

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ANKER INNOVATIONS LTD.,
Petitioner,

v.

POWERMAT TECHNOLOGIES LTD.,
Patent Owner.

IPR2024-00996
Patent 8,626,461 B2

Before KEN B. BARRETT, PATRICK R. SCANLON, and
JOHN R. KENNY, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

Anker Innovations Ltd. (“Petitioner”)¹ filed a Petition requesting *inter partes* review of U.S. Patent No. 8,626,461 B2 (“the ’461 patent,” Ex. 1001). Paper 2 (“Pet.”). The Petition challenges the patentability of claims 13–18 of the ’461 patent. Powermat Technologies Ltd. (“Patent Owner”)² filed a Preliminary Response to the Petition. Paper 6 (“Prelim. Resp.”).

An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is 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). Having considered the arguments and evidence presented by Petitioner and Patent Owner, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on at least one of the challenged claims of the ’461 patent. Accordingly, we institute an *inter partes* review as to all the challenged claims of the ’461 patent on all the grounds of unpatentability set forth in the Petition.

B. *Related Proceedings*

Both parties identify, as matters involving or related to the ’461 patent, *Powermat Technologies Ltd. v. Anker Innovations Ltd.*, 5:23-cv-00052 (E.D. Tex.) and IPR2024-00994 (U.S. Patent No. 9,048,696

¹ Petitioner identifies Anker Innovations Ltd. as the real party in interest. Pet. 65.

² Patent Owner identifies Powermat Technologies Ltd. as the real party in interest. Paper 4, 1.

B2, which also is involved in the related district court litigation). Pet. 65–66; Paper 4, 1. Petitioner also identifies, as a related matter, IPR2024-00995 (U.S. Patent No. 9,083,204 B2, which also is involved in the related district court litigation). *See* Pet. 66.

C. The '461 Patent

The '461 patent “relates to a system and method for monitoring efficiency and controlling power transfer across an inductive power coupling.” Ex. 1001, 1:20–22. According to the '461 patent, monitoring is of “the efficiency of power transmission by an inductive power outlet comprising at least one primary coil wired to a power supply, for inductively coupling with a secondary coil wired to an electric device.” *Id.* at 12:8–12.

Figure 5 of the '461 patent is reproduced below.

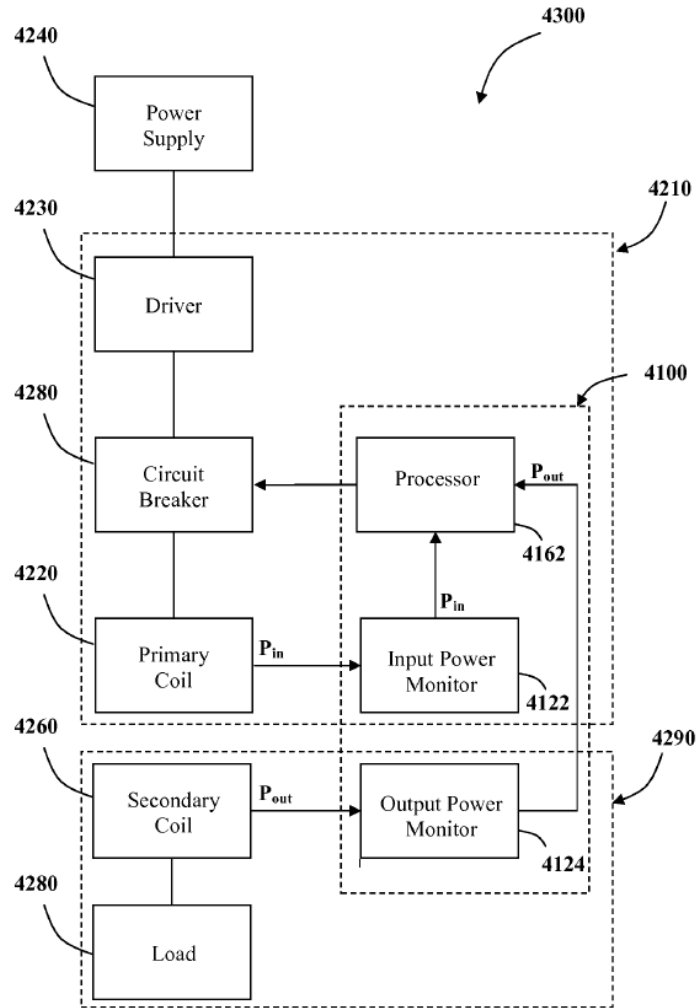


Fig. 5

Figure 5 depicts “a block diagram of a signal transfer system 4100.” *Id.* at 12:60–61. Shown is efficiency monitor 4300 having signal transfer system 4100 for monitoring the efficiency of power transmission by inductive power outlet 4210. *Id.* at 12:61–64. “The inductive power outlet 4210 consists of a primary coil 4220 wired to a power supply 4240 via a driver 4230 which provides the electronics necessary to drive the primary coil 4220.” *Id.* at 12:62–13:1. If secondary coil 4260 is brought into proximity with primary coil 4220, the pair of coils forms an inductive couple, and power is transferred from the primary coil to the secondary coil,

which provides power to electric load 4280. *Id.* at 13:4–9. “The efficiency monitor 4300 consists of an input power monitor 4122 incorporated within the power outlet 4210 and an output power monitor 4124 incorporated within the electric device 4290, both in communication with a processor 4162.” *Id.* at 13:10–14. In an embodiment, the input power monitor measures the input power delivered to the primary coil, the output power monitor measures the output power received by the secondary coil, and, based on these values, the processor determines an index of power-loss. *See id.* at 12:38–42, 13:21–23.

The index of power loss indicates how much power is leaking from the inductive couple. The index of power-loss may be the efficiency quotient Q which is the ratio between them, P_{out}/P_{in} , which is an indication of the efficiency of the inductive coupling. Alternatively the index of power loss may be the efficiency differential Δ , which is the difference between P_{out} and P_{in} .

Id. at 13:23–29. “The processor 4162 may additionally or alternatively be configured to trigger a circuit-breaker 4280 thereby cutting off the primary coil 4220 from the power supply 4240 when the efficiency quotient Q falls below a predetermined threshold or the efficiency differential Δ rises above a predetermined threshold.” *Id.* at 13:30–35.

Figure 6*b* is reproduced below.

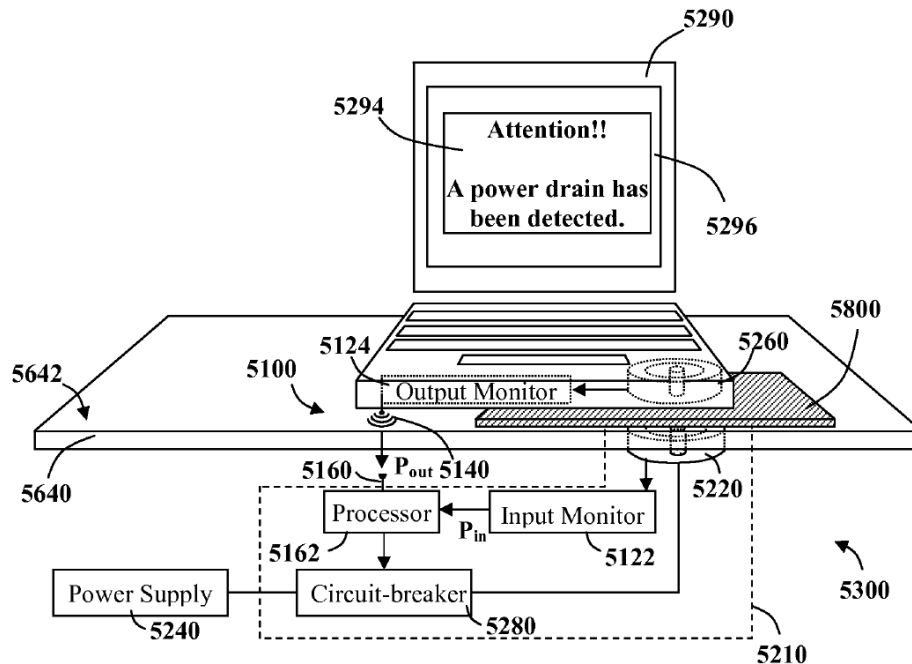


Fig. 6b

Figure 6*b* is “a schematic diagram of the inductive power outlet 5210 . . . wherein a power drain such as a conductive sheet of metallic foil 5800 is introduced between the primary coil 5220 and the secondary coil 5260.” *Id.* at 14:58–61. According to the ’461 patent,

The oscillating magnetic field produced by the primary coil 5220 when connected to a high frequency oscillating voltage from a driver 5230, produces eddy currents in the conductive sheet 5800 thereby heating the conductive sheet and draining power from the primary coil 5220. Such a power drain may be wasteful and/or dangerous. It will be appreciated that leak prevention systems which cut off power to the primary coil 5220 if no secondary coil 5260 is coupled thereto, would fail to detect this hazard.

