

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. IPR2025-00842

Patent No. 11,197,084 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. B6 (AfterShokz AS800)
Ex. 2014	Mojawa June 12, 2025 Final Unenforceability and Invalidity Contentions, Ex. B7 (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 Jul. 30, 2025
Ex. 2018	File History of U.S. Patent No. 11,310,582 (the “’582 patent”)
Ex. 2019	U.S. Patent No. 11,310,582 (the “’582 patent”)
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. PETITIONER'S CLAIM CONSTRUCTION ARGUMENTS ARE UNAVAILING

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., 1. Petitioner's arguments are misplaced.

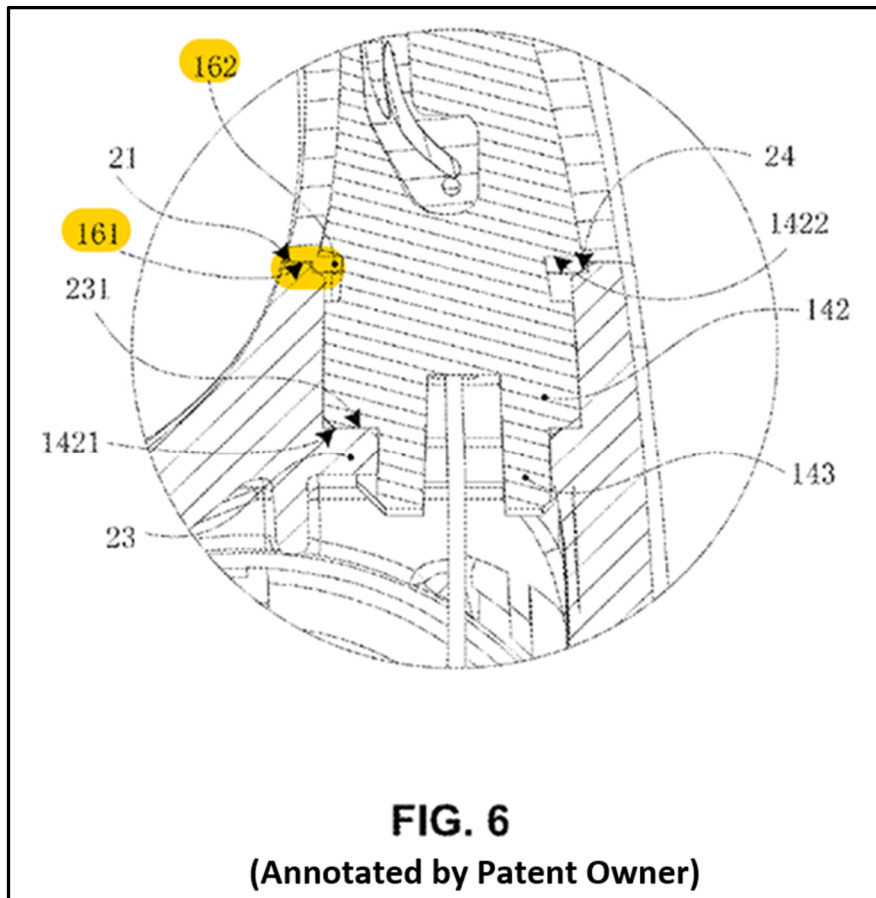
First, if a claim interpretation merely repeats the claim language, it would be unnecessary and superfluous. Patent Owner's Response (POR) explains how this limitation's plain meaning should be understood in view of the detailed description where neither "elastically" nor "abutted" are ignored.

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 '084 patent, at 13:54-58, shows abutting with locations other than an end surface. Rep., 1-2. 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, 13:54-58. This section refutes Petitioner's assertion because it states the elastic sleeve must be abutted against “the outer end surface” of the core housing. The abutment against the *end surface* becomes unequivocally clear in Figure 6 where annular abutting surface 161 (and annular boss 162)—both parts of the elastic sleeve—are abutted against outer end surface 21 of core housing 20. *See also id.*, 12:12-14.

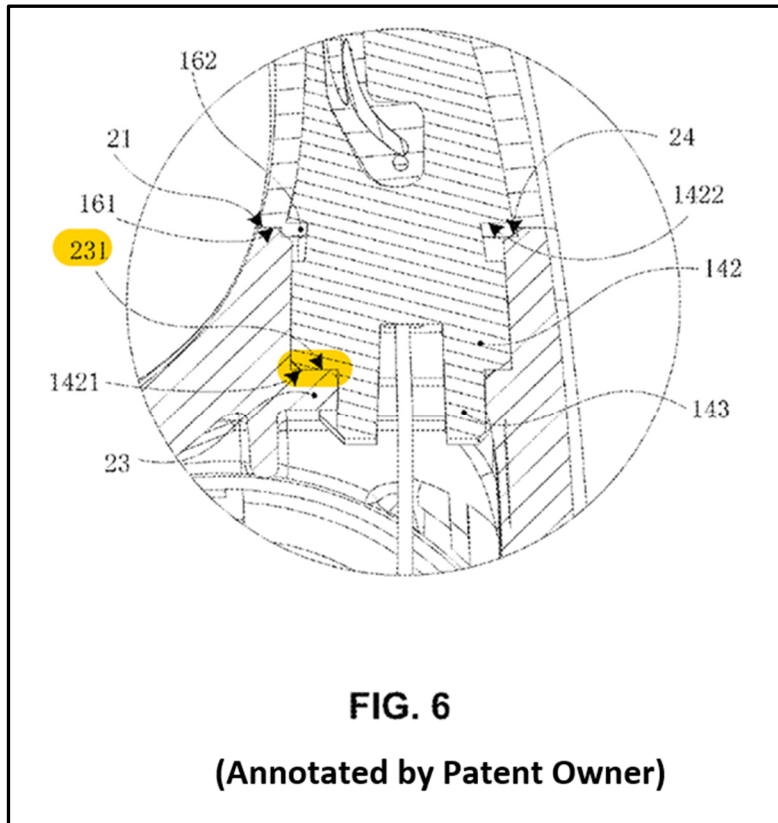
¹ All emphasized text is made by Patent Owner.



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.*, 13:58-62. Thus, this section of the '084 patent supports Patent Owner's interpretation.

Fourth, Petitioner further points to the '084 patent, at 12:29-34 (Rep., 2) that explains: “...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, 12:39-34. But, as Figure 6 illustrates (annotated below), outer side surface 231 is **at the edge of the stopping block 23**. *See id.*, 12:35-36 (“The outer

side surface 231 of the stopping block 23 refers to a side of the stopping block 23 facing the ear hook 10.”). Therefore, once again Patent Owner’s interpretation is 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 myriad other limitations, including an annular table and the protective sleeve extending to a side of the annular table surface, differentiating it from claim 1.

Accordingly, all of Petitioner’s arguments regarding the interpretation of elastically abutting fail.

B. “a control circuitry and/or a battery”

Patent Owner maintains that Petitioner promulgated inconsistent claim construction positions in IPR and in District Court. POR, 82-84. Nonetheless, Petitioner's invalidity grounds fail under any interpretation due to other shortcomings explained herein and in the POR.

