claim of the ’163 patent.

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 27, 30, 33 (briefing relating to Petitioner’s Motion to Exclude); Papers 29, 31, 32 (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 36, “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, 6, 8–10, 19, 23, 24, 27–37, 43–46, 48, and 49 are unpatentable.

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. 85; Paper 4, 2. Petitioner also filed a second petition challenging the same claims of the ’163 patent in IPR2017-01380. Pet. 85.

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.

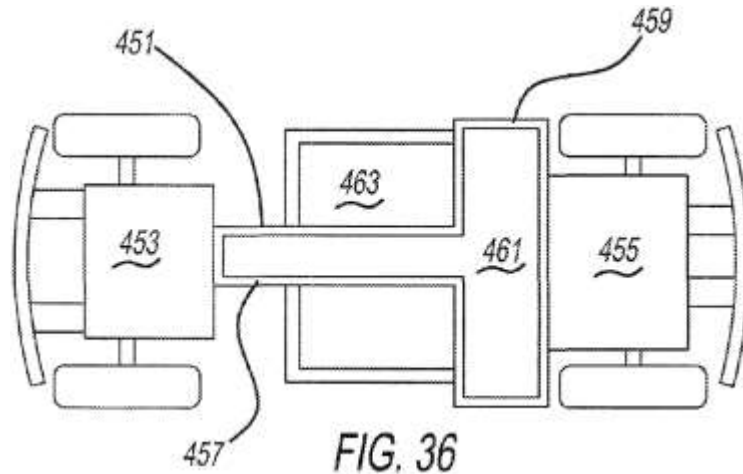


Figure 36 is a diagrammatic top view of a universal chassis with a T-shaped backbone 451.

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. 28–29. 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 10, 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. 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).

1. Chassis

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. 12. Patent Owner quotes at length, a passage from the ’163 patent without explaining how that passage supports its position. *Id.* at 12–13. 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. 13 (citing Ex. 2025 ¶ 26). The testimony from Mr. Kunselman upon which Patent Owner relies cites no objective evidence to support Mr. Kunselman’s opinion. *See* Ex. 2025 ¶ 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 3–4. 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 4 (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 4–5 (citing Ex. 2024;² 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 gear*³ 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

² 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.

³ Exhibit 1052 is an excerpt of the Dictionary of Automotive Engineering, Second Edition, published in 1995 by the Society of Automotive Engineers. Ex. 1052, 1–23. 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.

suspension are attached to—and therefore separate from—a “vehicle chassis.” Reply 5 (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.

2. *Service Plate*

Patent Owner proffers no comprehensive definition for “service plate” but argues that the claimed “service plate” must “be on the backbone.” PO Resp. 13 (citing Ex. 1001, 7:46–47, Dec. 9). Patent Owner argues that Gastesi does not render claims 6, 24, and 33 obvious because Gastesi fails to describe or suggest the claimed “service plate.” *Id.* at 32–34.

Claim 6 recites “the backbone structure further comprising a removable service plate, the backbone structure and plate together defining a substantially polygonal cross-sectional shape.” Ex. 1001 13:56–57. Plainly, the “service plate” is a removable component of the backbone structure. Based upon the arguments presented by the parties on whether Gastesi suggests the claimed service plate, we discern no reason to comment upon whether the “service plate” must “be on the backbone.”

C. LEGAL STANDARDS OF OBVIOUSNESS

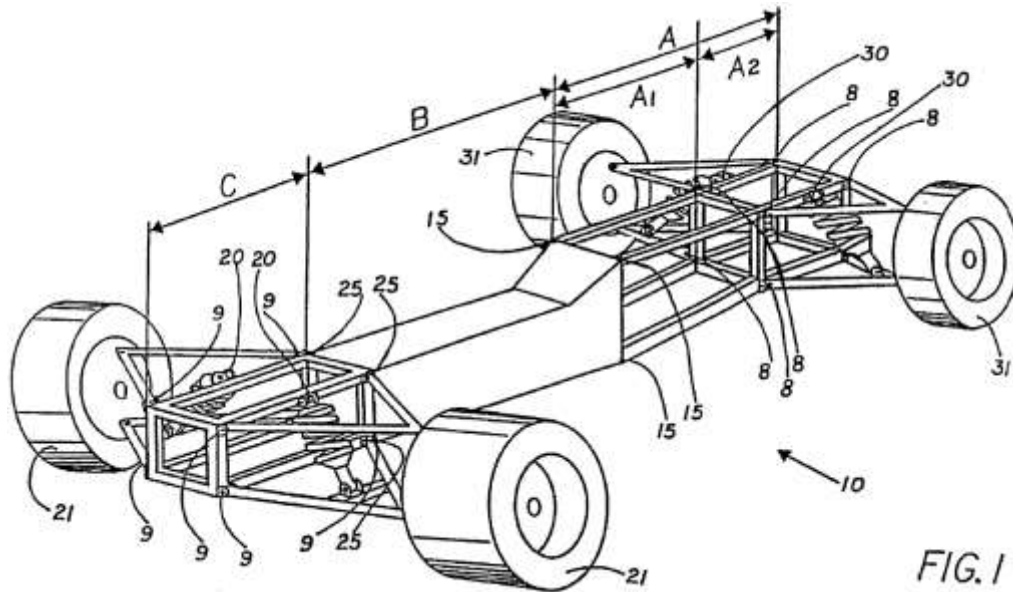
Petitioner challenges the patentability of the challenged claims on the grounds that the claims are obvious in light of one or more of the following references: Gastesi, Berghauer, and EV1. The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), reaffirmed the

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 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.

D. OVERVIEW OF THE PRIOR ART

1. Gastesi

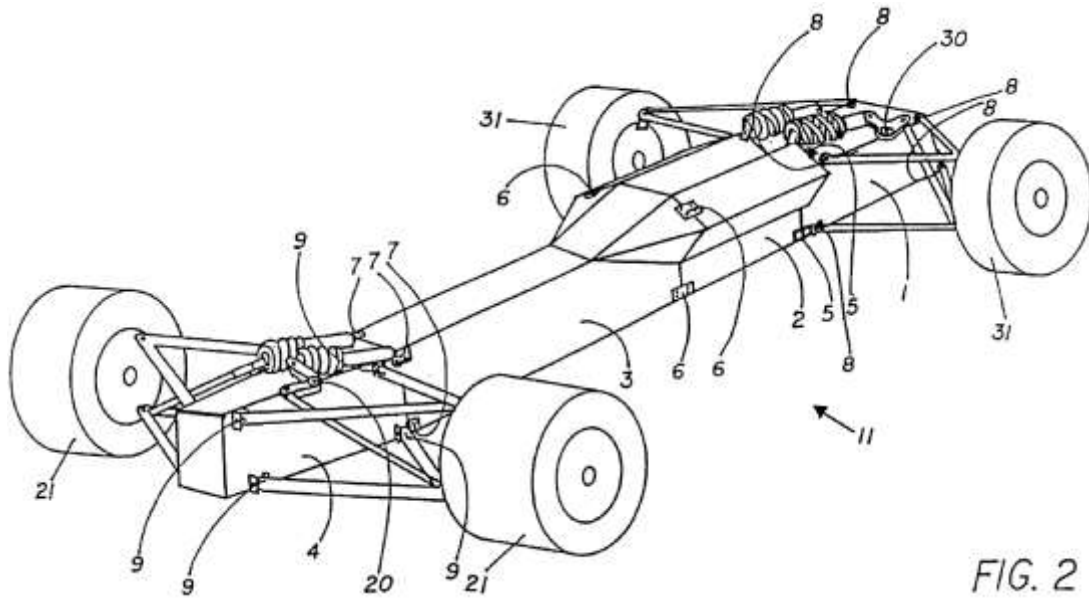
Gastesi is directed to “a modular chassis useful for motor vehicles having a forward mounted engine, rear mounted transmission and rear wheel drive.” Ex. 1012, 1:6–8. *Gastesi*’s Figure 1, reproduced below, is a perspective view of modular chassis 10, which includes front structural member A and rear structural member C that are “rigidly and detachably connected” to opposing ends of tubular member B.



