Trials@uspto.gov
571.272.7822

Paper 9
Date: January 21, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NEVRO CORP.,
Petitioner,

v.

BOSTON SCIENTIFIC NEUROMODULATION CORP.,
Patent Owner.

Case IPR2019-01216
Patent No. 7,177,690 B2

Before ROBERT A. POLLOCK, SCOTT C. MOORE, and
RICHARD J. SMITH, *Administrative Patent Judges.*

SMITH, *Administrative Patent Judge*.

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

I. INTRODUCTION

Nevro Corp. ("Petitioner") filed a Petition to institute an *inter partes* review of claims 1–10, 23, and 32–38 of U.S. Patent No. 7,177,690 B2 (the "'690 patent") on July 10, 2019. Paper 1 ("Pet."). Petitioner relies on the Declaration of Ben Pless Regarding U.S. Patent No. 7,177,690 ("Pless Declaration") in support of the Petition. Ex. 1003.

Boston Scientific Neuromodulation Corp. ("Patent Owner") timely filed a Preliminary Response to the Petition on October 24, 2019. Paper 8 ("Prelim. Resp."). Patent Owner filed a statutory disclaimer of claim 23 of the '690 patent, under 37 C.F.R. § 1.321(a), in the file record of the '690 patent, and also filed that disclaimer along with its Preliminary Response. Ex. 2001; Prelim. Resp. 1–2.

We have authority under 35 U.S.C. § 314, which authorizes the Director of the U.S. Patent and Trademark Office to decide whether to institute an *inter partes* review. To institute an *inter partes* review, we must determine that the information presented in the Petition shows "a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a).

A decision to institute under 35 U.S.C. § 314 may not institute on fewer than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348 (2018). The Court recognized, however, that all "claims challenged 'in the petition' will not always survive to the end of the case; some may drop out thanks to the patent owner's actions." *Id*. at 1357. Here, Patent Owner statutorily disclaimed claim 23 of the '690 patent such that it is no longer regarded as a claim challenged in the Petition. *See Vectra Fitness, Inc. v. TNWK Corp.*, 162 F.3d 1379, 1383 (Fed. Cir. 1998) ("This court has interpreted the term 'considered as part of the original patent' in

section 253 to mean that the patent is treated as though the disclaimed claims never existed.") (citing *Guinn v. Kopf*, 96 F.3d 1419, 1422 (Fed. Cir. 1996)).

Here, given the statutory disclaimer of claim 23 (Ex. 2001) and the foregoing precedent, we do not consider claim 23 in determining whether to institute *inter partes* review. *See* 37 C.F.R. 42.107(e). That approach is consistent with the statutory scope of *inter partes* review, and not at odds with *SAS*. *See, e.g.*, *Intuitive Surgical, Inc. v. Ethicon LLC*, IPR2019-01066, Paper 8 at 8 (PTAB Nov. 8, 2019). Accordingly, we refer to claims 1–10 and 32—38 as the "challenged claims."

Upon considering the arguments and evidence presented in the Petition, we determine that Petitioner has established a reasonable likelihood that it would prevail in showing the unpatentability of at least one of the challenged claims in the Petition. Accordingly, we institute an *inter partes* review of all claims and all grounds asserted in the Petition, except for claim 23 and the ground that only challenges claim 23.[1]

A. Real Parties in Interest

Petitioner identifies itself as the real party-in-interest. Pet. 2.

Patent Owner identifies itself and Boston Scientific Corp. as the real parties-in-interest. Paper 5, 2.

B. Related Proceedings

Petitioner states that the '690 patent is at issue in the district court case styled *Boston Sci. Corp. v. Nevro Corp.*, Case No. 1-18-cv-00644 (D. Del.) ("the '644 litigation"). Pet. 3.

Petitioner also identifies twenty-six related patents, and states that

[1] Petitioner's "Ground 2" challenged claim 23 alone as being obvious. Pet. 5. We do not include that challenge in the table below of challenged claims.

"[r]elated U.S. Patent No. 6,895,280 was involved in IPR2017-01811, IPR2017-01812, and IPR2017-01920. IPR2017-01920 was consolidated into IPR2017-01812. The Board's Final Written Decision on IPR2017-01812 is currently on appeal to the Federal Circuit. *See Boston Sci. Neuromodulation Corp. v. Nevro Corp.*, Lead Appeal No. 19-1582 (Fed. Cir.)." *Id*.

Patent Owner provides the following additional information:

The '690 patent is related to U.S. Patent Nos. 6,895,280 ("the '280 patent") and 7,496,404 ("the '404 patent"). Paper 5, 2.

The Board issued a final written decision in IPR2017-01812 finding claims 8, 18, 22–24, and 27 of the '280 patent unpatentable and claims 26 and 28–30 of the '280 patent not unpatentable. *Id.* The '280 patent is also at issue in *Boston Scientific Corp. et al. v. Nevro Corp.*, Case No. 1:16-cv-01163-CFC (D. Del.). *Id*.

The '404 patent is at issue in IPR2019-01313 filed by Petitioner, and both the '690 patent and the '404 patent are at issue in the '644 litigation. *Id.* at 3.

C. The '690 Patent (Ex. 1001)

The '690 patent concerns "[a] system and method for detecting the status of a rechargeable battery included within an implantable medical device." Ex. 1001, (57) (Abstract). Figure 1 below illustrates components of the system:

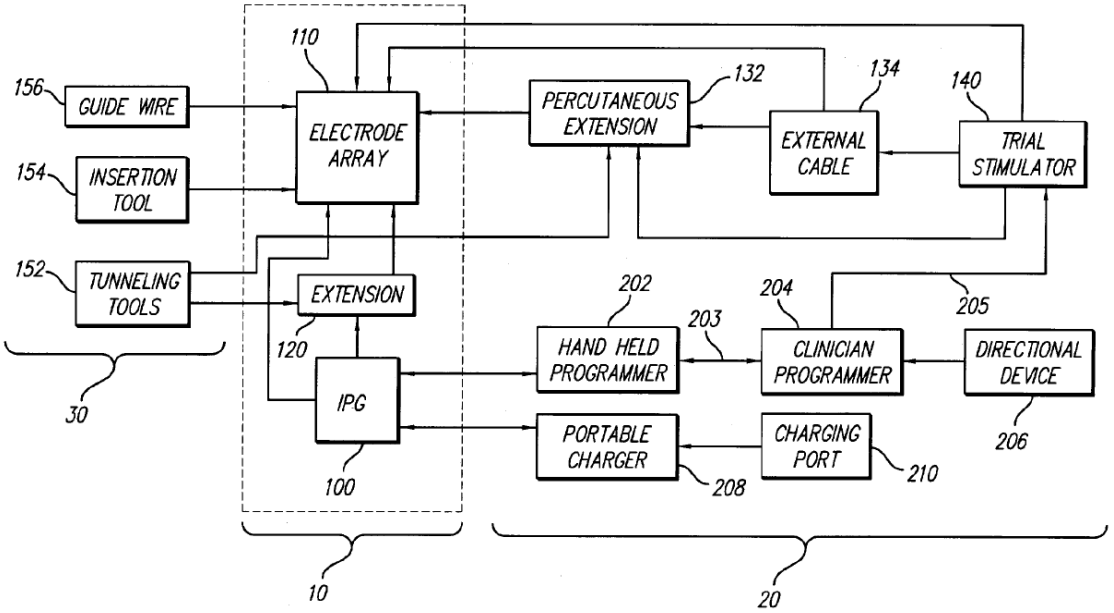

FIG. 1

Figure 1 above illustrates the components of an implantable medical device system. The implantable components 10 include an implantable pulse generator ("IPG") 100, which contains a replenishable power source such as a rechargeable battery. Ex. 1001, 6:32–39, 52–54. In a preferred embodiment, the IPG 100 comprises a rechargeable, multichannel, sixteen-contact, telemetry controlled, pulse generator housed in a rounded titanium case. *Id.* at 6:41–45. The external components 20 include a portable charger 208 used to transcutaneously recharge the IPG via RF power transmissions, an external or handheld programmer (HHP) 202 used by the patient to control the device, and a clinician programmer 204 used to program the device. *Id.* at 26:51–27:3, 27:45–52, 40:39–65, Fig. 1).

The '690 patent states that it provides "an implantable device system and method that can alert or inform a patient or clinician to the status of the rechargeable battery in an implanted medical device." Ex. 1001, 2:55–58. The '690 patent describes various parameters as status data or battery

charging information, such as duration of the last charge. *Id.* at 35:4–61. Battery charging and battery status information may be stored in IPG memory until the IPG is interrogated by the HHP. *Id.* at 35:53–55.

D. Illustrative Claims

Claims 1 and 32 are representative and reproduced below:

> 1. An implantable medical device system having a replenishable power source comprising:
> an implantable medical device, the device having a housing which contains processing circuitry; and
> an external programmer that may be placed in telecommunicative contact with the implantable medical device; and
> means for recording battery charging information, which may be recalled later,
> wherein the external programmer includes a status indicator for indicating the status of the replenishable power source within the implantable medical device.

Ex. 1001, 49:59–50:3.

> 32. A method for detecting and indicating the status of a rechargeable battery contained within an implanted medical device, the device having a memory storage for storing battery status data, the method comprising:
> (a) implanting the medical device;
> (b) interrogating the medical device with external hand held programmer (HHP) to upload battery status data stored in memory storage; and
> (c) indicating the battery status with a status indicator is vibration emanating from the HHP.

Id. at 52:34–44.

Claims 1, 32, 33, and 37 are the only independent claims of the challenged claims.

E. The Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims would have been unpatentable on the following grounds. Pet. 5.

Claims Challenged	35 U.S.C. §	Reference(s)
1–3, 5, 8–10, 32–34, 37, 38	103	Barreras[2] and Kaib[3]
9, 10	103	Barreras, Kaib, Schulman[4]
4	103	Barreras, Kaib, Munshi[5]
6, 7, 35, 36	103	Barreras, Kaib, Bowman[6]

II. ANALYSIS

A. Person of Ordinary Skill in the Art

Petitioner asserts that a "person of ordinary skill in the art ("POSA") in the field of the '690 patent in July 1999 would have had at least (1) a bachelor's degree in electrical or biomedical engineering, or equivalent coursework, and (2) at least one year of experience researching and developing implantable medical devices." Pet. 14 (citing Ex. 1003 ¶¶ 49–51).

Patent Owner states that "[f]or purposes of this Preliminary Response, Patent Owner has used Petitioner's proposed definition of a POSITA. (Petition at 14.) Patent Owner reserves the right to propose a definition of a POSITA should the Board grant institution." Prelim. Resp. 11.

For purposes of this Decision, and based on the current record, we apply Petitioner's assessment of a person of ordinary skill in the art. We

[2] Barreras, Sr. et al., U.S. Patent No. 5,733,313 ("Barreras"). Ex. 1005.
[3] Kaib et al., U.S. Patent No. 5,929,601 ("Kaib"). Ex. 1006.
[4] Schulman et al., U.S. Patent No. 6,185,452 B1 ("Schulman"). Ex. 1022.
[5] Munshi et al., U.S. Patent No. 5,411,537 ("Munshi"). Ex. 1007.
[6] Bowman et al., U.S. Patent No. 5,764,034 ("Bowman"). Ex. 1008.

also note that the level of ordinary skill in the art at the time of the invention may be reflected in the prior art in this proceeding. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (explaining that specific findings regarding ordinary skill level are not required "where the prior art itself reflects an appropriate level and a need for testimony is not shown") (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp*., 755 F.2d 158, 163 (Fed. Cir. 1985)).