III. THE LI-FUJITA COMBINATION IS IMPROPER

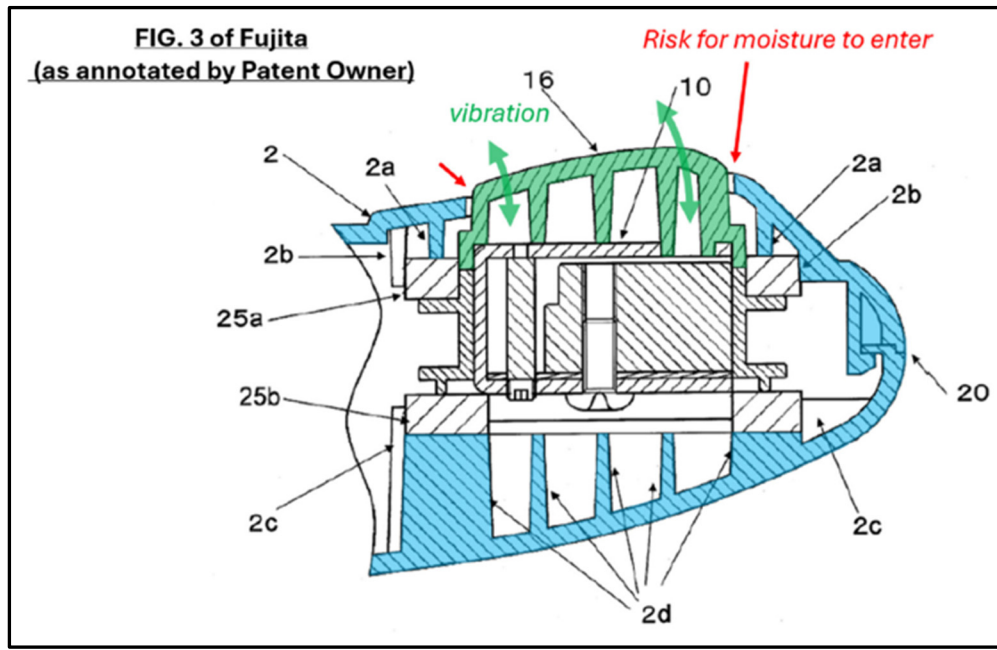
Petitioner assertions and new theories as to how the Li-Fujita combination would have been made, while entirely meritless, also represent Petitioner's belated attempts to improperly fix numerous errors in the original Petition. This type of retroactive overhaul based on new theories and new evidence is prohibited by the PTAB Trial Practice Guide which states: “*Petitioner may not submit new evidence or argument in reply that it could have presented earlier... “Respond,” in the context of 37 C.F.R. § 42.23(b), does not mean proceed in a new direction with a new approach as compared to the positions taken in a prior filing.*” Trial Guide, 73-74. *See also Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (affirming the Board's decision to exclude the reply and accompanying evidence because petitioner's motivation-to-combine argument was an impermissible “new theory of invalidity”); *see also Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1329–31 (Fed. Cir. 2019) (rejecting a new theory of unpatentability where petitioner argued for the first time in its reply that a

reference disclosed a limitation); *see also Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc.*, 853 F.3d 1272, 1286 (Fed. Cir. 2017) (stating that new arguments based on a new section of the prior art amount to an entirely new theory of *prima facie* obviousness absent from the petition).

Petitioner's improper new arguments and new evidence are highlighted throughout this Sur-reply.

A. Petitioner's contentions about Fujita are both late and unavailing

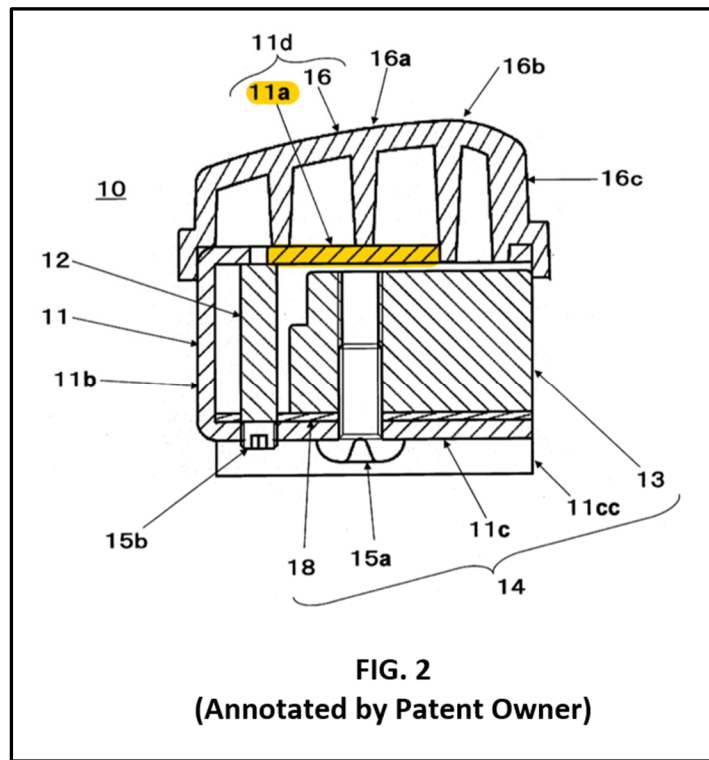
First, Petitioner's Reply contends Fujita does not use the term "gap" but then proposes that a POSITA would fill the gap "with a rubber gasket or stopper...[that] would be watertight." Rep., 6. Contrary to Petitioner's assertions, Fujita's Figure 3 clearly shows a gap (*see* red arrow annotations below) and never teaches filling the gap with any material. Additionally, Figure 3's gap is depicted without hashmarks (compared to other areas having hashmarks), further confirming the absence of filler material in the gap.



Furthermore, Fujita's explains cushion 16 moves and has "large displacements" (Fujita, ¶37), which further confirms the necessity of a gap to allow the pivoting, up-and-down movement of cushion 16. *Id.*, ¶27; POR, 18-19; Scordilis, ¶¶77-79. Petitioner's hypothesis, presented for the first time in its Reply, that a POSITA would fill the gap with a watertight "rubber gasket/stopper" would have hindered the cushion's movements, prevented the cushion's full vibration range, and would have contradicted Fujita's very principles of operation.

Second, Petitioner contends Fujita "*contemplates a fixed and rigid fit of the cushion 16 between the positioning hole and boss to reduce secondary vibration.*" Rep., 6. But Fujita never uses the term "rigid fit," and Fujita's section cited by Petitioner explains that cushion 16 is **fixed to vibration output part 11a**. Fujita,

¶28: “The cushion 16 is positioned and fit between a positioning hole and a boss, then fixed in high rigidity state. **When the fixation between the vibration output part 11a and the cushion 16 is weak**, secondary vibration occurs between the two, and harsh sound information with the secondary vibration is transmitted to the user.” See also *id.*, ¶27.