In contradistinction to previous systems known to the inventors, embodiments of the present invention measure the efficiency quotient Q . Consequently, when a power drain is introduced, such as that shown in FIG. 6*b*, for example, the output power P_{out} received by the secondary coil 5260 is lower than normal and the efficiency quotient Q may therefore drop

below the predetermined threshold. The efficiency monitor 5300 is thus able to detect the hazard.

Id. at 14:61–15:11.

D. Illustrative Claims

Claims 13 and 15 of the '461 patent, reproduced below with bracketed annotations inserted, are illustrative.

13. [13Pre] An inductive power outlet comprising at least one primary coil, for inductively coupling with a secondary coil wired to an electric load, the inductive power outlet further comprising an efficiency monitor comprising:

[13.1] at least one input power monitor configured to measure input power received by the primary coil from the power supply;

[13.2] at least one signal detector configured to detect signals carrying data pertaining to output power received by the secondary coil;

[13.3] at least one processor configured to receive data pertaining to the input power and the output power, the processor further configured to determine an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil;

[13.4] wherein the index of power-loss comprises at least one of:

an efficiency quotient Q , defined as the ratio of the output power to the input power; and

an efficiency differential Δ , defined as the difference between the output power and the input power.

15. [15.1] An inductive power receiver comprising at least one secondary coil for inductively coupling to a primary coil and supplying power to an electric load, [15.2] the inductive power receiver further comprising

at least one output power monitor for measuring output power received inductively by the secondary coil from the primary coil, and

[15.3] at least one signal transmitter configured to transmit signals carrying data pertaining to the output power to the inductive power outlet of claim 13.

Ex. 1001, 21:52–22:19, 22:23–32.

E. Evidence

Petitioner relies on the following references:

Name	Reference	Exhibit No.
Olson	US 2005/0075699 A1, published April 7, 2005	1004
Stevens	WO 2005/109597 A1, published Nov. 17, 2005	1005
Jin	US 2002/0057164 A1, published May 16, 2002	1006

Petitioner also relies on the declaration of Dr. Gary L. Woods (Ex. 1003) in support of its arguments. The parties also rely on other exhibits as discussed below.

F. Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims are unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. § ³	Reference(s)/Basis
13–16, 18	102(a), (b)	Olson
17	103(a)	Olson, Stevens
13–18	103(a)	Stevens, Olson
13–18	103(a)	Stevens, Jin

³ The application that issued as the '461 patent was filed before the effective date of the Leahy Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), and we apply the pre-AIA versions of 35 U.S.C. §§ 102 and 103.

II. 35 U.S.C. § 325(d)

Patent Owner contends that we should exercise discretion under 35 U.S.C. § 325(d) to deny the Petition, applying the Board’s precedential decision in *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020) (precedential) (“*Advanced Bionics*”). Prelim. Resp. 19–30. For the reasons below, we do not exercise discretion to deny institution under § 325(d).

Section 325(d) provides that, in determining whether to institute an *inter partes* review, “the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.” 35 U.S.C. § 325(d). The Board uses a two-part framework in determining whether to exercise its discretion under § 325(d), specifically:

- (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and
- (2) if either condition of [the] first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

Advanced Bionics, Paper 6 at 8. The art or arguments presented in the Petition are not “substantially the same” as those previously presented to the Office when there are differences between them that are material to the Office’s prior consideration of the art and arguments. *Wolfspeed, Inc. v. Trs. of Purdue Univ.*, IPR2022-00761, Paper 13 at 7–8 (Vidal Mar. 30, 2023).

A. Prosecution History

As originally filed, application claim 14, which issued as independent claim 13, recited:

14. An inductive power outlet comprising at least one primary coil, for inductively coupling with a secondary coil wired to an electric load, the inductive power outlet further comprising an efficiency monitor comprising:

at least one input power monitor configured to measure input power delivered to the primary coil;

at least one signal detector configured to detect signals carrying data pertaining to output power received by the secondary coil;

at least one processor configured to receive data pertaining to the input power and the output power, the processor further configured to determine an index of power-loss.

Ex. 1002, 41.

The Examiner issued a non-final office action with, *inter alia*, a rejection of claim 14 as anticipated by U. S. Patent No. 7,605,496 to Stevens *et al.* (“Stevens496,” Ex. 1013). *Id.* at 91–92.

The applicant responded to that first office action with argument, but did not amend independent application claim 14. *See id.* at 180, 186–187; *see also id.* at 182–184 (arguments for independent application claim 1). The applicant argued that Stevens496 “does not describe any power monitor used to measure the output power received by a secondary coil wired to an electric load,” and therefore fails to disclose the related signal detector and the index of power-loss that is based on the output power. *Id.* at 187. The applicant further argued that Stevens496 “explicitly notes that the power drawn by the electrical drive unit represents the power drawn by **all** the secondary devices plus other losses.” *Id.* at 183. For the recitation regarding a determination of an index of power-loss, the applicant asserted that Stevens496 “describes a control unit 16 which compares measured power with a predetermined shutdown threshold and restricts the power

supply accordingly,” and that this is not a comparison of input power to output power. *Id.* at 184.

The Examiner issued a final rejection, maintaining the position that Stevens⁴⁹⁶ discloses the argued limitations. *See id.* at 196–198, 201–202. The Examiner stated, “Applicants have defined the index of power-loss as the difference between said output power and said input power in the Specification; however, Applicants do not include that definition in the claimed language.” *Id.* at 202. The Examiner found that Stevens⁴⁹⁶ discloses an index of power-loss in its description of determining overall losses attributable to magnetic losses in the coils as well as losses in the primary unit (such as the electrical drive unit) and in secondary devices and host objects. *See id.*

Two interviews were conducted. *See id.* at 207, 210. In the second interview, the Supervisory Patent Examiner, on behalf of the Primary Examiner, suggested claim language that “would improve the clarity of the claimed invention,” stating:

In particular, replacing “delivered to the primary coil” in lines 5–6 with “received by the primary coil from a power supply”; replacing “output power received by the secondary coil” in lines 7–8 with “inductive output power received by the secondary coil from the primary coil”; and including the limitations of claim 10 in claim 1, with a clarification that the efficiency quotient Q and efficiency differential δ are indicative of the efficiency of the inductive coupling.

Id. at 210.

The applicant then amended application claim 14 to incorporate the suggestions, including adding to the independent claim the limitations of dependent application claim 10—namely, “wherein the index of power-loss comprises at least one of” an efficiency quotient Q and an efficiency

differential Δ . *Id.* at 217; *see also id.* at 179 (dependent application claim 10 prior to the amendment). The applicant argued that the amendments more explicitly defined the index of power-loss and argued that Stevens⁴⁹⁶ does not disclose the claimed output power monitor. *See id.* at 223–224.

The Examiner issued a notice of allowability, finding that Stevens⁴⁹⁶ discloses the recited “at least one processor configured to receive data pertaining to the input power and the output power,” but that:

Stevens et al. do not teach the processor further configured to determine an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil; wherein the index of power-loss comprises at least one of: an efficiency quotient Q , defined as the ratio of the output power to the input power; and an efficiency differential $[\Delta]$, defined as the difference between the output power and the input power.

Id. at 245.

B. Discussion

There is no dispute that none of Petitioner’s references were considered by the Examiner during prosecution. *See* Pet. 63; Prelim. Resp. 20. Patent Owner argues that Petitioner’s Stevens reference and the prosecution reference Stevens⁴⁹⁶ (Ex. 1013) share the same disclosure and are substantially the same. Prelim. Resp. 20. Petitioner does not dispute that assertion. *See* Pet. 29 n.3 (asserting that the pertinent portion of Stevens was not acknowledged by the Examiner); *id.* at 63 (asserting that “[t]he file history contains no indication that Olson or Jin were presented to the Examiner” but not making the same assertion for Stevens). Patent Owner notes that Stevens⁴⁹⁶ was a reference utilized by the Examiner in rejections. Prelim. Resp. 23–24 (citing Ex. 1002 EX1002, 91–94, 197–200, 210, 246). As to the other Petition references, Patent Owner argues that Olson and Jin

are cumulative of art considered by the Examiner and that Petitioner's arguments regarding Olson are cumulative of arguments made during prosecution. *See id.* at 26–29.

As discussed above, the applicant argued that Stevens⁴⁹⁶ did not determine the applicant's index of power-loss (Ex. 1002, 184), and the Examiner allowed the claims after the applicant added by amendment, *inter alia*, the language further defining the claimed index of power-loss as being “indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil.” *See* Ex. 1002, 218, 245–249. In the reasons for allowability, the Examiner stated, *inter alia*, “Stevens et al. do not teach the processor further configured to determine an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil.” *Id.* at 247–248.

