Trials@uspto.gov
571-272-7822

Paper 12
Date: May 12, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

EVE ENERGY CO., LTD.,
Petitioner,

v.

VARTA MICROBATTERY GMBH,
Patent Owner.

IPR2023-00121
Patent 11,258,092 B2

Before CHRISTOPHER L. CRUMBLEY, JO-ANNE M. KOKOSKI, and CHRISTOPHER M. KAISER, *Administrative Patent Judges*.

KOKOSKI, *Administrative Patent Judge*.

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

I. INTRODUCTION

Eve Energy Co., Ltd. ("Petitioner") filed a Petition to institute an *inter partes* review of claims 1–22 (the "challenged claims") of U.S. Patent No. 11,258,092 B2 ("the '092 patent," Ex. 1001). Paper 1 ("Pet."). VARTA Microbattery GmbH ("Patent Owner") filed a Preliminary Response. Paper 9 ("Prelim. Resp."). With Board authorization, Petitioner filed a Reply to the Preliminary Response ("Prelim. Reply," Paper 10) and Patent Owner filed a Sur-reply to Petitioner's Reply ("Prelim. Sur-reply," Paper 11).

Institution of an *inter partes* review is authorized by statute when "the information presented in the petition . . . and any response . . . 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 (2018); *see also* 37 C.F.R. § 42.4 (2021). For the reasons discussed below, we determine that Petitioner establishes a reasonable likelihood of prevailing with respect to the unpatentability of at least one claim of the '092 patent, and we do not exercise discretion to deny the Petition. Accordingly, we institute an *inter partes* review of claims 1–22 of the '092 patent.

A. Real Parties in Interest

Each party identifies itself as the real party in interest. Pet. 1; Paper 7, 2.

B. Related Matters

The parties identify *VARTA Microbattery GmbH v. Eve Energy Co., Ltd.*, 2:21-cv-00399 (E.D. Tex. 2021) as a related matter. Pet. 1; Paper 7, 4. The '092 patent is also the subject of IPR2023-00122, filed by Petitioner. Paper 3, 1; Paper 7, 5. The parties further identify several other *inter partes* reviews directed to patents related to the '092 patent. Pet. 1; Paper 7, 4–6.

C. The '092 Patent

The '092 patent "relates to button cells comprising two metallic housing half-parts separated from one another by an electrically insulating seal" that "form a housing with a flat bottom area and a flat top area parallel to it." Ex. 1001, 1:23–26. Arranged inside the housing is "an electrode-separator assembly comprising at least one positive and at least one negative electrode, which are in the form of flat layers and are connected to one another by at least one flat separator." *Id*. at 1:26–30.

The '092 patent teaches that it is "preferable for at least one of the electrodes, preferably both the at least one negative electrode and the at least one positive electrode in [the] button cell, to be connected to the flat bottom and top areas [of the housing] via one or more output conductors." Ex. 1001, 6:3–7. "On the electrode side, the output conductors may, for example, be connected to a current collector. The output connectors can be connected to the housing and/or to the current collectors by, for example, welding or via [a] clamped joint." *Id*. at 6:7–13. The button cell may also include "at least one insulating means, which prevents a direct mechanical and electrical contact between the end faces of the winding and the flat bottom and top areas." *Id*. at 6:34–38.

D. Challenged Claims

Petitioner challenges claims 1–22 of the '092 patent. Pet. 2. Claim 1, the only independent challenged claim, is illustrative of the claimed subject matter, and is reproduced below.

1. A button cell comprising:

[a] a housing, the housing including:

a cell cup having a flat bottom area, and

a cell top having a flat top area;

[b] an electrode-separator assembly winding disposed within the housing, the electrode-separator assembly winding including a multi-layer assembly that is wound in a spiral shape about an axis, the multi-layer assembly including:

[c] a positive electrode formed from a first portion of a first metallic foil, the first portion of the first metallic foil being coated with a first electrode material,

[d] a negative electrode formed from a first portion of a second metallic foil, the first portion of the second metallic foil being coated with a second electrode material, and

[e] a separator disposed between the positive electrode and the negative electrode;

[f] a first metallic foil output conductor, the first metallic foil output conductor at least partially lying flat between (i) a first end fact of the electrode-separator assembly winding and (ii) a first of the flat bottom area or the flat top area; and

[g] a second metallic foil output conductor, the second metallic foil output conductor at least partially lying flat between (i) a second end face of the electrode-separator assembly winding and (ii) a second of the flat bottom area or the flat top area;

[h] a first insulator disposed between the first end face of the electrode-separator assembly winding and the first metallic foil output conductor; and

[i] a second insulator disposed between the second end face of the electrode-separator assembly winding and the second metallic foil output conductor,

[j] wherein the first metallic foil output conductor is welded to the first of the flat bottom area or the flat top area and the second metallic foil output conductor is welded to the second of the flat bottom area or the flat top area, and

[k] wherein the first electrode material is a lithium-intercalating electrode material and the button cell is a rechargeable lithium-ion button cell.

Ex. 1001, 12:64–13:38 (bracketed material added).

E. Asserted Grounds

Petitioner asserts that claims 1–22 would have been unpatentable based on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–10, 13–22[1]	103[2]	Higuchi,[3] Kobayashi,[4] Okochi[5]
11	103	Higuchi, Kobayashi, Okochi, Brenner[6]
12	103	Higuchi, Kobayashi, Okochi, Kubota[7]

Pet. 4. Petitioner relies on the Declaration of Marc Juzkow (Ex. 1003) in support of its contentions.

