

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CARRIER FIRE & SECURITY AMERICAS CORPORATION,
Petitioner,

v.

SENTRILOCK, LLC,
Patent Owner.

IPR2021-00664
Patent 7,949,541 B2

Before RYAN H. FLAX, BRENT M. DOUGAL, and
ALYSSA A. FINAMORE *Administrative Patent Judges*.

FLAX, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
Dismissing Patent Owner's Motion to Exclude and Strike
35 U.S.C. § 318(a); 37 C.F.R. § 42.64

I. INTRODUCTION

We have authority in this proceeding under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

A. BACKGROUND

SentriLock, LLC (“Patent Owner”) is the owner of U.S. Patent 7,949,541 (Ex. 1001, “the ’541 patent”). Paper 4, 1. Carrier Fire & Security Americas Corporation (“Petitioner”) filed a Petition (Paper 1, “Petition” or “Pet.”) requesting *inter partes* review of the ’541 patent and challenging the patentability of claims 1, 4–6, 9, 11–13, 15, 17–24, 28, 29, 35, 37, and 39–47 thereof. Pet. 1.¹ We instituted trial on September 16, 2021. Paper 12. Patent Owner filed a Response to the Petition (Paper 17 (“Response” or “Resp.”)), to which Petitioner filed a Reply (Paper 20, “Reply”), and to which Patent Owner filed a Sur-Reply (Paper 23, “Sur-Reply”).² We have considered each of these papers and the cited evidence (to the extent appropriate, as discussed below).

A final hearing was conducted on June 21, 2022, where the parties presented oral argument in support of their positions in this proceeding and in related IPR2021-00665 (concerning U.S. Patent 8,606,589 B2). *See* Paper 33 (“Hr’g Tr.”).

Petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to Patent

¹ Petitioner does not challenge claims 2, 3, 7, 8, 10, 14, 16, 25–27, 30–34, 36, and 38. *See* Pet. 1.

² To the extent such documents are relevant, Patent Owner also initially responded to the Petition by filing a Preliminary Response (Paper 6), to which Petitioner responded by filing a Preliminary Reply (Paper 7), to which Patent Owner responded by filing a Preliminary Sur-Reply (Paper 10).

Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d) (2019). Although herein we indicate that certain of Patent Owner's arguments are not persuasive, this should never be taken as an indication that we have assigned Patent Owner the burden of proof on patentability.

After considering the parties' arguments and supporting evidence, we conclude that Petitioner proves by a preponderance of the evidence that claims 23, 24, 28, 29, 35, 37, and 39–47 of the '541 patent are unpatentable as obvious over the asserted prior art. 35 U.S.C. § 316(e). However, we also conclude that Petitioner has not met its burden to prove that claims 1, 4–6, 9, 11–13, 15, and 17–22 are unpatentable over the asserted prior art. *Id.*

Patent Owner also files a Motion to Exclude and Strike certain of Petitioner's evidence and the portions of Petitioner's Reply relying thereon. Paper 27 ("Motion" or "Mot."). Petitioner opposes this motion. Paper 28 ("Opposition" or "Opp."). For reasons discussed herein, the Motion is *dismissed*.

B. REAL PARTIES-IN-INTEREST

Petitioner lists itself and Carrier Global Corporation as real parties-in-interest. Pet. 3. Patent Owner identifies itself as a real party-in-interest. Paper 4, 1.

C. RELATED MATTERS

Petitioner and Patent Owner state that they are parties to ongoing litigation involving the '541 patent in *SentriLock, LLC v. UTC Fire & Security Americas Corp., Inc.*, No. 1:20-cv-00520, in the United States District Court for the District of Delaware. Pet. 3; Paper 4, 1. Petitioner

notes that UTC Fire & Security Corporation, Inc. changed its name to Carrier Fire & Security Americas Corporation in September 2020. Pet. 3, n.2.

The parties also list IPR2021-00665, which challenges U.S. Patent 8,606,589 B2, as a related matter. Pet. 3; Paper 4, 1. The final decisions in these two related *inter partes* review proceedings are issued concurrently.

D. THE '541 PATENT

The '541 patent issued on May 24, 2011, from U.S. Application 11/703,829, filed on February 8, 2007. Ex. 1001, codes (45), (21), (22). The '541 patent states that it is a continuation-in-part of Application 10/734,513, filed on December 12, 2003, and ultimately indicates priority to U.S. Provisional Application 60/319,773, filed on December 12, 2002. *Id.* at codes (60), (63), 1:5–10.

The '541 patent describes “[s]ystems and methods . . . for maintaining security and data gathering for a number of vehicles.” Ex. 1001, Abstract. In its Background section, the '541 patent explains that car dealerships face challenges in tracking and maintaining security in their vehicles, while also making the vehicles accessible to sales personnel when needed. *Id.* at 1:20–37. Existing systems provided a key storage device mounted on the vehicle window and a second device for transmitting identifying information to a computer inside the dealership, but the '541 patent reports that such systems required frequent servicing due to the battery drain from the communication scheme. *Id.* at 1:40–46, 1:65–2:6. In addition, the patent identifies a need for a system that quickly and reliably locates particular automobiles on the lot. *Id.* at 2:15–17.

Figure 2 of the '541 patent is reproduced below:

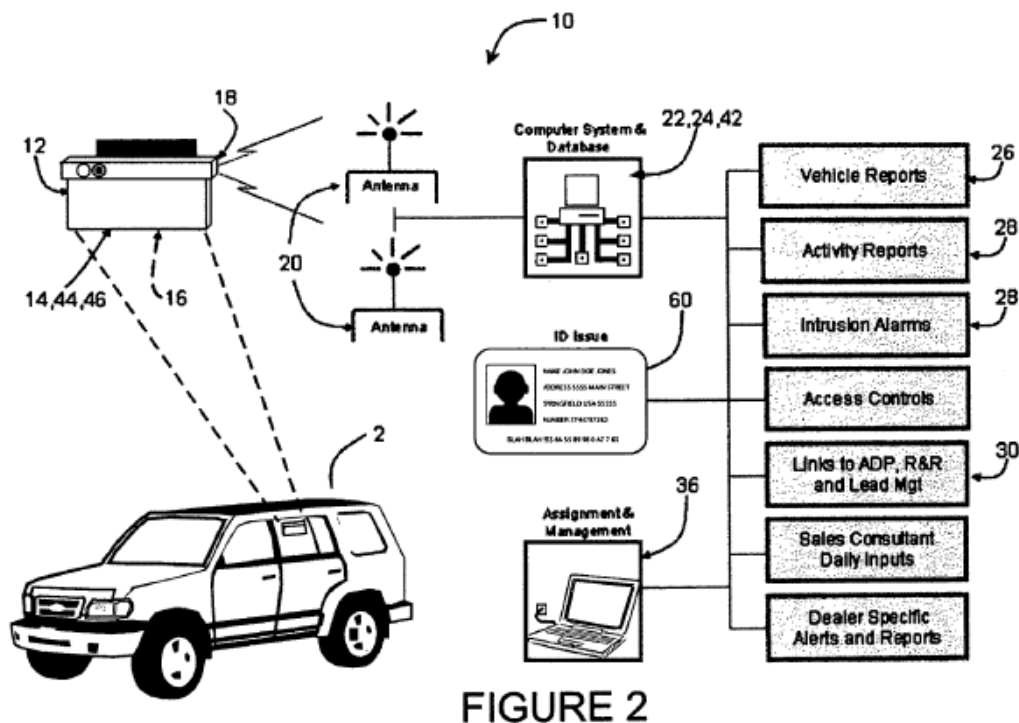


Figure 2 is “a diagram of the basic physical architecture” of vehicle activity monitoring system 10. *Id.* at 6:42–43, 7:14–16. In system 10, vehicle activity modules (VAM) 12 are mounted on vehicles 2. *Id.* at 7:16–18. “VAM 12 includes a lock box or key container 14 including key sets 16 and a transmitter or wireless link 18 which relays various information to one or more antennae 20 connected to a central computer 22 containing a database 24.” *Id.* at 7:20–24.

The '541 patent describes the system's operation as follows:

[W]ith the reading of a valid ID card 60, the ID 60 is validated in the PC database 24 in the dealership, through the wireless link 18. This validation process typically would take a few seconds. Once the validation is received, the key container 46 is released so that the sales consultant or other users can remove the key 16 for access to the vehicle 2. In a sales event 4, the interested customer will be given immediate access to the

vehicle 2. If the customer decides to test drive the vehicle 2, the sales consultant would simply check the customer[']s driver[']s license and then take customer off of the lot in the vehicle. When the vehicle 2 exits the lot, the wireless system 18 records that this vehicle is now absent but is still in an open sales event. The VAM 12 then records this as a demo drive attributed to the respective sales consultant, and records the elapsed time the vehicle 2 is out off the lot[.] Upon completion of any sales event 4, the key 16 will be replaced in the VAM 12 and the key container 46 closed. All the relevant data is added to the sales event for subsequent management follow-up and sales reporting.

Id. at 8:45–64.

Figure 13, reproduced below, is a schematic diagram of a VAM having a conductive container for housing a smart key. *Id.* at 7:4–7.

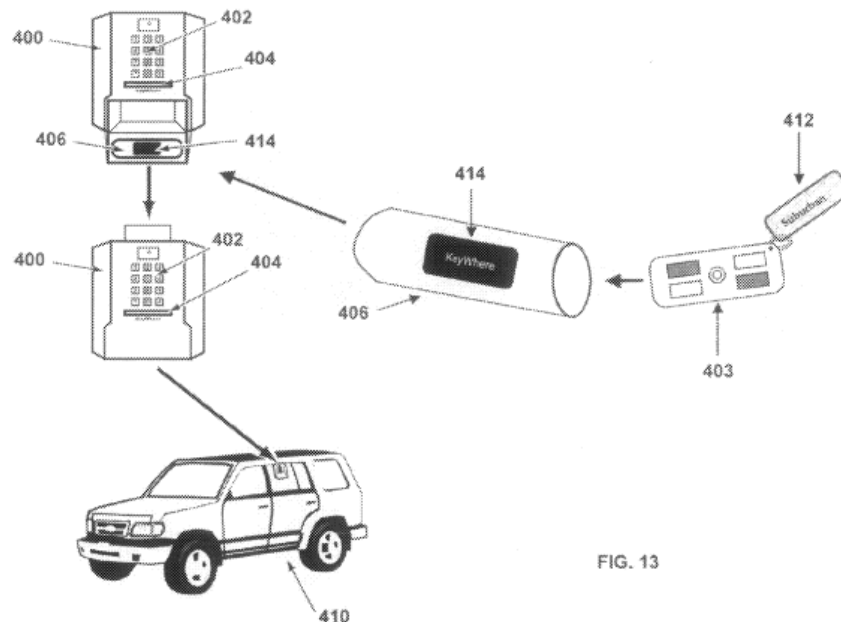


Figure 13 shows VAM 400 having keypad system 402 that “allows for the entry and capture of important customer information . . . to be entered by the employee at the time the key is accessed.” *Id.* at 15:11–15. Keypad 402 can provide additional security features through management of access to VAM

400 by use of employee pin numbers. *Id.* at 15:20–23. In addition, VAM 400 can include signal attenuating container 406 for smart keys 408.³ *Id.* at 15:52–54. The ’541 patent explains that smart keys use RFID to wirelessly signal the vehicle to unlock when the smart key is in proximity to the vehicle, such that “[a]ttenuating the smart key signal may be necessary in order for the VAM 400 to store the smart key 408 while simultaneously preventing access to the vehicle 410.” *Id.* at 15:55–64. Smart key 408 has dealership vehicle ID tag 412, and “RFID tag 414 is appended to the outside of the conductive container 406, which then allows for verification of the presence and location of the conductive container 406.” *Id.* at 16:30–39.

In use, the smart key 408 is stored within the conductive container 406, which is then stored within the key storage portion 418 of the VAM housing. Access to the VAM 400 is then achieved through one of the keypad 402, ID reader 404, or RFID reader (not shown). The presence of the key 406 [sic—408] within the conductive container 406 thus does not interfere with access to the VAM 400 and storage of related data, nor does the key 408 affect access to the vehicle 410 until it is removed from the container 406.

Id. at 16:40–48.