For the reasons discussed below in the context of Ground 2 (obviousness over Stevens and Olson), we have concerns as to whether Petitioner will be able to adequately prove that Stevens' ratio of power-out to power-in discloses the recited coil-to-coil efficiency. Olson, however, contains teachings regarding the coil-to-coil efficiency. *See, e.g.*, Ex. 1004 ¶ 112. Olson, for example, states that “[e]fficiency of energy transfer is an important measure of the effectiveness of energy transfer from primary coil 54 of external antenna 52 to secondary coil 34,” and that “it is preferred that efficiency is measured coil-to-coil, i.e., from primary coil 54 to secondary coil 34.” *Id.* We do not agree with Patent Owner's arguments, Prelim. Resp. 26, that Petitioner's contentions—including those regarding the coil-to-coil efficiency—are cumulative of arguments made during prosecution regarding Stevens⁴⁹⁶.

Patent Owner asserts that Olson is cumulative of art that was before the Examiner, arguing that disclosures of an efficiency ratio that is measured coil-to-coil “are already in several references marked as considered during prosecution of the ’461 Patent such as Partovi and Cook.” Prelim. Resp. 27 (citing Ex. 1002, 297 (Information Disclosure Statement (IDS)); Ex. 2001 ¶ 119 (Partovi); Ex 2002 ¶ 44 (Cook)); *see also* Ex. 1002, 302 (IDS listing Cook)).

For Partovi, Patent Owner argues that it “discloses various teachings related to efficiency ratios between a primary coil and secondary coil.” Prelim. Resp. 27–28 (citing Ex. 2001 ¶¶ 14, 40, 109, 119). Patent Owner quotes the following from Partovi’s paragraphs 119 and 120: “The advantages of this approach include: High efficiency (~90% coil to coil).” *Id.* The other cited paragraphs do not appear to pertain to coil coupling efficiency. *See* Ex. 2001 ¶¶ 14, 40, 109. Patent Owner also argues that “Cook similarly discloses transfer efficiencies,” citing to and quoting only the following: “[R]espectively, these circuits may provide transfer efficiencies (transmit antenna input to receiver output) close to 90% at 13.56 MHz.” Prelim. Resp. 28 (quoting Ex. 2002 ¶ 44) (alteration in original).

Olson, as an anticipation reference, is relied on by Petitioner for more than the concept of coil-to-coil efficiency standing alone. The claimed invention pertains to power monitors measuring the power at both coils, sending data from the secondary unit to the primary unit, and determining the index of power-loss from the data, with the Specification suggesting uses for that index. *See, e.g.*, Ex. 1001, 14:58–15:11 (using the efficiency quotient to identify a power drain located between the coils). Petitioner’s anticipation ground relies on Olson for all of the claimed features, but Patent

Owner does not argue that either Partovi or Cook has a similar breadth of teachings or discloses anything regarding the efficiency metric other than the attainability of a high level of efficiency. We do not find Olson to be cumulative of art previously considered by the Examiner.

Patent Owner, similar to its argument for Olsen, argues that Jin is cumulative of prosecution art because “the Examiner already considered a multitude of references directed to measurements of efficiency and indexes of power loss.” Prelim. Resp. 28 (citing Ex. 1002, 297, 302 (IDS); Ex. 2001 ¶ 119 (Partovi); Ex. 2002 ¶ 44 (Cook)). Patent Owner asserts that arguments regarding the limitations for which Petitioner’s Jin contentions are directed—the index of power-loss limitations 13.3 and 13.4—“were heavily considered by the Examiner during prosecution of the ’461 Patent,” and notes that the Examiner allowed the claims after they were amended to define the index as a coil-to-coil efficiency. *See id.* (citing Ex. 1002, 210).

If Patent Owner is correct in its assertions that “the Examiner heavily considered this [power-loss index] element multiple times throughout prosecution,” and that the Examiner considered “several” and “a multitude of references directed to measurements of efficiency and indexes of power loss” (Prelim. Resp. 27–30), the Examiner’s allowance of the claims based on the art’s lack of these teachings constitutes material error. *Cf.* Pet. 64 (Petitioner arguing that there were material errors during prosecution and that the Petition’s Grounds 1A–3 “plainly demonstrate why this conclusion [that the prior did not disclose or suggest the recited index of power-loss] was flawed—including that at least Olson and Jin plainly disclose prior art examples of these conventional options.”).

Although we have considered Patent Owner’s request for our exercise of discretion to deny institution under 35 U.S.C. § 325(d), on the record before us, we determine that § 325(d) is not sufficiently implicated such that its statutory purpose would be undermined by institution of a review. We, therefore, decline to deny the Petition under § 325(d).

III. ANALYSIS

A. Principles of Law

Petitioner bears the burden of persuasion to prove unpatentability of the claims challenged in the Petition, and that burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987); *see also Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1334 (Fed. Cir. 2008) (to anticipate a patent claim under 35 U.S.C. § 102, “a single prior art reference must expressly or inherently disclose each claim limitation”). Moreover, “[b]ecause the hallmark of anticipation is prior invention, the prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)). Whether a reference anticipates is assessed from the perspective of one of ordinary skill in the art. *See Dayco Prods., Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 1368–69

(Fed. Cir. 2003) (“[T]he dispositive question regarding anticipation [i]s whether *one skilled in the art* would reasonably understand or infer from the [prior art reference’s] teaching’ that every claim element was disclosed in that single reference.” (second and third alterations in original) (quoting *In re Baxter Travenol Labs.*, 952 F.2d 388, 390 (Fed. Cir. 1991))).

Additionally, “[u]nder the principles of inherency, if the prior art necessarily functions in accordance with, or includes, the claimed limitations, it anticipates.” *MEHL/Biophile Int’l Corp. v. Milgraum*, 192 F.3d 1362, 1365 (Fed. Cir. 1999); see *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349–50 (Fed. Cir. 2002).

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 said 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 skill in the art; and (4) if present, any objective evidence of obviousness or non-obviousness.⁴ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. The Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art;

⁴ The parties have not directed our attention to any objective evidence of obviousness or non-obviousness.

prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quoting *Custom Accessories, Inc. v. Jeffrey–Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)).

Petitioner contends that:

[A] person of ordinary skill in the art at the time of the alleged invention (“POSITA”) would have had a bachelor’s degree or higher in electrical engineering, at least 3 years of experience designing or researching electronic circuits, and familiarity with power electronics and inductive power transfer circuits.

Pet. 8 (citing Ex. 1003 ¶ 20). Patent Owner states that, “[f]or purposes of this preliminary response, Patent Owner adopts the Petitioner’s proposal.” Prelim. Resp. 17.

Petitioner’s definition is consistent with the level of ordinary skill reflected in the prior art references of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (recognizing that the prior art itself may reflect an appropriate level of skill in the art). For purposes of this decision, we apply Petitioner’s definition of the person of ordinary skill in the art.

C. Claim Construction

We apply the same claim construction standard used in district court actions under 35 U.S.C. § 282(b), namely that articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b). In applying that standard, claim terms generally are given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic

evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). “[W]hile extrinsic evidence can shed useful light on the relevant art, . . . it is less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Phillips*, 415 F.3d at 1317 (internal quotation marks omitted).

Petitioner contends that “[a]ll claim terms should be construed according to the *Phillips* standard,” and “[h]ere, given the remarkable overlap between the preferred embodiment of the ’461 patent and the prior art/predictable combinations articulated in Grounds 1A–3, Petitioners submit that no claim elements need a formal construction for purposes of resolving the controversy in this proceeding.” Pet. 8. Patent Owner states that, “[t]o simplify the issues before the Board, Patent Owner has not asserted any claim constructions in this preliminary response and adopts the Petitioner’s position that ‘[a]ll claim terms should be construed according to the *Phillips* standard.’” Prelim. Resp. 17 (quoting Pet. 8).

On this record and for purposes of this decision, we determine that no claim terms require express construction.

D. The Alleged Anticipation of Claims 13–16 and 18 by Olson (Ground 1A)

Petitioner alleges that claims 13–16 and 18 of the ’461 patent are anticipated by Olson. *See* Pet. 12–19 (addressing claim 13). Patent Owner argues, *inter alia*, that Petitioner has failed to show that Olson discloses measuring the power in and power out as specifically claimed and, therefore, has not shown that Olson discloses the claimed index of power-loss. *See* Prelim. Resp. 31–40.