Gastesi's Figure 1 is a schematic perspective view of modular chassis 10.

Element A1 of member A may include an engine (not shown) and member C may include a transmission (not shown). *Id.* at 3:24–27. Element A2 provides suspension attachment points. *Id.* at 3:21–22.

Gastesi describes another embodiment of its base unit as modular chassis 11 with centrally located tubular structural member 3, which is shown in Figure 2, reproduced below.



Gastesi's Figure 2 is a schematic perspective view of modular chassis 11.

Engine 2 and transmission 4 are structural members in chassis 11 that are rigidly connected to opposite ends of tubular member 3. *Id.* at 3:43–60.

Fuel tank 22 is located inside tubular member

3. *Id.* at 4:24–25, Figures 3, 4. Bottom plate

36 at the bottom of body 32 is removable to permit easy removal and replacement of

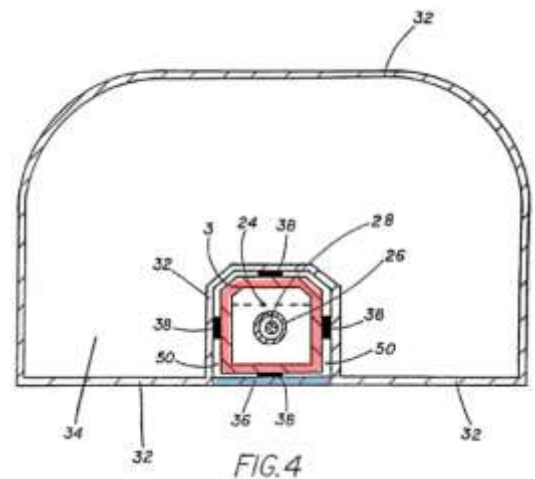
body 32 from tubular member 3 and access to

tubular member 3 and fuel tank 22 within

tubular member 3. Petitioner's colorized

version of Gastesi's Figure 4, reproduced at

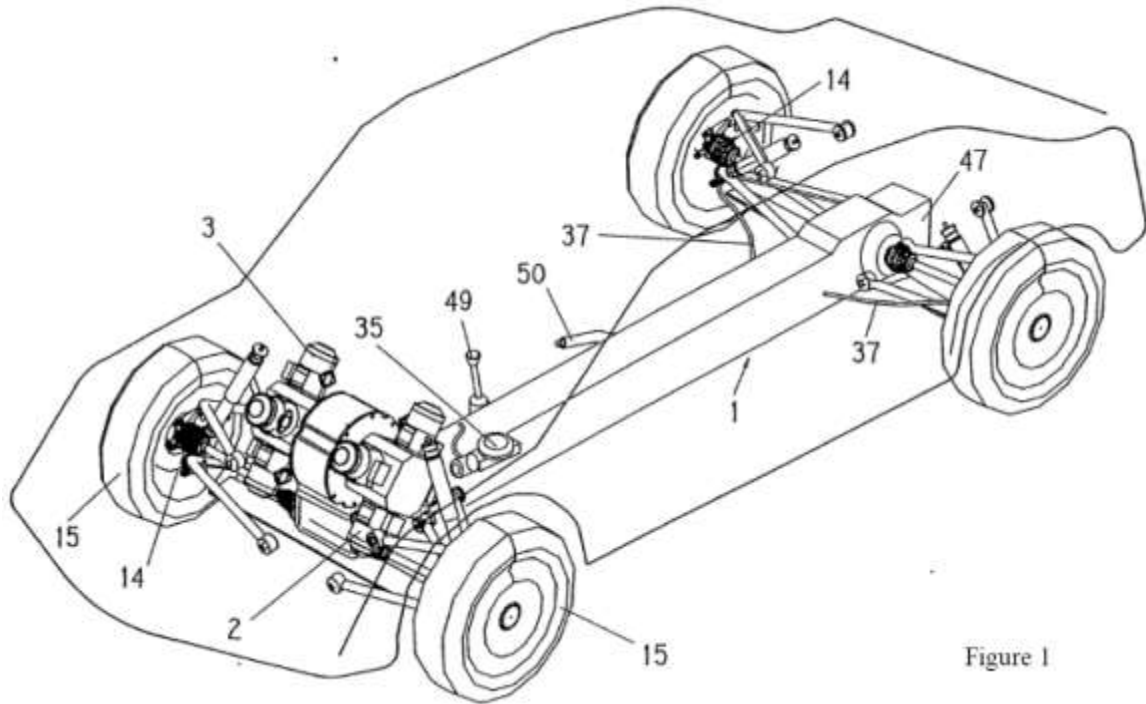
right, illustrates the location of bottom plate 36 (colored blue) and tubular member 3 (colored red).



2. Berghauer

Berghauer is directed to “a base unit for a motor vehicle.” Ex. 1013, 1:3. As shown in Berghauer's Figure 1, Berghauer's base unit consists of

support pipe 1, at least two drive motors 2 and 3 and their auxiliary devices, a manual transmission 7, and at least one differential 8 and its associated torque transmission devices. *Id.* at 1:3–9, 6:28–34. Berghauer’s Figure 1 is reproduced below.



Berghauer’s Figure 1 is a diagrammatic view of a base unit of a vehicle.

Drive motors 2 and 3 are connected to one side of support pipe 1 via a connecting housing. *Id.* at 6:34–36. At the other end, support pipe 1 is shown connected to a second structure that includes a rear axle and differential housing 47. *Id.* at 9:16–17. Berghauer’s support pipe 1 may be configured to contain batteries 25 that serve as an energy source for electric drive motor 3a as shown in Figure 16, reproduced below. *Id.* at 9:28–32.

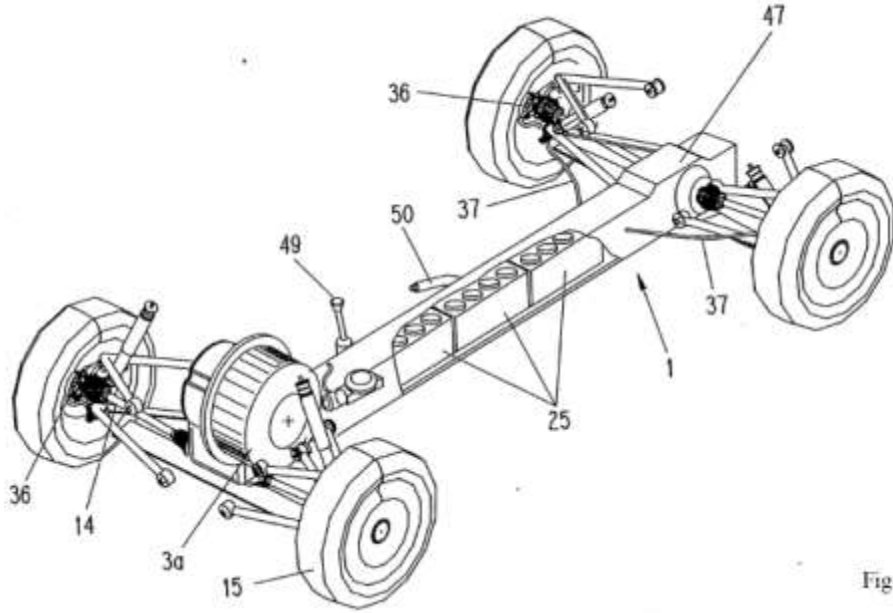


Figure 16

Berghauer's Figure 16 is a diagrammatic view of a base unit equipped only with an electric motor.

Berghauer also describes a base unit having hybrid drive with engine 2 and electric motor 3a as shown in Figure 15, reproduced below. *Id.* at 8:25–34.