B. Claim Construction

In this *inter partes* review, filed July 10, 2019,[7] we construe the claims of the '690 patent by applying "the standard used in federal courts, in other words, the claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b), which is articulated in *Phillips*."[8] Under that standard, "the words of a claim 'are generally given their ordinary and customary meaning' . . . [which] is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Phillips*, 415 F.3d at 1312–13 (citations omitted). Any special definitions for claim terms must be set forth with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Means-plus-function claiming "allow[s] patentees to express a claim limitation by reciting a function to be performed rather than by reciting

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[7] *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340, 51,343 (amending 37 C.F.R. § 42.100(b) effective November 13, 2018) (now codified at 37 C.F.R. § 42.100(b) (2019)).
[8] *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

structure for performing that function, while placing specific constraints on how such a limitation is to be construed." *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347 (Fed. Cir. 2015) (en banc). Specifically, the scope of a means-plus-function limitation is restricted to "only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Id.*

Board rules require a Petition to include a statement identifying how a challenged claim is to be construed. 37 C.F.R. 42.104(b)(4). Moreover, "[w]here the claim to be construed contains a means-plus-function or step-plus-function limitation as permitted under 35 U.S.C. § 112(f), the construction of the claim must identify the specific portions of the specification that describe the structure, material, or acts corresponding to each claimed function." *Id.*

Petitioner proposes constructions for two terms in the challenged claims.

1. Means for Recording Battery Charging Information

Petitioner asserts that this term, as recited in claim 1, is presumed to be a means-plus-function limitation. Pet. 15. Petitioner refers to the disclosure of the '690 patent to argue that the corresponding structure is "'IPG memory 162 *or other memory*' for storing battery charging information until it is recalled by the HHP." *Id.* (citing Ex. 1001, 35:53–55) (emphasis added). According to Petitioner, "the claimed '*means for recording battery charging information*' has a corresponding structure of a computer memory to perform the claimed function of 'recording battery charging information.'" *Id.* (citing Ex. 1003 ¶¶ 53–55).

Patent Owner contests Petitioner's proposed construction. Prelim. Resp. 13–15. In particular, Patent Owner argues that the claimed function

also states that the battery charging information "may be recalled later," that the term "computer memory" is never used in the specification or claims, that it is unclear what the purpose of the qualifier "computer" adds to "memory," and that Petitioner's construction fails "because it impermissibly broadens the corresponding structure to memory located anywhere in the system, rather than only in the implanted device, as specified by the '690 patent." *Id.* at 13.

According to Patent Owner, the claimed function is "recording battery charging information, which may be recalled later," and that the corresponding structure should be "memory contained within the implanted device." *Id.* at 13–14. Patent Owner cites to disclosures in the '690 patent to argue that "[t]his structure is consistent with every disclosure in the '690 patent of where battery charging information is monitored and stored." *Id.* at 14. Patent Owner also argues that, based on the language of claim 1, any arrangement of the memory other than within the implanted device would be "illogical," and that dependent claim 5 confirms "that the 'means for recording battery charging information ***is a memory storage contained within the implantable device***.'" *Id.* at 15 (citing Ex. 1001, 50:12–18 (claim 5)).

Based on the record at this stage of the proceeding, we find that that term "means for recording battery charging information, which may be recalled later" is a means-plus-function limitation having the recited function of "recording battery charging information, which may be recalled later" and the corresponding structure of "memory 162 or other memory" (*see* Ex. 1001, 35:53–54).

On this record, we do not agree that such memory is necessarily present only within the implanted device. This is borne out by the fact that

claim 1 does not recite that the "means" is present within the implanted device, as well as the doctrine of claim differentiation and the limitation of dependent claim 5 that further defines the "means" as "a memory storage contained within the implantable device." Ex. 1001, 50:12–18. We also find that Petitioner has established a reasonable likelihood of showing that the memory of Barreras is located within its implanted medical device, and thus our Decision herein would be the same whether or not we construed the "means" of claim 1 to require that the memory be present only within the implanted device.

2. Means for Non-Invasively Recharging

Dependent claim 9 recites "means for non-invasively recharging the replenishable power source through the skin," which Petitioner asserts is presumed to be a means-plus-function limitation. Pet. 15–16. Petitioner identifies the corresponding structure as "an external power source (Ex. 1001, Fig. 9, 277), power amplifier (*id*., Fig. 9, 275), an external coil (*id.*, Fig. 9, 279) and an internal coil (*id.*, Fig. 9, 680)." *Id.* at 16 (citing Ex. 1001, 41:56–61; Ex. 1003 ¶¶ 56–60). Petitioner thus concludes that "the corresponding structure for a '*means for non-invasively recharging the replenishable power source through the skin*' is a power source, power amplifier, and two coils placed inside and outside the patient." *Id*. at 17 (citing Ex. 1003 ¶ 59).

For purposes of this Decision, Patent Owner does not dispute Petitioner's proposed construction of the "means for non-invasively recharging" term, and argues that "[e]ven under Petitioner's proposed construction, it cannot meet its burden of proving that any challenged claim is likely unpatentable." Prelim. Resp. 12. Patent Owner further argues that "there is no need for the Board to engage in claim construction of this term

at this time," and that "Patent Owner reserves the right to argue the construction of this and any other term of the '690 patent should the Board grant institution." *Id.* at 12–13. For purposes of this Decision, we adopt Petitioner's uncontested construction of "means for non-invasively recharging the replenishable power source through the skin."

We determine, for purposes of this Decision, that we need not expressly construe any other undisputed terms. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy'") (*quoting Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

C. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which that subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

An obviousness analysis "need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 550 U.S. at 418.

D. Obviousness over Barreras and Kaib

All of Petitioner's obviousness challenges are based on the combined teachings of Barreras and Kaib (Pet. 5), and Petitioner's challenges of independent claims 1, 32, 33, and 37 rely solely on the combined teachings of Barreras and Kaib (*id.*). Patent Owner advances several arguments against Petitioner's obviousness challenges of independent claims 1, 32, 33, and 37, and relies on those arguments for dependent claims 2–10, 34–36, and 38. Prelim. Resp. 27. We address Patent Owner's arguments below.

1. Barreras (Ex. 1005)

Barreras is a U.S. patent titled "RF Coupled, Implantable Medical Device with Rechargeable Back-up Power Source," which discloses a tissue stimulator system. Ex. 1005, [54], 7:35–38. Barreras's Figure 1 is reproduced below.