As Figure 2 shows, cushion 16 is attached to element 11a (and tightly so) to ensure proper transmission of vibrations generated by piezoelectric element 12 to cushion 16. *Id.*, ¶¶27, 28. The cushion's attachment to element 11a is unrelated to the gap that surrounds the cushion, and in no way implies that the gap can be filled with any material.

B. Petitioner's waterproofing contentions based on Li are both late and meritless

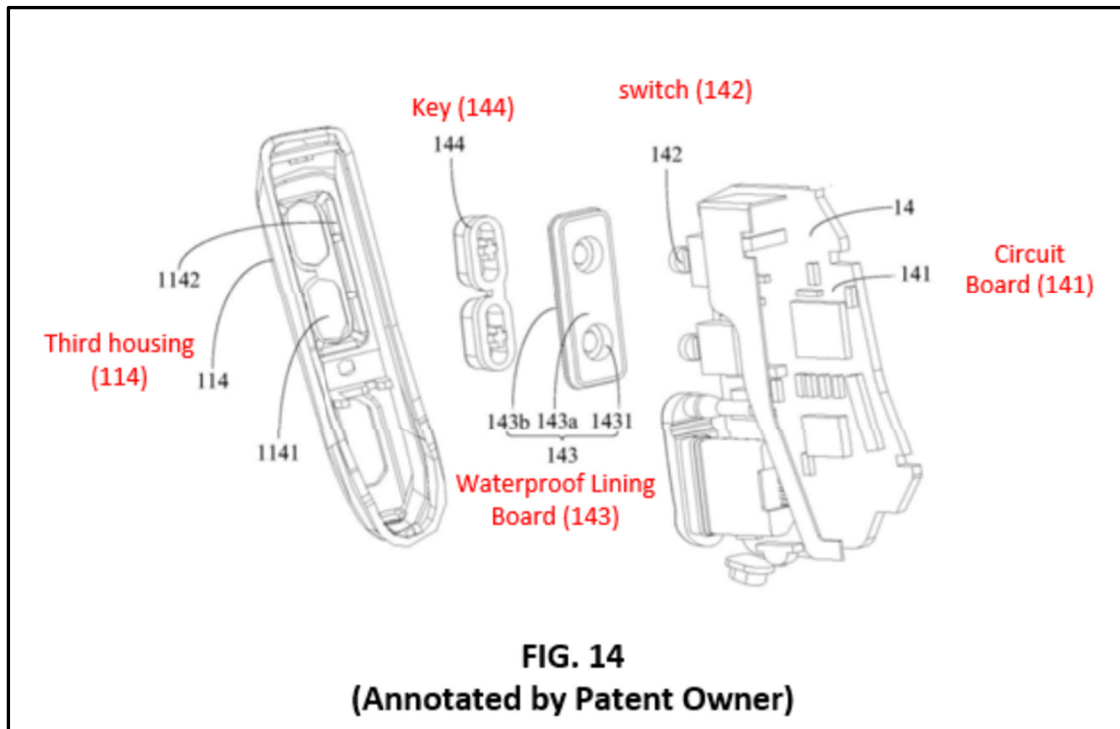
First, Petitioner's reply proposes using an elastic silicone layer that "would be extended over the interface between the housing and the vibrating speaker, to maintain a "watertight" seal while allowing Fujita's speaker to vibrate freely." Rep., 7, citing Li, ¶¶28, 58. Petitioner also asserts Li describes "'a waterproof lining board" that shows internal redundancy demonstrating that "a Fujita-style speaker would not "deter" a POSITA in managing internal moisture protection." *Id.*, citing Li, ¶71. But these new arguments are nowhere in the Petition, and the Petition never cites to Li's ¶58 to support its new covering-the-gap hypothesis. Pet., 35-42. Further, the Petition's reliance on Li's ¶28 is limited to element [1b] related to **the ear hook** (*id.*, 31-32) and concludes by stating: "*Li's disclosure of other waterproof components such as a waterproof lining board 143 would inform a POSITA that other elements like first elastic coating layer 1132 would be waterproof.*" *Id.*, ¶32.

But unlike element [1b] that concerns an elastic waterproof sleeve surrounding **the ear hook**, element [1d] relates to the core housing and its housing panel. Notably, it is Petitioner's combination in element [1d] that requires the gap, implicating moisture infiltration into the core housing. Petitioner's belated attempts to rely on new arguments and new sections of Li to fix the Petition's

flaws not only flaunt the PTAB rules but are also technically meritless, as explained below.

Second, Petitioner contends it would be obvious to further extend Li's waterproof seal over the gap between the cushion and the housing. Rep. 7. But such a purported sealing proposal is not described in any of the references (or the original Petition), and it would not have been obvious by any stretch of imagination, as it would have severely interfered with the rotational, in-and-out movements of the cushion. Fujita emphasizes careful selection of the weight, specific gravity and rigidity of its cushion and element 11a to reduce secondary vibrations. Fujita, ¶28. Given Fujita's meticulous design considerations to preserve vibration fidelity, it is unimaginable, and certainly not obvious, to either fill-in the gap with silicon material or cover it with elastic material. Any such modifications would have severely interfered with the cushion's movement, and would have rendered the speaker ineffective or non-operational.

Third, unlike Petitioner's belated contentions, the "waterproof lining board" in Li would not have been effective in preventing moisture infiltration into the Li-Fujita speaker. Notably, Li's waterproof lining board is a flat, elongated element located deep inside the housing between two flat surfaces; and it provides an additional moisture barrier protecting switch 142, which is already shielded by key 144 cover, and third housing 114. See Li, ¶71, FIG. 14 (annotated below).



It is unclear how such a flat lining board would have been implementable in the Li-Fujita speaker that included a cushion with pivoting, in-and-out movements. Nonetheless, even if implemented, such a lining still would not have avoided **infiltration of moisture into and beneath the cushion** through the gap in the Li-Fujita combination. As the POR and Dr. Scordilis explained, “...*water infiltrating Li’s housing and Fujita’s speaker would degrade the operation of the complex and intricate moving parts, by affecting driving precision, reducing piezoelectric conversion efficiency, dampening vibration, and distorting the audio output.*” POR, 32, citing to Scordilis, ¶80.

C. Petitioner's leakage-cancelation arguments are late and ineffective

Petitioner's Reply asserts sound leakage issues of its combination would have been mitigated by Li's strip-shaped holes. Rep., 8.

First, the Petition's flaws cannot be fixed at this late stage based on Petitioner's rationale presented only in Petitioner's Reply and its unsubstantiated expert declaration.

Second, it is naïve and incorrect to assert that sound leakage issues associated with myriad Petitioner-proposed modifications to Li's speaker would be somehow mitigated by Li's strip-shaped holes, even in the presence of pivoting movements of the cushion. As the POR and Patent Owner's expert explained, "[a] POSITA would have found it beyond their ordinary skill and knowledge to manage the sound leakage acoustic effects from Fujita's open gap, which is annular, elliptical and surrounds the moving cushion. The inclusion of such annular and elliptical gap between the housing and the vibrating surface that moved up-and-down would have produced complicated acoustic effects that a POSITA having a bachelor's degree and 2-3 years of experience with acoustic technology would not have been able to mitigate. POR, 23; Scordilis, ¶¶80, 87-88.