[1] Petitioner includes claim 12 in its chart listing the asserted grounds (Pet. 4), and in its section heading for the analysis of this ground (*id*. at 13). The body of the Petition, however, does not address claim 12 in its analysis of this ground (*id*. at 13–67).
[2] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112–29, 125 Stat. 284 (2011), revised 35 U.S.C. §§ 102 and 103 effective March 16, 2013. Petitioner argues, and Patent Owner does not contest, that the pre-AIA statutory provisions apply to this case. *See* Pet. 5 n.1. Neither party indicates the result would change based on which version of the statute the Board applies for purposes of deciding whether to institute review.
[3] Higuchi, Chinese Patent App. Pub. CN101286572 A, published October 15, 2008 (Exs. 1009 (English translation), 1010 (original Chinese)).
[4] Kobayashi, JP 2007-294111, published November 8, 2007 (Exs. 1011 (English translation), 1012 (original Japanese)).
[5] Okochi, EP 0829105 B1, published May 21, 2003 (Ex. 1013).
[6] Brenner, DE 102005058132 A1, published June 6, 2007 (Ex. 1014, with English translation).
[7] Kubota, US 5,654,114, issued August 5, 1997 (Ex. 1015).

II. ANALYSIS

A. 35 U.S.C. § 314(a)

Under 35 U.S.C. § 314(a), the Director has discretion to deny institution of an *inter partes* review. *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) ("[T]he agency's decision to deny a petition is a matter committed to the Patent Office's discretion."); *SAS Inst. v Iancu*, 138 S. Ct. 1348, 1356 (2018) ("[Section] 314(a) invests the Director with discretion on the question *whether* to institute review."); *Harmonic v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) ("[T]he PTO is permitted, but never compelled, to institute an IPR proceeding.").

In determining whether to exercise discretion to deny institution under 35 U.S.C. § 314(a), the Board considers the trial date in related litigation as part of an assessment of all relevant circumstances of the case, including the merits, in an effort to balance considerations such as system efficiency, fairness, and patent quality. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 5–6 (PTAB Mar. 20, 2020) (precedential) ("*Fintiv* Order"); *see also NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 19–20 (PTAB Sept. 12, 2018) (precedential) (denying institution relying, in part, on § 314(a) because the parallel district court proceeding was scheduled to finish before the Board reached a final decision). In particular, the Board evaluates the following factors ("*Fintiv* factors"):

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel

proceeding;

5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board's exercise of discretion, including the merits.

Fintiv Order, 5–6. In evaluating these factors, "the Board takes a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review." *Id.* at 6.

On June 21, 2022, the Director of the United States Patent and Trademark Office ("USPTO") issued a Memorandum[8] to clarify "the PTAB's current application of *Fintiv* to discretionary institution where there is parallel litigation" and "confirm[] that the precedential import of *Fintiv* is limited to facts of that case." Memorandum, 2. In particular, the Memorandum sets forth that: (1) the PTAB will not rely on the *Fintiv* factors to discretionarily deny institution "where a petition presents compelling evidence of unpatentability" (*id*. at 2); (2) the *Fintiv* factors do not apply to parallel U.S. International Trade Commission proceedings (*id*. at 2–3); (3) the PTAB will not discretionarily deny institution "where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB" (*id.* at 3); and (4) "the PTAB will consider the median time from filing to disposition of the civil trial for the district in which the parallel litigation resides" (*id.*).

Patent Owner argues we should exercise our discretion under 35 U.S.C. § 314(a) to deny institution in view of *VARTA Microbattery*

[8] Available at: https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf

GmbH v. Eve Energy Co., Ltd., 2:21-cv-00399 (E.D. Tex. 2021). Prelim. Resp. 11–19. Petitioner asserts (Prelim. Reply 1) that it stipulated that "if the IPRs of [the '092 patent] are instituted, it will not assert invalidity in the parallel district court proceedings based on grounds that were raised or reasonably could have been raised in the instituted IPRs." Ex. 1018. We are bound by the guidance in the Memorandum, which states that the Board "will not discretionarily deny institution of an IPR or PGR in view of parallel district court litigation where a petitioner stipulates not to pursue in a parallel district court proceeding the same grounds as in the petition or any grounds that could have reasonably been raised in the petition." Memorandum, 7.

Patent Owner, however, argues that the Memorandum "has been called into question" and "the Board should not be bound by the Memorandum." Prelim. Sur-reply 1. We decline to address the merits of this argument, but we note that, when deciding whether to institute trial, we exercise the Director's discretion, and, in the absence of controlling authority to the contrary, we continue to exercise that discretion in accordance with the Director's instructions. *See* 37 C.F.R. § 42.4(a).

Accordingly, in view of Petitioner's stipulation, we decline to exercise our discretion under § 314(a) to deny institution of *inter partes* review.

B. 35 U.S.C. § 325(d)

Patent Owner argues that we should exercise our discretion under 35 U.S.C. § 325(d) to deny institution for two reasons: first, because the same prior art was raised during prosecution of the '092 patent; and second, because the Office previously considered the question of whether Higuchi and Kobayashi were compatible with one another during the examination of

an application related to the application that issued as the '092 patent. Prelim. Resp. 19–25.