The ’541 patent includes 47 claims, of which Petitioner challenges claims 1, 4–6, 9, 11–13, 15, 17–24, 28, 29, 35, 37, and 39–47. Ex. 1001, 21:39–24:61; Pet. 1. Of the challenged claims, claims 1, 23, and 45 are independent claims. *See* Ex. 1001, 21:39–24:61. Independent claims 1, 23, and 45 are illustrative of the challenged claims and are reproduced below, along with bracketed labels as added by Petitioner for convenient reference:

³ There appears to be a mismatch between Figure 13 and the textual description thereof. Figure 13 includes an item labeled as 403, which appears to match the description of smart key 408 in the specification. *See, e.g., id.* at 16:30–48.

1. [1.0] A device for storing at least one key proximate a vehicle, maintaining security, and gathering data for the vehicle, the device comprising:

[1.1] a housing having a mounting device to mount the device to the vehicle and a releasable key compartment; and

[1.2] a conductive container configured to fit within the releasable key compartment and further configured to receive at least one vehicle key;

[1.3] the conductive container being capable of attenuating a wireless signal emitted from the at least one key when disposed within the conductive container, and

[1.4] an identification tag containing vehicle information, the identification tag being attached to and associated with the at least one key or the conductive container, wherein the identification tag is configured to transmit information electronically to a central computer.

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23. [23.0] A system for maintaining security and gathering data for a plurality of vehicles comprising:

[23.1] a plurality of vehicle activity modules, each of which may be assigned and mounted to one of a plurality of vehicles, at least one of the plurality of vehicle activity modules including a storage device capable of receiving and storing data, a wireless transmitter, at least one sensor, a releasable key container configured to receive at least one key, and a processor operably coupled to one or more of the wireless transmitter, at least one sensor, or releasable key container;

[23.2] a computer having a database for storage of data, the computer being in wireless communication with the at least one vehicle activity module;

[23.3] at least one key identification device for attachment to the at least one key of at least one of the plurality of vehicles, wherein the at least one key identification device is configured to transmit information wirelessly to the computer; and

[23.4] at least one identification card containing information relating to an individual authorized to access the at least one vehicle activity module;

[23.5] wherein the processor is capable of receiving and transmitting event information to the storage device or the computer from at least one of the sensors; and

[23.6] wherein the processor is programmed to access and analyze the event information and compare the event information to reference information stored in the storage device for initiation of an event action within the at least one vehicle activity module.

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45. [45.0] A method for managing and recording event information pertaining to access to a plurality of vehicles, the method comprising:

[45.1] A) assigning one of a plurality of vehicle activity modules to one of a plurality of vehicles and mounting the vehicle activity module to the vehicle, the vehicle activity module including a storage device capable of receiving and storing data, a wireless transmitter, at least one sensor capable of sensing event information, a releasable key container configured to receive at least one key, and a processor;

[45.2] B) attaching a key identification device to a key for the assigned vehicle, wherein the key identification device transmits key identification information electronically to a central computer;

[45.3] C) providing at least one identification card containing information relating to an individual authorized to access at least one vehicle activity module;

[45.4] D) connecting the computer, having a database for data storage in wireless communication with the at least one vehicle activity module, the computer being configured to send and receive information to and from the at least one vehicle activity module;

[45.5] E) sensing an event from at least one of the plurality of vehicle activity modules;

[45.6] F) processing information relating to the sensed event with information contained within the at least one vehicle activity module; and

[45.7] G) establishing a wireless communication link between the plurality of vehicle activity modules and the computer, such that the activated vehicle activity module is configured to transmit the processed information from the vehicle activity module to the computer relating to the sensed event.

Id. at 21:39–54, 22:54–23:17, 24:21–54. As can be seen above, although similar, there are differences between these independent claims. Claim 1 is directed to a device for storing a vehicle key, claim 23 is directed to a system that includes vehicle activity modules for storing keys, and claim 45 is directed to a method incorporating vehicle activity modules for storing keys. *Id.* Claim 1 includes a limitation requiring “a conductive container”; the other independent claims do not. *Id.* Claims 2–22 depend directly or indirectly from claim 1, claims 24–44 and 47 depend directly or indirectly from claim 23, and claim 46 depends from claim 45. *Id.* at 21:39–24:61.

E. PETITIONER’S ASSERTED GROUNDS

Petitioner contends that the challenged claims would have been unpatentable based on the following grounds:

Ground	Claims Challenged	35 U.S.C. § ⁴	References/Basis
A	1, 4, 5, 9, 11–13, 15, 17	103(a)	Mosgrove, ⁵ Diaferia ⁶
B	6, 18–22	103(a)	Mosgrove, Diaferia, Harold ⁷
C	23, 24, 28, 29, 35, 37, 39–47	103(a)	Mosgrove, Harold, Imran ⁸

Pet. 24, 34, 41. In support of its proposed grounds for unpatentability, Petitioner relies on, *inter alia*, the Declaration of Timothy N. Comerford. *See* Ex. 1002. Patent Owner relies on, *inter alia*, the Declaration of Arthur J. Helmicki, Ph.D. *See* Ex. 2015. We find both witnesses are qualified to offer testimony on the knowledge and perspective of the person of ordinary skill in the art as of the invention. *See* Ex. 1002 ¶¶ 7–12, 17–19 (discussing Mr. Comerford’s experience and subject matter considered); Ex. 1003; Ex. 2015 ¶¶ 8–14, 17–21 (discussing Dr. Helmicki’s experience and subject matter considered); Ex. 2016.

We review Petitioner’s challenges and Patent Owner’s arguments below.⁹

⁴ The relevant sections of the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, took effect on March 16, 2013. The application that issued as the ’541 patent was filed February 8, 2007. *See* Ex. 1001, code (22). We apply the pre-AIA version of § 103. *See* 35 U.S.C. § 100(i). Our decision is not dependent on which version of the statute applies.

⁵ US 7,123,127 B2, issued Oct. 17, 2006 (Ex. 1011, “Mosgrove”).

⁶ US 2003/0057131 A1, published Mar. 27, 2003 (Ex. 1013, “Diaferia”).

⁷ US 6,472,973 B1, issued Oct. 29, 2002 (Ex. 1012, “Harold”).

⁸ US 4,851,652, issued July 25, 1989 (Ex. 1014, “Imran”).

⁹ Patent Owner argues in its Response that Petitioner’s witness, Mr. Comerford, lacks credibility, improperly implies claim constructions, does not take the level of ordinary skill into account, relies on improper

II. DISCUSSION

A. ORDINARY SKILL IN THE ART

Petitioner proposes that a person of ordinary skill in the art would have been “a person with at least a Bachelor’s degree in Electronics, Electrical, or Mechanical Engineering or related discipline, [and/]or at least three years of experience working with access control devices.” Pet. 8 (citing Ex. 1002 ¶ 19).¹⁰ Such a person of ordinary skill in the art could have both this level of education and experience without straying from Petitioner’s definition. Patent Owner neither contests Petitioner’s proposed definition of the ordinarily skilled artisan nor proposes an alternative. *See generally* Resp. Patent Owner’s witness, however, expressly adopts Petitioner’s definition. Ex. 2015 ¶ 20. We likewise adopt Petitioner’s proposed definition of the level of ordinary skill in the art and apply it here.¹¹

hindsight, and is biased in favor of Petitioner because of employment history, and, hence, we should give his testimony “no weight.” *See* Resp. 9–19. We do not agree with Patent Owner’s positions. The evidence shows that Mr. Comerford is qualified to testify on the issues in this proceeding, and we find his opinions are based on his understanding of the perspective of the ordinarily skilled artisan, his experience, the ordinary meaning of claim terms, and the disclosures of the prior art, are supported by evidence, and do not rely on the ’541 patent as a roadmap so as to infect his opinions with improper hindsight. *See generally* Ex. 1002; Ex. 1028; Ex. 1029.

¹⁰ We understand Petitioner’s proposed definition of the ordinarily skilled artisan to be inclusive regarding education and experience because such is reflected in Mr. Comerford’s cited testimony. *See* Ex. 1002 ¶ 19 (“I am such a person.”).

¹¹ The parties use the acronym POSA to refer to the person of ordinary skill in the art. *See generally* Pet.; Resp.

B. CLAIM CONSTRUCTION

“In an *inter partes* review proceeding, a claim of a patent . . . shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b) (2020). That standard “includ[es] construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” *Id.*; see also *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

Petitioner states that “[f]or purposes of this IPR, Petitioner does not believe any claim term requires a construction in order to resolve if the Challenged Claims are unpatentable based on the prior art presented.” Pet. 21. Patent Owner indicates it agrees with Petitioner “that the terms of the Challenged Claims should be understood as written.” See Resp. 6–7.

We agree with the parties and determine that no claim term requires express construction. See *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding that only claim terms that are in controversy need to be construed and “only to the extent necessary to resolve the controversy”); see also *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (applying *Vivid Techs.* in the context of an *inter partes* review).

C. LEGAL STANDARDS

“In an IPR, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to

each claim”)). As we have already noted, this burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware*, 800 F.3d at 1378.

Regarding obviousness, the Supreme Court, in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), reaffirmed the framework for determining obviousness 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* (383 U.S. at 17–18) that are applied in determining whether a claim is 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 art;¹² and (4) considering objective evidence indicating obviousness or non-obviousness.¹³ *KSR*, 550 U.S. at 406.

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at 416. “[W]hen the question is whether a patent claiming the combination of elements of prior art is obvious,” the answer depends on “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *Id.* at 417. The Supreme Court stated, “any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements [of the prior art] in the manner claimed.” *Id.* at 420.

¹² There is no dispute as to the definition of the person of ordinary skill in the art. *See supra* Section II.A.

¹³ There is no argument or evidence pertaining to objective indicia of non-obviousness. *See generally* Resp.

With these standards in mind, and in view of the definition of the ordinary skilled artisan and claim interpretation discussed above, we address Petitioner's challenges below.

D. THE '541 PATENT AND PRIORITY

There is a dispute as to what date the claims of the '541 patent should be accorded priority. As noted above, the '541 patent has an actual filing date of February 8, 2007, and states that it is a continuation-in-part of Application 10/734,513 (issued as U.S. Patent 7,340,400 B2 (*see* Ex. 1006, "the '400 patent")), which was filed on December 12, 2003, and ultimately indicates priority to U.S. Provisional Application 60/319,773 (*see* Ex. 1005, "the '773 provisional"), which was filed on December 12, 2002. Ex. 1001, codes (60), (63), 1:5–10. The effective filing date to be accorded the challenged claims matters here because it determines whether the Mosgrove reference is prior art. *See* Ex. 1011, code (22) (filing date of Jan. 31, 2003). Unless the '541 patent is entitled to priority to the '773 provisional, Mosgrove is prior art.

Petitioner argues that the challenged claims are not entitled to any priority date other than their actual filing date of February 8, 2007, because neither the '400 patent's nor the '773 provisional's disclosure supports independent claim 1's requirement for "a conductive container" for storing a key and the requirement of each of independent claims 23 and 45 for a vehicle activity module (VAM) with a processor to compare/process event information with reference to stored memory of the VAM. Pet. 9–11 (citing Ex. 1005; Ex. 1006). Petitioner also argues that the challenged claims all require a key "identification tag" / "key identification device" attached to a key (or to the conductive container in claim 1), which transmits information, and that, unlike the '400 patent, which discloses such a

component as an RFID tag, the '773 provisional does not disclose such a component. *Id.* at 11–12 (citing Ex. 1005; Ex. 1006).

Patent Owner “does not contest . . . that the priority date for claim 1 and its dependent claims is February 8, 2007.” Resp. 19, n.5. Patent Owner argues, however, that claims 23, 24, 28, 29, 35, and 39–47 are entitled to the December 12, 2002, filing date of the '773 provisional. *Id.* at 30. Most relevant, in response to Petitioner’s position about the claimed *key identification tag/device* attached to the vehicle key, Patent Owner argues this claimed component is described in the '400 patent as the aforementioned RFID tag (*see, e.g.*, Ex. 1006, Fig. 5 (element 74)), and is described in the '773 provisional because it discloses that “replacing the key” in the VAM key container is *sensed* (*see, e.g.*, Ex. 1005 ¶¶ 2–4, Fig. 5). *Id.* at 33–34, 40–43.

“In order to gain the benefit of the filing date of an earlier application under 35 U.S.C. § 120, each application in the chain leading back to the earlier application must comply with the written description requirement of 35 U.S.C. § 112.” *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1571 (Fed. Cir. 1997); *see also* 35 U.S.C. § 119(e)(1) (benefit of provisional application’s filing date requires disclosure of claimed invention “in the manner provided by the first paragraph of section 112”); *Dynamic Drinkware*, 800 F.3d at 1381–82 (“A reference patent is only entitled to claim the benefit of the filing date of its provisional application if the disclosure of the provisional application provides support for the claims in the reference patent in compliance with § 112, ¶ 1.”). “Entitlement to a filing date does not extend to subject matter which is not disclosed, but

would be obvious over what is expressly disclosed. It extends only to that which is disclosed.” *Lockwood*, 107 F.3d at 1571–72.

