

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SUZHOU MOJAWA INTELLIGENT ELECTRONIC CO., LTD.,

Petitioner,

v.

SHENZHEN SHOKZ CO., LTD.,

Patent Owner.

PTAB Case No. IPR2025-00843

Patent No. 11,310,582 B2

**PATENT OWNER'S SUR-REPLY TO PETITIONER'S REPLY TO THE
RESPONSE TO THE PETITION**

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UPDATED EXHIBIT LIST

No.	Exhibit Description
Ex. 2001	Chinese Patent No. CN107484054 A (“Li ’054”), original
Ex. 2002	Chinese Patent No. CN107484054 A (“Li ’054”), certified translation
Ex. 2003	U.S. Patent Application Publication No. 2016/0329041A1 (“Qi”)
Ex. 2004	Declaration of Wei Yuan
Ex. 2005	<i>Shenzhen Shokz Co. Ltd. v. Shenzhen Wenming Tech. Co. Ltd. et al.</i> , Case No. 1:24-cv-06717 (N.D.Ill.), Opposition to Motion to Stay dated July 1, 2025, ECF No. 69
Ex. 2006	<i>Shenzhen Shokz Co. Ltd. v. Shenzhen Wenming Tech. Co. Ltd. et al.</i> , Case No. 1:24-cv-06717 (N.D.Ill.), Minute Order setting case deadlines dated March 13, 2025, ECF No. 50
Ex. 2007	Judge Pacold estimated trial schedule
Ex. 2008	<i>Shenzhen Shokz Co. Ltd. v. Shenzhen Wenming Tech. Co. Ltd. et al.</i> , Case No. 1:24-cv-06717 (N.D.Ill.), District Court case docket (accessed July 29, 2025)
Ex. 2009	September 20, 2024 Declaration of Wei Yuan Regarding Alternative Service, ECF No. 22
Ex. 2010	Mojawa Initial Invalidity Contentions cover pleading dated January 30, 2025
Ex. 2011	Comparison of text portions of Ex. 1004 (Li ’492 certified translation) and Ex. 2002 (Li ’054 certified translation)
Ex. 2012	Mojawa June 12, 2025 Final Unenforceability and Invalidity Contentions
Ex. 2013	Mojawa June 12, 2025 Final Unenforceability and Invalidity Contentions, Ex. A7 (AfterShokz AS800)
Ex. 2014	Mojawa June 12, 2025 Final Unenforceability and Invalidity Contentions, Ex. A8 (AfterShokz AS600)

Ex. 2015	U.S. District Court for the Northern District of Illinois Local Patent Rules, https://www.ilnd.uscourts.gov/_assets/_documents/_rules/localpatentrules-preamble.pdf , last accessed July 24, 2025
Ex. 2016	Petitioner Stipulation dated July 24, 2025
Ex. 2017	Patent Owner Stipulation regarding non-asserted claims dated July 30, 2025
Ex. 2018	Declaration of Michael Scordilis, PhD, in support of Preliminary Patent Owner Response
Ex. 2019	Möser, M., <i>Engineering Acoustics: An Introduction to Noise Control</i> , Second Edition, Chapters 1 and 4 (2009).
Ex. 2020	Declaration of Dr. Michael Scordilis, PhD (“Scordilis”), in support of Patent Owner Response
Ex. 2021	Transcript of Patent Owner’s Deposition of Dr. Chris Kyriakakis on January 29, 2026
Ex. 2022	<i>The American Heritage Dictionary of the English Language</i> (5 th Ed.), 2011.
Ex. 2023	Mojawa’s Opening Claim Construction Brief

I. INTRODUCTION

Petitioner has failed to show unpatentability of the Challenged Claims.

Petitioner's Reply is rife with impermissible new arguments, new evidence and even new invalidity grounds, and its legal and technical assertions are significantly flawed. Therefore, Patent Owner requests that patentability of all Challenged Claims be maintained.

II. CLAIM CONSTRUCTION

A. “elastically abutted against”

Petitioner argues “Claim 1 does not specify that ‘an end surface of the core housing [is] in contact with the protective sleeve under an elastic force.’” Rep., 2. Petitioner's arguments are misplaced.

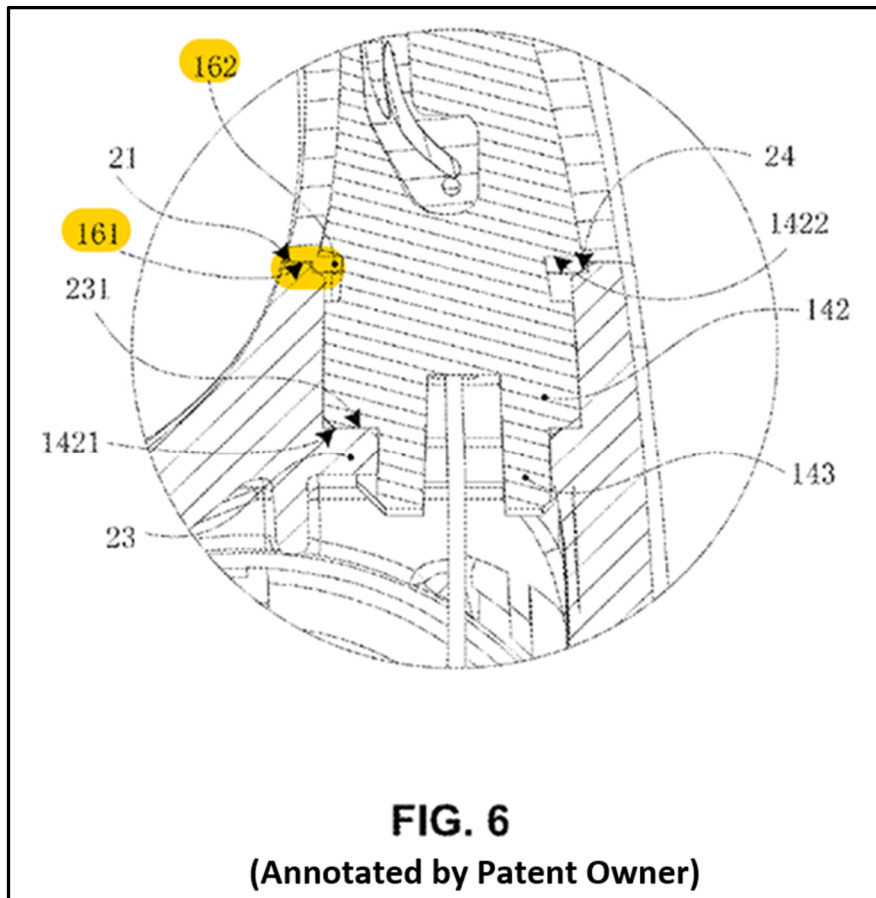
First, a claim interpretation repeating the claim language would be superfluous. POR clarifies the plain meaning of this limitation, considering the detailed description where "elastically" and "abutted" are not ignored.

Second, Patent Owner's interpretation relies on claim 1 itself where “abutted” is distinguished from “being surrounded by.” Claim 1 recites (1) the ear hook is “being surrounded by” the elastic sleeve, and (2) the core housing—recited as a separate element from the ear hook—is “elastically abutted against” the protective sleeve surrounding the ear hook.