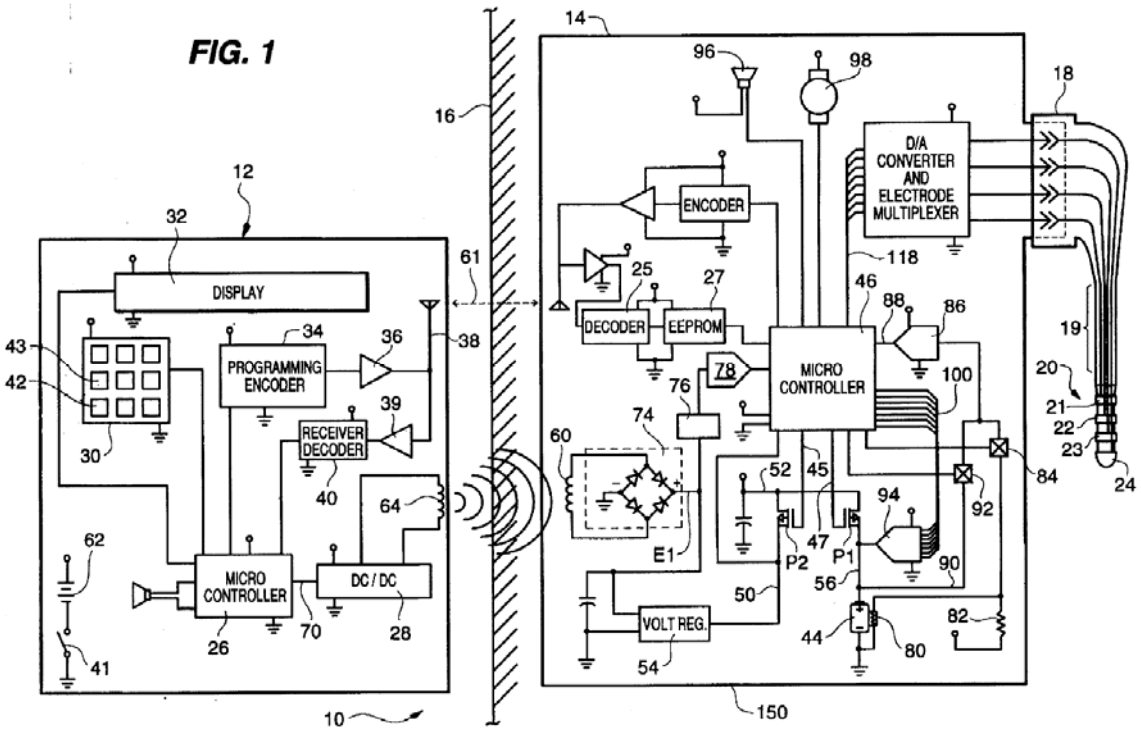

Figure 1 is a circuit diagram of Barreras's implantable tissue stimulator system, which includes transmitter 12 and implantable receiver 14. *Id.* at 7:6–9, 7:36–38. Receiver 14 is connected by multiple leads 19 to electrodes 21–24, which stimulate the patient's tissue in response to therapy values sent from transmitter 12 via RF signals. *Id.* at 7:38–47. The receiver 14 includes a non-volatile memory 27 for recording and storing biological signals and events (such as dysfunctional endocardiac signals), which may be recalled later for examination by a physician. *Id.* at 12:25–40.

Barreras explains that when rechargeable power source 44 of the implanted receiver is near depleted level, "receiver 14 will transmit, via an RF communication link 61, a 'recharge' command to the transmitter 12." *Id.* at 8:35–39. In response, transmitter 12 generates—via external battery 62, DC/DC converter 28, and output inductor 64—"high energy RF waves which are coupled into the inductor 60 contained within the receiver 14" to recharge implanted power source 44. *Id.* at 8:39–43. Barreras explains that a feedback system between receiver 14 and transmitter 12 "adjust[s], as a function of distance between the inductors 64 and 60, the RF energy required to quickly recharge the rechargeable power source 44. A close proximity requires much less RF energy to recharge the rechargeable power source 44 than a longer distance would, in the same time." *Id.* at 8:43–55.

Barreras also explains that implanted microcontroller 46 monitors the voltage level of power source 44. *Id.* at 9:7–11. When power source 44 is fully charged, the microcontroller sends "a 'stop' recharging command" to transmitter 12, and "simultaneously . . . cut[s] off the current needed to charge the rechargeable power source 44. In this manner, the power source 44 cannot be overcharged, even if the 'stop' command was not received by the transmitter 12 due to electromagnetic interference." *Id.* at 9:11–18.

The receiver 14 can be programmed to obtain operating power from RF coupled energy only, back-up rechargeable power supply/source 44 only, or a combination of both. *Id.* at 8:1–7. When the receiver 14 is programmed to "battery only" power acquisition mode, the receiver 14 will transmit a "recharge" command to the transmitter 12 when the rechargeable power source 44 reaches a near depleted level. *Id.* at 8:33–39. When receiver 14 is programmed to combination mode, and the rechargeable power source 44 is below a predetermined level, microcontroller 46 "signals the patient, via an audible alarm 96 and/or a vibrating alarm 98, that the rechargeable power source should be recharged. *Id.* at 9:54–67.

2. Kaib (Ex. 1006)

Kaib is a U.S. Patent titled "Battery Management Apparatus for Portable Electronic Devices," which discloses "methods and apparatus for the maintenance and management of the batteries of . . . portable medical devices." Ex. 1006, 1:9–12. The medical device in Kaib's system is a monitor-defibrillator, worn by the patient, that uses a processor and corresponding data storage to monitor battery information of a rechargeable battery 18. *Id.* at 1:59–60, 4:1–12. Figure 1 of Kaib, shown below, illustrates its monitor-defibrillator 12, patient base station 30, data storage 22, and rechargeable battery 18.