We agree with Petitioner that the ’773 provisional does not describe the *key identification tag/device* required by all claims so as to satisfy § 112. Such a component is described by the ’400 patent as the RFID tag. *See* Ex. 1006, Fig. 5 (element 74). The ’773 provisional, on the other hand, describes nothing that could be considered the claimed key identification tag or device “for attachment to the at least one key” as recited by claim 23 or “attaching a key identification device to a key” as recited by claim 45. Ex. 1002, 23:1–5, 24:32–35. Nothing in the ’773 provisional hints that *anything*, be it a tag or generic device, is attached to its otherwise disclosed key; therefore, we cannot agree with Patent Owner’s arguments. *See generally* Ex. 1005. The ’773 provisional merely indicates that a key can be contained in, removed from, and replaced in a key container module that can somehow sense the key’s presence, but provides no description as to how this sensing is accomplished, and certainly does not describe that anything attached to the key allows this sensing. *Id.* ¶ 4.

In view of the above-discussed findings, we conclude that the challenged claims are not entitled to priority to the ’773 provisional. Other than the *key identification device* claim element discussed above, we do not address whether any other claim elements are supported by prior applications nor need we for the purposes of rendering our decision herein. No further analysis here is required because, without the ’773 provisional for priority, each of Petitioner’s asserted references is prior art to the challenged claims.

E. REVIEW OF ASSERTED PRIOR ART

1. *Mosgrove*

Mosgrove issued as U.S. Patent 7,123,127 B2 on October 17, 2006, from U.S. Application 10/356,655, which was filed January 31, 2003.

Ex. 1011, codes (45), (21), (22). Mosgrove is prior art to the challenged claims. *See supra* Section II.D (addressing priority).

Mosgrove relates to “managing and tracking physical assets, such as, e.g., keys or other objects, that are secured at remote locations but must be accessed and used by different authorized people for various purposes.”

Ex. 1011, 1:7–10. Mosgrove explains:

Effective key management requires that a number of individual keys can be securely stored when not in use, but one or more of the keys can be made available to an authorized user in an efficient manner. Enhanced capabilities of key management systems would include tracking of keys that are in use or missing, as well as the ability to generate reports about activity relating to access of the keys and/or the locked areas unlocked by the keys.

Id. at 1:15–22. Figure 1 of Mosgrove is reproduced below:

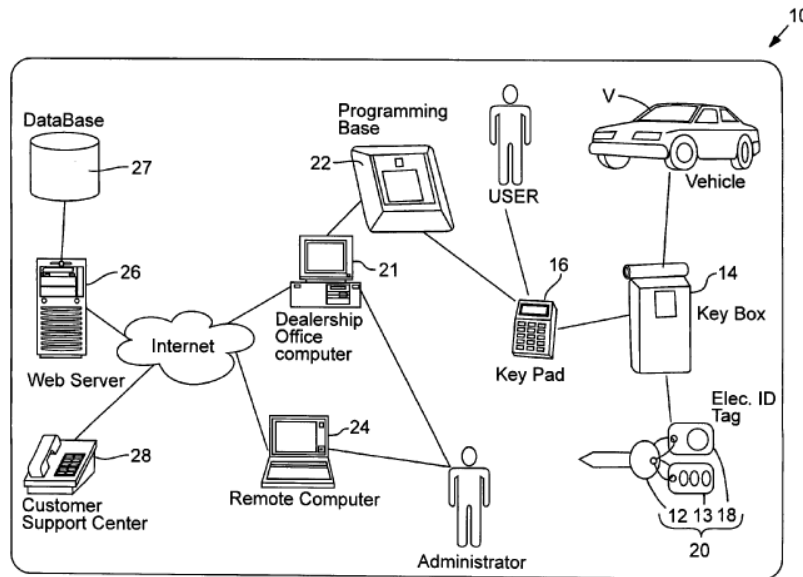


FIG. 1

Figure 1 is a schematic diagram of a key management system for a car dealership. *Id.* at 3:55–56. The figure shows system 10, in which vehicle key 12 is secured at vehicle V in key container 14 that is locked with an electronic lock (i.e., the key container is a lock box). *Id.* at 4:36–40. A user unlocks key container 14 by linking a pre-programmed electronic access device, such as key pad 16, and demonstrating that the user is authorized to access key container 14. *Id.* at 4:48–62. If access is authorized, “key container 14 is unlocked and information about the access is recorded in memory, which may include a memory in the key pad 16 and/or a memory in the key container 14.” *Id.* at 4:63–67. Central computer 21 administers system 10, including assigning privileges to classes of users, updating inventory information, tracking activity of key pads 16 and vehicles V, and allowing users to generate reports. *Id.* at 5:4–9.

Key tag 18 is attached to vehicle key 12 and has an electronically stored identifier. *Id.* at 5:35–37. “When the system 10 is initially configured to include the vehicle V in inventory, unique identification

information about that vehicle (e.g., the vehicle's VIN) is recorded in the database associated with the central computer 21 to correlate the vehicle V with the identifier of the assigned key tag 18.” *Id.* at 5:37–42.

Figure 11A of Mosgrove is reproduced below:

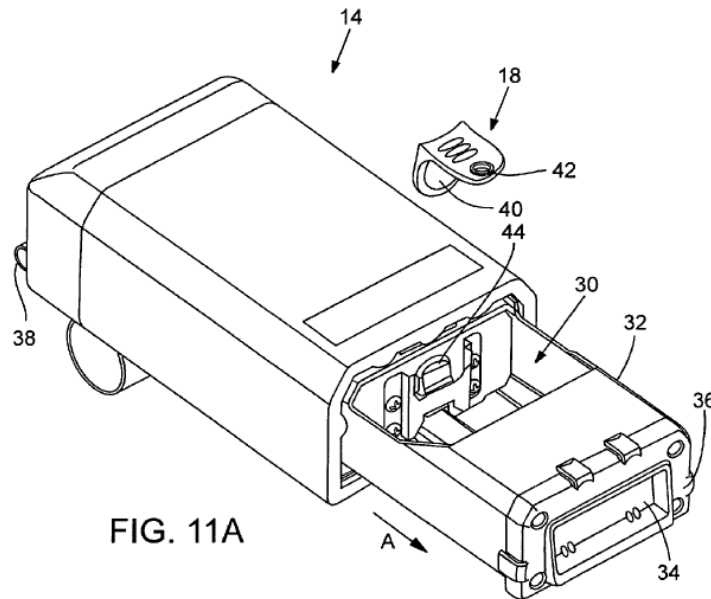


Figure 11A is a perspective view of key container 14 in an unlocked, open position. *Id.* at 4:8–10.

The key container 14 has a key set storage area 30 capable of accommodating the key set 20, which as shown in FIG. 1 may include one or more vehicle keys 12, the key tag 18 and its attachment, and in some cases, the conventional electronic key fob 13 (or ‘remote’) provided with the vehicle keys 12.

Id. at 11:60–65. Key tag 18 has identifier element 40 that can be read electronically and eyelet 42 to allow key tag 18 to be attached to vehicle key 12. *Id.* at 12:33–35. When key tag receiving portion 44 in key set storage portion 30 receives key tag 18, identifier element 40 completes a circuit in key container 14. *Id.* at 12:46–50. This allows key container 14 to detect the presence of key set 20. *Id.* at 12:44–46. “The key container 14 can be

configured to allow it to be locked only when the key set 20 is present in the key container 14.” *Id.* at 12:54–56.

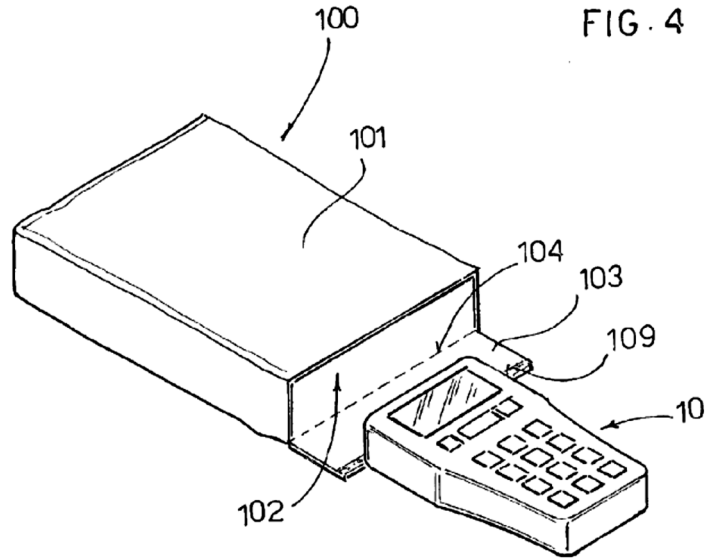
Mosgrove discloses that, “[i]n some implementations, and possibly if infrared, RF or other wireless communications capability between the access device [(the key pad 16)] and the key container 12 is provided, there may be a dedicated power source for the key container circuit.” *Id.* at 12:15–18.

2. *Diaferia*

Diaferia published as Publication No. US 2003/0057131 A1 on March 27, 2003; it is the published version of U.S. Application 10/246,738, which was filed September 19, 2002. Ex. 1013, codes (43), (21), (22). There is no dispute that *Diaferia* is prior art. *See generally* Resp.; *see supra* Section II.D (addressing priority).

Diaferia discloses a container for inhibiting the functioning of a portable receiver or transmitter, such as a cellular phone or other wireless telecommunication equipment. Ex. 1013, at codes (54), (57), ¶ 1. *Diaferia* identifies a need for a container that inhibits the functioning of such equipment so as to enhance airplane security, insofar as cellular phones are known as triggering devices in terrorist attacks. *Id.* ¶¶ 3–7. *Diaferia* states that “[t]he container comprises at least one sheet or layer of material having good electrical conductivity properties, arranged so as to surround totally said electronic apparatus to act as a shield against the propagation of electromagnetic waves to/from the antenna of the electronic apparatus, inhibiting functioning thereof.” *Id.* at Abstract.

Figure 4, reproduced below, illustrates one embodiment of such a container:



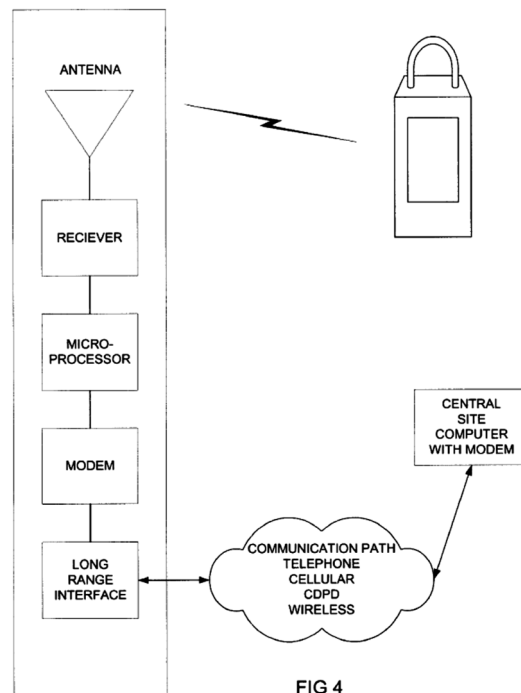
Diaferia states that “FIG. 4 is a perspective view illustrating a second embodiment wherein a device according to the invention is shown having a tubular shape, in use with portable apparatus, such as a cellular phone,” and the figure above shows such a view, where container bag 101 has an open closure flap 103 at an end providing insertion aperture 102 for phone 10 and also has a layer of adhesive material 109 to hermetically close flap 103 and aperture 102. *Id.* ¶¶ 18, 33, Fig. 4. This Figure 4 embodiment is similar to other embodiments disclosed by Diaferia, e.g., a bag/pouch embodiment (Figures 1–3) and a box embodiment (Figure 5). *See generally id.*

Diaferia states that “[t]he fundamental condition for the success” of its invention is that “the metal sheet completely surrounds the electronic apparatus at radio frequency without producing openings and limiting the gaps through which electromagnetic waves at radio frequency can penetrate.” *Id.* ¶ 25. Metal or other materials can be used, provided that the “material must have good electrical conductivity properties so as to be able to generate a Faraday cage type structure.” *Id.* ¶¶ 21, 23.