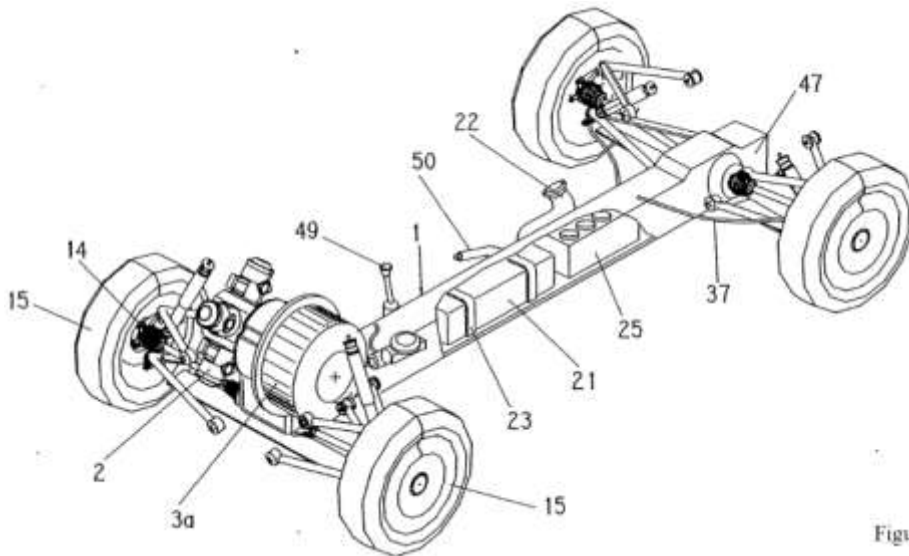


Figure 15

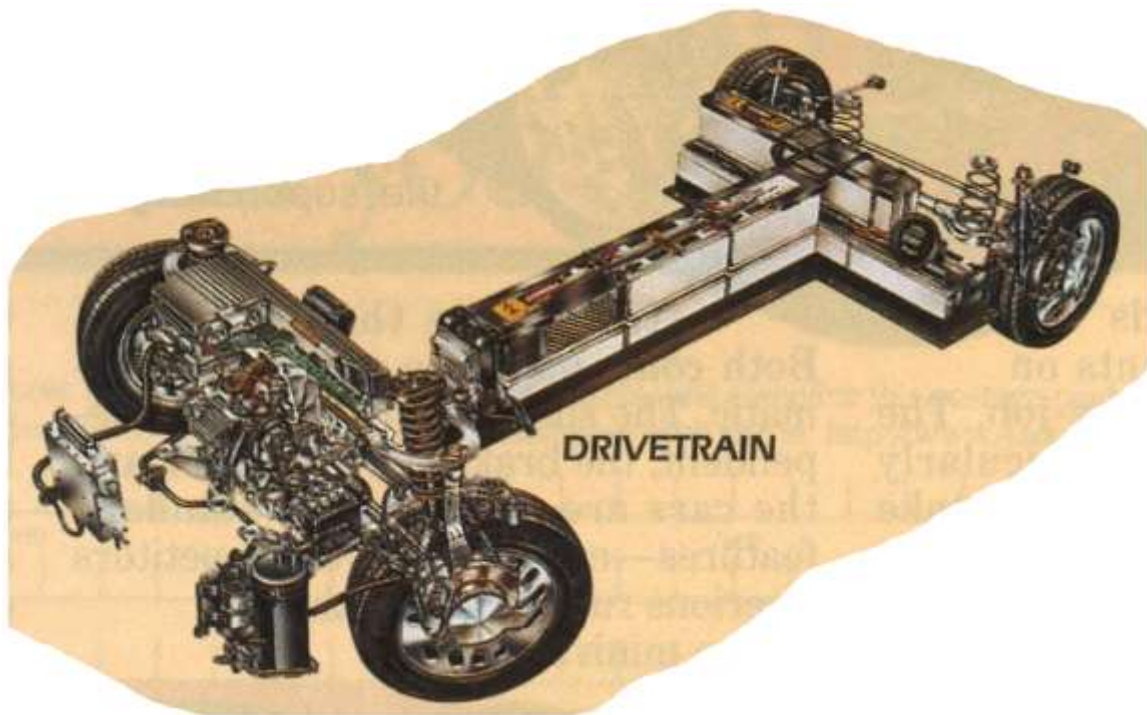
Berghauer's Figure 15 is a diagrammatic view of a base unit equipped with a hybrid drive power source.

Berghauer's base unit of Figure 15 also includes fuel tank 21 and battery 25 within support pipe 1. *Id.* at 8:25–34.

3. *The EV1 Documents*

a) Popular Mechanics

Popular Mechanics purports to be the October 1996 issue of the well-known monthly magazine of the same name that features “’97 New Cars.” Ex. 1015, 1. The General Motors EV1 is among the 1997 cars that were highlighted including a description of a “first drive” and a “closer look” of the EV1. *Id.* at 2. Popular Mechanics describes the EV1 as General Motors’ first production electric vehicle. *Id.* Popular Mechanics also describes the EV1 as an electric vehicle in which 26 batteries were arranged in a T-shaped tray located in the floor of the vehicle between and behind the two seats. *Id.* The illustration from Popular Mechanics reproduced below depicts the arrangement of the 26 batteries in the EV1.



The illustration is a perspective view of the drivetrain of the EV1.

b) Service Manual

The Service Manual describes the EV1 as including a lead-acid battery pack located “down center tunnel of vehicle (between driver’s and passenger’s seats) in a T-shaped compartment.” Ex. 1014, 3. The battery pack comprises 26 twelve volt batteries connected in series for a total of 312 volts that are “securely attached to battery tray, which is bolted to vehicle’s aluminum structure.” *Id.*

E. 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. 23–24 (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. 11–12 (citing Ex. 2025 ¶¶ 15–21). 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. 2025 ¶¶ 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. 11–12 (citing Ex. 2025 ¶¶ 15–21).

Petitioner responds that Patent Owner’s alleged level of skill is “extraordinary” rather than “ordinary.” Reply 5–6. Petitioner contends that Mr. Kunselman incorrectly focuses on the skill level of a team of designers rather than a “*person* having ordinary skill.” *Id.* at 6. Mr. Parker opines that

[e]xpertise 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. 23–24 (citing Ex. 1003 ¶ 20); PO Resp. 11–12 (citing Ex. 2025 ¶¶ 15–21); Reply 5–7 (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 obviousness from that perspective. We note that both Mr. Parker and Mr. Kunselman possess such a skill level. Ex. 1003 ¶¶ 6–13; Ex. 2025 ¶¶ 4–9.

F. CLAIMS 6 AND 9:
OBVIOUSNESS IN VIEW OF GASTESI

Petitioner contends that Gastesi renders claims 6 and 9 unpatentable as obvious. Pet. 35–46. Petitioner specifically identifies the portions of Gastesi that describe each element of claims 6 and 9. *Id.* (citing Ex. 1012, 1:66–2:4, 2:10–14, 2:42–45, 2:54–57, 3:20–34, 3:46–48, 4:3–4, 4:18–21, 4:24–25, 4:38–46, Figures 1–4). Petitioner also relies upon testimony from Mr. Parker to support its contentions. *Id.* (citing Ex. 1003 ¶¶ 99–108, 110–12, 116, 117).

Patent Owner argues that Petitioner has failed to prove that Gastesi renders either claim 6 or claim 9 obvious. PO Resp. 32–34 (claim 6), 34 (claim 9). For the reasons expressed below, we conclude that Petitioner has demonstrated by a preponderance of evidence that Gastesi renders claims 6 and 9 unpatentable as obvious.

1. *Claim 6*

Claim 6 depends from disclaimed independent claim 1 and further recites “the central backbone structure includes a closed-wall section, the backbone structure further comprising a removable service plate, the backbone structure and plate together defining a substantially polygonal cross-sectional shape.” Ex. 1001, 13:55–59. Petitioner argues that an ordinarily skilled artisan would have considered it obvious to place a removable plate in Gastesi’s tubular member 3 to permit access to fuel tank 22 and transmission shaft 28 for three reasons. Pet. 43–44. First, the use of service plates to provide access to internal components, for example, the hood of an automobile, was well known in the automotive industry. *Id.* at 43 (citing Ex. 1003 ¶ 110). Second, Gastesi already suggests the use of such an access plate in the form of its removable bottom plate 36, which

permits access to tubular member 3. *Id.* at 44. Third, adding a service plate to tubular member 3 would “provide a simple and inexpensive means by which to provide maintenance access to the fuel tank 22 and the transmission shaft 28” inside tubular member 3. *Id.* (citing Ex. 1003 ¶ 111).