1. *Olson (Ex. 1004)*

Olson pertains to “energy transfer devices, systems and methods for implantable medical devices.” Ex. 1004 ¶ 1. Olson discloses “[a] system and method for transcutaneous energy transfer and/or charging in a transverse direction,” with an external power source having a primary coil and an implantable medical device having a secondary coil. *Id.*, code [57] (Abstract). “The external power source is capable of providing energy to the implantable medical device when the primary coil of the external power source is placed in proximity of the secondary coil of the implantable medical device.” *Id.*

Olson states that, “[f]or implanted medical devices, the efficiency at which energy is transcutaneously transferred is crucial.” *Id.* ¶ 17. According to Olson: 1) “[t]he higher the efficiency of energy transfer, the more energy can be transferred while at the same time limiting the heating of surrounding components and tissue”; 2) “it is desirable to limit the amount of time required to achieve a desired charge, or recharge, of an internal power source”; and 3) “[the] amount of charging, or recharging, can be limited by the amount of time required for charging, or recharging,” and thus can limit the size of the internal power source. *Id.* Olson discloses that efficiency may be used by the patient or medical professional to determine a proper position and alignment of the external and internal components during charging. *See id.* ¶¶ 76–77.

Reproduced below is Olson’s Figure 2.

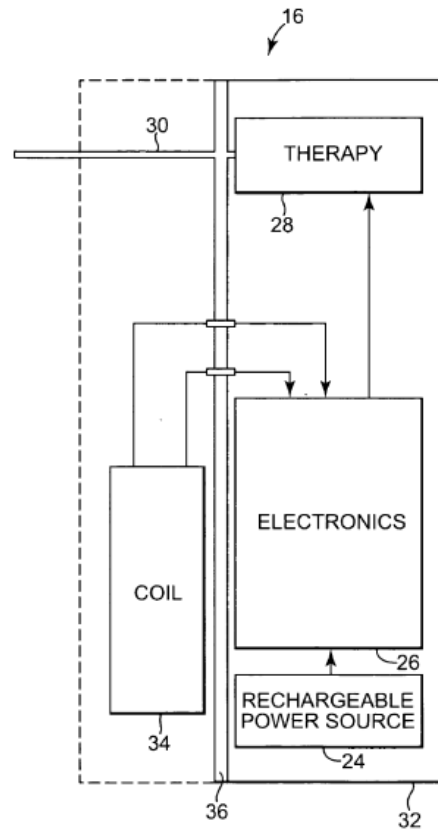


Fig. 2

Figure 2 depicts “is a block diagram of an implantable medical device.” *Id.*

¶ 29. “[I]mplantable medical device 16 has a rechargeable power source 24, such as a Lithium ion battery, powering electronics 26 and therapy module 28 in a conventional manner.” *Id.* ¶ 50. “Secondary charging coil 34 is operatively coupled through electronics 26 to rechargeable power source 24.” *Id.* “Electronics 26 help provide control of the charging rate of rechargeable power source 24 in a conventional manner.” *Id.*

Reproduced below is Olson’s Figure 14.

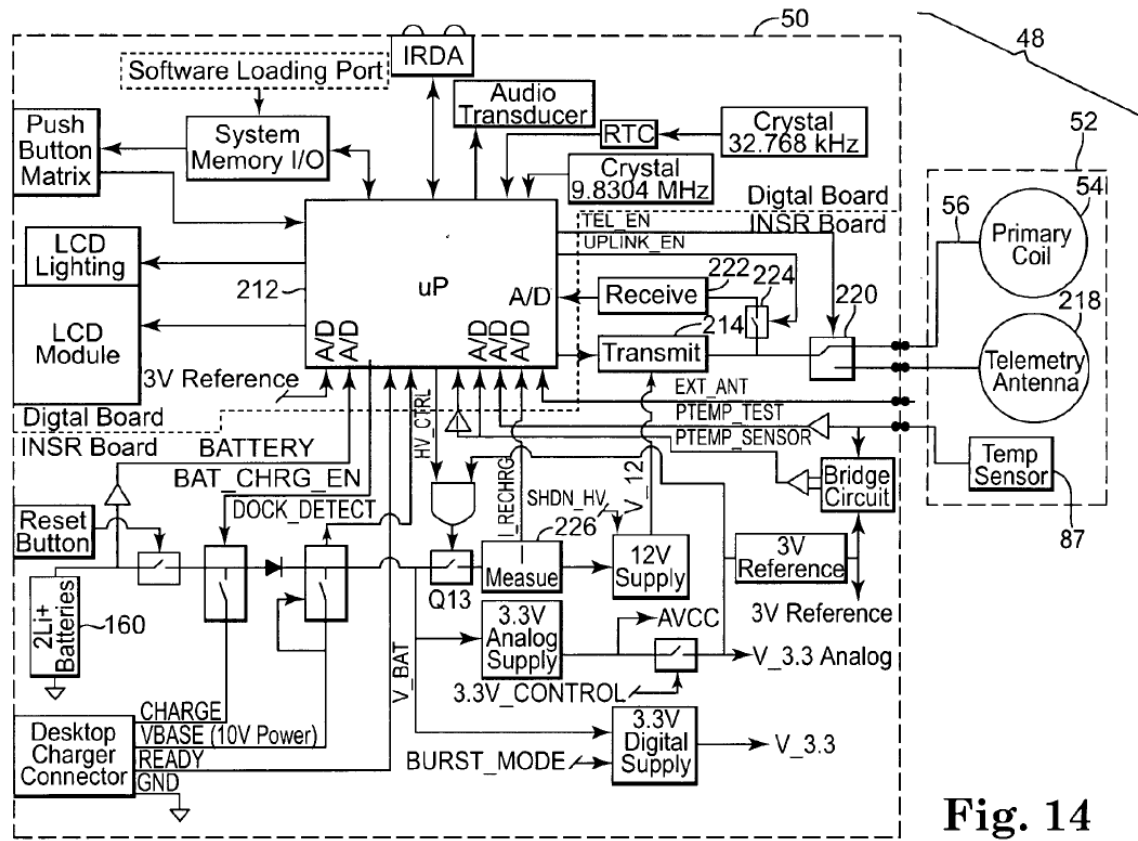


Fig. 14

Figure 14 depicts “a block diagram of external charging device 48 controlled by microprocessor 212.” *Id.* ¶ 72. “Transmit block 214 consists of an H-bridge circuit powered from 12 volt power supply 216.” *Id.* “Transmit block 214 drives primary coil 54 in external antenna 52.” *Id.* “Nominal input voltage to 12 volt power supply 216 is either 7.5 volts from lithium ion batteries 226 [sic⁵] or 10 volts from desktop charging device 162.” *Id.* ¶ 73.

Current measure block 226 measures current to 12 volt power supply 216. Current measured by current measure block 226 is used in the calculation of power in along with the voltage of batteries 160. . . [P]ower in is used in the calculation of efficiency of power transfer and/or charging

⁵ Element number 226 is the current measure block, not the lithium ion batteries. Ex. 1004 ¶ 74, Fig. 14. Batteries are element number 160. *See id.* ¶ 74, Fig. 14.

efficiency to determine, in part, the best location of external antenna 52 and/or rotating core cup assembly 92.

Id. ¶ 74.

Olson also states:

External charging device 48 measures the power out of external charging device 48 divided by the power into external charging device 48. This calculation is a measure of the efficiency of external charging device 48. The power out is gauged by the power induced in implantable medical device 16 and is determined by multiplying the voltage of rechargeable power source 24 by the charging current in implantable medical device 16. . . . The power in is gauged by the power generated by charging unit 50 and is determined by multiplying the voltage of the internal voltage of charging unit 50, e.g., the voltage of a battery or batteries internal to charging unit 50, by the current driving external antenna 52.

Id. ¶ 75.

Olson additionally states:

Efficiency of energy transfer is an important measure of the effectiveness of energy transfer from primary coil 54 of external antenna 52 to secondary coil 34. Efficiency is measured by dividing the power in, i.e., the power received by secondary coil 34, by the power out, i.e., the power transmitted by primary coil 54. While energy efficiency can be measured at other locations in external antenna 52 and/or implantable medical device 16, for purposes of some embodiments of the present invention it is preferred that efficiency is measured coil-to-coil, i.e., from primary coil 54 to secondary coil 34.

Id. ¶ 112.

2. *The Alleged Anticipation of Claim 13 by Olson*

- a. [13Pre] *An inductive power outlet comprising at least one primary coil, for inductively coupling with a secondary coil wired to an electric load, the inductive power outlet further comprising an efficiency monitor comprising:*

Petitioner contends that “[e]ven if the preamble is treated as a limitation, Olson discloses a ‘charging device 48’ (e.g., the claimed **inductive power outlet**) comprising a ‘**primary coil 54**,’” and that “[t]he charging device 48 ‘contains the electronics necessary to drive primary coil 54 with an oscillating current in order to induce current in **secondary coil 34** when primary coil 54 is placed in the proximity of secondary coil 34.’” Pet. 12–13 (citing, *inter alia*, Ex. 1004 ¶¶ 54, 72, 75, Fig. 14). Petitioner also contends that “Olson’s charging device 48 wirelessly recharges an electric device—an implanted medical device in Olson’s depicted embodiments—which includes a ‘rechargeable power source 24’ (e.g., the claimed **electric load**) wired to the ‘secondary charging coil 34.’” *Id.* at 13 (citing Ex. 1004 ¶¶ 50–54, Figs. 2–3). Petitioner additionally contends that “Olson’s charging device 48 includes ‘a microprocessor 212,’ ‘telemetry antenna 218,’ and ‘current measure block 226’ that operates as part of the claimed **efficiency monitor**.” *Id.* at 14 (citing, *inter alia*, Ex. 1004 ¶¶ 72–76, Fig. 14).