Third, Petitioner erroneously contends the '582 patent, at 13:46-50, shows

abutting with locations other than an end surface. Rep., 2-3. That section, however, explains: “...when the core housing 20 and the plug end 14 are plugged and fixed, the annular abutting surface 161 and the annular boss 162 may elastically abut against the outer end surface 21 of the core housing 20 and the connecting slope 24, respectively.”¹ EX1001, 13:46-50. This refutes Petitioner’s assertion because it states the elastic sleeve must abut “the outer end surface” of the core housing. This is unequivocally clear in Figure 6 where annular abutting surface 161 (and annular boss 162)—both parts of the elastic sleeve—abut outer end surface 21 of core housing 20. See also *id.*, 13:1-23.

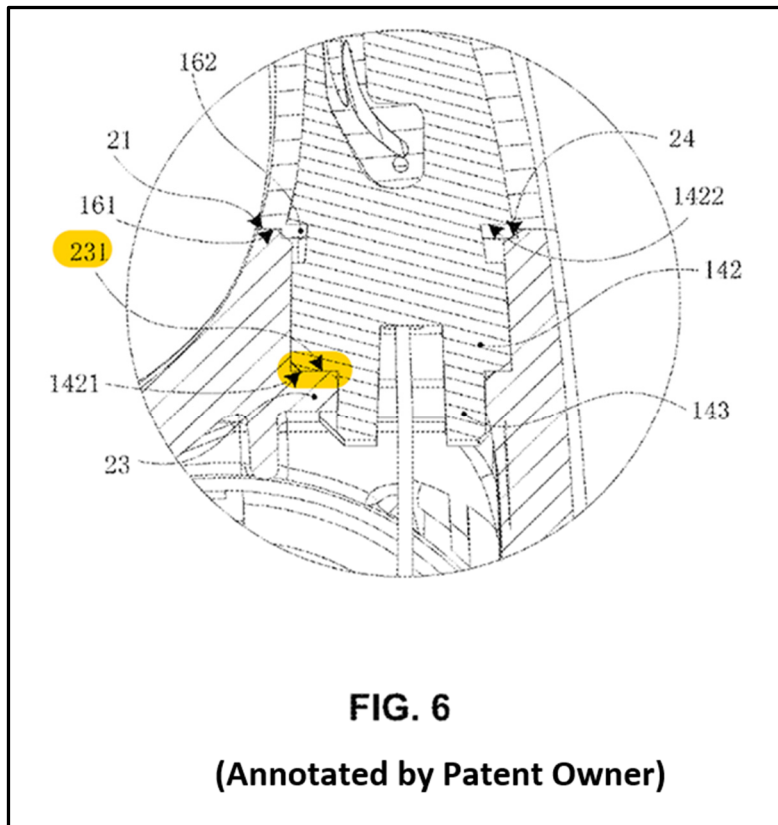
¹ All emphasized text is made by Patent Owner.



As illustrated, surfaces 21 and 24 are both parts of the same end surface of the core housing: i.e., an outer flat section (element 20) and a connected angled section (element 24). *See id.*, 13:34-45. Thus, this section supports Patent Owner's interpretation.

Fourth, Petitioner points to the '582 patent, at 12:18-21 (Rep., 3-4), explaining: "...the inserting portion 142 may be at least partially inserted into the socket 22 and abut against the outer side surface 231 of a stopping block 23." EX1001, 12:18-21. But, as Figure 6 illustrates (annotated below), outer side surface 231 is **at the edge of the stopping block 23**. *See id.*, 12:27-28. Patent Owner's

interpretation is again corroborated.



Fifth, Petitioner's claim differentiation arguments regarding claim 10 are unavailing. Rep., 2. Claim 10 depends from claims 9, 8, 7 and 1, with other limitations, differentiating it from claim 1.

Accordingly, Petitioner's claim-construction arguments fail.

B. "control circuit or the battery"

Patent Owner maintains that Petitioner promulgated inconsistent claim construction positions in IPR and in District Court. Petitioner's invalidity grounds, however, fail under any interpretation due to other shortcomings explained here and in the POR.

III. GROUND 1 FAILS TO SHOW THAT CLAIMS 1 AND 14 ARE UNPATENTABLE OVER LI AND LIAO.

A. 1[a]-Petitioner's motivations to combine Li and Fujita fail to overcome significant deterrents recognized by a POSITA

Petitioner argues Li does not “teach away” from the Li-Liao combination because it does not “criticize, discredit, or otherwise discourage” using a plug to connect a housing to connecting components. Rep., 7-8. Petitioner is wrong.

First, the POR does not argue “teaching away.” It identifies deterrents and obstacles a POSITA would have faced in making the proposed combination. POR 18-21. Petitioner's combination would have rendered Li's headphone non-operational. The POR explains why Li would have “otherwise discouraged” adding multiple segments—segmentation introducing additional seams into Li's unitary protective layer and creating serious waterproofing and structural-integrity issues. POR 16-26.

Second, Petitioner contends Li does not “criticize, discredit, or otherwise discourage” having numerous segmented sections. Rep., 7-8. Petitioner is wrong. Li describes only two connections (forming 3 segments). *See* Li, FIG. 2; POR, 18-20. It never contemplates additional segments, and stresses structural integrity, describing the ear hook and housings as a *singular* component constructed via injection molding, with a unitary protective layer, fixed connections, and adhesives. POR, 23-26. Li's strong preference for a unitary structure is inconsistent with

segmenting it into additional segments. *Id.*

Petitioner's structural-stability rebuttal rests on its expert's Rebuttal Declaration, first cited on Reply. Rep., 8 (citing EX1041, ¶¶5-6). Argument and evidence first advanced on reply—here, the Rebuttal Declaration paragraphs shoring up a motivation the Petition did *not* establish—are not properly before the Board and deserve no weight. 37 C.F.R. § 42.23(b); POR 18-26.

Third, Petitioner belatedly and erroneously argues that locating modular connections at the claimed location is not “arbitrary” because “[a] POSITA would have understood there to be finite places to locate modular connections” and “the core housing...and the circuit housing...are the natural points for modular separation because they are where the ear hook interfaces with the functional modules in a loudspeaker apparatus.” Rep., 11-12.

This argument should be rejected not only because it is presented for the first time in Petitioner's Reply, but also because it relies on the knowledge of a POSITA to improperly fill-in for the prior art's missing description—a practice that violates Rule 42 and is prohibited under both PTAB and Federal Circuit guidance. POR 33-35. Petitioner contends its Petition complies with Rule 42 because it relies on prior art references. Rep., 12-13. That is meritless: none of Petitioner's nine references (Li, Liao, and 7 “interchangeable modularity” references) describes the claimed first and second plug ends at the required locations.

Petitioner's reliance on *CyWee Group Ltd. v. ZTE (USA), Inc.*, 90 F.4th 1358 (Fed. Cir. 2024), for the proposition that adding plug ends was a mere "routine engineering task" (Rep., 12), is misplaced. *CyWee* does not excuse Petitioner from identifying prior art that discloses the claimed configuration; a "routine engineering" label cannot substitute for a reference teaching segmentation of the ear hook at the claimed plug-end locations, which no asserted reference supplies. POR, 31-33.