3. *Harold*

Harold issued as U.S. Patent 6,472,973 B1 on October 29, 2002, from U.S. Application 09/253,261, which was filed February 19, 1999. Ex. 1012, codes (45), (21), (22). There is no dispute that Harold is prior art. *See generally* Resp.; *see supra* Section II.D (addressing priority).

Harold summarizes that its “invention is the addition of a wireless radio link to a real estate lock box to transfer the data obtained from the access keypad to a nearby receiver which sends the data to a central site computer and compiles the data for dissemination.” Ex. 1012, Abstract. Harold illustrates such a communication system at, for example, its Figure 4, which is reproduced below:



Harold states that “FIG. 4 is a schematic view of the enhanced lock box, the receiver unit and the central computer site,” and shows “a ‘radio receiver telephone’ with a dialing modem under the control of a microprocessor,”

where the radio receiver includes an antenna, a receiver, a microprocessor, a modem and a long range interface, and wirelessly connects a lock box to a central site computer via a wireless communication path, which may provide two-way communication. *Id.* at 3:44–45, 6:58–7:16.

Harold explains that realtors use lock boxes having electronic keys that allow access to the house key inside of the lock box. *Id.* at 1:50–55. The “lock box stores certain data, such as the number of the electronic key, [and] the time and date of entry. This information can later be downloaded at a central terminal Unfortunately, there is no easy method of instantly obtaining this data that is very valuable.” *Id.* at 1:56–62. Harold describes adding a wireless radio link to a lock box to transfer the data from the key pad to a nearby receiver, which then sends the data to a central site computer. *Id.* at 2:25–29. The “primary benefit” of Harold’s invention is that it allows the information to be accessed in a timelier manner, when it may influence a seller’s or buyer’s decisions on the sale of the property. *Id.* at 2:55–62.

Harold states that, upon verifying access codes entered at a keypad, a central site computer can transmit directly to a pager in the lock box and command it to release the key, and stolen or lost keys can be disabled from unwanted intrusions in real-time. *Id.* at 3:17–19, 5:19–26.

4. *Imran*

Imran issued as U.S. Patent 4,851,652 on July 25, 1989, from U.S. Application 184,204, which was filed April 20, 1988. Ex. 1014, codes (45), (21), (22). There is no dispute that Imran is prior art. *See generally* Resp.; *see supra* Section II.D (addressing priority).

Imran relates to an electronic lock box, for example, key container 86, and access card in which the access card supplies the timekeeping function

and the power required for operating the lock box. Ex. 1014, 1:5–6, 1:41–48, 4:56–58. Figure 1 of Imran is reproduced below:

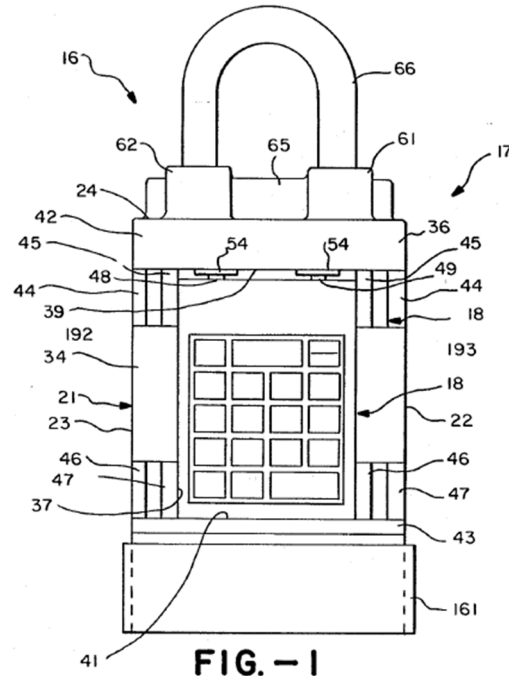


Figure 1 is a front elevation view of electronic lock box 17 and access card 18, which is removably mounted in lock box 17. *Id.* at 2:13–15, 2:64–68. The front side of access card 18 includes a keyboard. *Id.* at 8:8–9. To access the key container, a user inserts access card 18 and inputs the user's private access code using the keyboard. *Id.* at 12:62–13:8, 14:36–43.

F. OBVIOUSNESS OVER MOSGROVE AND DIAFERIA (GROUND A),
AND OVER MOSGROVE, DIAFERIA, AND HAROLD (GROUND B)

Petitioner contends under its Ground A that claims 1, 4, 5, 9, 11–13, 15, and 17 would have been obvious over Mosgrove and Diaferia and, further, under its Ground B that claims 6 and 18–22 would have been obvious over Mosgrove, Diaferia, and Harold. Pet. 24–41. Patent Owner disputes these contentions. Resp. 19–30. These two grounds for unpatentability are closely related. We address them together because all

claims challenged thereunder include or depend from independent claim 1, each ground is based on combining the same prior art, Mosgrove and Diaferia (Ground B foundationally relies on Ground A), and the same facts are dispositive. After considering the parties' arguments and evidence of record, we determine that Petitioner has not established by a preponderance of the evidence that the challenged claims are unpatentable under either of these grounds. We explain below.

Petitioner relies on Mosgrove as teaching every limitation of claim 1 except for the limitation reading "a conductive container configured to fit within the releasable key compartment and further configured to receive at least one vehicle key," which Petitioner asserts is taught by Diaferia. *See* Pet. 26–30. Petitioner asserts that, as keyless ignition fobs were in use since the late 1990s and such was the market trend by the time of the alleged invention of the '541 patent, this made the unauthorized unlocking by such wireless systems a concern and the attenuation of signals between such a fob and vehicle an issue. *Id.* at 25 (citing Ex. 1002 ¶¶ 37–38). On this, Petitioner asserts that "it would have been obvious to a POSA that Mosgrove's key container would include a metallic material [(i.e., a Faraday cage)], like that disclosed in Diaferia, to attenuate the keyless ignition fob's signals and prevent keyless start when the keys are stored in the key container mounted on the vehicle." *Id.* at 26 (citing Ex. 1002 ¶ 39).

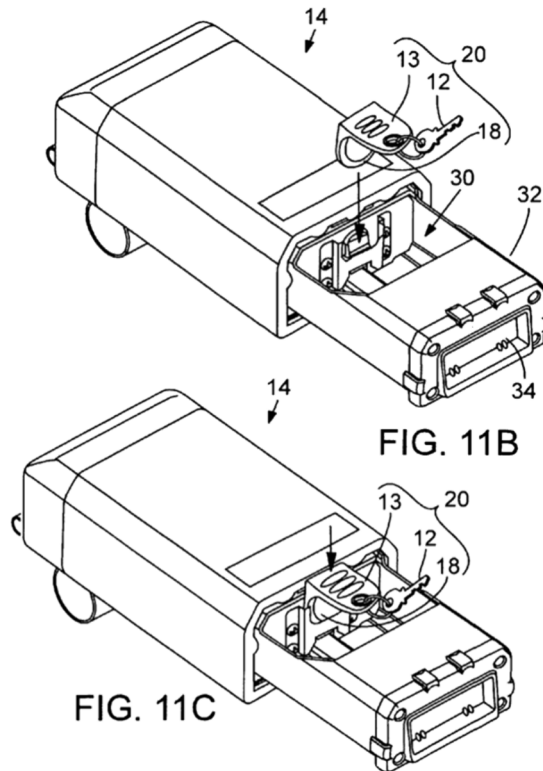
Patent Owner argues the ordinarily skilled artisan would not have been motivated to combine Mosgrove's and Diaferia's constructions because it would change/frustrate the basic principles of operation of Mosgrove's key-sensor circuit, which requires that a key tag attached to a key set be inserted into a receiver to complete a circuit that signals the key's presence

in the key container. Resp. 20–25 (citing, *inter alia*, Ex. 2015 ¶¶ 41, 49, 54, 58–64). Patent Owner’s position is that Diaferia discloses that the conductive material it uses to block telecommunication signals between a device inside that material and something outside it must “completely surround[]” the electronic apparatus, without openings or gaps through which electromagnetic waves can pass, but that such a configuration is at odds with Mosgrove’s requirement that its key (the thing put into Diaferia’s conductive container) must have a tag that can access and be inserted into a receiver to complete a circuit, which would be outside that conductive container from the key and its tag. *Id.* So, according to Patent Owner’s argument, either the Mosgrove circuit cannot be competed to recognize a key’s presence, or the Diaferia container must have an opening through which the key tag passes against that reference’s teachings.

We agree with Patent Owner that, on this record, Petitioner’s case for combining Mosgrove and Diaferia is unpersuasive. As Patent Owner points out, one of the features that Mosgrove describes as beneficial, and, in fact, a feature required by Petitioner’s case for unpatentability under Grounds A and B (*see* Pet. 30–31, 35), is its circuit that detects when a key set is in a key set storage area. *See* Ex. 1011, code (57), 12:32–65, Figs. 11A–D. Mosgrove teaches that when key tag 18 is received in key tag receiving portion 44, identifier element 40 completes a circuit in the key container. *Id.* Mosgrove explains that using that circuit to determine whether the key set is present in the container is important because the container can be configured so that it locks only when the key set is inside. *Id.*

We reproduced Mosgrove’s Figure 11A showing this system above; however, Figures 11B and 11C better illustrate how the components of this

key-sensing circuit are configured and interact, and we reproduce these figures below:



Figures 11B and 11C show the same key container 14 at sequential moments where Figure 11B shows key container 14 in an open configuration for receiving key set 20 in its storage portion 30 and Figure 11C shows key tag 18 of key set 20 inserted (arrow) into key tag receiving portion 44 (unlabeled, but *see supra* Section II.E.1 reproducing Fig. 11A)), and, as Mosgrove states, “[w]hen the key tag 18 is received in the key tag receiving portion 44, the identifier element completes a circuit in the key container.” Ex. 1011, 12:44–54. Mosgrove discloses no other system or configuration of components to achieve this. *See generally id.*

Dr. Helmicki (Patent Owner’s witness) testifies that modifying Mosgrove as Petitioner proposes, by placing the key set inside a fully

enclosed conductive container, would eliminate Mosgrove's key-sensing feature because it would no longer be possible to insert key set 20's key tag 18 into key container 14's key tag receiving portion 44 so its identifier element 40 completes a circuit. *See, inter alia*, Ex. 2015 ¶¶ 49–55. Petitioner does not explain in its Petition (*see*, in particular, Pet. 28–30 addressing the claimed *conductive container* and *identification tag* elements of claim 1) how Mosgrove could or would have been modified, in view of Diaferia or otherwise, that would have still allowed the key container to detect whether a key set were present inside.

We recognize that Petitioner seeks to address the problem in its Reply with two alternative arguments. Reply 5–12. Petitioner first argues that constructing the entire key set storage area 30 of Diaferia's conductive material and adding a door for closing this compartment rather than the sliding-box arrangement illustrated by Mosgrove's Figs. 11A–11D is one option. *Id.* at 6–7. But, this is not what Petitioner proposed in its Petition where it asserted “Diaferia discloses a conductive container” as claimed, which “can be provided in various shapes and sizes and, therefore, it would have been obvious to a POSA to configure the conductive container so that it may receive or accommodate a vehicle key and fit within Mosgrove's releasable key compartment.” Pet. 28–29.

As its second, alternative argument, Petitioner argues that if Mosgrove's key set were put into Diaferia's conductive pouch for placement into the Mosgrove key container, it would have been obvious to add “a thin wire or cable, thread, or something of that nature” to connect the key set to the key tag so that the “something of that nature” extends through the conductive pouch through some limited opening or gap. Reply 8–12.

Again, this is not a theory of configuration proposed in the Petition, which simply asserted Mosgrove’s key set would be put into Diaferia’s conductive container, which would fit within Mosgrove’s releasable key compartment. *See* Pet. 28–29.

In our Trial Practice Guide we explain that a “[p]etitioner may not submit new evidence or argument in [a] reply that it could have presented earlier, e.g.,[,] to make out a prima facie case of unpatentability.” Patent Trial and Appeal Board Consolidated Trial Practice Guide 73 (Nov. 2019)¹⁴ (“CTPG” or “Trial Practice Guide”) (citing *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1077–78 (Fed. Cir. 2015)). The Trial Practice Guide further explains that “[r]espond,’ in the context of 37 C.F.R. § 42.23(b), does not mean proceed in a new direction with a new approach as compared to the positions taken in a prior filing,” and “[w]hile replies and sur-replies can help crystalize issues for decision, a reply or sur-reply that raises a new issue or belatedly presents evidence may not be considered.” *Id.* at 74.