1. Legal Framework

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." The Board uses a two-part framework for evaluating arguments under § 325(d):

> (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 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, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential) ("*Advanced Bionics*"). In applying this framework, we consider the *Becton, Dickinson*[9] factors that address discretion to deny when a petition presents the same or substantially the same prior art or arguments previously presented to the Office, including:

> (a) the similarities and material differences between the asserted art and the prior art involved during examination;
>
> (b) the cumulative nature of the asserted art and the prior art evaluated during examination;

[9] *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first paragraph) ("*Becton, Dickinson*").

> (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;
>
> (d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art;
>
> (e) whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art; and
>
> (f) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments.

Becton, Dickinson, Paper 8 at 17–18. Factors (a), (b), and (d), relate to whether the same or substantially the same art or arguments were previously presented to the Office, and factors (c), (e), and (f) relate to whether the petitioner demonstrates that the Office erred in a manner material to the patentability of the claims. *Advanced Bionics*, Paper 6 at 9–11. Only if the same or substantially the same art or arguments were previously presented to the Office do we then consider whether the petitioner has demonstrated a material error by the Office. *Id.*

2. Part One of the Advanced Bionics Framework

Patent Owner directs us to two prior Office proceedings in which it contends the same art was presented to and considered by the Office: "prosecution of the application underlying the '092 patent" and "prosecution of . . . the application underlying Patent Owner's U.S. Patent No. 10,804,506," which "claim[s] priority to a . . . German ancestor" of the '092 patent. Prelim. Resp. 19. We consider each separately to determine whether the record sufficiently establishes that the same art asserted here was previously presented to the Office, as Patent Owner argues.

a) Prosecution of the Application Underlying the '092 Patent

Patent Owner asserts that, "[d]uring prosecution of the application that issued as the '092 patent, the Examiner explicitly noted that he had considered each of" Higuchi, Kobayashi, and Okochi, "the sole references the Petition relies on for its challenge to independent claim 1." Prelim. Resp. 21 (citing Ex. 1002, 112, 113, 175). Patent Owner is correct; Higuchi, Kobayashi, and Okochi each appear on Information Disclosure Statements submitted to the Office during prosecution. Ex. 1002, 112, 113, 175. Accordingly, we are persuaded that Patent Owner has satisfied part one of the *Advanced Bionics* framework with respect to the prosecution of the application underlying the '092 patent.

b) Prosecution of the Application Underlying the '506 Patent

Patent Owner notes that, during the prosecution of an application that ultimately issued as U.S. Patent No. 10,804,506,[10] "the Office extensively considered the issue of whether Higuchi's internal components were compatible with Kobayashi's housing," an issue presented here under Petitioner's arguments for obviousness over the combination of Higuchi, Kobayashi, and Okochi. Prelim. Resp. 23–24. Specifically, in response to a rejection over the combination of Kobayashi and Higuchi, Patent Owner argues that the applicant for the '506 patent stated that "the windings of Kobayashi and Higuchi . . . are distinct and not interchangeable" and explained that Higuchi's output leads could not be placed into the Kobayashi housing. *Id.* at 24 (quoting Ex. 2037, 18–19). Based in part on this argument, the Office allowed the application, and the '506 patent issued in

[10] We enter U.S. Patent No. 10,804,506 into the record as Exhibit 3001, and we take official notice of its contents.

due course. Because the Petition raises the same issue of the compatibility of Higuchi and Kobayashi already resolved by the Office, Patent Owner argues that we should deny the Petition under § 325(d). *Id.*

Petitioner argues that, based on "MPEP § 609.02's requirement that the examiner consider information in a *parent* application such that the prosecution history of that application is technically part of the history of the subject patent," when the Board "has considered prosecution histories other than the patent at issue, it has been direct family members." Prelim. Reply 2–3. Petitioner asserts that "[t]here is no direct lineage between the '092 patent and the '506 patent." *Id*. at 3.

We read the *Becton, Dickinson* factors broadly "to apply to any situation in which a petition relies on the same or substantially the same art or arguments previously presented to the Office during a proceeding *pertaining to the challenged patent*." *Advanced Bionics*, Paper 6 at 10 (emphasis added). The record before us does not establish that the prosecution of the '506 patent is a proceeding pertaining to the '092 patent. The familial relationship between the '506 patent and the '092 patent is distant and complicated. Specifically, the '506 patent issued from application 15/433,654, which

> is a divisional application of U.S. application Ser. No. 13/378,117 filed Dec. 14, 2011, which is a § 371 of International Application No. PCT/EP2010/058637, with an international filing date of Jun. 18, 2010 (WO 2010/146154 A2, published Dec. 23, 2010), which is based on German Patent Application Nos. 10 2009 030 359.6, filed Jun. 18, 2009, and 10 2009 060 800.1, filed Dec. 31, 2009.

Ex. 3001, 1:7–13. The '092 patent, meanwhile,

> is a divisional of U.S. Ser. No. 15/696,354, filed Sep. 6, 2017, which is a divisional of U.S. Ser. No. 15/283,568, filed on Oct. 3,

> which is a continuation of U.S. Ser. No. 14/827,387, filed Aug. 17, 2015, which is a divisional of U.S. Ser. No. 13/146,669, filed Sep. 7, 2011, which is a national phase of International Application No. PCT/EP2010/000787, with an international filing date of Feb. 9, 2010 (WO 2010/089152 A1, published Aug. 12, 2010), which claims priority to German Patent Application Nos. 10 2009 008 859.8, filed Feb. 9, 2009, 10 2009 030 359.6, filed Jun. 18, 2009, and 10 2009 060 788.9, filed Dec. 22, 2009.