Patent Owner argues, as discussed below, that Olson lacks certain aspects of the recited efficiency monitor, but does not raise any other arguments regarding these contentions. *See* Prelim. Resp. 31–39. We determine that Petitioner has shown sufficiently for purposes of institution that Olson discloses the preamble.

- b. [13.1] *at least one input power monitor configured to measure input power received by the primary coil from the power supply;*

Petitioner contends that “Olson discloses a current measure block 26 that, in connection with microprocessor 212, provides the claimed **input power monitor**.” Pet. 15 (citing Ex. 1003 ¶ 42). Petitioner asserts that, “[i]n particular, ‘current measure block 226’ measures current to ‘12 volt power supply 216,’ which is used in the calculation of the ‘power in’ measure,” and that, “[a]s shown in FIG. 14, this is the current driving the external antenna 52, via the transmit block 214 and to the primary coil 54.” *Id.* (citing Ex. 1004 ¶¶ 74–75, 112, Fig. 14); *see id.* at 15–16 (asserting that “the microprocessor 212 receives a value for the measured current from the power supply to drive the primary coil 54 of the external antenna” (citing Ex. 1004 ¶ 74, Fig. 14; Ex. 1003 ¶ 43)).

Petitioner also contends that microprocessor 212 receives the current measurement and “also receives the input voltage of the charging device 48 (e.g., from the batteries 160 and/or the desktop charging device 162),” and that, therefore, “the microprocessor 212 calculates the ‘power in’ by ‘multiplying the internal voltage of the charging unit 50 . . . by the current driving the external antenna 52 [provided to the primary coil 54].” *Id.* at 15–16 (alteration in original) (citing Ex. 1004 ¶¶ 71–78, 112, Fig. 14; Ex. 1003 ¶¶ 43–44).

Petitioner further contends that, “[a]ccording to Olson, the ‘power in’ measure is advantageously ‘used in the calculation of efficiency of power transfer and/or charging efficiency to determine, in part, the best location of external antenna 52 and/or rotating core cup assembly 92.’” *Id.* at 15 (quoting Ex. 1004 ¶ 74). Petitioner quotes Olson’s paragraph 112:

efficiency is measured by dividing the power in, i.e., the power received by secondary coil 34, by the power out, i.e., the power transmitted by primary coil 54. While energy efficiency can be measured at other locations in external antenna 52 and/or implantable medical device 16, for purposes of some embodiments of the present invention ***it is preferred that efficiency is measured coil-to-coil, i.e., from primary coil 54 to secondary coil 34.***

Id. at 16–17 (quoting Ex. 1004 ¶ 112) (internal quotation marks omitted).

Patent Owner argues that Petitioner has failed to show that Olson discloses an input monitor configured to measure input power received by the primary coil from the power supply. Prelim. Resp. 31. Specifically, Patent Owner argues that “current measure block 226 measures current ***to power supply 216*** instead of the input power ***received by the primary coil from the power supply,***” as recited by limitation 13.1. *Id.* at 31 (citing Ex. 1004 ¶ 74; Pet. 15); *see also id.* at 39–40 (Patent Owner arguing that “both Petitioner and Olson fail to address whether ‘power transmitted by primary coil 54’ [of Olson’s paragraph 112] is the same as ‘power received by the primary coil from the power supply’ of element [13.4]” (first and second alterations added; emphasis omitted). According to Patent Owner, “[m]easuring current to the power supply is fundamentally different from measuring the power received by the primary coil,” and that “Petitioner fails to establish how or why a measurement of current input to a power supply is necessarily the same as a measurement of power received by the primary coil from the power supply.” *Id.* at 31–32.

At this preliminary stage of the proceeding, we do not agree with Patent Owner’s arguments. Patent Owner does not cite to evidence, such as expert testimony, to support its implied argument that Olson’s measured current is “fundamentally different” from the current received by the

primary coil. *See* Prelim. Resp. 31–32. Petitioner’s declarant, Dr. Woods, on the other hand, testifies, *inter alia*, that “[t]he ‘[c]urrent measured by current measure block 226 is used in the calculation of power, which as depicted in FIG. 14, measures the ‘power in’ provided to transmit block 214/primary coil 54.” Ex. 1003 ¶ 37 (citing Ex. 1004 ¶¶ 74–75, Fig. 14) (first alteration added); *see also, e.g., id.* ¶ 42 (Dr. Woods testifying that the measured current to the power supply “is the current driving the external antenna 52, via the transmit block 214 and to the primary coil 54.” (citing Ex. 1004 ¶¶ 74–75, 112, Fig. 14)). Paragraph 75 of Olson, cited in support of that testimony, provides: “*The power in* is gauged by the power generated by charging unit 50 and is determined by multiplying the voltage of the internal voltage of charging unit 50, e.g., the voltage of a battery or batteries internal to charging unit 50, by *the current driving external antenna 52.*” Ex. 1004 ¶ 75 (emphasis added). We note that external antenna 52 includes primary coil 54. *See, e.g.,* Fig. 14. Dr. Woods’ testimony is, at this stage, un rebutted.

Patent Owner also argues that “Petitioner fails to provide any evidence regarding the function of Olson’s microprocessor 212 in relation to measuring input power,” and that, “[w]hile Olson describes a power calculation in paragraph [0075], Olson does not describe this power calculation as performed by microprocessor 212.” Prelim. Resp. 32 (citing Pet. 16; Ex. 1004 ¶ 72) (first alteration added).

At this preliminary stage of the proceeding, we do not agree with Patent Owner’s arguments regarding the microprocessor. Although Patent Owner does not bear the burden to show patentability, we observe that Patent Owner does not suggest that there is another component in Olson’s

external charging device that might perform the admittedly-disclosed power calculation. *See* Prelim. Resp. 32–33. Dr. Woods testifies that microprocessor 212 receives the measured current and the input voltage of the charging device, and, from those values, calculates power in. *See* Ex. 1003 ¶¶ 43–44 (citing, *inter alia*, Ex. 1004 ¶¶ 71–78, Fig. 14); *see also* Ex. 1004 ¶ 74, Fig. 14 (Olson stating that “[c]urrent measured by current measure block 226 is used in the calculation of power in along with the voltage of batteries 160,” and Figure 14 depicting the signal from measure block 226 as an input to microprocessor 212). Dr. Woods’ testimony is, at this stage, un rebutted.

We determine, based on the current record, that Petitioner has shown sufficiently for purposes of institution that Olson discloses limitation 13.1.

c. [13.2] at least one signal detector configured to detect signals carrying data pertaining to output power received by the secondary coil;

Petitioner contends that “Olson describes the ‘telemetry antenna 218’ (e.g., a **signal detector**) that is configured to detect data signals from the implantable medical device,” and that “Olson describes that microprocessor 212 receives ‘by telemetry’ measurement data pertaining to ‘the power induced in implantable device 16’ (e.g., via the telemetry antenna 218).” Pet. 17 (citing Ex. 1004 ¶¶ 52, 72–75, Fig. 14; Ex. 1003 ¶ 45). Petitioner additionally contends that the received information is “data pertaining to the ‘power induced in the implantable medical device 16’—a **‘power out’ measure** indicating the recharging power received by the secondary coil.” Pet. 11–12 (citing Ex. 1004 ¶¶ 73, 75; Ex. 1003 ¶¶ 36–37); *see also id.* at 14 (contending that “the microprocessor 212 is configured to determine an efficiency index calculation . . . by receiving (e.g., via the

telemetry antenna 218) data pertaining to the ‘power out’ for the amount of power induced at the secondary charging coil 34.” (citing Ex. 1004 ¶¶ 72, 74–76; Ex. 1003 ¶ 41)).