Petitioner's Reply provides no explanation other than summarily asserting sound leakage mitigation would have been obvious based on Li's strip-shaped

holes. Rep. 8. Petitioner's expert repeats similar assertions and additionally states Fujita also provides sound leakage mitigation measures. EX1041, ¶12. The latter argument, which is not in Petitioner's Reply, amounts to improper incorporation by reference under 37 CFR § 42.6(a)(3) and should not be given any weight.² Same is true with Petitioner's expert opinion that relies on the newly-cited paragraph [0044] of Fujita, which was not part of the original Petition or expert declaration. *Id.*

Furthermore, Petitioner's newly proposed modifications include a sealing mechanism for covering the gap in the Li-Fujita speaker (*see* Section III.B *supra*), while maintaining Li's strip-shaped holes. In view of the myriad changes proposed by Petitioner, mitigation of sound leakage issues due to complex interactions of the moving parts, sound holes, and exterior sealing mechanisms would have been well outside of a POSITA's skillset with only 2-3 years of experience in acoustic technology, not obvious and not achievable with a reasonable expectation of success. Scordilis, ¶¶80-88.

² These arguments are also completely ineffective against claims 12-15 in Ground 2, where Petitioner replaces Fujita's entire piezoelectric mechanism (other than cushion 16) with Fukuda's magnetic system.

D. Petitioner's motivations to combine Li and Fujita fail to overcome significant deterrents recognized by a POSITA

Petitioner criticizes Patent Owner's explanation of the shortcomings of the Li-Fujita combination and argues that Li does not "teach away" from the combination because it does not "criticize, discredit, or otherwise discourage" using a plug to connect a housing to connecting component. Rep. 8-9. Petitioner is wrong on many fronts.

First, the POR has no recitations of "teaching away." Rather, the POR points out numerous deterrents and obstacles that a POSITA would have faced in attempting to make the Petitioner-proposed combination. POR, 23-25. Notably, Petitioner's combination would have rendered the objectives of Li's headphone ineffective and the headphone itself non-operational. The POR includes several explanations as to why Li, at the very least, would have "otherwise discouraged" a POSITA to add multiple additional segments to Li's device and to create a combination with an air gap that would have created serious waterproofing, structural integrity and sound leakage issues. POR, 17-35.

Second, Petitioner contends Li does not 'criticize, discredit, or otherwise discourage' having numerous segmented sections. Rep., 8-9. Petitioner is wrong. Li describes only two connections (forming 3 segments) in its headphone design. See Li, FIG. 2, POR, 25-26. It never contemplates including additional segments,

and further stresses the importance of the headset's structural integrity by describing the ear hook and the associated housings should be constructed as a singular component via injection molding, with a unitary protective layer, fixed connections, and attached with adhesives. POR, 33-35. Li's strong preference for a unitary structure is inconsistent with further segmenting that structure into multiple additional segments. *Id.*

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 (containing the speaker) and the circuit housing (containing the battery or control circuit)...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. Not only this argument should be rejected because it is presented for the first time in Petitioner's Reply, the argument also squarely 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 prohibited under both the PTAB and Federal Circuit guidance. POR, 41-44. Petitioner contends its Petition complies with Rule 42 because it relies on prior art references. Rep., 12. This assertion is meritless because none of Petitioner's nine references (Li, Fujita, and 7 “interchangeable modularity” references) describes the claimed first and

second plug ends at the required locations.

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; Petitioner fails to provide any rationale for this conclusory assertion. Notably, neither Li nor any other prior art in the vast array of Petition’s references describes segmenting the ear hook at the claimed locations, thus strongly undermining Petitioner’s assertion that these locations were “natural points.” Any such conclusion is only based on improper hindsight.

Fourth, regarding moisture infiltration, Petitioner summarily contends a POSITA would have used elastomeric sealing materials between adjoining components. Rep., 10. This argument was absent from the original Petition and is thus improper to be raised at this late stage. As explained in Section III.B, Petition’s only waterproofing explanation concerns element [1b]’s waterproof elastic sleeve that surrounded **the ear hook**. Even now, Petitioner provides a mere conclusory statement that “a POSITA, familiar with waterproofing techniques, including using elastomeric sealing materials between adjoining components” would not have been deterred.” Rep., 10. But Petitioner fails to describe how the elastomeric sealing would be possible in the presence of additional segments with additional socket and inserting components.

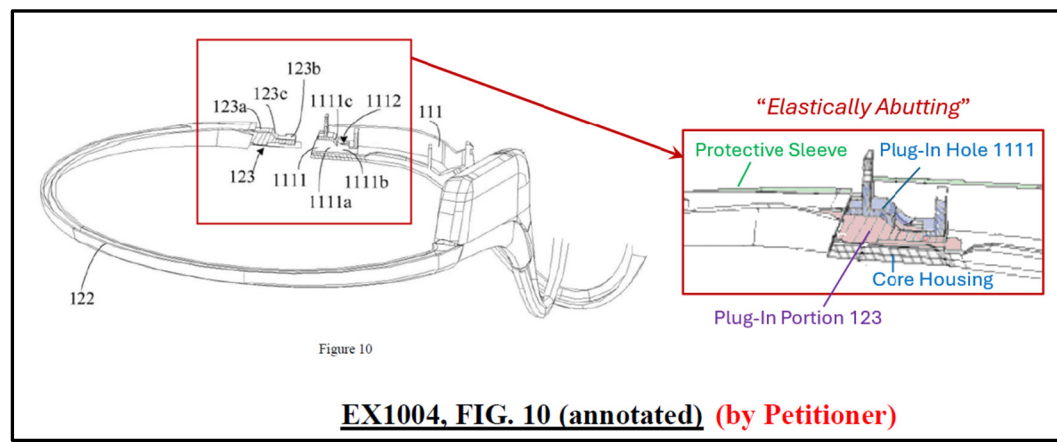
Fifth, Petitioner’s purported “modularity” benefit in a hypothetical

combination is legally improper (POR, 39-41); it is also deficient because any purported benefit is negated by numerous disadvantages and strong discouragements in Li. POR, 23-35.

In sum, Petitioner's position is a textbook example of using improper hindsight and relying on the knowledge of a POSITA to back-fill the claim limitations not described in any prior art.