Nor does Petitioner's expert cure the gap. Petitioner buttresses its "natural points" assertion with paragraph 121 of the opening Kyriakakis declaration, Rep., 12 (citing EX1003, ¶121), but that paragraph offers only the same conclusory ipse dixit, untethered to any prior-art disclosure of segmentation at the claimed locations. A conclusory expert assertion that merely tracks the argument it supports is entitled to little or no weight. 37 C.F.R. § 42.65(a).

Additionally, even if the claimed locations constituted interfaces with functional modules, there is no reason they would be "natural points" for segmenting Li's unitary ear hook, and Petitioner provides no rationale for this conclusory assertion. Neither Li nor any other reference in the Petition describes segmenting the ear hook at the claimed locations, undermining Petitioner's "natural points" assertion. Any such conclusion rests only on improper hindsight.

Fourth, regarding moisture infiltration, Petitioner summarily contends a POSITA would have used elastomeric sealing materials between adjoining

components. Rep., 9-10. This argument was absent from the Petition—where the only waterproofing explanation concerns [1b]’s waterproof elastic sleeve surrounding the ear hook. Even now, Petitioner’s rationale is conclusory, never explaining how such sealing would work amid the additional segments with socket and inserting components.

The Reply invokes *Winner International Royalty Corp. v. Wang*, 202 F.3d 1340 (Fed. Cir. 2000), and *Medichem* (benefits “both lost and gained” must be weighed) and *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784 (Fed. Cir. 2021), and *PAR Pharmaceutical, Inc. v. TWI Pharmaceuticals, Inc.*, 773 F.3d 1186 (Fed. Cir. 2014) (Petitioner need show only a “suitable option,” not the “best option”). Rep., 9-10. But even a “suitable option” must be motivated by the prior art and have a reasonable expectation of success. Petitioner cannot use hindsight and a POSITA’s general knowledge to supply a segmentation that no asserted reference discloses at the claimed locations. 35 U.S.C. § 316(e); POR 18-26.

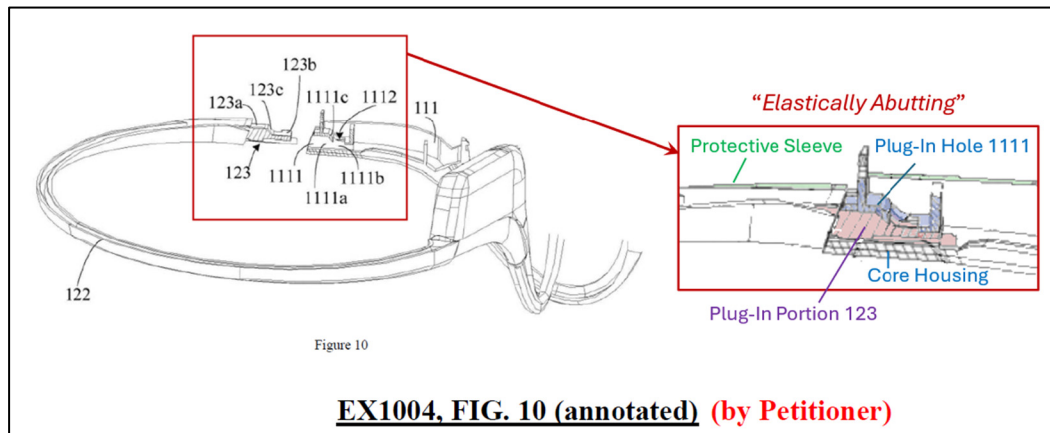
Fifth, Petitioner’s purported “modularity” benefit in a hypothetical combination is legally improper (POR, 31-33) and deficient because any purported benefit is negated by numerous disadvantages and strong discouragements in Li. POR, 18-26.

In sum, Petitioner’s position is a textbook example of improper hindsight, relying on a POSITA’s knowledge to back-fill claim limitations no prior art

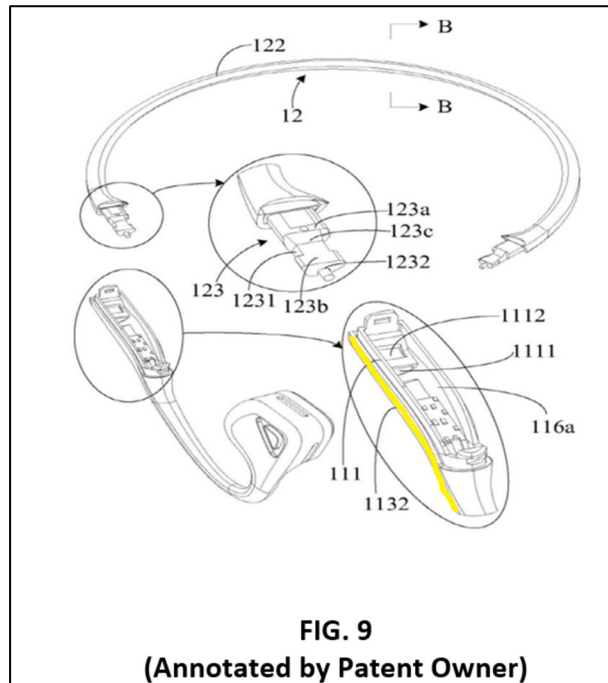
describes.

B. 1[c]-Li does not disclose elastic abutting.

First, Petitioner's elastic abutting explanations rely on Li's Figure 10, which **does not show the plug ends at the claimed location**. Rep., 13-14. Petitioner's hypothetical figure labeled "Elastically Abutting" also incorrectly identifies the elastic sleeve as "Core Housing." Rep., 14-15.

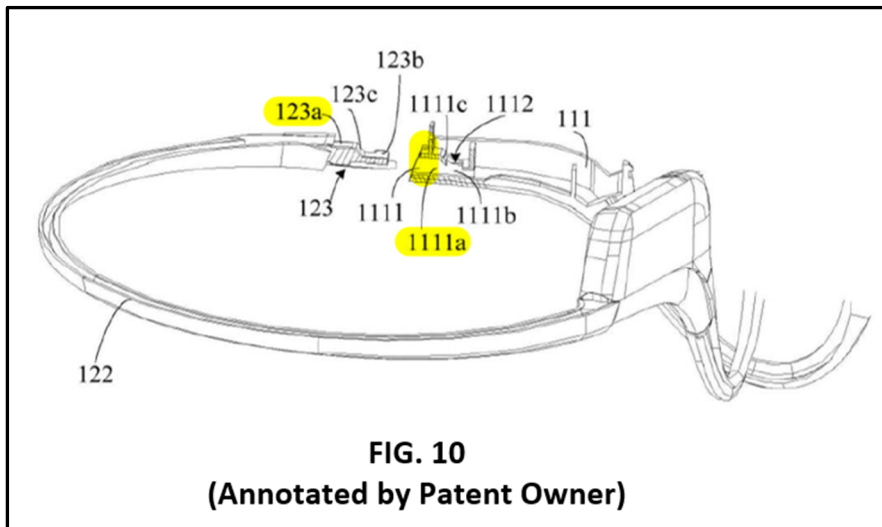


Li confirms this labeling is erroneous: reference numeral 111 denotes the first housing, and 1111 denotes the plug-in hole (with sub-elements 1111a and 1111b). Li, ¶¶60, 62. The cross-hatched area Petitioner erroneously labels "Core Housing" is elastic coating layer 1132, which "directly contacts the ear" for comfort. *Id.*, ¶28; Fig. 9. Li's elastic layer is not the claimed core housing. Li never describes its elastic sleeve (122) elastically abutting the core housing (POR, 37-42), and Petitioner's mislabeling fails to refute this.