Ex. 1001, 1:7–17.

The '506 patent and the '092 patent, therefore, share a common ancestor in German Patent Application No. 10 2009 030 359.6, of which the '506 patent's application was a third-generation descendant and the '092 patent's application is a sixth-generation descendant. Restated in familial terms, the '506 patent and the '092 patent are second cousins, three times removed. The '506 patent's application is not identified as "related U.S. application data" on the face of the '092 patent. Ex. 1001, code (60), 1:7–17.

As noted above, the *Advanced Bionics* framework is applicable in "any situation in which a petition relies on the same or substantially the same art or arguments previously presented to the Office during a proceeding *pertaining to the challenged patent*." *Advanced Bionics*, Paper 6 at 10 (emphasis added). This clearly includes the prosecution of the application underlying the challenged patent and other proceedings, such as *inter partes* reviews or reexaminations, that directly involved the challenged patent itself. It may also include the prosecution of any applications that are parents or other direct ancestors of the application underlying the challenged patent. *See, e.g.*, *Google LLC v. Kewazinga Corp.*, IPR2021-00527, Paper 16 at 10–12 (PTAB Aug. 24, 2021) (noting that, during prosecution of

an application, patent examiners are required to consider information that previously was considered by the Office in parent applications). But this does not describe the remote relationship between the '092 patent and the '506 patent. Accordingly, we are not persuaded that the fact that the '092 patent and the '506 patent share a common yet distant ancestor is sufficient to establish that art and arguments considered during the prosecution of the application that issued as the '506 were considered during prosecution of the application that issued as the '092 patent for purposes of § 325(d). Thus, we determine that part one of the *Advanced Bionics* framework is not satisfied by the Office's consideration during the prosecution of the application that issued as the '506 patent of some of the same art asserted here.

3. Part Two of the Advanced Bionics Framework

Patent Owner contends that the Petition fails to establish that, during prosecution of the application underlying the '092 patent, the Office erred in a manner material to the patentability of the challenged claims. Prelim. Resp. 23. Petitioner argues that Higuchi, Kobayashi, and Okochi "were not used in a substantive rejection of the application that led to the '092 patent." Prelim. Reply 1.

For the reasons described below, we find that Petitioner has demonstrated a reasonable likelihood of prevailing in showing that at least one claim of the '092 patent is unpatentable over the combined teachings of Higuchi, Kobayashi, and Okochi based on the current record. *See* Section II.E, *infra*. In doing so, Petitioner demonstrates that the Examiner erred in a manner material to the patentability of the challenged claims by not appreciating that the combination of Higuchi, Kobayashi, and Okochi discloses features in the claims of the '092 patent lacking in the prior art applied to reject the claims. *See, e.g.*, Ex. 1002, 208–209 (Examiner's

statement of reasons for allowance). Because Petitioner persuasively shows that Higuchi, Kobayashi, and Okochi disclose subject matter that the Examiner found missing in the art applied during prosecution, we determine that the Petition establishes that the Office erred in a manner material to the patentability of the challenged claims. Accordingly, we determine that the second part of the *Advanced Bionics* framework is not satisfied.

4. Conclusion

Based on our analysis within the *Advanced Bionics* framework, we find that the Petition does not implicate § 325(d) in a manner sufficient to warrant discretionary denial, and we decline to exercise our discretion to deny institution under § 325(d).

C. Level of Ordinary Skill in the Art

Petitioner contends that a person having ordinary skill in the art ("POSITA") would have had "a bachelor's degree in engineering (mechanical, electrical or chemical), general science, materials science or the equivalent and 3-4 years of work experience with electrochemical cell packaging systems." Pet. 5. Petitioner further contends that "[l]ess work experience may be compensated by a higher level of education, such as a master's or doctorate degree," and "less education may be compensated by more work experience." *Id*. Patent Owner states that the Preliminary Response "establishes that Petitioner's arguments fail even under its proffered definition of" a person of ordinary skill in the art. Prelim. Resp. 10. Patent Owner does not propose a different level of skill in the art at this stage of the proceeding. *See id*. ("Patent Owner reserves the right to dispute Petitioner's definition of a [person of ordinary skill in the art] if an IPR is instituted.").

To the extent necessary, and for purposes of this Decision, we accept the uncontested assessment offered by Petitioner.

D. Claim Construction

We construe each claim "in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." 37 C.F.R. § 42.100(b) (2019). Under this standard, claim terms are generally given their plain and ordinary 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 v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). Only those terms in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Realtime Data LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019).

Petitioner asserts that "no claim term requires construction." Pet. 8. Patent Owner asserts "no claim construction is necessary to deny institution." Prelim. Resp. 11.

We determine that no claim term requires express construction for purposes of this Decision.

E. Ground 1: Asserted Obviousness over Higuchi, Kobayashi, and Okochi

Petitioner contends that claims 1–10 and 12–22 would have been obvious over the combined teachings of Higuchi, Kobayashi, and Okochi. Pet. 13–67.

1. Overview of Higuchi

Higuchi is a Chinese Patent Application entitled "Coin Type Non-Aqueous Electrolyte Secondary Battery." Ex. 1009, code (54).[11] Higuchi describes a coin type rechargeable battery having a strip-shaped anode, strip-shaped cathode, and strip-shaped separator that are wound together to form a cylindrical wound body. *Id.* at 3,[12] Fig. 5B. Higuchi's Figure 5B is reproduced below.