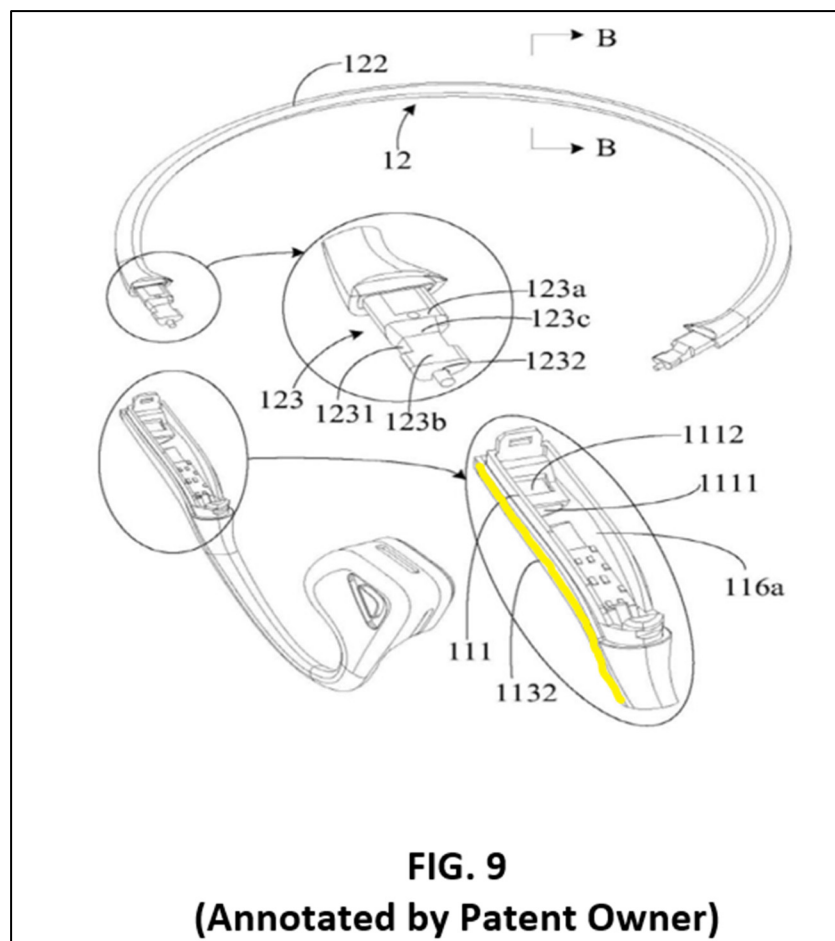
E. Li does not disclose elastic abutting

First, Petitioner's elastic abutting explanations rely on Li's Figure 10 that **does not show the plug ends at the claimed location**. Rep., 13-15. Furthermore, Petitioner's a hypothetical figure labeled "Elastically Abutting" (right-hand side box below) incorrectly identifies, in blue text, the elastic sleeve as "Core Housing." Rep., 15.

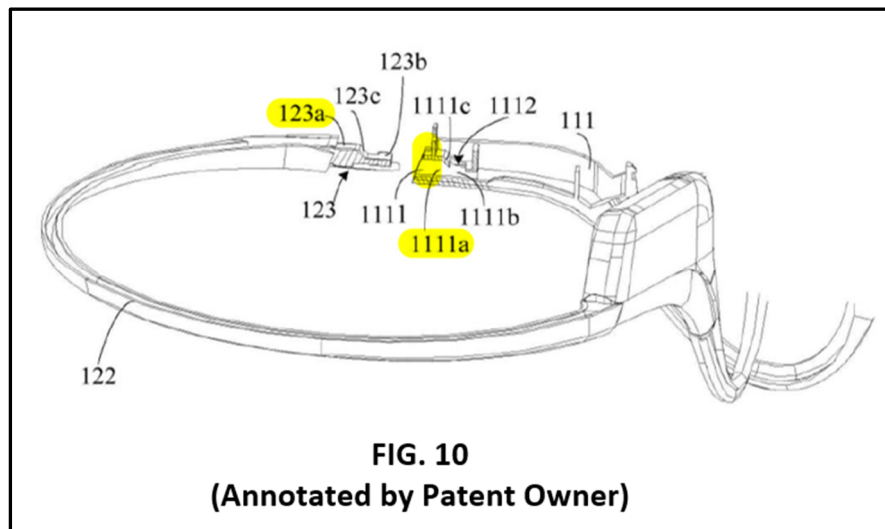


Petitioner's erroneous labeling is confirmed by Li, which uses reference numeral 111 to identify its first housing, and 1111 to identify the plug-in hole at

the end of the first housing, having sub-elements 1111a (first hole section) and 1111b (second hole section). Li, ¶¶60, 62. The cross-hatched area Petitioner erroneously labels “Core Housing” is in fact elastic coating layer 1132, which is more clearly depicted in Figure 9 (annotated below); it “directly contacts the ear” and allows the earphone to be worn “comfortably.” *Id.*, ¶28. Li’s elastic layer is not the claimed core housing. Li never describes, depicts or suggests its elastic sleeve (122) elastically abutting the core housing (POR, 44-50) and Petitioner’s assertions based on incorrect labeling fail to refute this fact.



Second, in purporting that Li teaches elastic abutting, Petitioner mischaracterizes Li's paragraphs [0063]-[0064] by asserting "the plug-in portion 123 and the plug-in hole 1111 are configured for a "tight fit" between them so that "the rear hook can be effectively connected to the ear hook." Rep., 14. However, Petitioner's paraphrasing of Li omits elements **123a** and **1111a**—the elements engaging with each other in a tight fit. Li's full citation reads: "...*the second plug-in section 123b of the plug-in portion 123 passes through the first hole section 1111a and the second hole section 1111b in sequence, so that the first plug-in section 123a fits tightly with the first hole section 1111a.*" Li, ¶63; Fig. 10 (annotated below).



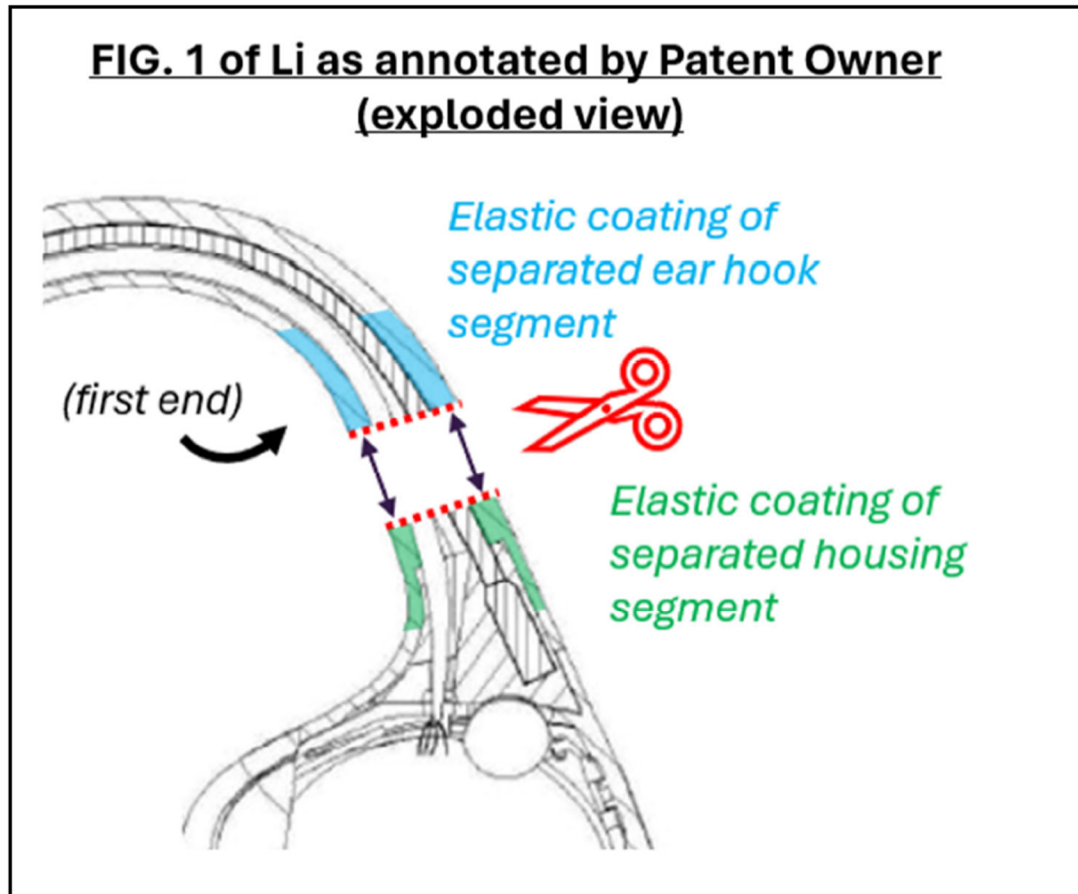
Importantly, there is no explanation in this section about elastic abutting *of the sleeve* with the core housing.