Petitioner's invocation of *In re Mouttet*, 686 F.3d 1322, 1331 (Fed. Cir. 2012), does not aid its position. Rep., 14-15. *Mouttet* permits the Board to credit what a reference teaches; it does not authorize importing into Li's figures a teaching the specification never provides. Reading Li "for all that it teaches" still does not teach the elastic coating layer elastically abutting the core housing.

Second, Petitioner mischaracterizes Li's paragraphs [0063]-[0064] by asserting "the plug-in portion 123 and plug-in hole 1111 are configured for a "tight fit."" Rep., 14-15. Petitioner's paraphrasing omits elements 123a and 1111a—the elements engaging in a tight fit. Li's actual text describes "the first plug-in section 123a fits tightly with the first hole section 1111a." Li, ¶63; Fig. 10.



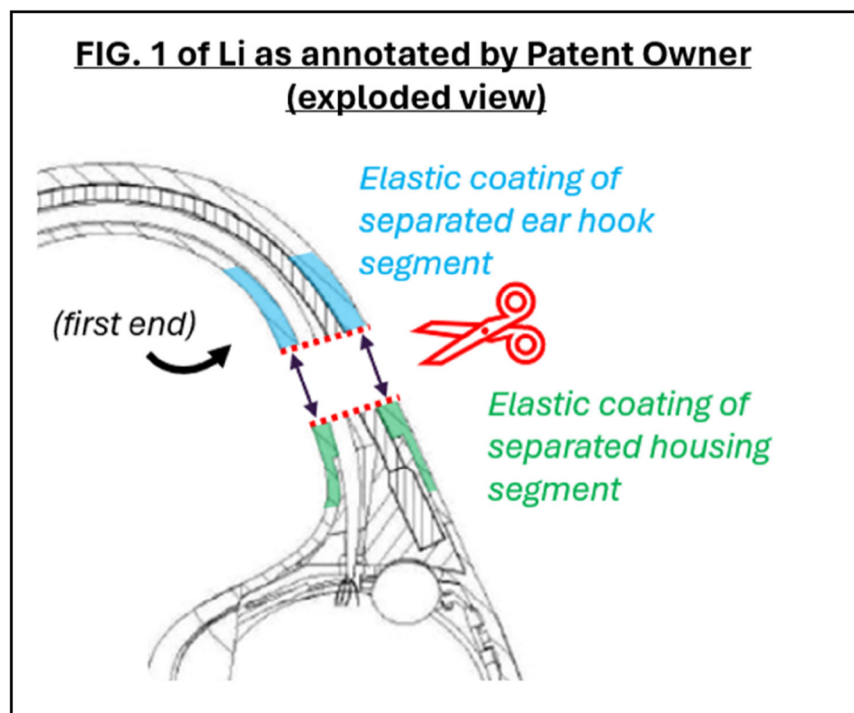
Importantly, this section provides no explanation about elastic abutting *of the sleeve* with the core housing.

Petitioner's expert gloss—that coating 122 “undergoes elastic deformation” and forms an “interference-type relationship” with housing 111 to effect the “tight fit,” Rep., 14-15 (citing EX1041, ¶12)—does not supply the missing teaching. Li's “tight fit” is the mechanical engagement of plug-in section 123a within hole section 1111a, Li, ¶63—not elastic abutment of the sleeve against the core housing. Dr. Kyriakakis identifies no disclosure in Li supporting an “interference-type relationship” between coating 122 and the core housing, and his conclusory opinion deserves little or no weight. 37 C.F.R. § 42.65(a).

Third, Petitioner's position contradicts its earlier dismissal of Patent Owner's structural integrity arguments. See Rep., 8-9. Within paragraphs [0063]-[0064]—

relied upon here² for elastic abutting—Li describes using an adhesive to permanently connect the earphone's sections. Petitioner earlier dismissed these paragraphs as Li's *optional* features. *Id.* Petitioner cannot have it both ways.

Fourth, Petitioner provides no real answer to Patent Owner's argument that even if all of Petitioner's assertions are assumed true, only Li's elastic coatings at both connection sides would contact each other (see figure below), whereas claim 1 requires the elastic sleeve to elastically abut *the core housing*. Rep., 15-16; POR, 42-45.



² 2“By the *tight fit between the first plug-in section 123a and the first hole section 1111a*...and the *application of adhesive or locking piece for fixation*, the rear hook is further effectively connected to the ear hook.” Li, ¶64.

Petitioner's conclusory Reply assertions miss the point. Rep., 15-16. "The protective sleeve" in [1c] finds antecedent basis in [1b], indicating it must surround the ear hook section. That sleeve in Petitioner's invalidity ground (blue-annotated above) does not abut the core housing across the gap. As explained in the POR and admitted by Petitioner (see discussion of claim 10 *infra*), at best, the blue-annotated elastic sleeve contacts the green-annotated elastic sleeve—a sleeve-to-sleeve connection, not abutment (let alone elastic abutment) against the core housing.

C. Petitioner Has Abandoned the Only Theory It Advanced for [1e], and Its New Theories Fail.

Petitioner's [1e] challenge rested on a single inherency premise: that the rigid connection of the housing panels automatically produces the claimed sub-60-degree phase difference. After POR showed otherwise, the Reply abandons the necessity requirement governing inherency (Rep., 17) and substitutes a new "geometry" rationale found nowhere in the Petition or in Liao. Rep., 18-19. The theory switch is impermissible, the new obviousness theory too late and unsupported, and reliance on Liao's lone direct-attachment statement is hindsight.

1. Petitioner's disclaimer of necessity is fatal under either legal framework.

The Reply accuses Patent Owner of "improperly attempt[ing] to apply the 'necessarily present' standard for inherent anticipation." Rep., 17. But the issue is Petitioner's theory, not Patent Owner's label: the Petition derived the phase result

from Liao's structure, and Petitioner cannot relabel it as ordinary obviousness.

First, the “necessarily present” standard is not confined to anticipation. Where a petitioner relies on inherency to supply a limitation *within an obviousness analysis*, the Federal Circuit requires the limitation be “necessarily present” or the “natural result of the combination,” and inherency in obviousness “must be carefully circumscribed.” *PAR Pharm., Inc. v. TWi Pharms., Inc.*, 773 F.3d 1186, 1195-96 (Fed. Cir. 2014); *LBT IP I LLC v. Apple Inc.*, 2023 U.S. App. LEXIS 14376, at *8-9 (Fed. Cir. June 9, 2023).

Second, the standard applies because of how the *Petition* framed its case. Liao nowhere discusses the relative phase of any two parts of its housing. POR, 45; EX2020, ¶115. The *Petition* derived that result as the automatic consequence of Liao's structure—the phase difference “is nearly zero *because*” panel 220 and housing 210 are “rigidly connected.” Pet., 35. A property derived from Liao's structure.

Petitioner does not defend that inherency theory but abandons it: it “need *not* show Liao's housing construction *necessarily always* produces the claimed phase difference.” Rep., 17. That concedes rigidity does not *necessarily* produce the claimed result—defeating the *Petition's* original theory (rigidity automatically yields a nearly zero phase difference). See Pet., 34-36.