Patent Owner counters that adding an access plate to Gastesi’s tubular member 3 would not have been obvious because an ordinarily skilled artisan would consider that adding such a plate would provide no advantages and would render the vehicle less safe. PO Resp. 32–34. Patent Owner’s argument rests wholly upon Mr. Kunselman’s testimony in which he opines that adding a service plate to Gastesi’s tubular member 3 would “serve no purpose.” For example, Mr. Kunselman also opines that an ordinarily skilled artisan would access Gastesi’s fuel tank through the “lateral ends of tubular member 3” to gain access to “fittings and connections.” Ex. 2025 ¶ 65. He also testifies that adding a service plate to Gastesi’s tubular member 3 would “introduce risk in the form of leak paths” for fuel in Gastesi’s fuel tank. *Id.* Mr. Kunselman cites no objective evidence in support of his testimony. *Id.*

Petitioner persuasively argues that we should discount Mr. Kunselman’s testimony. First, we consider Mr. Kunselman’s testimony to be weak because it is not supported by objective evidence. Second, Mr. Kunselman bases his testimony on the faulty premise that Gastesi’s fuel tank 22 is “immediately adjacent engine 2.” Reply 8; *see also* Ex. 2025 ¶ 65 (“Since the gas tank is *immediately adjacent* engine 2, a POSITA would understand that the gas tank fittings would be also located at the lateral end.” (emphasis added).) Third, on cross examination, Mr. Kunselman concedes that Gastesi is not specific about whether its fuel tank is “immediately

adjacent” the engine, but instead merely indicates that fuel tank 22 is located somewhere within the centrally located section “B” shown in Gastesi’s Figure 1. Ex. 1063, 121:10–122:19; *see also* Ex. 1012, 3:1–14, 4:3–4 (describing fuel tank 22 inside tubular structure 3 of Figures 3 and 4). Mr. Parker agrees. Ex. 1061 ¶¶ 30–31. Fourth, Mr. Kunselman also testifies that the installation of service plates to enable access to components positioned beneath the plate were known before 2007. Ex. 1063, 119:6–120:7.

As for the alleged “leak path” introduced by using a service plate in tubular member 3, Mr. Kunselman fails to explain why Gastesi’s fuel tank 22, which is a separate structure within tubular member 3,⁴ would leak simply because a service plate is installed in tubular member 3. Mr. Parker opines that an ordinarily skilled artisan would understand that the leak path identified by Mr. Kunselman would be mitigated by Gastesi’s use of a separate structure for fuel tank 22. Ex. 1061 ¶ 32. We consider Mr. Parker to be more credible than Mr. Kunselman on this point because Mr. Parker testifies about the structures that Gastesi actually describes rather than simply positing risks without explanation.

To the extent that Patent Owner impliedly argues that Gastesi teaches away from using service plates in its backbone structure (tubular member 3), such an argument fails. Rather than disparaging the use of service plates to gain access to underlying structures, Gastesi actually suggests using removable plates to permit access by including its bottom plate 36 to ease

⁴ *See* Ex. 1012, Figure 3 (illustrating fuel tank 22) 4:3–4 (explaining that fuel tank 22 is shown in section inside tubular structure 3).

assembly and disassembly of body 32 from tubular structure 3. Ex. 1012, 4:18–21.

Based on a preponderance of evidence before us, Petitioner persuades us that Gastesi renders claim 6 unpatentable as obvious.

2. Claim 9

Claim 9 depends from disclaimed claim 1 and further recites, among other limitations: “at least one of: a wire and a fluid line, extending within a longitudinal length of the backbone structure to the engine.” Ex. 1001, 14:2–4. Petitioner contends that an ordinarily skilled artisan would understand that a fuel line of Gastesi must extend along “at least some longitudinal length of the tubular structural member 3” because fuel tank 22 is located within tubular member 3 and the engine is mounted outside the front end of tubular member 3. Pet. 45–46 (citing Ex. 1012, 3:20–25, 3:46–48, Figure 2; Ex. 1003 ¶ 116–17). Petitioner also contends that an ordinarily skilled artisan would have considered it obvious to longitudinally offset Gastesi’s fuel tank 22 within tubular member 3 “to improve safety and reduce risk of fire.” *Id.* at 46. Doing so would require a fuel line to traverse the longitudinal distance between such a fuel tank and the engine. *Id.*

Patent Owner argues that Gastesi does not describe or suggest a fuel line extending longitudinally within its tubular member 3 because an ordinarily skilled artisan would conclude that Gastesi’s fuel tank 22 is located “immediately adjacent” its engine 2 such that the tubular member contains no fuel line at all. PO Resp. 34 (citing Ex. 2025 ¶ 69). Patent Owner also contends that an ordinarily skilled artisan would offset Gastesi’s fuel tank within tubular member 3 because doing so would “disrupt handling” and “reduce fuel volume.” *Id.* (citing Ex. 2025 ¶ 70). Patent

Owner's argument is based wholly upon Mr. Kunselman's testimony, which cites no objective evidence in support. See Ex. 2025 ¶¶ 69–70 (citing no objective evidence).

Patent Owner's argument is unpersuasive. Petitioner persuasively points out that even Mr. Kunselman concedes that Gastesi's fuel tank is not necessarily immediately adjacent the engine. Reply 9 (citing Ex. 1063, 121:10–122:19). Gastesi states that its fuel tank “is located *near* the center of gravity by . . . placing it inside the tubular structural member.” Ex. 1012, 2:35–38 (emphasis added). No evidence of record demonstrates that longitudinally moving one end of Gastesi's fuel tank would place that tank in a location that is not “near the center of gravity.” Any space between Gastesi's fuel tank 22 and its engine 2 would result in some length of fuel line within tubular member 3.

We determine that Petitioner has proven by a preponderance of evidence that Gastesi suggests at least a fuel line extending between its fuel tank 22 and its engine 2. We also conclude that Petitioner has proven by a preponderance of evidence that Gastesi renders claim 9 unpatentable as obvious.

G. CLAIMS 8, 10, 19, 23, 24, 32–34, 36, 37, 43–46, 48, AND 49:
OBVIOUSNESS IN VIEW OF GASTESI AND BERGHAUER

Claims 8 and 10 depend directly from disclaimed claim 1. Claims 19, 23, and 24 depend directly from disclaimed claim 11. Claim 32 is an independent claim from which claims 33, 34, 36, and 37 directly depend. Claim 43 is independent. Claim 44 is an independent claim from which claims 45, 46, 48, and 49 depend. All these claims recite various features related to the electrification of the drivetrain of a vehicle. See Ex. 1001, 13:64–67, 14:7–9, 15:46–49 (claims 8, 10, and 19 (requiring “electric

traction motor”), 15:1–2 (claim 23 requiring “battery” in “central chassis structure”), 15:42–57, 15:62–67 (claims 32–34, 36, and 37 requiring batteries in central backbone), 16:40–48 (claim 43 requiring “electrical wire” “extending entire length of central spine”), 16:49–18:18 (claims 44–46, 48, and 49 reciting “electric traction motor”).