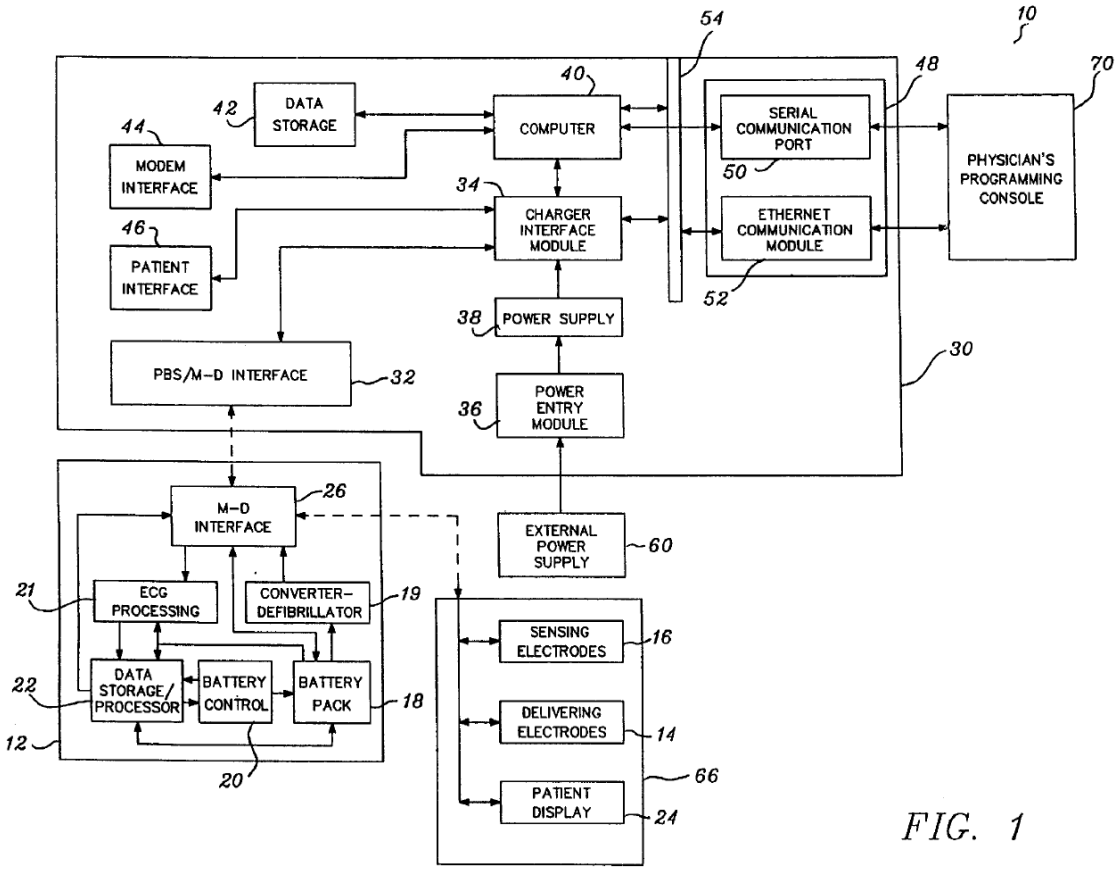

FIG. 1

Figure 1 above is a block diagram of the components of Kaib's medical device system.

Kaib states that there is a need "in the portable medical electronic device industry to implement a comprehensive way of informing the patient, as precisely as possible, of the status of that patient's device, and particularly the status of the device battery." Ex. 1006, 1:41–46. Kaib's system monitors and stores various information about the rechargeable battery 18, which is then reported to the user, thereby allowing the user or clinician, if necessary, to recharge or replace battery 18. *Id.* at 4:9–22, 5:27–30, 9:38–51.

3. Analysis

Petitioner asserts that claims 1–3, 5, 8–10, 32–34, 37, and 38 of the '690 patent are unpatentable as obvious over the combined teachings of

Barreras and Kaib, and relies on the Pless Declaration in support of those assertions. Pet. 18–62 (citing Ex. 1003 ¶¶ 72–81, 84–107, 110–111, 113, 115, 117, 118, 121–124, 126, 128, 129, 130–132, 133–135, 137, 138, 141–145, 147–167).

a. Claim 1

Petitioner argues that Barreras discloses all of the limitations of claim 1, except that Barreras does not explicitly disclose that the information that may be recorded in non-volatile memory 27, and which may be recalled later by the transmitter 12, may be "battery charging information" as recited in claim 1. Pet. 22–39 (citing Ex. 1005, Fig. 1, 1:7–11, 4:55–61, 5:3–8, 21–28, 5:67–6:3, 6:22–24, 37–43, 54–59, 7:26–37, 44–48, 54–55, 60–67, 8:33–39, 43–49, 9:63–67, 11:1–5, 12:25–36; Ex. 1003 ¶¶ 72–81, 84–107, 110, 111).

Petitioner argues that Kaib discloses a "monitor-defibrillator 12 [that] uses a processor and corresponding data storage 22 to monitor the status of a rechargeable battery 18." Pet. 28 (citing Ex. 1006, Fig. 1, 4:1–8, 7:46–49). Petitioner further argues that Kaib's system "monitors various examples of '*battery charging information*' for the monitor-defibrillator's rechargeable battery and uses this information to determine the rechargeable battery's health status and remaining lifespan." *Id.* at 29 (citing Ex. 1003 ¶ 89). Petitioner also argues that examples of battery charging information monitored and stored by Kaib's system, such as low battery power condition and number of charging cycles, correspond to the types of battery charging information disclosed and claimed in the '690 patent. *Id.* at 29–33 (citing Ex. 1006, 3:29–35, 4:10–24, 4:18–21, 5:36–49, 6:48–63, 7:4–7, 9:44–48, 11:66–12:1, 16:46–54, 50:51–54; Ex. 1001, 4:13–21, 23:22–28, 35:6–10, 12–15, 26–31, 55–61, 50:16, 51–54, 66; Ex. 1003 ¶¶ 89–97).