This leaves only the Reply's new ordinary-obviousness framing (Rep., 17-19),

which the Petition never developed (*see* Pet., 34-36) and which Petitioner may not raise in its Reply. 37 C.F.R. § 42.23(a). Even if entertained, it fares no better, as explained below.

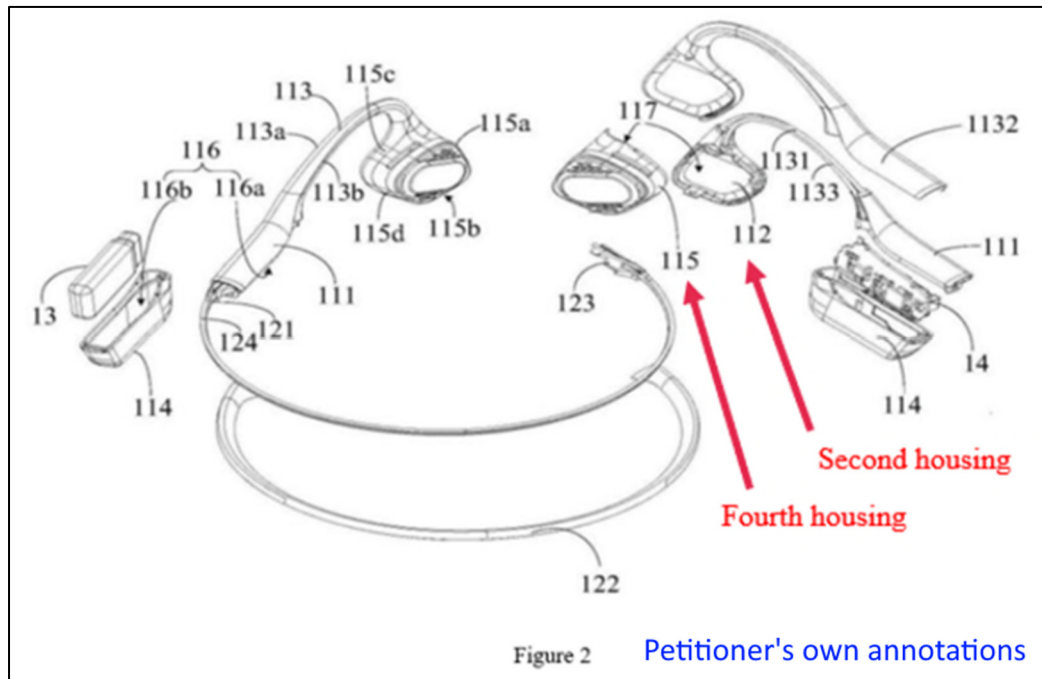
2. Petitioner's new ordinary-obviousness theory is both too late and unsupported.

Petitioner's Reply belatedly argues for the first time that Liao's direct-attachment housing would "perform in the same way as the claimed housing," including a sub-60-degree phase difference, because it allegedly has "a flat, planar front panel and a flat rear housing wall," centrally driven, forming a "direct and symmetrical" path with "planar panels of uniform thickness." Rep., 17-19 (citing EX1041, ¶¶14-18).

None of the above appears in the Petition or Dr. Kyriakakis's original declaration. Pet., 34-36; EX1003, ¶¶134-144. Nor is it proper rebuttal: a new structural mechanism is a new affirmative case, made only after the POR showed "Petitioner offers no other pathway" than rigidity. POR, 48. The new theory and EX1041, ¶¶14-18, warrant no weight. 37 C.F.R. § 42.23(b); *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369-1370 (Fed. Cir. 2016).

Petitioner's theory also fails on the merits. ***First***, the alleged geometry does not exist in Petitioner's combination: the Petition maps [1e] to ***Li's contoured***, multi-

part fourth housing 115 and second housing 112 of an ear-hook headset. Pet., 36; EX1003, ¶¶136-137; Li, FIG. 2 (annotated below).



Dr. Kyriakakis's hypothesis is *configuration-specific* by his own terms: the in-phase result follows only “[i]n *such a configuration*” of *Liao*—flat, symmetric, centrally driven. EX1041, ¶18. But that is not the Petition's combination. Pet., 36; Li, FIG. 2. Li's housings are neither flat nor symmetric, and Petitioner never explains how Liao's assumed geometry maps onto Li's structures, or why the combined Li-Liao device would exhibit the claimed sub-60-degree phase difference. By his own physics, Li's contoured, asymmetric housings have precisely the features Dr. Kyriakakis concedes: “could otherwise induce *significant phase divergence*.” EX1041, ¶16.

Second, Liao does not disclose the alleged geometry—it contradicts it. Neither the Reply nor Dr. Kyriakakis cites anything for the geometry assertions: EX1041, ¶16, which carries the entire theory, identifies nothing from Liao. *Compare* Rep., 18 *with* EX1041, ¶16. This warrants little or no weight. 37 C.F.R. § 42.65(a); *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15 (PTAB Aug. 24, 2022) (precedential). Petitioner's Reply asserts Liao “does not teach a housing including curvatures, cutouts, or asymmetric reinforcements.” Rep., 18. But Petitioner misses the point; absence of a curvature teaching in Liao does not mean Liao describes a flat or uniform geometry; it does not. Petitioner bears the burden, 35 U.S.C. § 316(e); silence cannot carry it.

Liao's affirmative disclosures point the other way. As to the “centrally located vibration source,” Liao teaches “***more preferably***, the mass distribution of the panel around the vibration [center] is uneven (i.e., the vibration center ***deviates from the physical center*** of the panel).” Liao, ¶74. Liao thus prefers an ***off-center*** vibration center, contrary to EX1041. As to “planar panels of uniform thickness” (Rep., 19)—absent from EX1041—Liao states that “[p]***referably***, a panel with ***uneven thickness*** can be used.” Liao, ¶78; POR 57. Liao thus ***prefers*** the very non-uniformities the Reply assumes away.

Third, even the assumed geometry would not supply a reasonable expectation of the claimed result. Dr. Scordilis explained—and Dr. Kyriakakis does not

dispute—that thickness, material, support, and loading differences “could set the two panels to vibrate with phase differences...much greater than 60 degrees within the 2000 Hz to 3000 Hz frequency range,” even in a rigid housing. EX2020, ¶¶117-119. Dr. Kyriakakis’ only answer—that such features “are not disclosed in Liao” (EX1041, ¶¶16, 18)—inverts the burden of proof.

Petitioner’s own treatment of claim 14 confirms the point: to establish claim 14’s amplitude ratio it required four conditions—rigid connection, same panel material, same panel thickness, and same vibration source—but for claim 1’s phase limitation Petitioner mentions only one condition while ignoring others. Pet., 41-42; EX1003, ¶¶151-153; POR, 47-48; EX2020, ¶¶120-122.