“In most cases, the Board is capable of identifying new issues or belatedly presented evidence when weighing the evidence at the close of trial, and disregarding any new issues or belatedly presented evidence that exceeds the proper scope of reply or sur-reply.” CTPG 80 (Nov. 2019). The Board has regularly shown this capability. *See Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369–70 (Fed. Cir. 2016) (The Board refusing to consider reply brief arguments advocating a “new theory” of unpatentability under 37 C.F.R. § 42.23(b)); *Apple Inc. v. e-Watch, Inc.*, IPR2015-00412, Paper 50, 44 (PTAB May 6, 2016) (“Accepting . . .

¹⁴ Available at www.uspto.gov/TrialPracticeGuideConsolidated.

belatedly presented new arguments would be unjust to the Patent Owner and we decline to do so.”).

Thus, we find any suggestion by Petitioner that Mosgrove’s entire key container or key compartment *is* the conductive container of Diaferia is a new and late argument, which we will not consider. Likewise, we find any suggestion by Petitioner that some sort of wire or cable (or something of that nature) might be used to connect a key put inside a conductive container to a key tag that is outside that conductive container so that the tag might be inserted into a key-sensing circuit is also a new and late argument, which we will not consider.

For the reasons set forth above, we are not persuaded by Petitioner’s argument that claim 1 would have been obvious over Mosgrove in view of Diaferia. Petitioner’s arguments against dependent claims 4, 5, 6, 9, 11–13, 15, and 17–22 are unpersuasive for the same reasons. *See* Pet. 31–34; *Mylan Pharms. Inc. v. Research Corp. Techs., Inc.*, 914 F.3d 1366, 1376 (Fed. Cir. 2019) (“Dependent claims, with added limitations, are generally not obvious when their parent claims are not.”). Petitioner neither asserts nor do we discern that Harold remedies the shortcomings of Mosgrove and Diaferia in these respects. Thus, we conclude that Petitioner has not shown by a preponderance of the evidence that claims 1, 4, 5, 6, 9, 11–13, 15, and 17–22 are unpatentable under the Petition’s Grounds A and B.

G. OBVIOUSNESS OVER MOSGROVE, HAROLD, AND
IMRAN (GROUND C)

Under its final Ground C, Petitioner contends that claims 23, 24, 28, 29, 35, 37, and 39–47 would have been obvious over Mosgrove, Harold, and Imran. Pet. 41–66. Patent Owner disputes this. Resp. 30–57. We address the parties’ arguments and the evidence of record below.

1. *Analysis of Claim 23*

In its challenge to independent claim 23, Petitioner relies on Mosgrove as teaching most of the limitations. *See* Pet. 44–53. Petitioner asserts that Mosgrove’s key containers correspond to the claimed “vehicle activity modules” (*id.* at 45), Mosgrove’s key tag receiving portion 44 corresponds to the claimed “sensor” (*id.*), Mosgrove’s microprocessor-based circuit corresponds to the claimed “processor” (*id.* at 45–46, 51–52), Mosgrove’s central computer corresponds to the claimed “computer” (*id.* at 46), and Mosgrove’s key tag 18 corresponds to the claimed “key identification device” (*id.* at 48). Harold’s role in Petitioner’s proposed combination is as a supplement in the event that Mosgrove does not disclose that “the computer [is] in wireless communication with the . . . vehicle activity module,” as recited in claim 23. *Id.* at 46–47. Petitioner further relies on Imran to teach an identification card that is used to access a lock box. *Id.* at 49–50.

Petitioner asserts that the person of ordinary skill in the art would have had reason to combine Mosgrove and Harold because, like Mosgrove, Harold discloses lock boxes for storing keys and because directing Mosgrove’s wireless communication capabilities to a central computer, as taught by Harold, would have streamlined Mosgrove’s upload of information obtained from its key container for real-time analysis of access activity to facilitate system diagnostics, programming, and updates, and to provide real-time alerts of unauthorized access and potential criminal activity, which are concerns according to Mosgrove. *Id.* at 34–36, 42–43 (citing Ex. 1002 ¶¶ 37–40, 76–79, 97). Petitioner also asserts the ordinarily skilled artisan would have added Imran to this combination because Imran also discloses a key container lock box and provides an access card for the

system, which would provide a credential for user identity, which is a concern according to Mosgrove. *Id.* at 43 (citing Ex. 1002 ¶¶ 95–99).

Patent Owner contests that there was motivation to combine this prior art with a reasonable expectation of success, absent improper hindsight.¹⁵ Resp. 30, 46–53. Patent Owner argues that Harold issued years before Mosgrove was filed yet Mosgrove did not incorporate Harold’s teachings, which evidences that it would not have been obvious to make that combination, and that Petitioner offers no contemporaneous evidence to the contrary. *Id.* at 48 (citing Ex. 1011; Ex. 1012; Ex. 2015 ¶¶ 127–129). Patent Owner argues that Petitioner’s “real-time analysis” rationale could only have come from the teachings of the ’541 patent itself. *Id.* at 49–50 (citing Ex. 2015 ¶ 130). Patent Owner also challenges whether Mr. Comerford (Petitioner’s witness) properly analyzed obviousness based on these references, pointing to an exchange during his deposition where he seemed to agree that his opinions were “based on the people doing the work on the invention of the ’541 patent.” *Id.* at 50–52 (citing Ex. 2017, 179:14–182:6). Patent Owner also argues that, because it would have required “significant engineering” to add Harold’s “complex two-hop or intermediate transmitter network” into Mosgrove’s system, the ordinarily skilled artisan would not have had a reasonable expectation of success. *Id.* at 53–55 (citing Ex. 2015 ¶¶ 132–135).

Having considered the parties positions on the combining of the prior art and the evidence, we agree with Petitioner that there would have been

¹⁵ Patent Owner also argues that Mosgrove is not prior art because the challenged claims are entitled to priority to the ’773 provisional; however, this is an unpersuasive argument for the reasons set forth above. *See supra* Section II.D.

reasons for the ordinarily skilled artisan to modify Mosgrove in view of Harold, with a reasonable expectation of success. Petitioner, supported by Mr. Comerford's testimony, establishes that a reason to modify Mosgrove's systems per Harold's teachings is that lock boxes should communicate with central computers so as to streamline the wireless communications between Mosgrove's vehicle key containers (i.e., lock boxes) and their associated central computer. *See* Pet. 35–36; Ex. 1002 ¶¶ 78–79.

We read Mosgrove to expressly disclose that its key containers have a wireless communication system and functionality: a “wireless communication capability between the access device [(e.g., a key pad)] and the key container.” *See* Ex. 1011, 12:15–18. In addition to communication between its key containers (lock boxes) and associated access devices (key pads), Mosgrove's system also includes communication between the access devices and a central computer; thus, in Mosgrove's specified system the access device (key pad) is a communications intermediary between the key containers and a computer. *Id.* at 4:35–5:47, Fig. 1. Petitioner's proposed modification to Mosgrove would point its key containers' already existing wireless communications systems toward its central computer for information exchange, without requiring the intermediary key pad. *See, e.g.*, Hr'g Tr. 25:7–26:3 (Petitioner confirming our understanding of its position on this issue).

“[W]hen a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.” *KSR*, 550 U.S. at 416. This is the case here where Mosgrove's wireless communication system exists already and is merely redirected. “[I]f a

technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *Id.* at 417. Further, “any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements [of the prior art] in the manner claimed.” *Id.* at 420. This is the case here where the techniques of Harold illuminate an advantage to be had using Mosgrove’s existing system.

We find Petitioner’s proposed streamlining of Mosgrove’s systems to be a reason to combine and modify the prior art. *See Dystar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006) (making things stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient are universal motivators to combine/modify prior art). And, further, as Mosgrove’s disclosed key containers *have* wireless communication capability, simply specifying that the communications will be between the key container and the computer rather than between the key container and keypad is no technological leap. It would have required only the use of known components and techniques to yield predictable results, and we find there would have been a reasonable expectation for success. *See* Ex. 1002 ¶ 79; *KSR*, 550 U.S. at 417 (to be nonobvious, an improvement must more than the predictable use of prior art elements according to their established functions).

We address Patent Owner’s arguments, which we find unpersuasive, below.

Regarding Patent Owner’s argument that Mosgrove should have referenced Harold’s teachings of lock box-to-computer communications if

this element were obvious, we are not persuaded. “[E]vidence of a motivation to combine need *not* be found in the prior art references themselves, but rather may be found in ‘the knowledge of one of ordinary skill in the art or, in some cases, from the nature of the problem to be solved.’ . . . When not from the prior art references, the ‘evidence’ of motive will likely consist of an *explanation* of the well-known principle or problem-solving strategy to be applied.” *Dystar*, 464 F.3d at 1366 (emphases in original, quoting *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999)).

Regarding Patent Owner’s allegations of the improper use of hindsight in asserting the modification/combination of prior art, we are not persuaded. “Any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made and does not include knowledge gleaned only from applicant’s disclosure, such a reconstruction is proper.” *In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971). Here, Petitioner has only identified subject matter from prior art without reliance on the teachings of the ’541 patent, i.e., Mosgrove teaches wireless communications in a vehicle key lock box and Harold says it would be useful to have such a lock box wirelessly communicate with a central computer, and we find no improper hindsight in this position. We do not find the fact that Patent Owner extracted *a comment* from Mr. Comerford that he based an opinion “on the people doing the work on the invention of the ’541 patent,” to be representative of this testimony in his Declaration (Ex. 1002) or persuasive on this issue.

Regarding Patent Owner's argument that combining Harold's technology with Mosgrove's systems would have been too complex for the ordinarily skilled artisan, we do not find that this is what Petitioner proposes.

There is a distinction between trying to physically combine the two separate apparatus disclosed in two prior art references on the one hand, and on the other hand trying to learn enough from the disclosures of the two references to render obvious the claims in suit. . . . Claims may be obvious in view of a combination of references, even if the features of one reference cannot be substituted physically into the structure of the other reference.

Orthopedic Equip. Co. v. United States, 702 F.2d 1005, 1013 (Fed. Cir. 1983). We do not find that Petitioner proposes physically combining Harold's apparatus with Mosgrove's, but merely proposes slightly modifying Mosgrove's system to be more like Harold's in terms of where wireless communications are transmitted.

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference," *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)[], [*s*]ee also *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) (citing *In re Keller*, 642 F.2d at 425), but rather whether "a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention," *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007).

Allied Erecting & Dismantling Co., Inc. v. Genesis Attachments, LLC, 825 F.3d 1373, 1381 (Fed. Cir. 2016). Here, we find the ordinarily skilled artisan would have been motivated to modify Mosgrove as proposed. Thus, Patent Owner's argument is not persuasive.

Having concluded that Petitioner has sufficiently shown the ordinarily skilled artisan would have combined the teachings of Mosgrove, Harold, and Imran (and modified Mosgrove in the manner Petitioner proposes) with a

reasonable expectation of success, we turn to the elements of the claims and the parties' positions on whether they would have been obvious over the prior art.

23. [23.0] *A system for maintaining security and gathering data for a plurality of vehicles comprising*

This is independent claim 23's preamble. Ex. 1001, 22:54–55.

Petitioner asserts that this subject matter is taught by Mosgrove in its disclosure of a system for maintaining security and gathering data relating to vehicles and their keys. Pet. 44 (citing, *inter alia*, Ex. 1002 ¶¶ 103–104).

Patent Owner does not argue that the Mosgrove, Harold, and Imran prior art combination fails to teach this subject matter. *See generally* Resp.; *In re NuVasive, Inc.*, 841 F.3d 966, 974 (Fed. Cir. 2016) (holding that the Board is not required to address undisputed matters).

We note, the preamble includes the open and inclusive transitional term “comprising,” which means the claim can include additional steps or elements not expressly recited. *CIAS, Inc. v. Alliance Gaming Corp.*, 504 F.3d 1356, 1360 (Fed. Cir. 2007) (“In the patent claim context, the term ‘comprising’ is well understood to mean ‘including but not limited to.’”). “Generally, the preamble does not limit the claims.” *Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002). Regardless of whether the preamble is limiting, Petitioner shows that the recitation in the preamble is satisfied by the prior art combination because Mosgrove is directed to “[a] key management system from controlling access to vehicle keys,” teaches that such keys are “secured,” and discloses collection and communication of data in this system. *See, e.g.*, Ex. 1011, Abstract, 1:6–10, 4:35–5:47, Figs. 1–10, 12.