Petitioner argues that there are several reasons that a person of ordinary skill in the art would have modified Barreras using Kaib's battery monitoring technique, thereby monitoring and storing battery charging information using Barreras's receiver memory and micro-controller, for later retrieval and display. Pet. 33–38 (citing Ex. 1005, 4:55–61, 5:43–50; Ex. 1006, 1:41–46, 9:39–41; Ex. 1009, 1–3, 9, 13, 16, 20; Ex. 1011, 5; Ex. 1020, 1:77 [sic, 59]–67; Ex. 1021, 3:40–64; Ex. 1003 ¶¶ 99–107). Petitioner points, for example, to the "prevailing industry trend" that it contends "was to design all battery-powered devices, including medical devices, to monitor, store, and send battery information." *Id.* at 34 (citing Pet. 6–9; Ex. 1003 ¶¶ 30–36; Ex. 1012; Ex. 1009, 1–4, 9, 13, 16, 20, 22; Ex. 1011, 1, 5, 6; Ex. 1013; Ex. 1016, Fig. 5, 6:48–52, 8:15–18, 11:53–12:8, 13:24–30; Ex. 1005, 4:57–61). Additional reasons that a POSA would have combined the teachings of Barreras and Kaib, as argued by Petitioner, include the monitoring of a battery's future health to indicate when it needs to be replaced, which would be especially critical for an implanted battery such as disclosed in Barreras. *Id.* at 34–35 (citing Ex. 1006, 9:39–41; Ex. 1003 ¶¶ 100, 101). Petitioner also argues that Kaib "provides an express motivation that medical devices need to 'inform[] the patient, as precisely as possible, of the status of that patient's device, and particularly the status of the device battery.'" *Id.* at 35–36 (citing Ex. 1006, 1:41–46; Ex. 1009, 2–3; Ex. 1011, 5; Ex. 1003 ¶¶ 102, 103).

Petitioner also argues that "storing and sending battery information was well within the level of a POSA at the time of the '690 patent." Pet. 37 (citing Ex. 1020, 1:59–67; Ex. 1021, 3:40–64; Ex. 1003 ¶ 105). Thus, according to Petitioner, it would have been obvious to use Kaib's "well known" battery monitoring technique in Barreras's system "to improve that

system for the same reasons that Kaib and other industry leaders implemented that technique in other battery-powered devices, *e.g.*, [to] inform a user of a battery's status, such as the remaining time that the battery can power the device." *Id.* (citing *KSR*, 550 U.S. at 417).

Based on our review of the current record, including Patent Owner's arguments addressed below, we determine that Petitioner has established a reasonable likelihood that it would prevail in showing that the combined teachings of Barreras and Kaib would have rendered obvious claim 1 of the '690 patent.

b. Claim 32

Petitioner relies on its arguments regarding claim 1, and disclosures of Barreras and Kaib that are the same or similar to those discussed above, to argue that claim 32 would have been obvious. Pet. 51–58. Petitioner argues that Barreras discloses "an implanted receiver 14 ("*implantable medical device*") containing a rechargeable power source 44 ("*rechargeable battery*") and non-volatile memory 27 ("*memory storage*")." *Id.* at 51–52 (citing Ex. 1005, Fig. 1 (annotated), 7:33–37; Ex. 1003 ¶ 141). Petitioner further argues that receiver 14 "detects when the charge in the rechargeable power source 44 falls below a predetermined level ("*detecting . . . the status of a rechargeable battery*")," and that once detected, receiver 14 notifies the patient (using one or more of several alarms) that the battery needs to be recharged ("indicating the status of a rechargeable battery"). *Id.* at 52 (citing Ex. 1005, 4:55–61, 9:63–67; Ex. 1003 ¶ 142).

As discussed above, Petitioner argues that a person of ordinary skill in the art "would have been motivated to incorporate Kaib's battery monitoring technique that records battery information ("*battery status data*"), such as

low power condition and the number of recharge cycles, in the Barreras receiver's non-volatile memory 27 to be recalled later." Pet. 54.

Petitioner argues that Barreras discloses implanting the medical device and use of an external hand-held programmer (transmitter 12), and that Kaib discloses that a patient may request ("interrogate") a battery check on Kaib's monitor-defibrillator 12 by using a patient display 24. Pet. 55–56 (citing Ex. 1005, Abstract, Fig. 1, 4:18–19, 7:36–38, 14:22–24; Ex. 1006, 4:8–16, 21–22; Ex. 1003 ¶¶ 147–149). According to Petitioner, the combined teachings thus disclose a system where a transmitter 12 (an "external hand held programmer") described by Barreras requests battery information, as described by Kaib, when needed. *Id.* at 56 (citing Ex. 1003 ¶ 150). But, until then, "the non-volatile memory 27 in receiver 14 will store the battery information ("*stored in memory storage*")." *Id.* (citing Ex. 1003 ¶ 150). Petitioner relies on its discussion of claim 1 for the motivation and obviousness of including Kaib's teachings in the Barreras system. *Id.* at 57 (citing Ex. 1003 ¶ 152).

Petitioner acknowledges that Barreras does not expressly disclose that the status indicator is "vibration emanating from the HHP." Pet. 57. However, according to Petitioner, a person of ordinary skill in the art would have been motivated to provide an additional alarm (i.e., a vibrating alarm) in transmitter 12 of Barreras for alarm redundancy, pointing to the recognized need for multiple alarms as disclosed in Barreras. *Id.* at 58 (citing Ex. 1005, 4:56–61; Ex. 1003 ¶ 155). Petitioner further argues that including a vibrating alarm on the external programmer of Barreras "would have been a simple arrangement of old elements (*i.e.*, vibrating alarm) with each performing the same function it had been known to perform (*i.e.*,

notifying a user) and yield no more than one would expect from such an arrangement." *Id.* (citing Ex. 1003 ¶ 156).

Based on our review of the current record, including Patent Owner's arguments addressed below, we determine that Petitioner has established a reasonable likelihood that it would prevail in showing that the combined teachings of Barreras and Kaib would have rendered obvious claim 32 of the '690 patent.

c. Claim 33

Petitioner relies on its arguments set forth in connection with claims 1 and 32 to argue the obviousness of claim 33. Pet. 59–60 (citing Ex. 1003 ¶¶ 157–160). Moreover, because claim 33 recites certain battery status data, Petitioner argues that Kaib discloses "(1) logging the completion times of battery operations ("*the last time the battery was charged*"), (2) monitoring and storing the length of charge cycles ("*duration of the last charge*"), [and] (3) monitoring and storing the number of charging cycles that a battery has undergone ("*number of times charging has been performed*")." *Id.* (citing Pet. 28–33; Ex. 1006, 7:4–7, 9:44–48, 11:66–12:1, 16:46–53; Ex. 1003 ¶¶ 92–94).