	Guaranteeing “nearly in <i>phase</i> ” vibrations (element [1e])	Guaranteeing “nearly the same” vibration <i>amplitudes</i> (dependent claim 14)
1) Rigid panel connections	Asserted as necessary 	Asserted as necessary 
2) Same panel material	Not asserted as relevant 	Asserted as necessary 
3) Same panel thickness	Not asserted as relevant 	Asserted as necessary 
4) Same vibration source	Not asserted as relevant 	Asserted as necessary 

Petitioner thereby conceded that material, thickness, and source placement affect how the panels move relative to one another, and those factors *govern phase* as they govern amplitude. EX2020, ¶121. Petitioner's expert's sole position is the unsupported assertion that Liao's housing would perform identically to the claimed

housing, based solely on the same rigidity premise. EX1003, ¶¶138-143. A conclusory assertion tracking the claim language cannot establish obviousness. 37 C.F.R. § 42.65(a); *Xerox*, Paper 9, 16.

3. Petitioner's Reliance on Liao Remains Improper Hindsight.

The Reply asserts Patent Owner's hindsight argument "mischaracterizes Liao, which...touts the benefits of the direct attachment method." Rep., 18. The quoted text refutes it: Liao's paragraph 63 only states the connection members "*may* not be necessary" and "[t]he panel *can* be directly mounted on the housing or bonded to the housing with adhesive." Liao, ¶63. That is a *permissive* listing of alternatives identifying no benefit of direct attachment. Dr. Kyriakakis's contrary testimony that "Liao teaches using a direct attachment method is desirable" finds no support in that paragraph. EX1041, ¶17. Where Liao *does* tout benefits, it does so for the *elastic* connection members: a "shock-absorbing effect," suppression of sound leakage, and avoidance of "abnormal sound caused by possible abnormal resonance." Liao, ¶58; POR, 50-51; EX2020, ¶¶125-126. Liao devotes its figures and advantages to *elastic* coupling and mentions direct attachment only in passing; elevating that passing alternative into Liao's "teaching" for the claimed phase result is the selective culling *Cheese Systems* condemns. *Cheese Sys., Inc. v. Tetra Pak Cheese & Powder Sys., Inc.*, 725 F.3d 1341, 1352-54 (Fed. Cir. 2013); POR 49-53.

The Reply's further assertion that Liao does not "criticize, discredit, or

otherwise discourage” direct attachment (Rep., 19 citing *DePuy Spine*, 567 F.3d at 1327) fares no better. Liao identifies sound leakage as a central problem arising when vibration is “transmitted to the housing...causing the housing to vibrate” (Liao, ¶64), and teaches a lower housing-to-panel vibration ratio (x_2/x_1) means “the lower the sound leakage” (Liao, ¶68) and “using *elastic* connection members...can reduce the vibration amplitude of the housing...thereby reducing sound leakage.” Liao, ¶69, ¶172. Petitioner’s theory requires the opposite: a back panel that vibrates together with, and comparably to, the front panel. A reference whose stated objective is to *minimize* housing vibration does “otherwise discourage” selecting the rigid, direct connection to maximize it. *DePuy Spine*, 567 F.3d at 1327.

Furthermore, Patent Owner’s argument did not depend on teaching away. Even if Liao were merely neutral toward direct attachment, neutrality would *not* supply the affirmative reason to select that undeveloped “direct-connection” alternative—nor any basis to expect a sub-60-degree phase difference at 2000-3000 Hz—that Petitioner must prove. 35 U.S.C. § 316(e). And *In re GPAC*’s nexus requirement governs objective evidence of nonobviousness, which Patent Owner never proffered. 57 F.3d at 1580; Rep., 19. The hindsight defect lies in Petitioner’s *prima facie* case, not in Patent Owner’s decision to forgo objective indicia. Petitioner’s reliance on Liao’s lone direct-attachment statement remains improper hindsight.

D. Claim 14: vibration amplitude ratio within 0.5 to 1.5

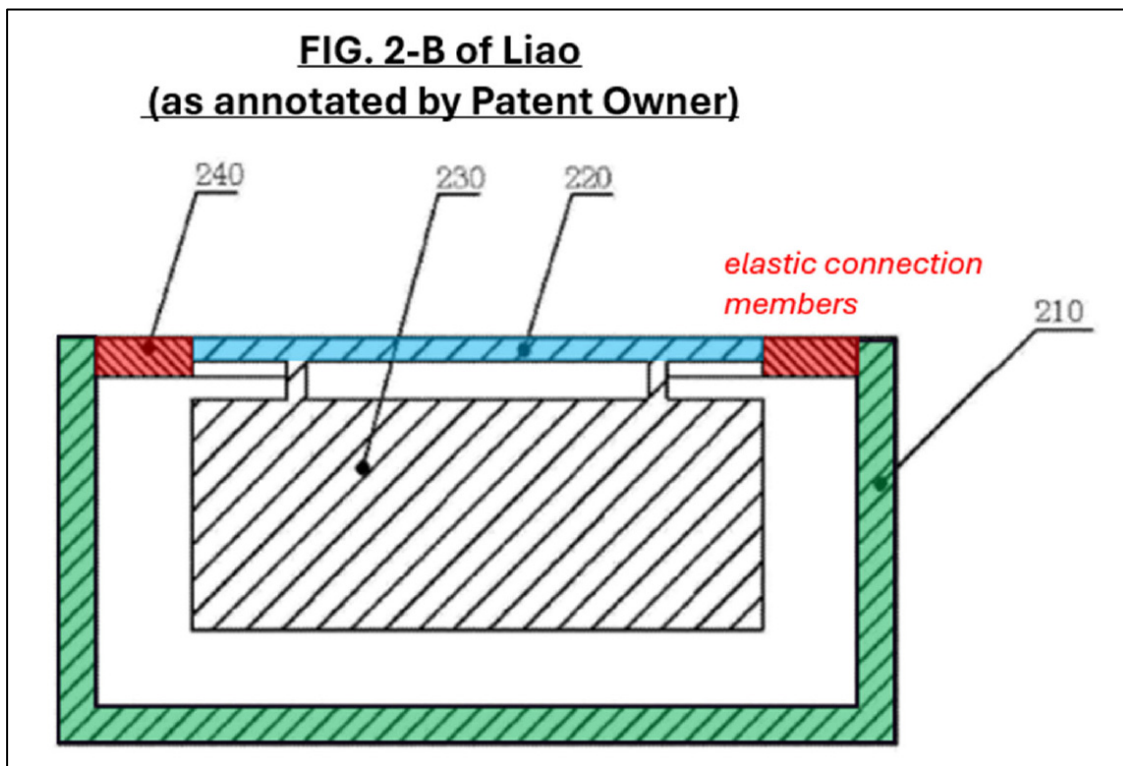
Claim 14 is not invalid based on at least its dependency from claim 1. Petitioner's claim 14 arguments also fail independently: the central premise of its amplitude theory—equal panel thickness—is one Liao expressly contradicts.

1. Petitioner's disclaimer of “necessity” defeats Petition's only theory.

The Reply repeats its [1e] reasoning: Petitioner “need not show that Liao's housing construction necessarily always produces the claimed vibration amplitude ratio range.” Rep., 20. It is equally fatal here. The Petition derived the claimed ratio from Liao's structure alone, based on four conditions (rigid connection, same material, same thickness, same source), concluding the panels “would also have nearly the same amplitudes.” Pet., 41-42; EX1003, ¶¶151-153. A property derived from structure rather than disclosure is inherency subject to the “necessarily present” standard (*supra* §III.C.1; *PAR Pharm.*, 773 F.3d at 1195-96), and Liao nowhere discusses relative panel amplitudes. POR, 55; EX2020, ¶131. By abandoning inherency, Petitioner effectively concedes its four conditions do not reliably produce the claimed ratio, and identified no other path. POR, 55. *DexCom*, Rep., 20, is inapposite: Patent Owner does not confine Liao to what it “literally says” but relies on what Liao affirmatively teaches, the opposite of Petitioner's premise.