Third, Petitioner's position contradicts its earlier dismissal of Patent

Owner's structural integrity arguments. *See* Rep., 9-10. Notably, within the same paragraphs [0063]-[0064] (and in the same sentence³) relied upon by Petitioner for its elastic abutting rationale, Li describes using an adhesive to permanently connect the earphone's sections together. However, Petitioner earlier dismissed the description in these paragraphs as Li's *optional* features. POR., 9, Petitioner cannot have it both ways, and Petitioner's inconsistent positions should be given little weight.

Fourth, Petitioner has provided no real answer to Patent Owner's argument that even if all of Petitioner's assertions are assumed to be true, only Li's elastic coatings at both sides of the connection would contact each other (see figure below), whereas claim 1 requires the elastic sleeve to elastically abut ***the core housing***. Rep., 16; POR, 50-52.

³ “By the ***tight fit between the first plug-in section 123a and the first hole section 1111a***, the tight fit between the second plug-in hole 1111[sic] and the second hole section 1111b, 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., 16. Notably, "the protective sleeve" in element [1c] finds antecedent basis in element [1b] that indicates the protective sleeve must surround the ear hook section. Such a protective sleeve in Petitioner's invalidity ground would be the blue-annotated protective sleeve in the above figure, which does not abut against the core housing located 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 would make contact against the green-annotated elastic sleeve. This is a sleeve-to-sleeve

connection and not abutment (let alone elastic abutment) against the core housing.

IV. GROUNDS 2-3 AGAINST DEPENDENT CLAIMS ARE DEFICIENT

A. Petitioner should not be allowed to belatedly change its invalidity grounds

The Petition's invalidity ground against claims 12-13 fails to provide a reason for adding Fukuda to the Lee-Fujita combination. Now, Petitioner's Reply contends claims 12-13 must be considered under a different invalidity ground based on Lee and Fujita only. Rep., 16. This shifting of invalidity positions at this late stage is improper and should be rejected.

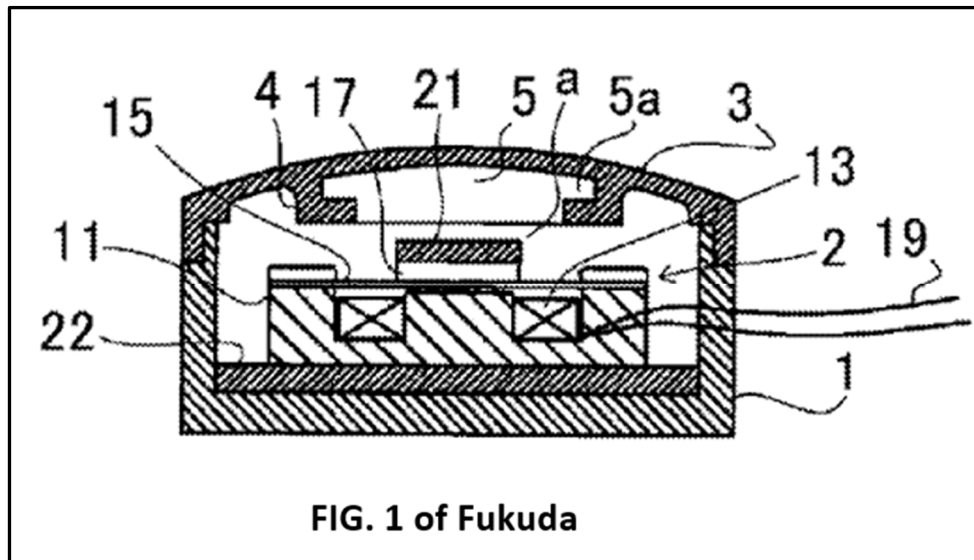
B. Petition's position against claim 14 fails

In arguing that claim 14 invalidity assertion is not scattered and inconsistent as to what is being replaced or maintained in the Li-Fujita-Fukuda combination, Petitioner points to Petition, at 50-51. Rep., 17. However, the Petition merely states "*add[ing] Fukuda's coil (voice coil 13) and magnetic circuit system (center pole 12, yoke 11, rod-shaped magnets 14) from Fukuda's earphone core to Fujita's earphone core in place of Fujita's piezoelectric mechanism.*" Pet., 50. Notably, by not explaining which part(s) of Fujita's piezoelectric "mechanism" is being replaced, Patent Owner and the Board must rely on guesswork and/or evaluate all possible permutations involved in this combination.

Petitioner's Reply does little to clarify this murky combination, and only

includes unsubstantiated assertions: “*A POSITA, motivated by the desire to produce efficient, high-quality sound at reduced manufacturing cost, would have placed Fukuda’s unitary driver within Fujita’s housing,*” and “*Patent Owner ignores the ability of a POSITA to place a standard magnetic transducer (Fukuda) into a known speaker housing (Fujita) to improve contact geometry.*” Rep., 17-18. These statements (1) are vague and still do not clarify what Petitioner considers to be “Fujita’s housing,” (2) are incorrect as explained in the POR and below, and (3) rely on unsubstantiated expert assertions based on incorrect assumptions.

First, Petitioner touts the benefits of Fukuda’s system being an “independent unit” ready for incorporation into mobile devices (Rep., 17, EX1041, ¶28) “as it is.” *Id.*, ¶29. But Petitioner’s combination undermines these purported benefits. Notably, Petitioner’s combination **does not** incorporate Fukuda’s system “as it is” in Fujita’s system: at the very least, it requires the addition of Fujita’s asymmetric convex cushion, without which all of Petition’s invalidity grounds fail. Furthermore, while the Petition and Reply mention using Fukuda’s voice coil 13, center pole 12, yoke 11, and magnets 14 (Pet., 50, Rep., 17), numerous other elements of Fukuda’s speaker shown in Figure 1 are left out.