Petitioner contends that the combination of Gastesi and Berghauer renders claims 8, 10, 19, 23, 24, 32–34, 36, 37, 43–46, 48, and 49 unpatentable as obvious. Pet. 56–76. Petitioner specifically identifies the portions of Gastesi and Berghauer that describe each element of the challenged claims. *Id.* (citing Ex. 1012, 1:11–14, 1:53–55, 1:66–2:1, 2:14–16, 2:35–38, 3:20–24, 3:29–34, Figure 1, claims 1–6; Ex. 1013, 1:34–2:1, 2:1–5, 2:22–23, 2:27–33, 3:16–29, 4:3–8, 5:19–31, 6:22–23, 6:28–43, 6:52–56, 7:5–20, 8:8–13, 8:15–24, 8:25–34, 8:35–41, 8:51–55, 8:56–9:23, Figures 1–6, 9–11, 12, 15, 16, claim 3). Petitioner also relies upon Mr. Parker’s testimony to support its contentions. *Id.* (citing Ex. 1003 ¶¶ 150–55, 157, 158, 161–71, 173–77, 180–89, 194–99, 201).

Patent Owner proffers no argument that claims 44–46, 48, and 49 remain patentable. Tr. 55:21–26; *see also generally* PO Resp. (not addressing patentability of claims 44–46, 48, and 49). However, Patent Owner argues that Petitioner has failed to prove that an ordinarily skilled artisan would have been motivated to combine teachings of Gastesi and Berghauer to arrive at the subject matter recited in claims 8, 10, 19, 23, 24, 32–34, 36, 37, and 43. PO Resp. 23–34, 36. Patent Owner does not argue that Petitioner’s cited portions of Gastesi and Berghauer fail to describe the elements of claims 8, 10, 19, 23, 34, 36, 37, 43–46, 48, and 49. *See generally* PO Resp. 13–36 (identifying allegedly missing elements in the

combination of Gastesi and Berghauer only for claims 24, 32, and 33).⁵ Accordingly, Patent Owner has waived any argument that the combination of Gastesi and Berghauer describes all elements of these claims. Based on our review of Petitioner's citations to evidence,⁶ which we adopt as our own, we determine that Petitioner has proven by a preponderance of evidence that the combination of Gastesi and Berghauer describes all elements of claims 8, 10, 19, 23, 34, 36, 37, 43–46, 48, and 49.

For the reasons expressed below, we are persuaded that Petitioner has proven by a preponderance of evidence that the combination of Gastesi and Berghauer renders claims 8, 10, 19, 23, 24, 32–34, 36, 37, 43–46, 48, and 49 unpatentable as obvious.

1. Alleged Lack of Motivation to Combine Teachings of Gastesi and Berghauer for Claims 8, 10, 19, 23, 24, 32–34, 36, 37, and 43

Petitioner argues, based on Mr. Parker's testimony, that an ordinarily skilled artisan would have been motivated to combine Berghauer's teachings of using electric motors and a variety of powertrain arrangements with Gastesi's modular chassis concepts to broaden the types of vehicles

⁵ We address Patent Owner's argument that the combination of Gastesi and Berghauer fails to describe all elements of claims 24, 32, and 33 separately below.

⁶ Pet. 56–76 (citing Ex. 1012, 1:11–14, 1:53–55, 1:66–2:1, 2:14–16, 2:35–38, 3:20–24, 3:29–34, Figure 1, claims 1–6; Ex. 1013, 1:34–2:1, 2:1–5, 2:22–23, 2:27–33, 3:16–29, 4:3–8, 5:19–31, 6:22–23, 6:28–43, 6:52–56, 7:5–20, 8:8–13, 8:15–24, 8:25–34, 8:35–41, 8:51–55, 8:56–9:23, Figures 1–6, 9–11, 12, 15, 16, claim 3; Ex. 1003 ¶¶ 150–55, 157–63, 173–77, 179–89, 194–201).

incorporating Gastesi's concepts, which would expand the commercial market for Gastesi's modular chassis. Pet. 57 (citing Ex. 1003 ¶ 151).

Patent Owner contends that Mr. Parker "admitted" under cross examination that he "did nothing to evaluate commercial viability" of "using Berghauer to modify Gastesi." PO Resp. 23–24; *see also id.* 4–5 (quoting Ex. 2026, 50:17–51:4, 60:20–61:11). Based on our review of the cited cross examination of Mr. Parker, we determine that Mr. Parker merely admitted that he did not know or investigate whether the technologies described in either Gastesi or Berghauer were ever commercially successful. Ex. 2026, 50:17–51:4, 61:4–11). Petitioner argues persuasively that Mr. Parker's testimony is not relevant to whether an ordinarily skilled artisan would have been motivated to try to broaden the commercial market for Gastesi's modular chassis by applying Berghauer's teachings about using electric and hybrid drivetrains in a vehicle with a central backbone in its chassis.

Reply 10–13. On the relevant issue, Mr. Kunselman testified as follows:

Q. —... So at the time of the '163 patent, having a chassis that could be adaptable to a variety of different vehicle types, that would have been desirable?

A. Yes.

Ex. 1063, 167:5–9. Mr. Parker also testifies that "it is generally desirable in the automotive arts to design a vehicle chassis to be available for use across a larger number of use cases." Ex. 1061 ¶ 38. The '163 patent notes that a "main deficiency" of "traditional" chassis designs at the time of the invention was that they were "not readily adaptable to a wide variety of vehicles without forcing major and expensive redesign work." Ex. 1001, 1:29–33. Mr. Kunselman agrees that "at the time of the '163 patent, having a chassis that could be adaptable to a variety of different vehicle types . . .

would have been desirable.” Ex. 1063, 167:5–9. Whether Gastesi or Berghauer individually described commercially successful products has no bearing on whether an ordinarily skilled artisan would have combined teachings of both references to render Gastesi’s modular chassis “adaptable to a variety of vehicle types.” Both experts agree that increasing the adaptability of any traditional chassis would have been commercially desirable.

Patent Owner further argues that seven specific teachings of Gastesi and Berghauer demonstrate that an ordinarily skilled artisan would not have combined teachings of Gastesi and Berghauer to arrive at the claimed subject matter. *Id.* at 24–30. Those seven teachings are:

1. Gastesi is a modular chassis with a load bearing engine and transmission;
2. Gastesi is front engine rear wheel drive;
3. Gastesi uses an in-line engine;
4. Gastesi is light weight;
5. Berghauer specifically teaches away from in-line engines;
6. Berghauer requires a separate frame or support; and
7. Berghauer has non-load bearing engines.

PO Resp. 25.

Petitioner responds that Patent Owner mischaracterizes Gastesi and Berghauer and that collectively, these seven items do not lead an ordinarily skilled artisan to avoid combining teachings of Gastesi and Berghauer. Reply 10–21. For the reasons expressed below, we agree with Petitioner.

Regarding items 1 and 7,⁷ which we view as intertwined, although Gastesi does describe a modular chassis having a load-bearing engine and transmission, Ex. 1012, 3:46–60, Figure 2, Gastesi also describes a modular chassis in which the engine and transmission are not load bearing members, *id.* at 3:20–34, Figure 1. Mr. Parker testifies that an ordinarily skilled artisan would understand that Berghauer’s electric traction motors are easily incorporated into Gastesi’s chassis embodiment of Figure 1. Ex. 1061 ¶¶ 44–47. Mr. Parker’s un rebutted testimony is persuasive in our view.

Regarding item 2, Gastesi does describe a front-engine, rear-drive chassis. Ex. 1012, 1:52–54, Abstract. Patent Owner and Mr. Kunselman contend that placing batteries as a driving energy source in Gastesi’s central backbone would require “converting Gastesi into a front wheel drive vehicle.” PO Resp. 26 (citing Ex. 2025 ¶ 80). Mr. Kunselman cites no objective evidence to support his opinion. Ex. 2025 ¶ 80.

Patent Owner fails to point out why Gastesi’s teaching of a front-engine, rear-drive chassis is relevant to any issue of patentability. Based on our review of the claims challenged as obvious in view of the combination of Gastesi and Berghauer that Patent Owner argues to remain patentable,⁸ only claim 43 includes any limitation relating to which wheels are driven.⁹

⁷ Because Gastesi also describes engines that are not load bearing, we find that Berghauer’s description whether its engines are or are not load bearing to be irrelevant to our determination of whether an ordinarily skilled artisan would have been motivated to combine teachings of Berghauer and Gastesi.