[23.1] a plurality of vehicle activity modules, each of which may be assigned and mounted to one of a plurality of vehicles, at least one of the plurality of vehicle activity modules including a storage device capable of receiving and storing data, a wireless transmitter, at least one sensor, a releasable key container configured to receive at least one key, and a processor operably coupled to one or more of the wireless transmitter, at least one sensor, or releasable key container

Regarding this next clause of independent claim 23, Petitioner asserts it is taught by Mosgrove's disclosure of key containers assigned to and mounted on vehicles at, e.g., a car dealership, where each container has a memory for receiving/storing data, a wireless transmitter, a sensor in a key tag receiving portion and a key pad, a portion to receive a key, and a microprocessor for controlling the container's functions. Pet. 45–46 (citing Ex. 1002 ¶¶ 106–112; Ex. 1011, 1:63–64; 2:40–45; 2:61–67; 3:21–26, 3:28–30; 5:52–64, 6:49–50, 6:58–64, 11:49–57, 11:66–12:2, 12:8–12, 12:15–18, 12:44–52, Figs. 4, 11A–11C).

Patent Owner does not argue that the Mosgrove, Harold, and Imran prior art combination fails to teach this subject matter. *See generally* Resp.; *In re NuVasive*, 841 F.3d at 974 (holding that the Board is not required to address undisputed matters).

We agree with Petitioner that Mosgrove teaches this claimed subject matter and adopt Petitioner's rationale as our own. For example, we agree that Mosgrove's key containers 14 disclose the claimed *vehicle activity modules*, that they have a memory capable of receiving and storing data, also have a wireless transmitter that can communicate with a key pad, have at least one sensor in a circuit for detecting the presence of a key, have a releasable key container configured to receive at least one key in the form of

a key storage area, and have a processor operably coupled to one or more of the wireless transmitter, at least one sensor, or releasable key container, which controls the locking and unlocking of the container based on sensed input, such as whether a key is present or whether a user has approved access. *See* Ex. 1011, 2:38–3:50, 4:35–5:46, 11:35–12:61.

*[23.2] a computer having a database for storage of data,
the computer being in wireless communication with the
at least one vehicle activity module*

Petitioner asserts the subject matter of this portion of independent claim 23 is taught by Mosgrove in its disclosure of a central computer and associated database for tracking activity of access devices, users, and vehicles. Pet. 46 (citing Ex. 1002 ¶ 114; Ex. 1011, 3:31–38, 5:16–22, 11:49–57). Petitioner acknowledges that Mosgrove’s key container is not directly in wireless communication with the computer, but asserts that having such a direct wireless communication would have been obvious to the ordinarily skilled artisan to streamline Mosgrove’s system by having its key containers communicate with the computer rather than via an intermediary device (the key pad) and that, as of the invention date, it was well-known for computers to have wireless communication capabilities. *Id.* at 46–47 (citing Ex. 1002 ¶¶ 115–116; Ex. 1011, 10:44–11:33).

Petitioner asserts that the teachings of Harold support that this modification to Mosgrove’s system would have been obvious because Harold discloses a wireless radio link between a lock box and a receiver and a central computer used to transfer data therebetween, e.g., lock box access information, in real-time, which Petitioner asserts would improve Mosgrove’s system. *Id.* at 47 (citing Ex. 1002 ¶¶ 78–79, 116; Ex. 1012, 2:25–28, 4:30–33, 4:48–55, 5:19–26, 6:16–22, 7:17–34, 8:13–20).

We have addressed Patent Owner’s arguments concerning the combination of Mosgrove and Harold, and Mosgrove’s modification, above. Patent Owner also argues that “the combination fails to disclose a vehicle activity module being in wireless communication with the computer as expressly recited in claims 23 and 45.” Resp. 55–56. As part of this argument, Patent Owner contends that Petitioner’s position relies on Mosgrove’s key container and key pad being considered a single unit, but further argues that these two things are not a single unit. *Id.* at 56–57 (citing Ex. 2015 ¶¶ 136–138).

We agree with Petitioner that Mosgrove teaches the claimed computer, i.e., a “central computer 21 . . . linked to a database that stores information for administering the key management system.” *See, e.g.*, Ex. 1011, 5:10–22. We agree with Petitioner’s position that it would have been obvious to modify Mosgrove to direct its wireless communications to be between the Mosgrove key container and the Mosgrove central computer, rather than to require the Mosgrove key pad as an intermediary, which is suggested by Harold in teaching that wireless communications between a remote key lock box and a central computer are useful. *See* Ex. 1002 ¶¶ 78–79; *see also* Ex. 1012, Abstract, 2:25–3:31, 4:48–55, 5:19–26.

Upon modifying Mosgrove’s key container’s wireless communication system so that it communicated with Mosgrove’s central computer, whether or not Mosgrove’s key pad and key container can or should be considered a single unit, as argued by Patent Owner, becomes a moot point. At the hearing, we asked the parties to explain the significance, if any, of the Mosgrove key container and keypad being a single unit, as argued by Patent Owner, and neither party did so. *See* Hr’g Tr. 27:9–28:25, 55:11–60:21.

[23.3] at least one key identification device for attachment to the at least one key of at least one of the plurality of vehicles, wherein the at least one key identification device is configured to transmit information wirelessly to the computer

Petitioner asserts that Mosgrove teaches this subject matter of independent claim 23 because the reference discloses a key tag with an identifier, which is configured to transmit information wirelessly to a computer when a key tag reader connected to the computer scans the key tag identifier. Pet. 48 (citing Ex. 1002 ¶ 118; Ex. 1011, 2:57–60, 5:35–47, 8:64–9:2, Fig. 1). Petitioner asserts that the ordinarily skilled artisan would have understood that “scanning” a key tag with a reader connected to a computer means “transmitting information wirelessly” to the computer, e.g., via RFID or bar code. *Id.* (citing Ex. 1002 ¶ 118).

Patent Owner does not argue that the Mosgrove, Harold, and Imran prior art combination fails to teach this subject matter. *See generally* Resp.; *In re NuVasive*, 841 F.3d at 974 (holding that the Board is not required to address undisputed matters).

Petitioner has explained how Mosgrove teaches the claimed key identification device, and we adopt Petitioner’s uncontradicted rationale as findings of fact.

[23.4] at least one identification card containing information relating to an individual authorized to access the at least one vehicle activity module

Petitioner asserts including an identification card (an access device) with Mosgrove’s system would have been obvious because Mosgrove discloses that a user must unlock the key container using a pre-programmed electronic access device to demonstrate the user is so authorized based on their identity. Pet. 48–49 (citing Ex. 1002 ¶ 120; Ex. 1011, 3:1–2, 4:48–62,

6:45–53, 8:1–4). Petitioner asserts that Imran supports this position because the reference teaches access card 18 as an identification card with a key pad, which is similar to Mosgrove’s access device (key pad 16), to access a lock box. *Id.* at 49–50 (citing Ex. 1002 ¶¶ 121–122; Ex. 1014, 2:49–67, 8:8–21, 12:62–13:8, 14:36–43, Fig. 7).

Patent Owner does not argue that the Mosgrove, Harold, and Imran prior art combination fails to teach this subject matter. *See generally* Resp.; *In re NuVasive*, 841 F.3d at 974 (holding that the Board is not required to address undisputed matters).

Petitioner has explained how Mosgrove teaches the claimed identification card, and we adopt Petitioner’s uncontradicted rationale as findings of fact. We agree with Petitioner’s uncontested position that including an identification card with user information with Mosgrove’s key container system as an access device would have been obvious in view of Mosgrove’s and Imran’s teachings. *See* Ex. 1002 ¶¶ 120–122.

[23.5] wherein the processor is capable of receiving and transmitting event information to the storage device or the computer from at least one of the sensors

Petitioner asserts that Mosgrove’s key container’s processor is disclosed to receive and transmit information, e.g., access information, to the device from one of its sensors, such as a user’s access request input at the key pad 14 or information from the key tag to the receiving portion indicating its presence. Pet. 51–52 (citing Ex. 1002 ¶¶ 124–125; Ex. 1011, 4:48–5:3, 7:9–13, 12:8–14).

Patent Owner does not argue that the Mosgrove, Harold, and Imran prior art combination fails to teach this subject matter. *See generally* Resp.;

In re NuVasive, 841 F.3d at 974 (holding that the Board is not required to address undisputed matters).

Petitioner has explained how Mosgrove teaches the claimed processor, and we adopt Petitioner's uncontradicted rationale as findings of fact. We agree with Petitioner's uncontested position that Mosgrove's microprocessor discloses the claimed microprocessor. *See* Ex. 1002 ¶¶ 124–125.

[23.6] wherein the processor is programmed to access and analyze the event information and compare the event information to reference information stored in the storage device for initiation of an event action within the at least one vehicle activity module

Petitioner asserts that Mosgrove teaches this subject matter because the reference's key container's processor validates a user's identity based on input from the key pad (event information) and controls the unlocking of the key container. Pet. 52 (citing Ex. 1011 2:50–52, 3:17–18, 6:49–50, 12:8–11). Petitioner asserts that an ordinarily skilled artisan would have understood that this process relies on reference information stored in the key container, such as authorized users and their PIN codes, and that Mosgrove discloses that the processor must compare user input to authorized user information stored in the key container's memory in order to unlock the key container. *Id.* at 52–53 (citing Ex. 1002 ¶¶ 127–128; Ex. 1011, 3:25–27, 3:63–4:7, 4:14–18, 4:63–5:3, 6:66–7:3, 12:8–11).

Patent Owner does not argue that the Mosgrove, Harold, and Imran prior art combination fails to teach this subject matter. *See generally* Resp.; *In re NuVasive*, 841 F.3d at 974 (holding the Board is not required to address undisputed matters).

Petitioner has explained how Mosgrove teaches the claimed processor's programming, and we adopt Petitioner's uncontradicted rationale as findings of fact. We agree with Petitioner's uncontested position that Mosgrove's microprocessor is programmed to operate in the fashion claimed. *See* Ex. 1002 ¶¶ 127–128.

2. *Analysis of Dependent Claims 24, 28, 29, 35, 37, 39–44, and 47*

Each of claims 24, 28, 29, 35, 37, 39–44, and 47 depends, directly or indirectly, from independent claim 23. Petitioner provides a detailed discussion mapping the cited references onto each limitation of these dependent claims. *See* Pet. 53–59, 66. Patent Owner does not present any argument on these claims beyond those discussed above in connection with claim 23. *See* Resp. 55–57. As noted above, claims 25–27, 30–34, 36, and 38 are not challenged in this proceeding.

Claim 24 depends directly from independent claim 23 and further recites “*the computer periodically transmits reference information to the at least one vehicle activity module independent of the event information, which reference information may be used by at least one of the vehicle activity modules to analyze event information.*” Ex. 1001, 23:18–22 (italics added). Petitioner asserts that this subject matter would have been obvious because Harold discloses lock boxes in two-way wireless communication with a central computer to control access timing for retrieving keys or other issues, which makes obvious periodically updating Mosgrove's key containers with reference information, such as authorized access times. Pet. 53–54 (citing Ex. 1002 ¶ 130; Ex. 1011, 4:48–54; Ex. 1012, 2:46–49, 4:48–55, 5:21–26, 6:58–7:16, 7:10–16). We agree with Petitioner's unopposed

position and adopt Petitioner's rationale on obviousness as our findings of fact.

Claim 28 depends directly from independent claim 23 and further recites "*the at least one sensor senses the presence or absence of the at least one key identification device within the releasable key container and wherein the at least one vehicle activity module transmits information relating to the presence or absence of a key identification device.*"

Ex. 1001, 23:33–38 (italics added). According to Petitioner, Mosgrove's key tag receiving portion senses the presence or absence of the key identification device and records this event information into the memory, and the ordinarily skilled artisan would have understood that this information is transmitted to the key pad and, thus, would have found it obvious to transmit the information to the central computer as part of tracking activities for the same reasons asserted for combining Mosgrove and Harold concerning claim 23. Pet. 54–55 (citing Ex. 1002 ¶¶ 132–133). We agree with Petitioner's unopposed position and adopt Petitioner's rationale on obviousness as our findings of fact.