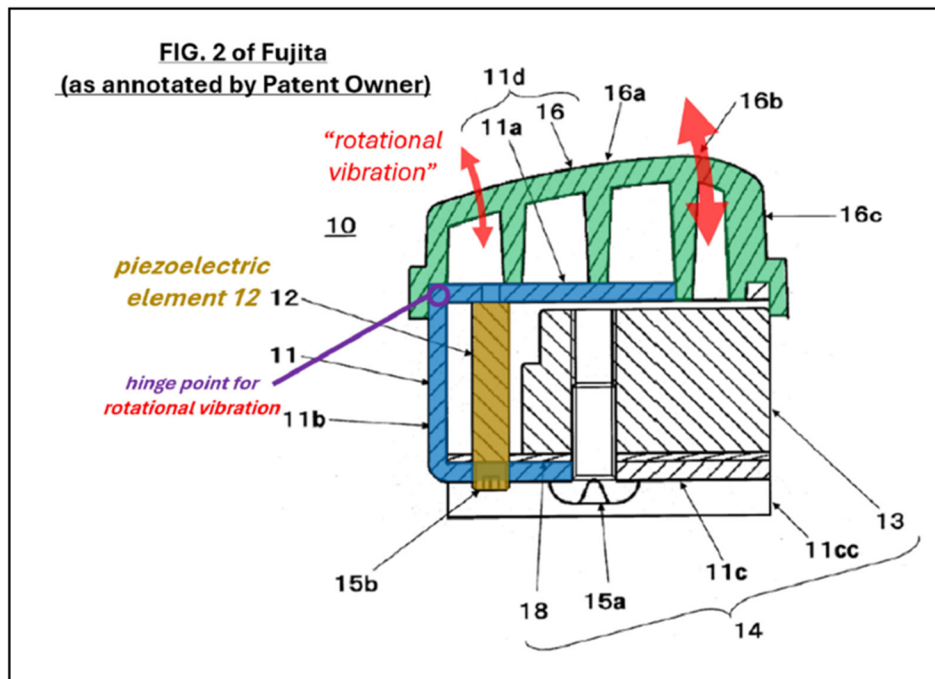
Importantly, Fukuda’s “benefits” that Petitioner relies on—“independent unit,” “simple in construction” (Rep., 17), “as it is” incorporation (EX1041, ¶¶29, 31)⁴—are associated with Fukuda’s “bone conduction speaker” as a unit, and cannot be attributed to Petitioner’s select, hand-picked elements (e.g., elements 11 to 14) which are then combined with at least the asymmetric convex cushion of Fujita.

Second, Fujita’s cushion was designed to work with Fujita’s piezoelectric system, and importantly, with the “pivoting” motion of Fujita’s mechanism:

⁴ The Reply and Petition both rely on Fukuda at 3:23-28, which clearly attributes its purported “benefits” to the speaker unit as a whole.

“...the entire reason why Fujita discloses a convex speaker cushion is inextricably tied to the rotational motion, which causes the peak of the cushion to displace more than the non-peak portions for optimized transmission of sound signals.”

POR, 56-58, Scordilis, ¶¶135-138.



Petitioner did not account for and did not address this deficiency in its Petition (*see* POR, 61, showing Petitioner's expert had not considered this lever-action/hinge-like/rotational vibration of Fujita), and belatedly purports Fujita's cushion would remain "effective" in a system with linear motion. Rep., 19-20. Petitioner's position is based on mere speculation, is unsubstantiated, and is contradicted by Patent Owner's reasoned explanations. *See* POR, 55-63, and *id.*, 60: "...replacing Fujita's entire piezoelectric-based speaker mechanism with

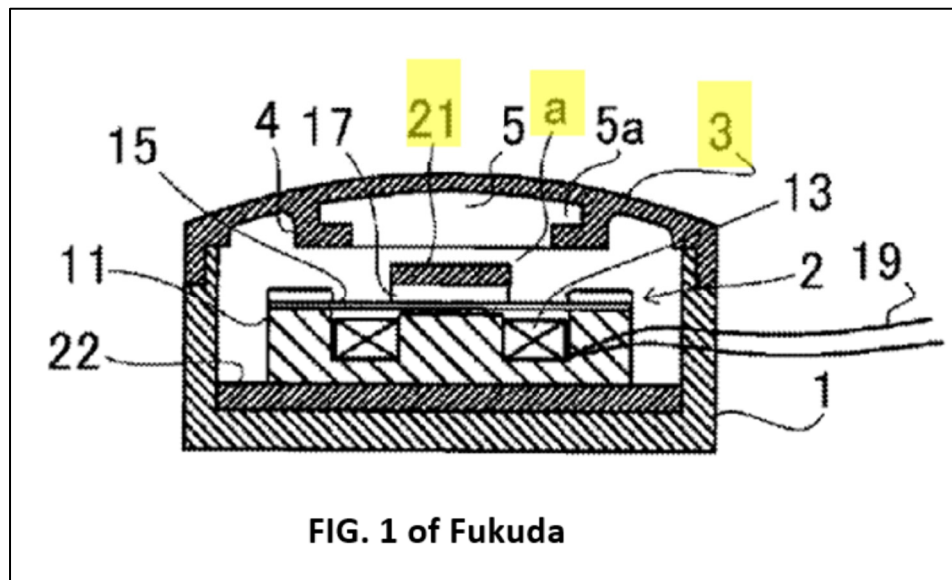
Fukuda's linear magnetic driver would not result in the cushion peak being displaced more than the non-peak portions of the cushion, thus destroying the entire premise of Fujita. Scordilis, ¶¶139-144.” Petitioner's assertions also contradict the express teachings of Fujita that require a rotational motion (and thus having the specific asymmetric convex-shaped cushion).

Third, Petitioner trivializes the required modifications as routine mechanical tasks. Rep., 19-20. This assertion is far from accurate given Petitioner's definition of a POSITA. Notably, Petitioner's POSITA definition does not require work experience in bone conduction speaker design, sound leakage mitigations or even mechanical design of small speakers, but only requires 2-3 years of work experience in “acoustic technology” and a bachelor's degree. Nonetheless Petitioner arbitrarily declares it would be a routine task by a POSITA to re-design the intricate interactions of the pivoting arm of Fujita's piezoelectric system with its customized convex cushion, to work with Fukuda's linear magnetic driver. Petitioner's assertions are unsupported, and a POSITA would have neither found such modifications obvious nor achievable with a reasonable expectation of success. Scordilis, ¶¶77-88.