Patent Owner argues that Petitioner fails to demonstrate that Olson discloses this limitation. *See* Prelim. Resp 33–34. Patent Owner quotes from Petitioner’s contention that is stated in terms of the power of the implantable device, and argues that “Petitioner fails to address how the ‘power induced in implantable medical device’ in Olson is necessarily the same as ‘output power received by the secondary coil,’” as recited in limitation 13.2. *Id.* at 33 (citing Pet. 17). Patent Owner further argues that “Olson’s figures and accompanying descriptions related to the implantable medical device 16 fail to disclose any detail on where current or power is measured with respect to the alleged secondary coil.” *Id.* at 34 (citing Ex. 1004 ¶¶ 52, 55, Fig. 3); *see also id.* at 36 (“claim 13 **does** recite particular measurements (e.g., ‘input power received by the primary coil from the power supply,’ and ‘output power received by the secondary coil’).”); *id.* at 39 (“Olson fails to disclose with any particularity, where this measurement is taken with respect to any alleged secondary coil.”).⁶

As indicated above, Petitioner’s contentions are not limited to power of the implanted device, but also refer to the secondary coil. *See, e.g.,* Pet. 14 (discussing the preamble). Similarly, Dr. Woods’ testimony

⁶ Limitation 13.2 recites data “pertaining to” power received by the secondary coil. Ex. 1001, 22:7–8. To the extent that Patent Owner contends that “pertaining to” requires a disclosure with a high level of specificity (e.g., details and particularity as to measurement locations), Patent Owner is encouraged to fully discuss, in future briefing, the basis for such a claim construction, with a focus on the intrinsic evidence.

regarding the output power is both in terms of the “device” and the “secondary coil.” *See, e.g.*, Ex. 1003 ¶ 45 (“measurement data pertaining to ‘the power induced in implantable device 16’” (citing Ex. 1004 ¶ 75); *id.* at ¶ 41 (“data pertaining to the ‘power out’ for the amount of power induced at the secondary charging coil 34.” (citing Ex. 1004 ¶¶ 72, 74–76))).

Dr. Woods testifies, for example, that “the microprocessor 212 is configured to determine an efficiency index calculation by receiving (e.g., via the ‘current measure block 226’) data pertaining to the ‘power in’ at the primary coil 54 and by receiving (e.g., via the telemetry antenna 218) *data pertaining to the ‘power out’ for the amount of power induced at the secondary charging coil 34.*” *Id.* ¶ 46 (citing Ex. 1004 ¶¶ 72, 74–76) (emphasis added). We understand Dr. Woods to testify, and Petitioner to contend, that Olson’s disclosure of, for example, the “power out” determination of paragraph 75, which refers to the “current in the implantable device,” to be “data pertaining to output power received by the secondary coil,” as recited in limitation 13.2. *Cf.* Ex. 1004 ¶ 75 (Olson: “The power out is gauged by the power induced in implantable medical device 16 and is determined by multiplying the voltage of rechargeable power source 24 by the charging current in implantable medical device 16.”); *id.* ¶ 112 (“Efficiency is measured by dividing the power in, i.e., *the power received by secondary coil 34 . . .*” (emphasis added)). Dr. Woods’ testimony is, at this stage, un rebutted.

Additionally, both Petitioner and Dr. Woods rely on Olson’s paragraph 112, which discloses efficiency based on “the power received by secondary coil 34.” *See, e.g.*, Pet. 16 (citing and parenthetically quoting Ex. 1004 ¶ 112); Ex. 1003 ¶ 44 (Dr. Woods’ declaration). This language in

Olson aligns with the terminology recited in the limitation. *Compare* Ex. 1004 ¶ 112 (Olson: “the power received by secondary coil 34”), *with* Ex. 1001, 22:7–8 (Limitation 13.2: “power received by the secondary coil”).

We determine, based on the current record, that Petitioner has shown sufficiently for purposes of institution that Olson discloses limitation 13.2.

- d. [13.3] at least one processor configured to receive data pertaining to the input power and the output power, the processor further configured to determine an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil; [13.4] wherein the index of power-loss comprises at least one of:*
- an efficiency quotient Q , defined as the ratio of the output power to the input power; and*
- an efficiency differential Δ , defined as the difference between the output power and the input power.*

Petitioner, referring to its earlier discussions of claim elements, contends that Olson’s microprocessor 212 is the recited “processor,” and that it “is configured to determine an efficiency index calculation by receiving (e.g., via the ‘current measure block 226’) data pertaining to the ‘power in’ at the primary coil 54 and by receiving (e.g., via the telemetry antenna 218) data pertaining to the ‘power out’ for the amount of power induced at the secondary charging coil 34.” Pet. 17–18 (citing Ex. 1004 ¶¶ 71–78, 112, Fig. 14; Ex. 1003 ¶ 46). Petitioner notes, *inter alia*, that Olson’s paragraph 112 states that “efficiency is measured coil-to-coil.” *Id.* at 18 (quoting Ex. 1004 ¶ 112). Petitioner further contends that “Olson discloses calculating ‘a ratio of power out divided by power in,’” and that is the recited efficiency quotient, which is an index of power-loss. *Id.* at 19 (citing

Ex. 1004 ¶¶ 74–76, 112⁷; Ex. 1003 ¶¶ 48–49). We note that Olson refers to “[u]sing efficiency as a measure of effective coupling.” Ex. 1004 ¶ 77.

Patent Owner reiterates its argument that Olson fails to disclose the recited input power and output power and argues, therefore, that Olson fails to disclose a processor configured to receive data pertaining to the input power and the output power and the recited index of power-loss. *See* Prelim. Resp. 34–40; *see id.* at 36 (Patent Owner acknowledging that Olson’s paragraph 112 states that “it is preferred that efficiency is measured coil-to-coil, i.e., from primary coil 54 to secondary coil 34,” but arguing that “this paragraph of Olson fails to describe, with any particularity, what it considers ‘coil-to-coil’ measurements.”). For the reasons discussed above, we, on the current record, do not agree with those arguments by Patent Owner.

We determine, based on the current record, that Petitioner has shown sufficiently for purposes of institution that Olson discloses limitations 13.3 and 13.4.

e. Conclusion as to Independent Claim 13

Having considered the parties’ arguments and evidence, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing in its challenge to claim 13 as anticipated by Olson.

⁷ Petitioner asserts that Olson’s paragraphs 74–76 consistently use the terms “power in” and “power out,” but paragraph 112 “flips this terminology in one self-evident instance.” Pet. 19-20 n.2 (citing Ex. 1003 ¶ 49). According to Petitioner, even with the terminology flipped, paragraph 112 is consistent with those other paragraphs in that it describes the same dividend and divisor for the efficiency quotient. *Id.*

3. The Alleged Anticipation of Claims 14–16 and 18 by Olson

Claim 15 recites an inductive power receiver comprising: 1) an output power monitor for measuring output power received inductively by the secondary coil, and 2) a signal transmitter configured to transmit signals carrying data pertaining to the output power to the inductive power outlet of claim 13. *See* Ex. 1001, 22:23–32. The remaining claims challenged in this ground—claims 14, 16, and 18—are dependent claims. Petitioner, with the support of the testimony of Dr. Woods, addresses the limitations of these claims. *See* Pet. 20–26. Patent Owner does not present arguments regarding Petitioner’s contentions beyond those already addressed. *See* Prelim. Resp. 40 (arguing: “Because claims 14–16 and 18 depend on claim 13, Petitioner has failed to establish that any of claims 13–16 and 18 are anticipated by Olson.”).

Having considered the parties’ arguments and evidence, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing in its challenge to claims 14–16 and 18 as anticipated by Olson.

E. The Alleged Obviousness of Dependent Claim 17 over Olson and Stevens (Ground 1B)

Petitioner alleges that claim 17 would have been obvious over Olson and Stevens. *See* Pet. 26–37. Claim 17 depends directly from claim 15 (the power receiver) and adds limitations pertaining to a switched ancillary load and a modulator for modulating a bit-rate signal used in the switching. *See* Ex. 1001, 22:38–46.

Petitioner contends, *inter alia*, that “Stevens suggests the conventional practice of the secondary device using ‘a dummy load’ (e.g., an ancillary load) representing the amount of power required by its actual load, and Stevens suggests dynamically altering the load to provide information of the

secondary device to the primary unit including using a number of ‘bits.’”
Pet. 30 (citing Ex. 1005, 30:34–31:6).

Petitioner, with the support of the testimony of Dr. Woods, addresses the limitations of claim 17 when Steven’s load-related teachings are applied to Olson’s teachings. *See* Pet. 26–37. Patent Owner does not present arguments regarding Petitioner’s contentions beyond those already addressed. *See* Prelim. Resp. 40 (arguing that “[c]laim 17 depends from claim 13 and is therefore patentable for at least the same reasons claim 13 is patentable.”).

Having considered the parties’ arguments and evidence, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing in its challenge to claim 17 as being obvious over Olson and Stevens.

F. The Alleged Obviousness of Claims 13–18 over Stevens and Olson (Ground 2)

Petitioner alleges that claims 13–18 would have been obvious over Stevens and Olson. *See* Pet. 37–47 (addressing claim 13). Patent Owner argues that Petitioner has failed to show that the proposed combination discloses or suggests limitations 13.1 through 13.4. Prelim. Resp. 41–51.

1. Stevens (Ex. 1005)

Stevens “relates to controlling inductive power transfer systems for use, for example, to power portable electrical or electronic devices.”