2. Liao contradicts the equal-thickness condition, and the Reply disclaims Petition's own evidence.

For equal thickness, the Petition cited only Liao ¶¶57-58 and FIG. 2-B. Pet., 41-42; EX1003, ¶152. But Liao expressly prefers the opposite—"a panel with uneven thickness" (Liao, ¶78)—and FIG. 2-B depicts the housing (210) as considerably thicker than the panel (220). POR 56-59; EX2020, ¶¶135-139.



The Reply's answer to FIG. 2-B disclaims the Petition's own alleged evidence: FIG. 2-B is now "irrelevant" because it "includes a connection member 240." Rep., 21. But FIG. 2-B is the very figure the Petition cited for equal thickness. Pet., 41-42; EX1003, ¶152. Petitioner's theory thus finds no support, and its illusory cost-saving) makes little sense: a thinner front plate requires less material, resulting in

reduced cost and weight, dissuading a POSITA from deviating from Liao.

3. Nothing else fills the gap.

Dr. Kyriakakis's theory that Liao's housing "would predictably produce" the claimed ratio rests on the new "symmetric," "centrally located" geometry that is too late, unsupported, and contradicted by Liao ¶¶74, 78. EX1041, ¶¶18-19; *supra* §III.C.2; 37 C.F.R. § 42.23(b). EX1001, 20:57-67. It cannot supply what Liao lacks; that is hindsight. *Supra* §III.C.3; *Cheese Sys.*, 725 F.3d at 1352-54. III.C.3

IV. GROUNDS 2-3

A. Claims 7-12

Petition originally asserted Numata's connector "improve[s] wear-resistance and [will] add Numata's convenient bi-directional plugging." Pet., 64. After the POR showed "bidirectionality" is a liability, not a benefit, Petitioner relies on the purported "secure fit and improved wear resistance." Rep., 22-23. But Li already describes multiple secure-connection mechanisms, including plug-in holes and adhesives (Li, ¶¶37, 60), as secure—if not more so—than Numata's connector. A POSITA would have gained no benefit from replacing Li's already-secure connectors.

As to "improved wear resistance," that term and its variations do not appear in Numata in the context Petitioner uses. Numata describes simplifying "wearing" the headset by one hand. Numata, Abstract, ¶¶7, 12, 17. Other than switching from

a left-ear to a right-ear configuration (*id.*, 10)—irrelevant to Li's device—Petitioner shows no scenario where Numata's bidirectional connector improves the wearability of Li's dual-ear device.

In contrast, using Numata's bidirectional connector would require extra checks, increase assembly cost and time, and sometimes render the earphone useless. POR, 61-69. That risk outweighs the illusory benefits of a "secure fit" or "wear resistance."

The following table summarizes Petitioner's conclusory rebuttals, which do not address the combination's flaws. *Id.*

Numata's Flaw Shown	POR	Petitioner's Reply	Shortcomings of Petitioner's Position
Incorrect and upside-down insertion of earphones	POSITA would flip the connections back to correct position / Fixable through routine engineering, e.g., keying or asymmetric geometries to prevent reverse insertion	Fails to explain why POSITA would be motivated to change the Li-Liao combination to use a bidirectional connector knowing this deficiency	Alternative connector configurations require significant modifications not explained in Numata or the Petition and are not routine for this POSITA / No explanation why a POSITA would use a reversible connector that cannot function as one

Incorrectly connected/assembled earphone is permanently attached because Numata's release mechanism requires a hole that cannot be implemented in the waterproof housing of the combination	Not rebutted in Petitioner's Reply.	Expert (EX1041, ¶22) admits this problem but says a POSITA would use alternate release mechanisms without a through-hole, e.g., a resilient cantilever latch accessible from the exterior, a spring-loaded detent, or a flexible barb that compresses upon pulling	EX1041, ¶22 is not cited in the Petition. Petitioner's filings and cited references describe no such alternate structures. The stated modifications are not trivial, and the expert does not explain how they are possible
Numata's connector lacks electrical connectivity, and adding electrical connections would obstruct plug insertion into its receptacle	Not rebutted in Petitioner's Reply	Expert (EX1041, ¶25) opines these would have been 'avoided by multiple known techniques for providing electrical connections via plug and socket portions.'	Petition and Reply inadequately explain and improperly incorporate the expert declaration by reference. EX1041, ¶25 is conclusory, merely citing Numata connector elements 65/65A and declaring electrical connections routine

Petitioner's arguments are new, conclusory, and/or unsubstantiated, and include improper incorporate by reference. Thus, they should be given little or no weight.

Petitioner's new reliance on Numata's disclosure does not cure the defect. The Reply points to Numata's hollow through-hole structure (65, 65A) and insertion part (47) as able to "accommodate electrical connections if desired." Rep., 23-24 (citing Numata, ¶¶31-34). But those paragraphs describe Numata's mechanical detachable-connector structure, not electrical connectivity, and Petitioner never explains how conductive elements could be added without obstructing the insertion and elastic-locking function on which Numata depends.

Petitioner's reliance on Numata's ¶¶31-34 for electrical connectivity is also belated. The Petition never asserted that Numata's insertion part 47 or through-hole 65/65A provides or accommodates electrical connectivity; it cited those paragraphs only for Numata's mechanical plug-and-socket fit and grounded its connectivity theory on Li and generic modular connectors, conceding that "Li does not disclose a method for the second wire set 124 in plug-in portions 123 to electrically 'connect the components'". Pet., 24. Petitioner first advanced the Numata-based theory in Reply, after Patent Owner showed Numata's plugs lack electrical connectivity. POR, 67-69. A reply may not introduce a new theory or evidence that could have been presented in the Petition. 37 C.F.R. § 42.23(b); *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369-70 (Fed. Cir. 2016).

B. Petitioner misconstrues claim 9 limitations

Claim 9 requires the inserting portion of the plug end be only partially inserted

into the socket, with the exposed part forming an annular surface “spaced apart” from the outer end surface of the core housing. EX1001, 37:34-39. Petitioner incorrectly reads this as requiring, “when” the plug is partially inserted, the surfaces be spaced apart. Rep., 23-25 (“When the Numata plug is partially inserted into a socket...”). But claim 9 has no temporal condition; it is an apparatus claim describing the spatial configuration of “the insertion portion” within the socket—clear from both the plain claim language and the detailed description. EX1001, 12:18-21 (“...the inserting portion 142 may be at least partially inserted into the socket 22 and abut against the outer side surface 231 of a stopping block 23.”); FIG. 6 (annotated below).