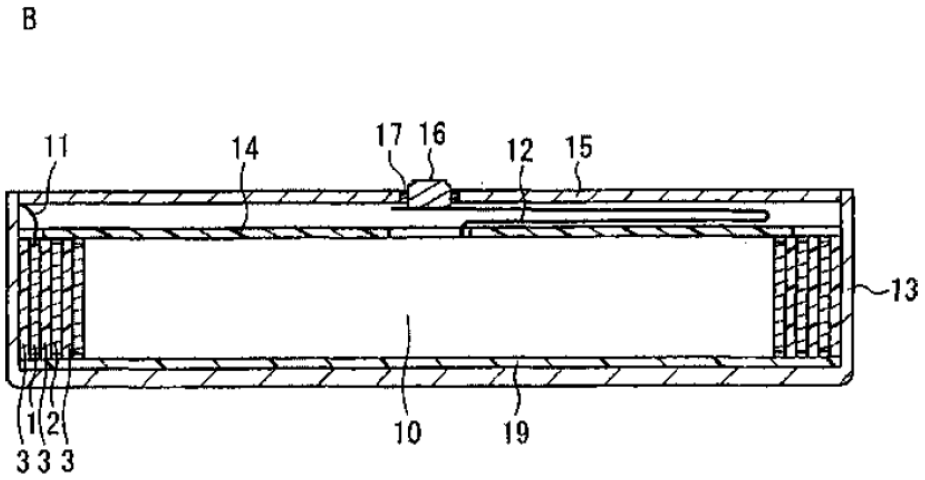


Figure 5

Figure 5B is a cross-sectional view of the battery described in Higuchi. *Id.* at 12. Lower insulating plate 19 is arranged on the bottom battery can 13. *Id.* Wound body 10 is structured such that strip-shaped separator 3 is interposed between the strip-shaped positive electrode 1 and strip-shaped negative electrode 2 and wound into a spiral. *Id.* Positive electrode lead 11 is provided on the outside peripheral side of wound body 10, and negative electrode lead 12 is provided on the inner peripheral side (not shown) of

[11] Petitioner provides a certified English translation of Higuchi. Ex. 1010, 1. All citations to Higuchi are to the certified English translation.
[12] We refer to the page numbers added by Petitioner in the lower-right corner of the page.

wound body 10. *Id*. at 11–12. Wound body 10 is inserted into cylindrical battery can 13 so that the winding axis direction matches the height direction of battery can 13. *Id*. at 12. Positive electrode lead 11 is inserted between battery can 13 and cap 15, so that battery can 13 and cap 15 can act as the positive electrode terminal. *Id*. Upper insulating plate 14 is placed on wound body 10, and negative lead 12 is welded to the inside of negative terminal 16 at the center of cap 15. *Id*. Insulating packing 17 insulates negative terminal 16 and cap 15. *Id*.

2. Overview of Kobayashi

Kobayashi is a Japanese Unexamined Patent Application entitled "Small Battery" and "relates to a small battery (for example, a button-type battery or coin-type battery) provided with a wound electrode group." Ex. 1011, code (54), ¶ 1.[13] Kobayashi describes

> a small battery having excellent heavy load properties can be provided by using a container having a sealed structure in which a metal anode case that also serves as an anode terminal and a metal cathode case that also serves as a cathode terminal are fitted together via an insulation gasket, and the cathode case or the anode case is further crimped by a crimping process, and housing in this container an electrode group of a laminate including a cathode and an anode wound in a spiral.

Id. ¶ 13.

[13] Petitioner provides a certified English translation of Kobayashi. Ex. 1012, 1. All citations to Kobayashi are to the certified English translation.

Kobayashi's Figure 1 is reproduced below.

[FIG. 1]

FIG. 1

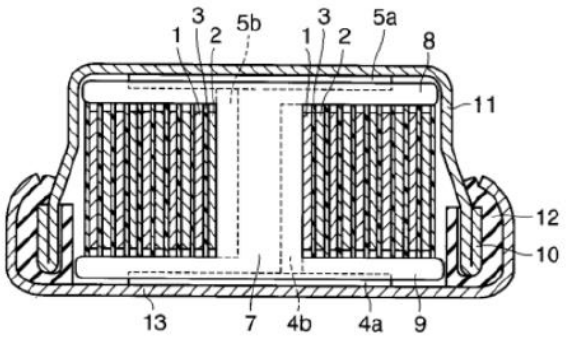


Figure 1 is a cross-sectional view schematically illustrating a coin-type secondary battery described by Kobayashi. Ex. 1011 ¶ 46. The secondary battery includes cathode 1, anode 2, cathode terminal 4, cathode terminal plate 4a, cathode lead part 4b with slit 4c (not shown) formed thereon, anode terminal 5, anode terminal plate 5a, and anode lead part 5b with slit 5c (not shown) formed thereon. *Id.* ¶¶ 26–28. Insulating plates 8, 9 are integrated into the upper and lower ends of wound shaft core 7. *Id.* ¶ 30. Separator 3 is "interposed and fixed, one sheet each between the wound shaft core 7 and the cathode 1 and between the wound shaft core 7 and the anode 2," and cathode 1 and anode 2 are wound in spiral via separator 3. *Id.* ¶ 32. Insulation gasket 12 is fitted into reverse part 10 of anode case 11. *Id.* ¶ 33. The electrode group is inserted into anode case 11 "so that the anode terminal plate 5a contacts the inner surface of anode case 11," and into cathode case 13 "so that the cathode terminal plate 4a contacts the inner surface of the cathode case 13." *Id.* ¶¶ 33–34. Cathode case 13 is fit to anode case 11 and sealed by performing a crimping process on cathode case 13. *Id.* ¶ 35.