Ex. 1005, 1:3–4.⁸

Reproduced below is Figure 4 of Stevens.

⁸ We, like Petitioner (*see, e.g.,* Pet. 42), cite to the page numbers in the header of the underlying document rather than the exhibit page numbers in the footer.

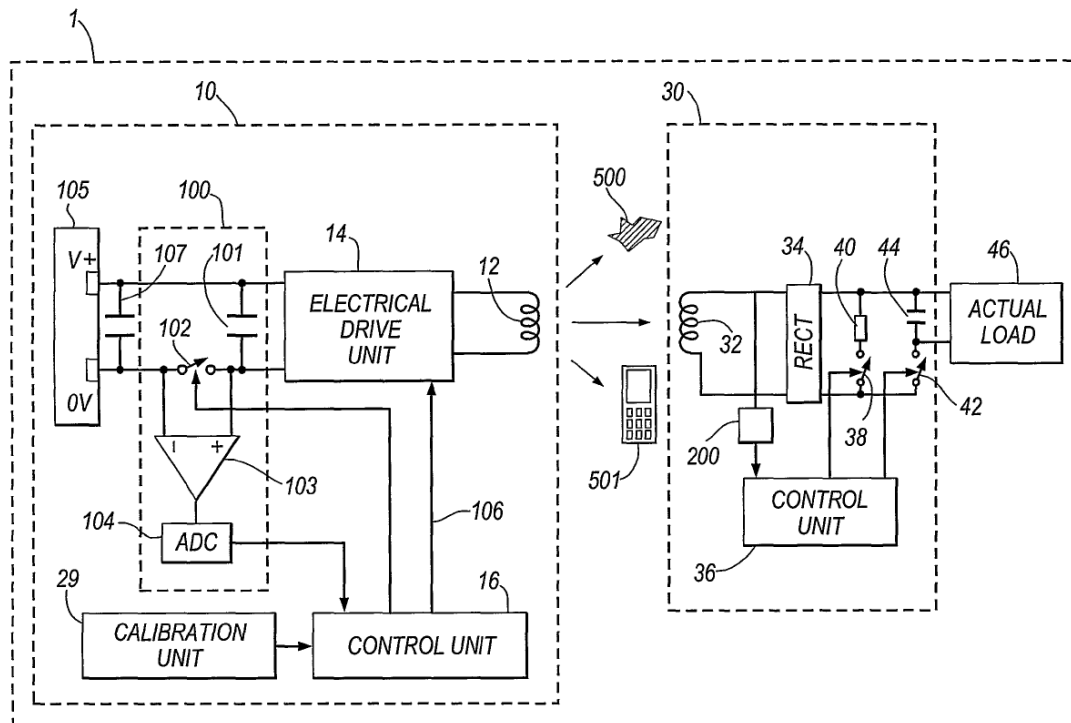


Fig.4

Figure 4 depicts a block diagram showing parts of an inductive power transfer system according to an embodiment of Stevens. *Id.* at 16:16–17. “[T]he primary unit 10 comprises a primary coil 12, an electrical drive unit 14, a control unit 16 and a power measurement unit 100.” *Id.* at 21:22–23. “The secondary device 30 is separable from the primary unit 10 and has a secondary coil 32 which couples with the electromagnetic field generated by the primary unit 10 when the secondary device 30 is in proximity to the primary unit 10.” *Id.* at 17:22–24 (discussing Figure 1). “In this way, power can be transferred inductively from the primary unit 10 to the secondary device 30 without direct electrical conductive contacts therebetween.” *Id.* at 17:24–26.

Stevens states that “[t]he power measurement unit 100 performs a measurement of the electrical power drawn by the electrical drive unit 14, on

receipt of a signal provided by the control unit 16.” *Id.* at 18:5–7. “The power measurement unit 100 provides an output representative of the electrical power drawn by the electrical drive unit 14 to the control unit 16.” *Id.* at 18:7–9. “The power drawn by the electrical drive unit 14 is representative of the power drawn by the primary coil 12 and hence also the power drawn by all the secondary devices 30 plus other losses.” *Id.* at 18:9–11.

Reproduced below is Figure 11 of Stevens.

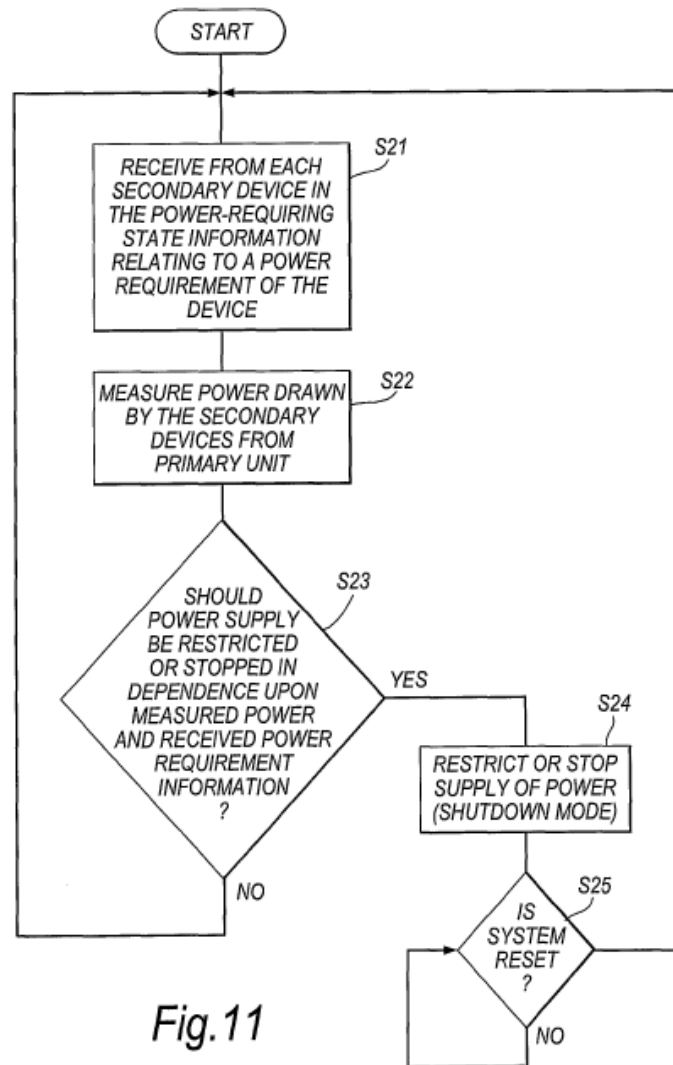


Figure 11 depicts a flowchart for a method of detecting a shutdown condition. *Id.* at 36:19–20. Stevens explains that the power requirement information from the secondary device (step S21) may take many different forms. *Id.* at 36:23–26. For example, it is “possible that the power requirement of the secondary device may already be known to the primary unit.” *Id.* at 36:31–32.

The power measurement unit 730 in the primary unit . . . measures the power being drawn by the secondary devices from the primary unit, as in step S22 in Fig. 11. Then, the control unit 720 determines, in dependence upon the measured power and the sum of the received load measures from the secondary devices, whether or not the power supply to the secondary devices should be restricted or stopped. In particular, if the measured power from the power measurement unit 730 exceeds the sum of the load measures from the secondary devices by more than a shutdown threshold, then the control unit 720 concludes that a substantial parasitic load must be present and places the primary unit in the shutdown mode, as in step S24 in Fig. 11.

Id. at 38:34–39:6.

Figure 12 of Stevens depicts another embodiment and is reproduced below.