⁸ Patent Owner confirmed that it proffers no argument that claims 44–46, 48, and 49 remain patentable. Tr. 55:21–26; *see also generally* PO Resp. (not addressing patentability of claims 44–46, 48, and 49).

⁹ Claims 8, 10, 19, 23, 24, 32–34, 36, and 37 recite no limitations on the location of the drive motor or which wheels are driven. Ex. 1001, 13:64–67

Namely, claim 43 requires that the central “spine is universally adapted to fit in different vehicular configurations including front-wheel drive and rear-wheel drive vehicles, without change.” Ex. 1001, 16:46–48. Patent Owner fails to articulate any reason why Gastesi’s central support structure B is incompatible with a front-drive configuration rather than the rear wheels as suggested by Berghauer. Petitioner relies upon Berghauer to meet this limitation of claim 43, which expressly describes a similar central support tube as its base unit 1 that is adapted for use with either front-wheel or all-wheel drive vehicle configurations. Pet. 69–70 (citing Ex. 1013, 2:1–5, 3:16–29, Figures 2–6 (front wheel drive), 5:19–25, 8:56–9:5, Figures 11, 12 (all wheel drive)).

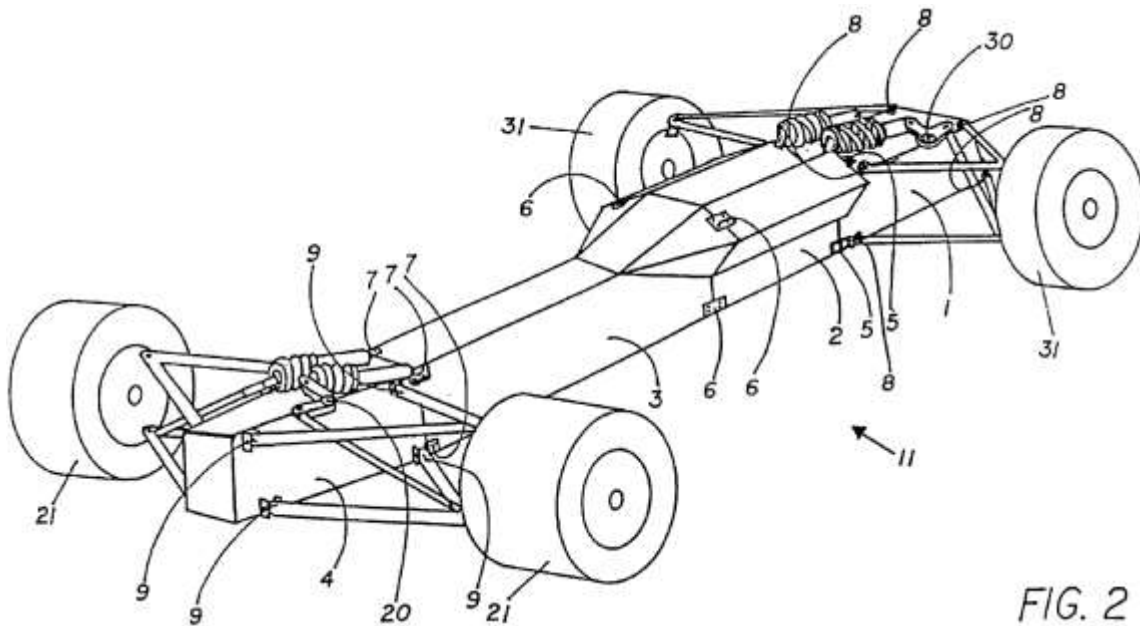
Regarding items 3–5, which we consider to be intertwined, Patent Owner argues that Berghauer expressly teaches away from Gastesi because Berghauer’s “teachings are ‘not suitable’ for drive types found in Gastesi” due to the added weight of inline engines. PO Resp. 26 (citing Ex. 1013, 1:21–29). The text that Patent Owner cites reads as follows:

The use of in-line engines as drive motors requires a large construction space for the drive unit since in-line engines are relatively large in relationship to the power that can be tapped. For its optimal use of the space of the vehicle body that is reconstructed and thus the greatest possible weight reduction of the vehicle overall, the known drive units are thus not suitable for the construction type being discussed here.

Ex. 1013, 1:21–28. Berghauer suggests that its combustion engines should be configured as radial engines to reduce the size of the engine. *Id.* at 2:20–26. Patent Owner contrasts Berghauer’s teachings with Gastesi’s

(claim 8), 14:7–9 (claim 10), 14:46–49 (claim 19), 15:1–5 (claims 23, 24), 15:42–57 (claims 32–34), 15:62–67 (claims 36, 37).

alleged disclosure of an “inline” engine 2 that is incorporated into the chassis as a stress-bearing member as illustrated in Gastesi’s Figure 2 below.



Gastesi’s Figure 2 is a schematic perspective view showing an assembled modular chassis.

Because Gastesi allegedly describes using a stress-bearing, inline engine, and Berghauer says that “known drive units” are “not suitable” for Berghauer’s “construction type,” Patent Owner concludes that Berghauer teaches away from Gastesi.

Patent Owner’s argument is unpersuasive for at least two reasons. First, regarding item 3, no evidence of record reveals whether Gastesi’s engines are “inline” engines.¹⁰ Gastesi refers only generically to the engine of its embodiment of Figure 1 as being positioned within space A1 of chassis 10. Ex. 1012, 3:24–25, Figure 1. Gastesi’s Figure 2 depicts engine 2 has

¹⁰ Patent Owner refers to engines having a straight or V arrangement of pistons connected to a linear crankshaft as an “inline” engine 2. Tr. 47:22–48:2.

having a vaguely v-shaped shape, but the accompanying text never specifies a configuration of engine 2. For this reason, we see no reason why an ordinarily skilled artisan would consider Gastesi's pair of chassis configurations to be incompatible with the radial engines suggested by Berghauer. Additionally, Petitioner does not suggest modifying Gastesi to use Berghauer's radial engine, but only that an ordinarily skilled artisan would have been motivated to incorporate Berghauer's teachings about vehicle configurations generally with Gastesi's modular chassis concepts. Pet. 57.

Second, Berghauer merely expresses a preference against using "inline" engines to reduce weight. Gastesi similarly touts the use of its centrally located backbone structure as a way of achieving lower weight. Ex. 1012, 2:10–14. Thus, the alignment of purpose in both Berghauer and Gastesi suggests combining their respective teachings.

Regarding item 6, we understand Patent Owner to be contending that Berghauer's support pipe 1 is not a "chassis" because Berghauer's Figures, for example, Figure 16, which we reproduce below, fail to illustrate how support pipe 1 supports unnumbered suspension components such as control arms and shock absorbers. PO Resp. 29–30 (citing Ex. 2025 ¶¶ 47–51).