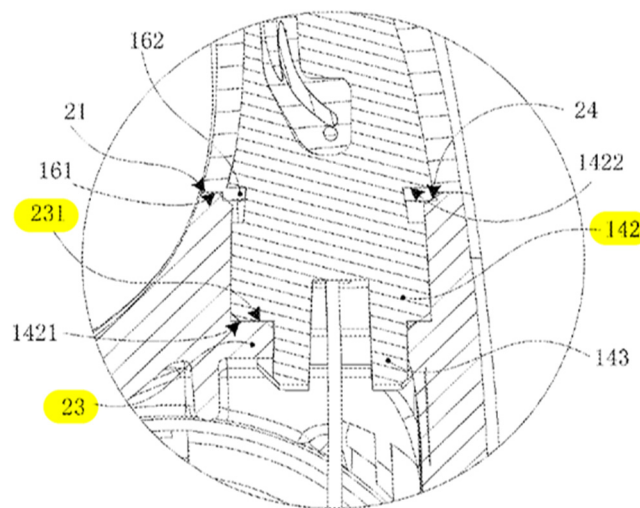


FIG. 6
(Annotated by Patent Owner)

Thus claim 9 describes positioning of the inserting portion when the first plug end is connected to the first socket. *See* base claim 7 (“the first socket is connected

to the first plug end.”).

Petitioner's claim-differentiation argument, citing *Clearstream Wastewater Systems, Inc. v. Hydro-Action, Inc.*, 206 F.3d 1440 (Fed. Cir. 2000), and *Karlin Technology, Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968 (Fed. Cir. 1999), Rep., 23-25, is misplaced. That claim 10 adds a “when the core housing and the first plug end are fixed” condition does not relieve Petitioner of proving claim 9's distinct structural requirement—that the inserting portion be “partially inserted” and its exposed annular surface “spaced apart” from the core housing's outer end surface. Therefore, claim 10 includes myriad differentiating features and Petitioner's claim differentiation arguments fail.

Perhaps realizing its misinterpretation, Petitioner also contends “[e]ven when the Numata plug is fixed to the socket,” the spaced-apart condition is satisfied “to accommodate typical manufacturing tolerances and permit reliable installation.” Rep., 23-25. This new Reply position is untenable: Numata says nothing about manufacturing tolerances, Petitioner and its expert offer no evidence tolerances would create a “spaced apart” configuration, and no explanation shows why the annular table “surface” and core housing's outer end “surface” would be spaced apart even with small tolerances.

C. Claim 10

First, claim 10 is patentable because Petitioner fails to show unpatentability

of base claim 9.

Second, [10b] recites: “...the protective sleeve elastically abuts against the core housing to realize sealing.” The Petition admits its mapping is sleeve-to-sleeve—“the second elastic coating layer 122 abuts the first elastic coating layer 1132 at the plug-in portion 123” (Pet., 82)—not sleeve-against-core-housing. That admission independently defeats [10b]. *See* Section III.B *supra*; EX2020 ¶¶158-161.

V. GROUND 4

Ground 4 challenges dependent claims 16-20 over Li-Liao-Wang-Xu-Nielsen. Pet.,93-107. Each depends from claim 16, which depends from claim 1 and incorporates [1e]. EX1003, ¶267; Pet., 95. Ground 4 fails for the [1e] reasons above and below.

A. Petitioner's claim 16 theory contradicts its [1e] theory, and the Reply's pivot is too late and confirms the defect.

Petitioner's [1e] theory depends on Liao's panels being rigidly and directly connected *without* connection members: “*if panel 220 is vibrating, housing 210 is also vibrating in phase...because panel 220 and the housing 210 are rigidly connected without connection members 240.*” Pet., 35; EX1003, ¶¶134-144. But to meet claim 16, Petitioner relies on Liao's “triple vibration system” (Figure 22-A), which uses an *elastic* connection: “[t]he first vibration transmitting plate 2216

elastically connects the energy conversion device to the housing 2219.” Pet., 95-96; EX1003, ¶268; Liao, ¶¶170-172. As Dr. Scordilis explained, it is impossible to tell whether the claim-16 combination uses a rigid or elastic housing, and the elastic Figure 22-A embodiment undermines [1e]’s rigid-connection premise. EX2020, ¶¶162-166; POR, 75-78. That contradiction defeats motivation to combine and reasonable expectation of success. POR 77-78; EX2020, ¶166.

Petitioner’s only substantive answer is its expert’s new assertion that Liao’s elastic and direct-attachment techniques are “not mutually exclusive or technically inconsistent” and that Liao’s magnetic circuit components are “compatible with different disclosed housing configurations, including Liao’s direct-attachment housing configuration”—an argument the Petition never made. EX1041, ¶¶30-31. The Petition never explained how its [1e] “rigid connection” can be replaced with an “elastic connection” for claim 16 while still meeting [1e]; it mapped [16a] to Figure 22-A’s “magnetic circuit system.” Pet., 95; EX1003, ¶268. Injecting new rationale and a new combination theory now is improper.

Petitioner’s expert testimony is not only late but conclusory, asserting “compatibility” without explaining why a POSITA would separate Figure 22-A’s magnetic circuit from its defining elastic connection, or how the hybrid would satisfy [1e]’s phase requirement. EX1041, ¶¶30-31; EX2020, ¶¶164-166. Such conclusory opinion cannot carry Petitioner’s burden. 35 U.S.C. § 316(e).

The Reply alleges that the Petition identified “other portions of Liao” (Pet., 93) and relied on Wang and Xu for [16a]. Rep., 26-27; Pet., 95-96; EX1003, ¶¶268-270. But a longer list of references does not identify *which* combination Petitioner asserts—which Liao housing embodiment, paired with which magnetic circuit component, satisfies both [16a] and [1e]. The Petition’s [16a] mapping invoked Liao’s Figure 22-A “magnetic circuit system”—the elastic embodiment, the source of the contradiction. Pet., 95; EX1003, ¶268. Neither the Petition nor the Reply explains how that elastic embodiment coexists with the rigid, no-connection-member housing on which [1e] depends, or how the combination would work. POR 75-78; EX2020, ¶¶162-166; 35 U.S.C. § 316(e).

B. The Reply cannot recast the instituted Li-Liao-Wang-Xu-Nielsen ground as Li-Liao-Wang-Xu for claims 16-19.

Ground 4 is based on Li-Liao-Wang-Xu-Nielsen, Pet., 93, but the Petition does not rely on any section of Nielsen for claims 16-19. POR 74-75. The Reply does not dispute that. Rep., 25-26. It instead cites the claims’ “logical[]” relationship, generalized motivation to use Wang, Xu, and Nielsen, and the alleged “compatib[ility]” of the claim 20 Nielsen combination with claims 16-19. Rep., 26-27. None substitutes for a feature-by-feature Nielsen obviousness showing. The Petition’s failure to map Nielsen is dispositive, and it cannot propose a new invalidity ground now. Notably, *Polygroup* does not authorize subtracting a

reference from a ground. Rep., 26-27.

VI. CONCLUSION

Petitioner failed to show that the Challenged Claims are unpatentable.

Dated: June 29, 2026

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CERTIFICATION OF WORD COUNT UNDER 37 CFR § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing PATENT OWNER'S SUR-REPLY totals 5,554 words, excluding the parts exempted by 37 C.F.R. § 42.24(a). This word count was made by using the built-in word count function tool in the Microsoft Word 365 software used to prepare the document.

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that true copies of the foregoing PATENT OWNER'S SUR-REPLY and were served in their entirety by electronic mail on the Patent Owner via its attorneys of record:

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