3. Overview of Okochi

Okochi is a European Patent entitled "Non-Aqueous Electrolyte Secondary Batteries," published March 18, 1998. Ex. 1013, codes (43), (54). Okochi describes a rechargeable battery having a spirally wound electrode assembly. *Id.* ¶¶ 1, 21. The positive and negative electrodes of Okochi's battery have metal foils that act as collectors, and are spot welded to the electrode and the inner surface of the cell container. *Id.* ¶¶ 17, 25.

4. Petitioner's Proposed Combination

Petitioner contends that the combined disclosures of Higuchi, Kobayashi, and Okochi teach all of the limitations of independent claim 1, and that a person of ordinary skill in the art would have been motivated to combine the teachings of the references in a manner that would result in the claimed button cell. Pet. 13–49. Petitioner begins its analysis with Higuchi's cell, and contends that a POSITA would have been motivated to modify Higuchi's cell by "(1) replacing Higuchi's housing with Kobayashi's housing, and (2) applying Okochi's folding and welding to Higuchi's leads 11 and 12." Pet. 18. Petitioner further contends that "[t]he result is a 'combination of familiar elements according to known methods' that 'does no more than yield predictable results.'" *Id.* (citing *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

a) replacing Higuchi's housing with Kobayashi's housing

Petitioner contends that Higuchi teaches that both battery can 13 and cap 15 act as the positive electrode terminal, and that a portion of negative electrode lead 12 is positioned near cap 15 without insulation. Pet. 19 (citing Ex. 1009, 12, Fig. 5B; Ex. 1003 ¶¶ 64–65). Petitioner contends that "[t]he proximity of the negative electrode lead to the positive electrode terminal poses a risk for short-circuit," so Higuchi provides extra space at

the top of the housing to distance negative electrode lead 12 from cap 15. *Id*. Petitioner further contends that Higuchi teaches that negative electrode lead 12 is formed from the negative current collector "that could be 'made of copper foil with a thickness of 12 μm.'" *Id*. at 20 (citing Ex. 1009, 15). Petitioner contends that "[a] POSITA would have understood such material to be thin and soft, such that when Higuchi's battery is placed upside down, lead 12 would make contact with cap 15." *Id*. (citing Ex. 1003 ¶ 67).

Petitioner contends that, in contrast, Kobayashi's "anode case 11 permits a safe connection between the negative electrode lead and a housing half." Pet. 20. Petitioner also contends that "Kobayashi discloses a more stable design" wherein anode case 11 is in contact with anode terminal plate 5a, and cathode case 13 is in contact with cathode terminal plate 4a. *Id*. at 22 (citing Ex. 1011 ¶¶ 33, 34, Fig. 1). Petitioner contends that

> a POSITA would have understood Kobayashi's cases 11 and 13 to act as an extension of their respective terminals, and to be analogous to Higuchi's cap 15 and negative terminal 16. Ex. 1003 ¶ 73. Kobayashi separates these extensions of the positive and negative terminals (cases 11 and 13) by placing them on opposite ends of the battery. Kobayashi's housing provides a more complete separation of the two terminals, and a more robust insulation between them.

Pet. 22–23. Therefore, according to Petitioner, "replacing Higuchi's housing with Kobayashi's eliminates Higuchi's risk for short-circuit and increases the volumetric energy density." *Id*. at 23 (citing Ex. 1003 ¶ 74).

Patent Owner responds that replacing Higuchi's housing with Kobayashi's "would have resulted in a drastic reduction of available space for active battery components." Prelim. Resp. 39. Patent Owner argues that the button cell resulting from such a modification "would have considerably reduced energy discharge capability and reduced battery life," and devices

using the button cell "would need to be recharged far more frequently." *Id.* at 41.

Patent Owner also argues that Petitioner and Mr. Juzkow recognized the drawbacks of the beaded-over Kobayashi housing in a petition directed to a related patent, where Petitioner argued that "a significant portion of the available space within [Kobayashi's] cell is reduced by the process of crimping the cell closed." Prelim. Resp. 42 (citing Ex. 2008, 2–3). Patent Owner argues that "Petitioner fails to explain why the beaded-over Kobayashi housing Petitioner and its same expert disparaged in another petition would be used in the present combination of references proposed in this Petition." *Id.* at 43–44.

Patent Owner also argues that a POSITA would not have replaced Higuchi's housing with Kobayashi's to reduce the risk of short circuits. Prelim. Resp. 44. Patent Owner points to Petitioner's arguments in a petition directed to a different related patent, where Petitioner argues that it would have been obvious to "adhere an insulation strip to one or both sides of Higuchi's leads" to "reduce [the] risk of short circuits without the corresponding loss of volume associated with Kobayashi's housing." *Id.* (citing Ex. 2042, 2–4). According to Patent Owner, "assuming that Petitioner and its expert are correct that a [POSITA] would have been motivated to adhere an insulation strip to both sides of Higuchi's lead, it would not be necessary" to replace Higuchi's housing with Kobayashi's "to reduce the risk of short circuits." *Id.* at 45.