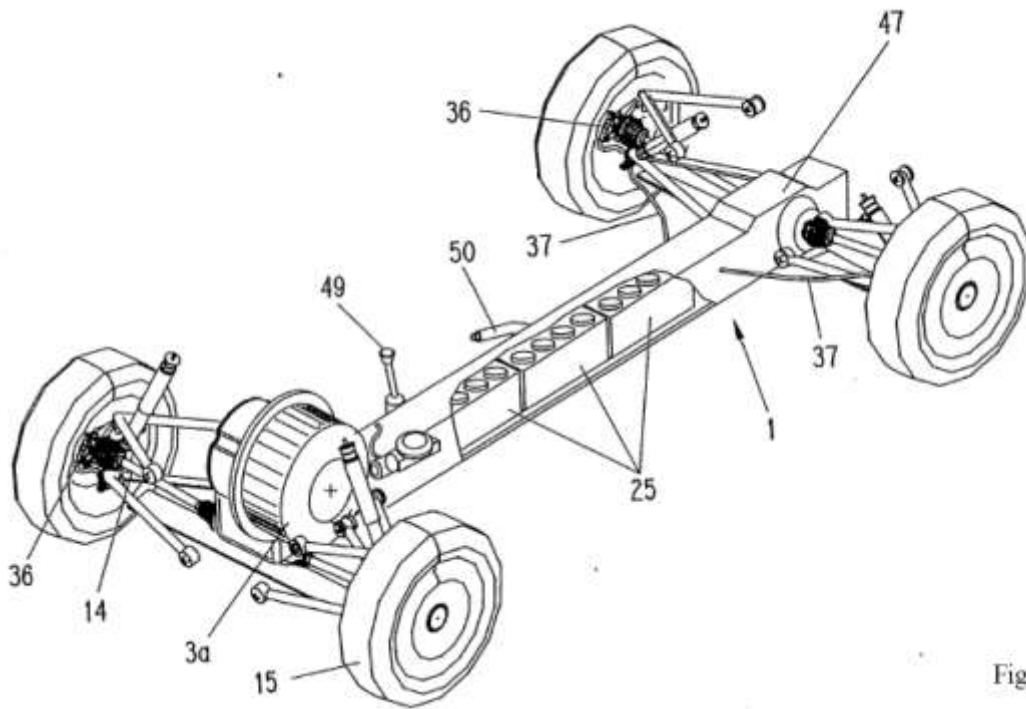


Figure 16

Berghauer's Figure 16 is a schematic representation of a base unit of a vehicle with an electric motor 3a and support pipe 1.

On cross examination, Mr. Kunselman concedes that an ordinarily skilled artisan would know that support pipe 1 forms part of chassis of the vehicle. Ex. 1063, 129:23–25. Mr. Parker explained how an ordinarily skilled artisan would have known to implement a rolling chassis using Berghauer's support pipe 1. Ex. 2026, 56:20–57:19. Petitioner persuades us that Berghauer's support pipe 1 and Gastesi's central backbone structures (element B of Figure 1 and tubular member 3 of Figure 2) store energy (i.e., fuel or batteries) and connect the front and rear of Gastesi's chassis elements in much the same way as Berghauer's support pipe 1 stores energy and connects its front and rear chassis elements. Ex. 1003 ¶¶ 149–151.

Based on our consideration of the entire trial record, we determine that Petitioner has proven by a preponderance of evidence that an ordinarily skilled artisan would have been motivated to incorporate electrification as

suggested by Berghauer into the chassis of Gastesi to arrive at the features recited in claims 8, 10, 19, 23, 24, 32–34, 36, 37, 43–46, 48, and 49.

2. *Additional Arguments for Patentability of Claim 10*

Claim 10 depends directly from claim 1, and further recites: “wherein the engine is part of a hybrid powertrain including both an internal combustion engine and an electric traction motor.” Ex. 1001, 14:7–9. Along with the arguments regarding an alleged lack of motive to combine teachings of Gastesi and Berghauer, Patent Owner further argues that “long felt need” supports a conclusion that claim 10 is not obvious. PO Resp. 31–32. Patent Owner contends that Petitioner’s filing in 2009 of a patent application, DE 10 2009 038 834 A1 to Greil relating to a vehicle having a modular chassis, at least twelve years after Berghauer and Gastesi were published demonstrates that a “long felt need” for such a chassis existed, even in 2009. *Id.* Patent Owner argues that it has shown a nexus between the claims of Greil and the claimed invention because an International Search Report on Greil’s claims indicated that Greil was not novel in view of a published patent application in the priority chain of the ’163 patent. *Id.* at 32 (citing Ex. 2005, 23).

Patent Owner’s argument is unpersuasive. First, that two different companies filed patent applications generally directed to modular chassis designs fails to establish that an unresolved need for a solution existed in the industry or that Patent Owner solved any such problem differently than Gastesi or Berghauer. Second, Patent Owner fails to identify or describe how any need allegedly met by Greil corresponds to the subject matter of

claim 10.¹¹ Third, Patent Owner’s argument implies that Petitioner’s filing of a patent application directed to a modular chassis constitutes an admission that the market was demanding a modular chassis for a long time that Patent Owner fulfilled simply because Petitioner thought its chassis design might be patentable. We discern no such admission stemming from Petitioner seeking patent protection on its version of a modular chassis design.

3. Additional Arguments for Patentability of Claims 24 and 33

Claim 24 depends from disclaimed independent claim 11, Ex. 1001, 15:3–5, and claim 33 depends from independent claim 33, *id.* at 15:52–54. Like claim 6, claims 24 and 33 recite removable plates to provide access to the inside of a hollow central structure. *Compare id.* at 13:55–59 (claim 6), *with id.* at 15:3–5 (claim 24), *and id.* at 15:52–54 (claim 33). Patent Owner argues that claims 24 and 33 are patentable because Gastesi fails to describe or suggest the use of removable plates in the hollow central structure of the claimed chassis. For the reasons expressed in Part II.F.1 above, we conclude that Petitioner establishes that an ordinarily skilled artisan would consider it obvious based on teachings in Gastesi to incorporate the removable plates of claims 24 and 33 into the central structure of the claimed chassis.

4. Additional Arguments for Patentability of Claim 32

Independent claim 32 recites a battery and a wire extending through the hollow central structure of the claimed chassis. Ex. 1001, 15:42–51. Patent Owner groups claim 32 with claim 9, when arguing that claim 9 remains patentable because Gastesi fails to describe a “fuel line” within its

¹¹ In the middle of its argument for patentability of claim 10, Patent Owner also mentions claims 8, 19, and 23 as being non-obvious because they claim a solution to a long-felt but unmet need in the industry. PO Resp. 31.

tubular member 3. PO Resp. 34. However, claim 32 does not mention or require a “fuel line” within the centrally located chassis structure but rather recites a battery and a wire within that central structure. *See* Ex. 1001, 15:42–51. Accordingly, we discern no additional argument in support of the patentability of claim 32 beyond those addressed in Part II.G.1 above.

Petitioner persuasively demonstrates that, based on the teachings of Gastesi and Berghauer, an ordinarily skilled artisan would have found it obvious to use a wire to connect batteries located in the central structure of a chassis to an electric traction motor as recited in claim 32. Pet. 64–67 (citing Ex. 1012, 1:66–2:1, 3:29–34, Figure 1, Ex. 1013, 2:22–23, 4:3–8, 8:8–13, 8:25–34, Figure 1; Ex. 1003 ¶¶ 173–177).

5. Claims 44–46, 48, and 49

Patent Owner proffers no argument that independent claim 44 and its dependent claims 45, 46, 48, and 49 remain patentable. Tr. 55:21–26; *see also generally* PO Resp. (not addressing patentability of claims 44–46, 48, and 49). For the reasons expressed in Part II.A above, Patent Owner has waived any arguments for patentability of these claims. Based upon the arguments provided and evidence cited in the Petition, Pet. 70–76, which we adopt as our own, we conclude that Petitioner has proven by a preponderance of evidence that the combination of Gastesi and Berghauer renders claims 44–46, 48, and 49 unpatentable as obvious.

6. Conclusion

For all the reasons expressed above, we conclude that Petitioner has proven by a preponderance of evidence that the combination of Gastesi and Berghauer renders claims 8, 10, 19, 23, 24, 32–34, 36, 37, 43–46, 48, and 49 unpatentable as obvious.

H. CLAIMS 2–4:
OBVIOUSNESS IN VIEW OF GASTESI AND EV1

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. None of claims 2–4 recites an electric motor, *id.* at 13:41–51, which is a concept introduced in claim 8, *id.* at 13:64–67.

Petitioner relies upon Gastesi as describing or suggesting all the elements of disclaimed independent claim 1 and relies upon EV1 as describing the limitations introduced in dependent claims 2–4. Pet. 76–80. Petitioner contends that “it was known in the art to arrange batteries within a T-shaped compartment down a center tunnel between the driver and passenger seats of an electric vehicle.” *Id.* at 77 (citing Ex. 1014, 3; Ex. 1015, 2). Petitioner also contends that an ordinarily skilled artisan would have understood that “using both longitudinally and laterally extending energy storage compartments, defining a T-shape compartment, would be desirable to accommodate additional batteries or fuel without intruding on the seating space for the passengers.” *Id.* at 79 (citing Ex. 1003 ¶¶ 209–11). Relying upon Mr. Parker’s testimony, Petitioner further argues

that an ordinarily skilled artisan would have been motivated to arrange the lateral segment of the EV1 batteries “below the rear seats of a four-passenger vehicle configuration 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 79–80 (citing Ex. 1003 ¶ 212).