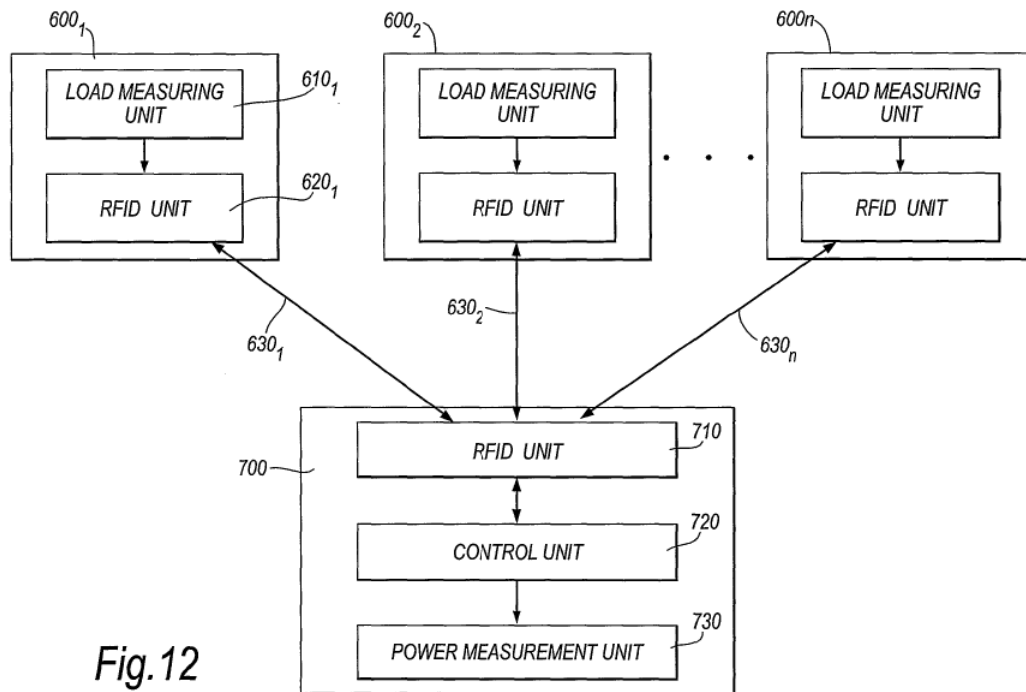


Fig. 12

Figure 12 depicts “a block diagram showing parts of a power transfer system according to a third embodiment” of Stevens. *Id.* at 17:4–5. In the Figure 12 embodiment,

each secondary device 600 comprises its own load measuring unit 610 and an RFID unit 620. The load measuring unit 610 measures the power being supplied to the actual load (46 in Fig. 4) of that secondary device. For example, the load measuring unit 610 may measure the current and/or voltage being supplied to the actual load 46 and may possibly integrate these measures over time for averaging purposes.

Id. at 38:16–23. “[The] load measure corresponds to the power requirement information of step S21 in Fig. 11.” *Id.* at 38:31–32.

The power measurement unit 730 in the primary unit also measures the power being drawn by the secondary devices from the primary unit, as in step S22 in Fig. 11. Then, the control unit 720 determines, in dependence upon the measured power and the sum of the received load measures from the secondary devices, whether or not the power supply to the secondary devices should be restricted or stopped. In particular, if the measured power from the power measurement unit 730 exceeds

the sum of the load measures from the secondary devices by more than a shutdown threshold, then the control unit 720 concludes that a substantial parasitic load must be present and places the primary unit in the shutdown mode, as in step S24 in Fig. 11.

Id. at 38:34–39:6.

2. Discussion

For the reasons discussed above, we determine that Petitioner has established a reasonable likelihood that it would prevail in showing that Olson anticipates claims 14–16 and that the combination of Olson and Stevens renders claim 17 as obvious. On this basis, we institute an *inter partes* review of all challenged claims. *See* 37 C.F.R. § 42.108(a).

We now provide guidance on our current view of the parties’ arguments for Ground 2.

Patent Owner argues, for limitation 13.2—regarding data pertaining to output power received by the secondary coil—that Stevens’ “‘power requirement information’ is simply information representative of ‘amount of power required’ by secondary devices and not ‘output power received by the secondary coil.’” Prelim. Resp. 43–44. According to Patent Owner, “the power requirement information is a static number that would not change even if output power received by the secondary coil changed, and therefore is distinct from ‘data pertaining to output power received by the secondary coil.’” *Id.* Patent Owner refers to Stevens’ statement that “[t]he power requirement of the secondary device may already be known to the primary unit,” and, “[f]or example, it may be known that all secondary devices of a certain type will have a particular power requirement.” *Id.* at 44 (quoting Ex. 1005, 36:32–37:3).

Patent Owner is discussing the Figure 11 embodiment of Stevens—the embodiment utilizing a known value. *See* Ex. 1005, 36:19–21, 36:32–37:3. However, we understand Petitioner to rely on the Figure 12 embodiment. *See, e.g.*, Pet. 42–43 (citing, *inter alia*, Ex. 1005, Fig. 12).

Patent Owner, in an argument that does apply to the Figure 12 embodiment and Petitioner’s reliance thereon, asserts that Stevens does not disclose a processor configured to determine “an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil,” as recited in limitation 13.3. Prelim. Resp. 47.

The Figure 12 embodiment of Stevens uses, rather than a static value known beforehand, the sum of load measurements from each secondary device. *See* Ex. 1005, 38:34–39:6. The system measures the “the power being drawn by the secondary devices from the primary unit,” which we understand to be a measurement of the power supplied from the primary side of the system.⁹ *See id.* at 48:34–35. Stevens’ system compares that value against the total of the measured “actual load[s]” of the secondary device (for example, those loads that are expected to be in the system and which are measured by a load measuring unit). *See id.* at 38:18–20, 38:35–39:2. If the power supplied by the primary side exceeds that of the “actual” secondary loads, the control unit concludes that there is a substantial parasitic load in the system. *See id.* at 39:2–5; *see* Pet. 44 (relying on these teachings for its contentions regarding the recited index of power-loss). Thus, we understand the difference between the two power values represents the power

⁹ Patent Owner argues that Petitioner has failed to show that the measured value is the same as recited in limitation 13.1. *See* Prelim. Resp. 41–43. We do not reach that argument at this time.

undesirably consumed by a parasitic load, rather than power lost due to an inefficient coil-to-coil coupling. It seems that, in Stevens' system, the coupling could highly-efficiently transfer power across the coils and thus efficiently feed a parasitic load, yet produce a large power differential or quotient (the difference between, or the ratio of, the power expected to be used and the power actually supplied).

For its obviousness case, Petitioner contends that, "[w]hile Stevens suggests an index of power-loss, Olson expressly discloses more details for the conventional practice of calculating an index of power-loss according to an advantageous efficiency quotient." Pet. 37 (citations omitted). According to Petitioner, "Olson discloses calculating 'a ratio of power out divided by power in,' which is similar to the claimed *efficiency quotient* as the *index of power-loss*." *Id.*

Patent Owner argues that Petitioner has not provided adequate reasoning why a person of ordinary skill in the art would be motivated to make the proposed combination. *See* Prelim. Resp. 49. Patent Owner asserts that the two references have different concerns—asserting that Stevens compares load measurements against a threshold to find parasitic loads and that Olson calculates an efficiency for purposes of aligning the external charger with the implantable device. *See id.* at 49. Patent Owner argues that "Stevens and Olson are directed to different goals and a POSITA would not be motivated to combine the two art." *Id.* Patent Owner also argues, *inter alia*, that "it is unclear how using the 'efficiency quotient' from Olson would benefit Stevens," and "[i]t is unclear how putting these values into Olson's 'ratio' format over a comparison format would make sense in Stevens." *Id.*

The issues raised by Patent Owner would benefit from further development at trial.

For the reasons discussed above, we determine that the Petition does demonstrate a reasonable likelihood of prevailing on its Olson-based grounds (Grounds 1A and 1B) as to all the challenged claims. Therefore, we institute an *inter partes* review on all challenged claims on all asserted grounds. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1354, 1359–60 (2018); 37 C.F.R. § 42.108(a) (“When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”). During trial, the parties will have the opportunity to further discuss their respective positions on the Stevens-Olson Ground 2. We emphasize that the issues discussed here merely are exemplary. The parties should address, in future briefing, all disputed issues as they deem appropriate.

G. The Alleged Obviousness of Claims 13–18 over Stevens and Jin (Ground 3)

Petitioner alleges that claims 13–18 would have been obvious over Stevens and Jin. *See* Pet. 55–61 (addressing claim 13). Petitioner’s articulation of this ground is somewhat similar to that for the Stevens-Olson ground, arguing that Stevens suggests an index of power-loss and that Jin teaches an efficiency quotient as the index. *See id.* at 56. Patent Owner, in addition to arguing that Jin fails to cure the deficiencies of Stevens, argues that Jin fails to disclose its “transmission efficiency equation” at the level of specificity required by claim 13. *See, e.g.,* Prelim. Resp. 53–56; *see also* Ex. 1006 (Jin’s “transmission efficiency” stated in terms of effective voltage/current values and “primary side” and “secondary side”).

Because we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on its Olson-based grounds, we institute an *inter partes* review on all grounds, including this Ground 3. During trial, the parties will have the opportunity to further discuss their respective positions on the Stevens-Jin ground.

IV. CONCLUSION

Petitioner has demonstrated a reasonable likelihood of prevailing in showing the unpatentability of at least one of the challenged claims of the '461 patent. Further, we decline to discretionarily deny *inter partes* review. Accordingly, we institute an *inter partes* review on all challenged claims on all asserted grounds. *See SAS Inst. Inc.*, 138 S. Ct. at 1354, 1359–60; 37 C.F.R. § 42.108(a). At this stage of the proceeding, we have not made a final determination with respect to the patentability of any of the challenged claims.

V. ORDER

For the foregoing reasons, it is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 13–18 of the '461 patent is instituted with respect to all grounds of unpatentability set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '461 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

IPR2024-00996
Patent 8,626,461 B2

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