Based on our review of the current record, including Patent Owner's arguments addressed below, we determine that Petitioner has established a reasonable likelihood that it would prevail in showing that the combined teachings of Barreras and Kaib would have rendered obvious claim 33 of the '690 patent.

d. Claim 37

Petitioner relies on its arguments set forth in connection with claims 1, 32, and 33 to argue the obviousness of claim 37. Pet. 61–62 (citing Ex. 1003 ¶¶ 162–166). Moreover, because claim 37 recites "indicating the battery

status with a second status indicator included in the implantable medical device," Petitioner argues that Barreras teaches "a receiver with a vibrating alarm 98 or audible alarm 96 (each being a "*second status indicator*") that is different from the alarm (a first "*status indicator*") . . . on the transmitter's display 32." *Id.* at 62 (citing Ex. 1005, Fig. 1, 4:55–61, 9:63–67; Ex. 1003 ¶ 166).

Based on our review of the current record, including Patent Owner's arguments addressed below, we determine that Petitioner has established a reasonable likelihood that it would prevail in showing that the combined teachings of Barreras and Kaib would have rendered obvious claim 37 of the '690 patent.

e. Dependent Claims

Petitioner argues that dependent claims 2, 3, 5, 8–10, 34, and 38 would have been obvious over the combined teachings of Barreras and Kaib. Pet. 39–51, 60, 62. For example, dependent claim 2 recites "[t]he system of claim 1, wherein the replenishable power source is a rechargeable battery." Ex. 1001, 50:4–5. Petitioner points to the disclosure in Barreras that its rechargeable power source 44 may be a "rechargeable battery contained within the implanted receiver." Pet. 39–40 (citing Ex. 1005, 5:3–8; Ex. 1003 ¶ 113).

4. Summary

For the reasons articulated by Petitioner, and in view of the record as a whole at this stage of the proceeding, including Patent Owner's Preliminary Response, we determine that the information presented in the Petition establishes that there is a reasonable likelihood that Petitioner would prevail in showing that at least one of the challenged claims would have been obvious in view of the combined teachings of Barreras and Kaib.

E. Patent Owner's Arguments

1. Pless Declaration

Patent Owner contends that the Pless Declaration "relies on unsupported, conclusory assertions, rather than credible evidence," and "merely repeats arguments from the Petition verbatim." Prelim. Resp. 15–18. Thus, according to Patent Owner, the Pless Declaration is entitled to little or no weight. *Id.*

The Pless Declaration provides sworn testimony by Mr. Pless, a person that appears on this record to have met the definition of a person of ordinary skill in the art as of July 1999. *See* Ex. 1003 ¶¶ 3, 4, 51; Pet. 14. That definition of a person of ordinary skill in the art is not challenged by Patent Owner for purposes of this Decision. Prelim. Resp. 11. Although we recognize that some of the statements by Mr. Pless are the same or substantially the same as those made in the Petition, and some of those statements may not include evidentiary support beyond that provided in the Petition, we find in this case that the unrebutted testimony of Mr. Pless is entitled to some weight at this stage of the proceeding. Patent Owner may challenge the testimony of Mr. Pless during trial through cross-examination and/or a declaration by a witness for Patent Owner.

2. Kaib

Patent Owner challenges Petitioner's reliance on Kaib for the disclosure of recording (storing) battery charging information. Prelim. Resp. 21–27. Patent Owner argues that Kaib's system "depends upon the hardwired connection between its battery 18 located in monitor-defibrillator 12 and its charger, patient base station 30." *Id.* at 22 (citing Ex. 1006, Abstract, 2:9–15, 6:48–57, 6:64–67, 9:39–41, 16:47–64). According to Patent Owner, this hardwired connection permits the base station 30 to

discharge battery 18 and directly measure the actual charge/discharge currents generated by the charger, resulting in a battery capacity check. *Id.* (citing Ex. 1006, 8:61–9:7). But, according to Patent Owner, "[t]he same could ***not*** occur with a transcutaneous, inductive charging scheme, such as the one employed by the implanted medical device system of the '690 patent." *Id.* at 23 (citing Ex. 1006, 9:13–22).

Patent Owner further argues that Kaib's system tracks other battery charging information through its hardwired connection and that, as a result, "five of the six battery charging information parameters claimed in the '690 patent are ***not*** monitored and stored by Kaib's monitor-defibrillator 12." *Id.* at 23–26 (citing Pet. 28, 31–32; Ex. 1006, 2:48–59, 4:10–14, 5:36–49, 7:4–7, 8:61–9:7, 9:38–48, 16:46–64). Finally, Patent Owner argues that "Petitioner does not recognize or address the fact that Kaib's system primarily monitors and stores battery charging information in patient base station 30, rather than monitor-defibrillator 12," and that "[f]or this reason, Kaib does not disclose monitoring and storing 'battery charging information' or 'battery status data' in an implanted medical device, as claimed." *Id.* at 27.

We are not persuaded by Patent Owner's arguments. Petitioner's obviousness challenge is based on the combined teachings of Barreras and Kaib, and arguments regarding Kaib individually or its use of a hardwired connection do not persuade us that Petitioner has not met its burden at this stage of the proceeding. *Bradium Techs. LLC v. Iancu*, 923 F.3d 1032, 1050 (Fed. Cir. 2019) ("A finding of obviousness . . . cannot be overcome 'by attacking references individually where the rejection is based upon the teachings of a combination of references.'") (citing cases). Based on the

combination as advanced by Petitioner, Kaib's use of a hardwired connection does not make Kaib inapt for obviousness purposes.