Patent Owner responds that because the T-shaped battery tray in the EV1 is not part of the chassis, Petitioner has failed to prove that the combination of Gastesi and EV1 describes the T-shaped central backbone structure of claim 2. PO Resp. 35–36. Patent Owner contends that Mr. Parker has, on cross examination, “disavowed” his declaration in which he says that the T-shaped battery tray is part of its chassis. *Id.* at 35 (citing Ex. 2026, 80:20–25, 85:3–16).

Patent Owner’s contention is not supported by evidence because Mr. Parker’s cross examination testimony is consistent with his declaration testimony. In his original declaration, Mr. Parker does not offer any opinion on whether the EV1 T-shaped battery tray is part of the EV1 chassis. Ex. 1003 ¶¶ 208–211. On cross examination, he confirms as much, and he expressly states that he has no opinion on whether the EV1 includes a T-shaped chassis. Ex. 2026, 85:3–16. Instead, he testifies that the EV1 includes a T-shaped battery tray as part of its unibody structure. *Id.* at 80:14–81:8.

Patent Owner also contends that “no part of the battery tray is connected to the chassis components of the EV1.” *Id.* at 36 (citing Ex. 2025 ¶ 96). Again, Patent Owner’s contention is not supported by evidence. First, the cited testimony from Mr. Kunselman states: “the batteries in the EV1 are on a tray, not a compartment of the chassis at all,” which falls short

of there being no connection between the battery tray and the chassis.
Ex. 2025 ¶ 96. Second, Mr. Kunselman recognizes that a unibody serves the function of a chassis by providing rigidity to the structure of a vehicle.
Ex. 1063, 158:11–12 (“a unibody certainly contains within it chassis functional objectives”), 159:17–18 (“I think you could go so far as to say the unibody is inherently part of the chassis system”), 160:5–11). Third, Mr. Parker that the battery tray of the EV1 is a structural part of the EV1 unibody chassis. Ex. 2026, 80:14–81:8.

Patent Owner proffers no other arguments for the patentability of claims 2–4. Based on our review of the record before us, we conclude that Petitioner has proven by a preponderance of evidence that the combined teachings of Gastesi and EV1 render claims 2–4 unpatentable as obvious.

I. CLAIMS 27–31 AND 35:

OBVIOUSNESS IN VIEW OF GASTESI, BERGHAUER, AND EV1

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 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. 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. Thus, the “T-shape”

central chassis structure is a common feature among all claims in this group. The “T-shape” feature is also recited in claims 2–4 discussed in Part II.H above.

Petitioner argues that the combination of Gastesi, Berghauer, and EV1 renders claims 27–31 and 35 unpatentable as obvious. Pet. 80–83. Petitioner identifies the portions of each reference that describe each element of the challenged claims. *See id.* (cross referencing argument and citations to evidence relating to claims 2, 4, 8, 11, 14, 24). Petitioner also supports its argument with citations to Mr. Parker’s testimony. *Id.* (citing Ex. 1003 ¶¶ 216–19, 222, 223, 225). As set forth in Parts II.G–H above, we have concluded that Petitioner has persuasively demonstrated a motive for combining teachings from Berghauer or EV1 with Gastesi to arrive at the inventions of claims 2–4, 8, 10, 19, 23, 24, 32–34, 36, 37, 43–46, 48, and 49. We find that argument and evidence to be equally persuasive with respect to whether an ordinarily skilled artisan would have been motivated to combine the teachings of all three references to arrive at the invention of claims 27–31 and 35.

Patent Owner groups claim 27 and its dependent claims 28–31 and 35 with claim 2, when arguing that Petitioner has failed to establish that the combination of Gastesi and EV1 describes a T-shaped compartment in the central backbone for holding batteries. For the same reasons expressed in Part II.H above, we are persuaded that the combination of Gastesi and EV1 describes the claimed T-shaped compartment. Accordingly, Patent Owner’s argument is unpersuasive.

Patent Owner groups claim 31 with claim 9, when arguing that claim 9 remains patentable because Gastesi fails to describe a “fuel line” within its

tubular member 3. PO Resp. 34. However, claim 31 does not mention or require a “fuel line.” *See* Ex. 1001, 15:15–24 (claim 27), 15:36–41 (claim 31). Accordingly, we discern no additional argument in support of the patentability of claim 31 beyond those addressed in Part II.G.1 above. Petitioner persuasively demonstrates that, based on the teachings of Gastesi, Berghauer, and EV1, an ordinarily skilled artisan would have found it obvious to use a wire to connect batteries located in the central structure of a chassis to an electric traction motor as recited in claim 31. Pet. 80–83 (incorporating analysis of claims 2, 8, and 11 and citing Ex. 1013, 2:22–23, 4:3–8, 8:8–13, 8:25–34, Figure 16; Ex. 1003 ¶¶ 216–219, 225).

For all these reasons, we conclude that Petitioner has proven by a preponderance of evidence that the combination of Gastesi, Berghauer, and EV1 renders claims 27–31 and 35 unpatentable as obvious.

III. PETITIONER’S MOTION TO EXCLUDE

Petitioner moves to exclude evidence relating to whether Berghauer describes a chassis to an ordinarily skilled artisan on two grounds, lack of relevance under Fed. R. Evid. 401, and being prejudicially misleading and confusing under Fed. R. Evid. 403. Paper 27, 2–7. 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 27, 7–8. The testimony Petitioner seeks to exclude relates to a prior art reference that is not a basis for challenging claims in this proceeding. Accordingly, we deny Petitioner’s motion as being moot.

IV. PATENT OWNER'S MOTION TO EXCLUDE

Patent Owner moves to exclude the following three groups of Exhibits:

- (1) Exhibit 1061—Supplemental Declaration of Mr. Parker;
- (2) Exhibits 1050, 1051, and 1053 (the “Theodore Marketing Exhibits”); and
- (3) Exhibits 1054, 1055, 1056, 1057, 1058, 1059, and 1060 (the “Tesla Exhibits”). For the reasons expressed below we deny Patent Owner's motion in its entirety.

A. EXHIBIT 1061

Patent Owner moves to exclude 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 29, 6–13. 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. 1061 ¶ 70 (citing Ex. 2026, 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.¹²

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 a Patent Owner Response. Paper 10, 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.

¹² 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.

B. THE THEODORE MARKETING EXHIBITS

We do not find it necessary to rely upon any of the Theodore Marketing Exhibits in reaching our decision and thus deny Patent Owner's motion to exclude these exhibits as moot.

C. THE TESLA EXHIBITS

We do not find it necessary to rely upon any of the Tesla Exhibits in reaching our decision and thus deny Patent Owner's motion to exclude these exhibits as moot.

V. CONCLUSION

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

- (1) claims 6 and 9 are unpatentable as obvious over Gastesi;
- (2) claims 8, 10, 19, 23, 24, 32–34, 36, 37, 43–46, 48, and 49 are unpatentable as obvious in view of Gastesi and Berghauer;
- (3) claims 2–4 are unpatentable as obvious in view of Gastesi and EV1; and
- (4) claims 27–31 and 35 are unpatentable in view of Gastesi, Berghauer, and EV1.

VI. ORDER

For the reasons given, it is:

ORDERED, based on a preponderance of evidence, that claims 2–4, 6, 8–10, 19, 23, 24, 27–37, 43–46, 48, and 49 of U.S. Patent 9,045,163 B2 are *unpatentable* as obvious under 35 U.S.C. § 103; and

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.

IPR2017-01379
Patent 9,045,163 B2

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