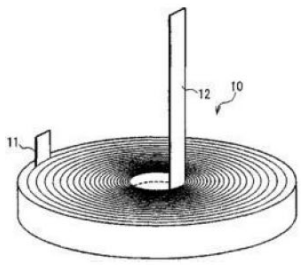
We have considered Patent Owner's arguments, and although they cast doubt on Petitioner's contentions and create a genuine issue of material fact, we are persuaded, on this record, that Petitioner provides sufficient reasoning with rational underpinning to support a motivation to combine the

teachings of Higuchi and Kobayashi as proposed. Pet. 18–29. Specifically, Petitioner sufficiently establishes, for purposes of institution, that a POSITA would have had reason to modify Higuchi's cell to use Kobayashi's housing in order to reduce the risk that the cell would short circuit. *Id*. at 19–23.

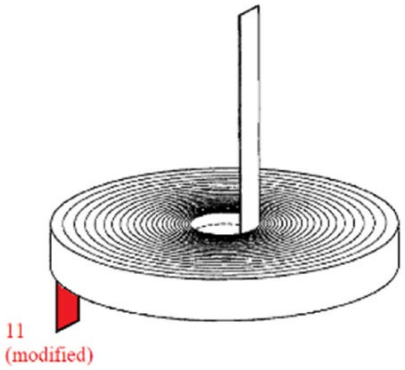
We invite the parties to develop these arguments further at trial, to the extent permitted under our rules.

b) applying Okochi's folding and welding techniques to Higuchi's lead 11 and 12

Petitioner contends that, before applying Okochi's folding and welding technique, a POSITA would have been motivated to move Higuchi's lead 11 "so as to extend from below Higuchi's wound body 10 so as to be separated from lead 12," as shown below. Pet. 29–30.



Ex. 1009 at Fig. 1



Ex. 1003 ¶86 (modification)

Higuchi Figure 1, depicting wound body 10 with lead 11 provided on its outer peripheral side and lead 12 provided on its inner peripheral side, is reproduced on the left, and Figure 1, modified by Petitioner to show lead 11 (in red) extending below wound body 10, is reproduced on the right. Pet. 30 (citing Ex. 1003 ¶ 87). Petitioner contends that, after replacing Higuchi's housing with Kobayashi's, "a POSITA would have been motivated to dispose electrode lead 11 on the opposite side of electrode lead 12 to further

prevent the same problem previously discussed with respect to lead 12 and Higuchi's cap 15." *Id*. Petitioner contends that "Kobayashi would have prompted this modification" because moving lead 11 to the bottom of the winding facilitates the connection between lead 11 and cathode case 13. *Id*. (citing Ex. 1003 ¶ 88).

Petitioner then contends that it would have been obvious to a POSITA that lead 11 could be connected to cathode case 13 either (1) on the lateral surface, (2) in the area between the plane and lateral surfaces, or (3) on the plane surface. Pet. 31 (citing Ex. 1003 ¶ 90). Petitioner contends that, of these options, "it would have been obvious to a POSITA to position lead 11 between wound body 10 and the plane surface of case 13." *Id*. at 35 (citing Ex. 1003 ¶ 95). Petitioner contends that, as compared to options 1 and 2, option 3 provides a better seal at least by eliminating a contact area between two metals, and prevents damage during battery assembly. *Id*. at 32–35 (citing Ex. 1003 ¶¶ 91–95). In addition, Petitioner asserts that "Kobayashi also discloses positioning its electrode terminals between the winding and the plane surfaces of the housing." *Id*. at 35 (citing Ex. 1011, Fig. 1).

Petitioner contends that Okochi teaches that lead 2c extends from the bottom of the winding and passes through a bottom insulating plate 4, the lead 2c bends so as to be positioned between the winding and the plane surface of the housing, and "[i]t would have been obvious to a POSITA to bend lead 11 in a similar fashion as Okochi's lead 2c, then position lead 11 between the winding and the plane surface of case 13." Pet. 36 (citing Ex. 1003 ¶¶ 98–99; Ex. 1013, Fig. 1). Petitioner also contends that, because Okochi teaches that "lead 2c is welded to the bottom of the housing, . . . [i]t would have been obvious to apply Okochi's welding to weld [Higuchi's]

lead 11 to Kobayashi's case 13." *Id.* at 39 (citing Ex. 1003 ¶ 103; Ex. 1013 ¶ 25).

Patent Owner responds that "Kobayashi could not have prompted any modification of Higuchi's leads 11 and 12 because Kobayashi expressly teaches away from using output conductor leads." Prelim. Resp. 49. Patent Owner asserts that Kobayashi explains that manufacturing a battery with collector tab terminals requires complex bending and welding processes, and, due to this complex manufacturing process, "it has been considered impossible to house this electrode group structure in a small battery such as a button-type or coin-type battery." *Id.* (citing Ex. 1011 ¶¶ 7, 14). Patent Owner further asserts that Kobayashi solves these problems by "eliminat[ing] collector tab terminals to provide a 'simplified' structure 'by installing a terminal . . . on the wound shaft core that is included in the electrode group.'" *Id.* (citing Ex. 1009 ¶¶ 15, 18). Patent Owner argues that Higuchi teaches that "the negative electrode lead 12 undergoes bend processing and that lead is welded to an electrode pin," which is the processing that Kobayashi characterizes as making it "impossible" to house the structure in a small button-type battery. *Id.* (citing Ex. 1009, 12, Fig. 4).