3. Motivation to Combine and Reasonable Expectation of Success

a. Differences between Barreras and Kaib

Patent Owner argues that there are fundamental differences between Barreras and Kaib, and thus a person of ordinary skill in the art "would not have been motivated to combine these two systems because of their conflicting methods of operation." Prelim. Resp. 28–29. Patent Owner focuses on Kaib's use of a hardwired connection between monitor-defibrillator 12 and patient base station 30, and argues that "patient base station 30 is critical to Kaib's monitoring and storing functions, and depends on a hardwired connection that is not available in Barreras." *Id.*

We are not persuaded by this argument for the reasons addressed above and because the overall principal of operation of Barreras and Kaib is the same. Both Barreras and Kaib disclose medical devices that use a rechargeable battery, and their respective systems are designed to monitor and maintain the charge of that battery. Moreover, the fact that Kaib uses a hardwired connection and Barreras uses a wireless connection does not change their overall principle of operation. *See In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) ("difference in the circuitry–electrical versus optical–does not affect the overall principle of operation of a programmable arithmetic processor").

b. Hindsight

Patent Owner argues that a person of ordinary skill in the art "would not have been motivated to combine Barreras with Kaib without the benefit of hindsight." Prelim. Resp. 29. In particular, Patent Owner argues that "the '690 patent claims six battery charging information parameters and

Petitioner has suggested no motivation for why a POSITA would have modified Barreras's system to monitor these six parameters, as opposed to fewer parameters or different parameters altogether." *Id.*

We are not persuaded by this argument. As an initial matter, none of the challenged claims recite "six" specific battery charging information parameters. Ex. 1001, 49:59–50:41, 52:34–53:15. Moreover, Petitioner's expert testified from the perspective of one of ordinary skill in the art as of July 27, 1999 (the earliest asserted filing date of the '690 patent), and Patent Owner identifies nothing to suggest that such testimony or Petitioner's cited art invoked facts unavailable to the skilled artisan as of that date. Ex. 1003 ¶ 51; *see WesternGeco LLC v. ION Geophysical Corp.*, 889 F.3d 1308, 1327 Fed. Cir. 2018).

c. Reasonable Expectation of Success

Patent Owner argues that a person of ordinary skill in the art "would not have had a reasonable expectation of success in modifying Barreras to include [a hardwired connection] because its device is implanted in the patient." Prelim. Resp. 29–30. We are not persuaded because "[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. . . . Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art." *MCM Portfolio LLC v. Hewlett-Packard Co.*, 812 F.3d 1284, 1294 (Fed. Cir. 2015) (citing *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). Here, the combined teachings asserted by Petitioner do not entail modifying Barreras to include a hardwired connection.

d. Alleged Motivations Unfounded

Patent Owner challenges Petitioner's assertion of reasons to combine the teachings of Barreras and Kaib. Prelim. Resp. 31–38. For example, Patent Owner states that Petitioner ignores the full breadth of the combination proposed by Petitioner, and specifically that Kaib's tracking of the number of charge cycles to determine when the battery should be replaced "is only one of six claimed as 'battery charging information' by the '690 patent." *Id.* at 32–33. We are not persuaded because none of the challenged claims recite six specific types of battery charging information, and independent claims 1, 32, and 37 merely recite "battery charging information" or "battery status data," thereby encompassing *one or more* types of such information or data (including number of charge cycles).

As a further example, Patent Owner contests Petitioner's argument, based on the statement in Kaib, that "medical devices need to 'inform[] the patient, as precisely as possible, of the status of that patient's device, and particularly the status of the device battery.'" Prelim. Resp. 34–35 (citing Pet. 35–36 (citing Ex. 1006, 1:41–46)). According to Patent Owner, Petitioner "doesn't explain ***why*** a patient needs to be informed," and that "a patient would only be interested in information that is pertinent to the patient–i.e., level of charge (charge remaining) and countdown (time to battery depletion)." *Id.* at 35. According to Patent Owner, "Petitioner's argument, therefore, is irrelevant to the four other parameters claimed as battery charging information in the '690 patent and not pertinent to patients: time of charge, duration of charge, rate of charge, and number of charge times." *Id.* (citing Ex. 1001, 38:12–28, 35:55–61).

We are not persuaded by that argument. Kaib states that patients should be informed, as precisely as possible, of "the status of the device

battery." Ex. 1006, 1:41–46. The next sentence in Kaib states "[t]his status should include not only the current conditions of the device battery but also *other information, such as* an indication of how much time remained in which the device would be operable." *Id.* at 1:46–49 (emphasis added). We are not persuaded on this record that the "status of the device battery," as taught by Kaib, is limited to "charge remaining" and "time to battery depletion." Thus, at this stage of the proceeding, we find that Petitioner has adequately shown sufficient reason(s) for combining the teachings of Barreras and Kaib.

F. Other Challenges

Petitioner's other challenges are directed to dependent claims 4, 6, 7, 9, 10, 35, and 36, and also include the combination of Barreras and Kaib. Pet. 64–76. Petitioner argues that Schulman, Munshi, and Bowman disclose additional claim limitations not explicitly disclosed by Barreras and Kaib. *Id.* For example, Petitioner argues reasons why it would have been obvious to incorporate Schulman's external charger in the combination of Barreras and Kaib (*id*. at 68), why replacing the rechargeable battery of Barreras with Munshi's lithium ion battery would have been obvious (*id*. at 72), and why a person of ordinary skill in the art would have been motivated to use a clinician program, like the one disclosed in Bowman, to access battery information in the combined system of Barreras and Kaib (*id*. at 74–75). Patent Owner does not advance any arguments regarding these additional grounds beyond its arguments based on the combination of Barreras and Kaib. *See generally* Prelim. Resp.

III. CONCLUSION

Based on the record as a whole at this stage of the proceeding, and for the foregoing reasons, we conclude that Petitioner has established a

reasonable likelihood that it would prevail in showing the unpatentability of at least one of the challenged claims of the '690 patent.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–10 and 32–38 of U.S. Patent No. 7,177,690 B2 is instituted with respect to all grounds set forth in the Petition, except for the ground challenging disclaimed claim 23; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial commencing on the entry date of this Decision.

PETITIONER:

Ching-Lee Fukuda
Matthew Hopkins
SIDLEY AUSTIN LLP
clfukuda@sidley.com
matthew.hopkins@sidley.com

Jon Wright
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
Jwright-ptab@sternekessler.com

PATENT OWNER:

David A. Caine
Wallace Wu
ARNOLD & PORTER KAYE SCHOLER LLP
David.caine@arnoldporter.com
Wallace.wu@arnoldporter.com