Claim 29 depends directly from independent claim 23 and further recites "*the event action is selected from the group consisting of: triggering an alarm, releasing the releasable key container, and transmitting the event information to the computer, or combinations thereof.*" Ex. 1001, 23:39–42 (italics added). Petitioner asserts that this subject matter would have been obvious because Mosgrove teaches an event of releasing (unlocking) the key container if a user is authorized. Pet. 55 (citing Ex. 1002 ¶ 135; Ex. 1011, 4:63–67, 11:60–12:2, Fig. 11A). We agree with Petitioner's unopposed

position and adopt Petitioner’s rationale on obviousness as our findings of fact.

Claim 35 depends directly from independent claim 23 and further recites “*the at least one sensor comprises a programmable key pad.*” Ex. 1001, 23:54–55 (italics added). Petitioner asserts that this subject matter would have been obvious because Mosgrove teaches a programmable key pad. Pet. 55 (citing Ex. 1002 ¶ 137; Ex. 1011, 3:1–20, 4:48–62, 6:45–50). We agree with Petitioner’s unopposed position and adopt Petitioner’s rationale on obviousness as our findings of fact.

Claim 37 depends directly from independent claim 23 and further recites “*the wireless transmitter is configured to communicate with the computer through a cellular communications facility.*” Ex. 1001, 23:58–60 (italics added). Petitioner asserts that this subject matter would have been obvious because Harold discloses a lock box that wirelessly communicates with a central computer via cellular communications, i.e., “a cellular communications facility,” as claimed. Pet. 56 (citing Ex. 1002 ¶ 139; Ex. 1012, 2:25–34, 7:3–6). We agree with Petitioner’s unopposed position and adopt Petitioner’s rationale on obviousness as our findings of fact.

Claim 39 depends directly from independent claim 23 and further recites “*the at least one vehicle activity module further comprises a clock and the at least one activity module transmits information related to the clock.*” Ex. 1001, 24:1–3 (italics added). Petitioner asserts that this subject matter would have been obvious because Mosgrove teaches the key containers record date and time of access in their memory, which would have been understood to include a clock. Pet. 56 (citing Ex. 1002 ¶ 141; Ex. 1011, 3:20–27, 6:2–9, 7:9–13). We agree with Petitioner’s unopposed

position and adopt Petitioner’s rationale on obviousness as our findings of fact.

Claim 40 depends directly from independent claim 23 and further recites “*the event information is transmitted to the computer for storage in the database and for generation of reports relating to the event information; and wherein the computer is configurable to generate reports relating to inventory based on the event information.*” Ex. 1001, 24:4–8 (italics added). Petitioner asserts this subject matter would have been obvious because Mosgrove teaches event information is transmitted to a computer for storage in a database, specifically access information including timing of access, and the generation of reports on such activity that would include time frame, user information, and usage codes. Pet. 56–57 (citing Ex. 1002 ¶¶ 143–144; Ex. 1011, 3:31–38, 4:63–5:9, 5:16–22, 7:7–17, 10:44–11:34). Petitioner asserts that such reports would also relate to inventory based on access information. *Id.* (citing Ex. 1002 ¶¶ 143–144; Ex. 1011, 10:59–65). We agree with Petitioner’s unopposed position and adopt Petitioner’s rationale on obviousness as our findings of fact.

Claim 41 depends from claim 40, and thereby from independent claim 23, and further recites “*the computer generates reports for locating at least one of the plurality of vehicles based on the event information.*” Ex. 1001, 24:9–11 (italics added). According to Petitioner, Mosgrove discloses that its computer reports include usage codes (e.g., sales demo, service, body shop, preparation detail inspection) associated with access, and providing the location of the vehicle accessed would have been obvious because such codes relate to locations (at a dealership). Pet. 57–58 (citing Ex. 1002 ¶ 146; Ex. 1011, 6:53–57, 10:52–58). We agree with Petitioner’s unopposed

position and adopt Petitioner’s rationale on obviousness as our findings of fact.

Claim 42 depends from claim 40, and thereby from independent claim 23, and further recites “*the computer generates reports relating to the presence or absence of at least one of the keys of the plurality of vehicles based on the event information.*” Ex. 1001, 24:12–14 (italics added). Petitioner asserts this subject matter would have been obvious because Mosgrove teaches an “audit trail” relating to access of key containers including user identification, user codes, timing of access, and key tag identification, and generating an inventory report, which provides information relating to the presence or absence of a key in a container as the status. Pet. 58 (citing Ex. 1002 ¶¶ 148–149; Ex. 1011, 2:57–64, 7:7–17, 10:44–58, 11:23–25, 12:44–50). We agree with Petitioner’s unopposed position and adopt Petitioner’s rationale on obviousness as our findings of fact.

Claim 43 depends from claim 40, and thereby from independent claim 23, and further recites “*the computer generates reports relating to access to at least one of the plurality of vehicles based on the event information.*” Ex. 1001, 24:15–17 (italics added). Petitioner asserts this subject matter would have been obvious because Mosgrove teaches its computer generates a vehicle activity report with access information for each vehicle. Pet. 58–59 (citing Ex. 1002 ¶ 151; Ex. 1011, 10:59–63). We agree with Petitioner’s unopposed position and adopt Petitioner’s rationale on obviousness as our findings of fact.

Claim 44 depends from claim 40, and thereby from independent claim 23, and further recites “*the computer generates reports relating to attempts*

to access at least one of the plurality of vehicles.” Ex. 1001, 24:18–20 (italics added). Petitioner asserts that this subject matter would have been obvious because Mosgrove teaches the computer can generate a report of activity for all users or some subset thereof that would include key pad assignments, vehicles accessed, and timing. Pet. 59 (citing Ex. 1011, 10:52–58). Petitioner asserts that including access attempts in such reports would have been obvious to track unauthorized tries and theft of equipment. *Id.* (citing Ex. 1002 ¶ 153; Ex. 1011, 11:5–34). We agree with Petitioner’s unopposed position and adopt Petitioner’s rationale on obviousness as our findings of fact.

Claim 47 depends directly from independent claim 23 and further recites “*the at least one key identification device is configured to transmit information wirelessly to the computer via at least one of the plurality of vehicle activity modules.*” Ex. 1001, 24:58–61 (italics added). Petitioner asserts that Mosgrove teaches the key container records information on identification of the key tag, which would be transmitted electronically, and that it would have been obvious, once Mosgrove’s key container’s wireless communications are directed to the computer, that this information be included in such wireless communications. Pet. 66 (citing Ex. 1002 ¶ 189–190; Ex. 1011, 5:35–47, 7:7–17). We agree with Petitioner’s unopposed position and adopt Petitioner’s rationale on obviousness as our findings of fact.

3. *Analysis of Claims 45*

Independent claim 45 is a method claim that recites many limitations similar to system claim 23 discussed above. *See* Pet. 59–66; Ex. 1001, 24:21–54. Petitioner’s rationale and evidence for combining Mosgrove, Harold, and Imran is the same for claim 45 as for claim 23, and Patent

Owner's arguments in opposition are also the same. *See* Pet. 41–43; Resp. 30–55. In view of this, other than maintaining our conclusion that Petitioner is correct that these prior art references would have been combined with a reasonable expectation of success, we will not restate our reasons for agreeing with Petitioner's position and disagreeing with Patent Owner's.

We turn to the elements of the claim and the parties' positions on whether they would have been obvious over the prior art. On each step recited by claim 45, other than the arguments discussed above concerning motivation to combine the prior art, reasonable expectation of success, and the overlapping subject matter of claim 23 and claim 45, Patent Owner presents no specific arguments directed to claim 45. *See In re NuVasive, Inc.*, 841 F.3d at 974 (holding the Board is not required to address undisputed matters). We have already discussed these arguments, and they are not persuasive to change our opinion on Petitioner's assertions and evidence.

45. [45.0] A method for managing and recording event information pertaining to access to a plurality of vehicles, the method comprising

Similar to independent claim 23, Petitioner asserts that the subject matter of the preamble is obvious over Mosgrove's teaching of a system that manages and records event information for a plurality of vehicles using key containers for their keys that exchange information with a central computer that generates reports on these events. Pet. 59–60 (citing Ex. 1002 ¶ 157; Ex. 1011, 2:40–52, 2:61–63, 3:20–26, 3:28–30, 4:38–40, 4:63–67, 5:4–22, 7:7–14, 11:44–65).

We agree with Petitioner's position on claim 45's preamble and adopt Petitioner's rationale on obviousness as our findings of fact, and, for the

reasons set forth above, are not persuaded by Patent Owner's arguments to the contrary. If independent claim 45's preamble is considered a limitation, it is taught by the prior art.

[45.1] A) assigning one of a plurality of vehicle activity modules to one of a plurality of vehicles and mounting the vehicle activity module to the vehicle, the vehicle activity module including a storage device capable of receiving and storing data, a wireless transmitter, at least one sensor capable of sensing event information, a releasable key container configured to receive at least one key, and a processor

Similar to independent claim 23, Petitioner asserts this step is taught by Mosgrove in its disclosure of assigning key containers to vehicles and mounting them thereon, where the containers include a memory for data, a wireless transmitter, and a key storage area in the container with a sensor for detecting the presence of a key tag and key set. Pet. 60–61 (citing, *inter alia*, Ex. 1002 ¶¶ 159–162, 164–165; Ex. 1011, 2:57–67, 7:7–12, 12:44–52, Figs. 11A–11C). Petitioner asserts that when a user accesses Mosgrove's key container, the key identification is recorded in the memory, which is a sensing event. *Id.* (citing Ex. 1002 ¶ 162; Ex. 1011, 7:7–17). Petitioner asserts a second sensor is present in a key pad associated with the key container that is used to wake up and unlock the key container. *Id.* at 61 (citing Ex. 1002 ¶ 163; Ex. 1011, 6:49–50, 6:58–66, 7:7–13, 7:18–20).

We agree with Petitioner's position on this step of claim 45's method and adopt Petitioner's rationale on obviousness as our findings of fact, and, for the reasons set forth above, are not persuaded by Patent Owner's arguments to the contrary. Additionally, whether or not Mosgrove's key pad can be considered a part of its key container is not determinative because Mosgrove's key container includes a sensor in the form of its key sensing

circuit and a wireless communicator (such features are not missing from the key container nor required of any other device). This step is taught by the prior art.

[45.2] B) attaching a key identification device to a key for the assigned vehicle, wherein the key identification device transmits key identification information electronically to a central computer

Petitioner asserts that this step is taught by Mosgrove disclosing a key tag attached to key sets so as to identify keys, where that key tag transmits key identity information electronically to a central computer via a reader. Pet. 61 (citing Ex. 1001 ¶¶ 167–168; Ex. 1011, 2:57–60, 5:16–22, 5:35–47, 8:64–9:2, Fig. 1).

We agree with Petitioner’s position on this step of claim 45’s method and adopt Petitioner’s rationale on obviousness as our findings of fact, and, for the reasons set forth above, are not persuaded by Patent Owner’s arguments to the contrary. This step is taught by the prior art.

[45.3] C) providing at least one identification card containing information relating to an individual authorized to access at least one vehicle activity module

Regarding this step of claim 45, Petitioner refers to its assertions on the similar limitation of claim 23 (clause 23.4), discussed above. Pet. 61–62 (citing Ex. 1002 ¶¶ 170–172). On that, Petitioner asserts that including an identification card (an access device) with Mosgrove’s system would have been obvious because Mosgrove discloses that a user must unlock the key container using a pre-programmed electronic access device to demonstrate the user is so authorized based on their identity. *Id.* at 48–49 (citing Ex. 1002 ¶ 120; Ex. 1011, 3:1–2, 4:48–62, 6:45–53, 8:1–4). Petitioner asserts that Imran supports this position because the reference teaches access

card 18 as an identification card with a key pad, which is similar to Mosgrove's access device (key pad 16), to access a lock box. *Id.* at 49–50 (citing Ex. 1002 ¶¶ 121–122; Ex. 1014, 2:49–67, 8:8–21, 12:62–13:8, 14:36–43, Fig. 7).

We agree with Petitioner's position on this step of claim 45's method and adopt Petitioner's rationale on obviousness as our findings of fact, and, for the reasons set forth above, are not persuaded by Patent Owner's arguments to the contrary. This step is taught by the prior art.