On this record, we disagree. Petitioner asserts that "[e]ven if using Kobayashi's electrode terminals 4, 5 to connect to its wound shaft core 7 achieves more efficient winding, the proposed Higuchi-Kobayashi combination would achieve other benefits." Pet. 27 (citing Ex. 1003 ¶ 83). Petitioner argues that Higuchi teaches welding its current conductors directly to the housing, which is a simpler manufacturing process than that in Kobayashi, which "requires an assembly of its current conductor . . . with a wound shaft core" before welding can take place. *Id.* (citing Ex. 1003 ¶ 81; Ex. 1009, Fig. 5B; Ex. 1011 ¶¶ 30–31). Petitioner also argues that

"Higuchi's strip-shaped electrode lead structure also presents a more simplified manufacturing process" than "Kobayashi's complex T-shaped electrode terminal structure." *Id.* (citing Ex. 1003 ¶ 210; Ex. 1013, Figs. 4, 5). At least on the present record, Petitioner's arguments that the Higuchi-Kobayashi combination would have had advantages over the Kobayashi design that might have counterbalanced the disadvantages noted by Kobayashi are supported by the cited evidence.

Based on the record before us at this stage of the proceeding, we are persuaded that Petitioner adequately establishes, for purposes of this Decision, that a POSITA would have been motivated to use Okochi's bending and welding techniques as proposed.

c) Conclusion

Having considered the parties' arguments and the evidence of record, we are persuaded that Petitioner provides sufficient reasoning with rational underpinning to support a motivation to combine the teachings of Higuchi, Kobayashi, and Okochi as proposed. Pet. 13–39.

5. Claims 1–10 and 13–22

Petitioner asserts, with supporting testimony from Mr. Juzkow, that the combination of Higuchi, Kobayashi, and Okochi teaches all of the limitations of independent claim 1. Pet. 39–49. In particular, Petitioner relies on Higuchi for its teaching of elements of the button cell such as an electrode-separator assembly including a positive electrode and a negative electrode, first and second output conductors, and first and second insulators, on Kobayashi's teachings of a housing, and on Okochi's teachings regarding welding a lead to the housing. *Id.*; *see also id.* at 13–39 (Petitioner's proposed combination). At this stage of the proceedings, Patent Owner does not address Petitioner's specific contentions with respect to claim 1.

We have reviewed Petitioner's contentions for all of the elements of independent claim 1, as well as the supporting evidence. Pet. 39–49. Based on the record before us, we are persuaded that Petitioner's discussion of the particular structures and methods in Higuchi, Kobayashi, and Okochi establishes a reasonable likelihood that the combined teachings of Higuchi, Kobayashi, and Okochi teach or suggest all of the limitations of independent claim 1. *Id*. We have also reviewed Petitioner's contentions with regard to claims 2–10 and 13–22, which depend, directly or indirectly, from claim 1. *Id*. at 49–67. We are persuaded that Petitioner establishes a reasonable likelihood that the teachings of Higuchi, Kobayashi, and Okochi teach or suggest all of the limitations of these dependent claims as well. *Id*.

F. Remaining Grounds

Petitioner contends that claim 11 would have been obvious over the combined teachings of Higuchi, Kobayashi, Okochi, and Brenner, and claim 12 would have been obvious over the combined teachings of Higuchi, Kobayashi, Okochi, and Kubota. Pet. 67–71. At this stage of the proceeding, Patent Owner does not address Petitioner's contentions with respect to these claims and grounds. *See* Prelim. Resp. 55–56 ("[F]or the same reasons discussed above with respect to independent claim 1, Petitioner also has not demonstrated a reasonable likelihood that it would prevail in showing that any of these remaining dependent claims, namely claims 11 and 12, would have been obvious."). Having determined that Petitioner establishes a reasonable likelihood of showing that at least one of the challenged claims is unpatentable as set forth above, we institute an *inter partes* review based on these grounds as well. *See* 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 the grounds of unpatentability asserted for each claim.").

III. CONCLUSION

Based on the arguments in the Petition, the Preliminary Response, the Preliminary Reply, and the Preliminary Sur-reply, and the evidence of record, we determine that Petitioner establishes a reasonable likelihood that it will prevail on its challenge to at least one claim of the '092 patent. Accordingly, we institute an *inter partes* review of all the challenged claims on all the grounds presented in the Petition.

The factual findings set forth in this Decision are preliminary and provided for the sole purpose of deciding whether to institute a review. Any final findings will be based on the full trial record, including any information presented in a timely filed response to the Petition. *See Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016) (noting that "there is a significant difference between a petitioner's burden to establish a 'reasonable likelihood of success' at institution, and actually proving invalidity by a preponderance of the evidence at trial") (quoting 35 U.S.C. § 314(a) and comparing *id*. with § 316(e)).

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that an *inter partes* review is instituted with respect to the grounds asserted in the Petition; 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, which shall commence on the entry date of this Decision.

FOR PETITIONER:

Kristopher L. Reed
Michael R. Morlock
Daniel J. Sherwinter
KILPATRICK TOWNSEND & STOCKTON LLP
kreed@kilpatricktownsend.com
mmorlock@kilpatricktownsend.com
dsherwinter@kilpatricktownsend.com

FOR PATENT OWNER:

H. Michael Hartmann
Wesley O. Mueller
Robert T. Wittmann
Paul J. Filbin
Brent A. Chatham
LEYDIG, VOIT & MAYER, LTD.
mhartmann@leydig.com
wmueller@leydig.com
bwittmann@leydig.com
pfilbin@leydig.com
bchatham@leydig.com