[45.4] D) connecting the computer, having a database for data storage in wireless communication with the at least one vehicle activity module, the computer being configured to send and receive information to and from the at least one vehicle activity module

Petitioner asserts that this step of claim 45 is taught by Mosgrove's disclosure of a central computer connected to a database, which together are used for administration and tracking of access device activity, users, and vehicles, via wireless communications from key containers (using the key pad). Pet. 62 (citing Ex. 1002 ¶¶ 174–175; Ex. 1011, 3:31–38, 4:63–5:11, 5:16–22, 7:60–8:4, 11:49–57). Petitioner, again, acknowledges that Mosgrove's key containers wirelessly communicate with its key pads, not the central computer, but asserts that, in view of Harold's wireless lock box-to-central computer communication systems, it would have been obvious to streamline Mosgrove's system and have the key containers wirelessly communicate with the central computer without requiring the intermediary key pads (this is the same argument as discussed above regarding claim 23's similar requirements). *Id.* (citing, *inter alia*, Ex. 1002 ¶¶ 78–79, 176–177).

We agree with Petitioner's position on this step of claim 45's method and adopt Petitioner's rationale on obviousness as our findings of fact, and,

for the reasons set forth above, are not persuaded by Patent Owner's arguments to the contrary. This step is taught by the prior art.

[45.5] E) sensing an event from at least one of the plurality of vehicle activity modules

Petitioner asserts that Mosgrove teaches this claim step in its disclosing, for example, sensing the presence and identity of a key tag and sensing user input at a key pad, which are events. Pet. 63 (citing Ex. 1002 ¶ 179; Ex. 1011, 2:57–67, 6:49–50, 6:58–66, 7:7–20, 12:44–52, Figs. 11A–11C).

We agree with Petitioner's position on this step of claim 45's method and adopt Petitioner's rationale on obviousness as our findings of fact, and, for the reasons set forth above, are not persuaded by Patent Owner's arguments to the contrary. This step is taught by the prior art.

[45.6] F) processing information relating to the sensed event with information contained within the at least one vehicle activity module

Petitioner asserts this step is taught by Mosgrove in the reference's disclosing validating user identity, e.g., via a PIN, to give key container access, where the key container's memory has lists of user identities for, e.g., a lockout list or authorized users, and in that the system also includes usage codes, date/time of access, and key tag identification data; thus, asserts Petitioner, a person of ordinary skill in the art would understand the key container's processor processes information relating to sensed events to determine box access. Pet. 63–64 (citing Ex. 1002 ¶¶ 181–182; Ex. 1011, 2:50–52, 3:1–5, 3:17–18, 3:25–27, 3:63–4:7, 4:14–18, 4:63–5:3, 6:49–50, 6:66–7:3, 7:7–17).

We agree with Petitioner's position on this step of claim 45's method and adopt Petitioner's rationale on obviousness as our findings of fact, and,

for the reasons set forth above, are not persuaded by Patent Owner's arguments to the contrary. This step is taught by the prior art.

[45.7] G) establishing a wireless communication link between the plurality of vehicle activity modules and the computer, such that the activated vehicle activity module is configured to transmit the processed information from the vehicle activity module to the computer relating to the sensed event

On this final recited step of the claim, Petitioner asserts, once more, that Mosgrove in view of Harold (and Imran) teaches this step because Mosgrove's key containers have wireless communications indirectly with a central computer and that it would have been obvious to an ordinarily skilled artisan to make these communications direct. Pet. 64–65 (citing, *inter alia*, Ex. 1002 ¶ 184). Petitioner also asserts that Mosgrove discloses its key containers recording user access information (sensed events) in memory, which is uploaded to a central computer, and, Petitioner asserts Harold discloses transmitting such information between a lock box and a central computer wirelessly, making doing so obvious. *Id.* (citing Ex. 1002 ¶¶ 184–185; Ex. 1011, 4:63–5:3; Ex. 1012, 2:25–34, 2:50–54, 3:54–56, 4:14–18, 7:30–34).

We agree with Petitioner's position on this step of claim 45's method and adopt Petitioner's rationale on obviousness as our findings of fact, and, for the reasons set forth above, are not persuaded by Patent Owner's arguments to the contrary. This step is taught by the prior art.

4. Analysis of Dependent Claim 46

Claim 46 depends directly from independent claim 45 and further recites "*the key identification device includes information that permits a cross-reference to the assigned vehicle.*" Ex. 1001, 24:55–57 (italics added).

Petitioner asserts that this subject matter is taught by Mosgrove disclosing the key identification device includes information permitting cross-reference to an assigned vehicle, e.g., a VIN, which is recorded at the central computer's database and correlated to the respective key tag. Pet. 65–66 (citing Ex. 1002 ¶ 187; Ex. 1011, 5:35–47).

We agree with Petitioner's position on claim 46 and adopt Petitioner's rationale on obviousness as our findings of fact, and, for the reasons set forth above, are not persuaded by Patent Owner's arguments to the contrary. This subject matter is taught by the prior art.

5. *Summary of Ground C*

Petitioner establishes by a preponderance of the evidence that claims 23, 24, 28, 29, 35, 37, and 39–47 of the '541 patent would have been obvious over Mosgrove, Harold, and Imran, as discussed above. No argument by Patent Owner or evidence of record persuades us otherwise.

H. PATENT OWNER'S MOTION TO EXCLUDE AND STRIKE

Patent Owner moves to exclude or strike Petitioner's Exhibit 1030 (Car and Driver Article), Exhibit 1031 (DOT Rulemaking), Exhibit 1034 (Supplemental Comerford Declaration), Exhibit 1035 (Rowe Article), Exhibit 1036 (Maxim Integrated Application Note), Exhibit 1037 (Job Article), and Exhibit 1038 (Becker Article), and the portions of Petitioner's Reply (pages 7–8, 10, 14–15) relying on this evidence. This evidence and the related portions of the Reply address Petitioner's Ground A, the obviousness of claims over Mosgrove and Diaferia, and Petitioner's contentions that these references would have been combined by the ordinarily skilled artisan. *See* Reply 5–18.

Patent Owner argues that Exhibits 1030, 1037, and 1038 should be excluded because they are unauthenticated, lack hallmarks of reliability, and

are hearsay, and also that the evidence was available and should have been asserted with the Petition to be relied upon by Petitioner. Mot. 6–8, 13–15. Patent Owner argues that Exhibit 1031 should be excluded because it was available as of and should have been submitted with the Petition, i.e., it also comes too late for Petitioner to rely thereupon. *Id.* at 8–9. Patent Owner argues that Exhibit 1034 presents new expert witness theories for unpatentability based on Mosgrove and Diaferia and is not based on sound methodology or reliable principles. *Id.* at 9–11. Patent Owner argues that Exhibits 1035 and 1036 were also submitted too late to support Petitioner’s assertions that Mosgrove and Diaferia would have been combined with a reasonable expectation of success, and also that, because they present an incomplete picture of the principles for which they are relied, consideration of these exhibits is prejudicial under Federal Rule of Evidence (FRE) 403. *Id.* at 11–13.

Regarding each of Exhibits 1030, 1031, and 1043–1038, Petitioner argues that, even though filed after the Petition, there is no prohibition against filing such evidence and that Patent Owner has had their notice and opportunity to respond, including by deposing Petitioner’s witness. Opp. 2–3. Petitioner argues it could not have included the exhibits earlier in the proceeding because it could not anticipate the specific issues Patent Owner would raise in its Response. *Id.* Petitioner also argues that Patent Owner offers no substantive explanation why this evidence should be excluded under the FRE. *Id.* at 8–9.

Regarding Exhibit 1030, Petitioner argues the evidence was first substantively cited by Patent Owner itself and that it is responsive to Patent Owner’s arguments to establish the industry’s increasing use of wireless

ignition fobs. *Id.* at 3–4. Petitioner argues Exhibit 1039 is a declaration authenticating Exhibit 1030, and that the document is also self-authenticating as an article from a periodical under FRE 902(6). *Id.* at 9. Similarly, Petitioner argues that, besides being adopted by the opposing party upon its citation by its witness at Exhibit 2105 ¶ 77 and thus not hearsay under FRE 801(d)(2)(B), Exhibit 1030 falls under hearsay exception for periodicals under FRE 803(18).

Petitioner makes the same general arguments over Exhibits 1031, 1037, and 1038. *Id.* at 4–6. Regarding whether Exhibits 1037 and 1038 are authenticated or constitute hearsay, Petitioner argues first that Patent Owner makes no substantiated argument, and next that they are self-authenticating under FRE 902(6) as newspaper/periodical articles, that Petitioner is not (necessarily) relying on the statements in the articles for their truth, and that even if hearsay the circumstances suggest their trustworthiness such that they should be admissible under FRE 807. *Id.* at 13–15.

Petitioner argues that Exhibit 1034 is submitted in response to Patent Owner’s arguments and discusses the principles relating to “a Faraday cage” as well-studied, and counters Patent Owner’s arguments that the Mosgrove-Diaferia combination would be inoperable. *Id.* at 5–7; *see also id.* at 11–13. Petitioner argues that Exhibits 1035 and 1036 are supportive of these positions and not prejudicial to the panel (no jury is involved). *Id.* at 7–8, 13.

The party moving to exclude evidence bears the burden of proving that it is entitled to the relief requested—namely, that the material sought to be excluded is inadmissible under the FRE. *See* 37 C.F.R. §§ 42.20(c), 42.62(a) (2019). In an *inter partes* review in which we both decide

admissibility and serve as the fact-finder, we are well-positioned to determine and assign appropriate weight to evidence presented, and we recognize that a complete record of the evidence is preferable to facilitate public access as well as appellate review. *See, e.g., Sony Computer Entm't Am. LLC v. Game Controller Tech. LLC*, IPR2013-00634, Paper 32 at 31 (PTAB Apr. 14, 2015); *see also Gnosis S.p.A. v. S. Alabama Med. Sci. Found.*, IPR2013-00118, Paper 64 at 43 (PTAB June 20, 2014) (citing *Donnelly Garment Co. v. NLRB*, 123 F.2d 215, 224 (8th Cir. 1941) (“If the record on review contains not only all evidence which was clearly admissible, but also all evidence of doubtful admissibility, the court which is called upon to review the case can usually make an end of it, whereas if evidence was excluded which that court regards as having been admissible, a new trial or rehearing cannot be avoided.”)).

As we explained above (*see supra* Section II.F) in addressing Petitioner’s Grounds A and B, we have “identif[ied] new issues or belatedly presented evidence when weighing the evidence at the close of trial, and disregard[ed] any new issues or belatedly presented evidence that exceed[ed] the proper scope of reply or sur-reply.” CTPG at 80. We have discerned whether the arguments and evidence submitted with and cited in Petitioner’s Reply are appropriate and have disregarded inappropriate arguments and evidence. As is apparent from our discussion above, we do not rely on any of the challenged exhibits in our resolution of Petitioner’s challenges. We also determine that it is in the interest of the public and for appellate review to have a complete record in this proceeding.

For these reasons, the Motion is dismissed. *Id.* at 79–80.

III. CONCLUSION

Petitioner establishes by a preponderance of the evidence that claims 23, 24, 28, 29, 35, 37, and 39–47 of the '541 patent would have been obvious over Mosgrove, Harold, and Imran, as discussed above. Therefore, we find these challenged claims are unpatentable.^{16, 17} We do not find Petitioner establishes by a preponderance of the evidence that claims 1, 4–6, 9, 11–13, 15, and 17–22 of the '541 patent would have been obvious over Mosgrove and Diaferia or Mosgrove, Diaferia, and Harold.

Our final decision is summarized as follows:

Claims	35 U.S.C. §	References/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 4, 5, 9, 11–13, 15, 17	103	Mosgrove, Diaferia		1, 4, 5, 9, 11–13, 15, 17
6, 18–22	103	Mosgrove, Diaferia, Harold		6, 18–22
23, 24, 28, 29, 35, 37, 39–47	103	Mosgrove, Harold, Imran	23, 24, 28, 29, 35, 37, 39–47	
Overall Outcome			23, 24, 28, 29, 35, 37, 39–47	1, 4–6, 9, 11–13, 15, 17–22

¹⁶ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

¹⁷ As noted above, claims 2, 3, 7, 8, 10, 14, 16, 25–27, 30–34, 36, and 38 of the '541 patent are not challenged in this proceeding.

Further, as discussed above, we dismiss Patent Owner's Motion to Exclude/Strike.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has proved by a preponderance of the evidence that claims 23, 24, 28, 29, 35, 37, 39–47 of the '541 patent are unpatentable;

FURTHER ORDERED that Petitioner has not proved by a preponderance of the evidence that claims 1, 4–6, 9, 11–13, 15, and 17–22 of the '541 patent are unpatentable;

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

FURTHER ORDERED that Patent Owner's Motion to Exclude and Strike is *dismissed*.

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