Fourth, Petitioner relies on expert statements that are simply wrong. Petitioner's expert opines: “*A POSITA would have understood that different known vibration-generation mechanisms (including piezoelectric and magnetic drivers)*

could be integrated with known vibration-transmission interfaces and **elastic contact structures.**" EX. 1041, ¶¶29. However, Fujita's cushion, required in Petitioner's combination with Fukuda, is not an elastic contact structure but is a "**highly rigid structure**" and has "**high rigidity.**" Fujita, ¶¶27-28. Therefore, Petitioner's conclusory statements based on expert's incorrect assumptions should be given little or no weight.

Fifth, Fukuda's magnetic system is specifically designed to operate with an "**elastic cover 3 [] formed of a rubber material,**" and **elastic plate 21.** Fukuda, 4:25-33. Importantly, Fukuda relies on elasticity and deformability of its symmetric cover 3 and elastic plate 21 to cause variations in gap "a" to transmit vibrations. *See id.*, 4:25-56.



Redesign of Fukuda's system having a symmetric-and-elastic cover to

instead include the asymmetric-and-rigid cushion of Fujita would have departed from the operating principles of Fukuda's system. Notably, Petitioner proposes combining differing components from incompatible systems (Fukuda's elastic membrane technology that operated based on a linear magnetic drive and a symmetric elastic cover *versus* Fujita's pivoting piezoelectric system with a rigid and asymmetric cushion). Such an endeavor—even if possible—would have required complex sound engineering and mechanical design considerations not described in the Petition, not within the skillset of this POSITA, and not achievable with a reasonable expectation of success.

Sixth, none of Petitioner's other magnetic systems describe any advantage over a piezoelectric system, and do not provide any motivation to replace the carefully-designed piezoelectric system of Fujita. POR, 63-67.

V. GROUND 4 IS SIGNIFICANTLY FLAWED

A. Petitioner's arguments against claims 7-10 are unavailing

Petition originally asserted Numata's connector "improve[s] wear-resistance and [will] add Numata's convenient bi-directional plugging." Pet., 83. Now that the POR clearly showed "bidirectionality" is a liability rather than a benefit, Petitioner hangs its hat on the purported "secure fit and improved wear resistance" features. Rep., 23. But Li already describes multiple mechanisms for providing a secure connection including plug-in holes to receive plug-in portions and even

applying adhesives (*see e.g.*, Li, ¶¶37, 60), which are as secure—if not more secure—than Numata's connector. Therefore, a POSITA would have gained no benefit in replacing Li's already-secure connectors.

As to the alleged “improved wear resistance,” this term or variations thereof are not in Numata—at least not in the context used by Petitioner. Numata describes simplifying the process of “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)—a feature irrelevant to Li's device—Petitioner has failed to show a single scenario where Numata's bidirectional connector improves the wearability of Li's dual-ear device.

In contrast, using Numata's bidirectional connector would have necessitated additional checks and validations, would have added to the cost and time of assembly, and in some cases, would have rendered the earphone useless. POR, 67-73. Clearly, the tradeoff between rendering the device useless outweighs the unnecessary and illusory benefits of a “secure fit” or “wear resistance.”

The following table summarizes Petitioner's conclusory rebuttal statements that fall considerably short in addressing the combination's flaws. POR, 22-23.

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 the correct position Can Fix 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-Fujita combination to use a bidirectional connector knowing this deficiency Alternative connector configurations require significant modifications not explained in Numata and/or in original Petition, and not a routine engineering task for this POSITA No explanation why a POSITA would use a reversable connector, if it cannot be used as a reversible connector
Incorrectly connected/assembled	Not rebutted in Petitioner's Reply.	¶36 of expert declaration is not cited in Petition

earphone is permanently attached because Numata's release mechanism requires a hole that cannot be implemented in the waterproof housing of the combination	Expert (EX1041, ¶36) admits this problem but purports that a POSITA would use alternate release mechanisms that do not require 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	Petitioner's original filings and all cited references fail to describe any such alternate structures Stated modifications are not trivial, and expert has no explanation about how those modifications would be even possible
Numata's connector has no electrical connectivity capability, and adding any electrical connections would obstruct plug's insertion into its receptacle	Not rebutted in Petitioner's Reply Expert (EX1041, ¶38) opines these would have been "avoided by multiple known techniques for providing electrical connections via plug and socket portions."	Petition and Reply have insufficient explanations and improperly incorporate-by-reference the expert declaration ¶38 of expert declaration is conclusory and merely points to elements 65/65A of Numata's connector, and summarily declares

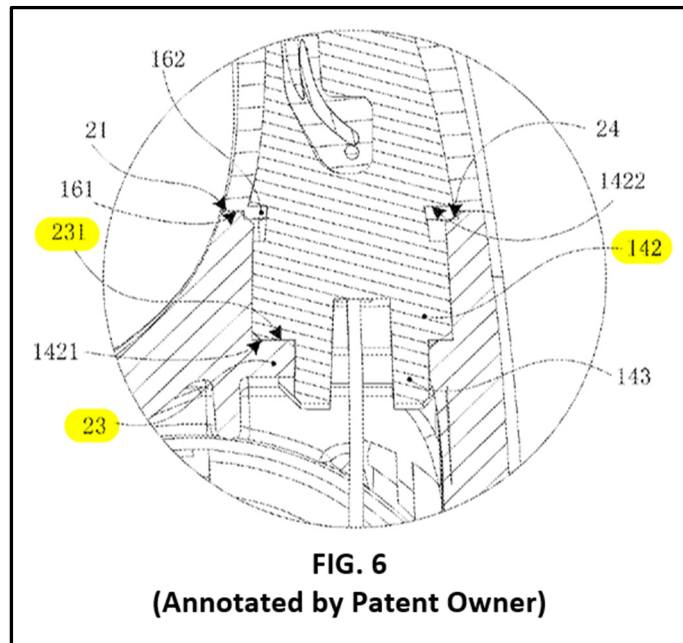
		providing electrical connections would have been routine
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Petitioner's arguments include new, conclusory, and/or unsubstantiated assertions, some also amounting to improper incorporation by reference. Thus, they should be given little or no weight.

B. Petitioner's 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, 37:55-60.

Petitioner incorrectly interprets this claim as requiring "when" the plug itself is partially inserted into the socket, the surfaces would be spaced apart. Rep., 24 ("When the Numata plug is partially inserted into a socket..."). But claim 9 does not have a temporal condition; it is an apparatus claim describing the spatial configuration of "the insertion portion" within the socket. This is clear both from the plain reading of claim 9, and the detailed description. EX1001, 12:26-29 ("...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).



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.”).

Perhaps realizing its misinterpretation, Petitioner also contends “[e]ven when the Numata plug is fixed to the socket,” the space-apart condition is satisfied “to accommodate typical manufacturing tolerances and permit reliable installation.” Rep., 24. Petitioner’s new position presented for the first time in the Reply is untenable because Numata has no explanation about accommodating manufacturing tolerances, Petitioner and its expert fail to provide any evidence of relevant manufacturing tolerances that would create such a “spaced apart” configuration, and it is unclear how or why the surfaces (i.e., annular table “surface” and outer end “surface” of the core housing) would be spaced apart even

in the presence of small manufacturing tolerances in parts of those surfaces.

C. Petitioner's has not shown claim 10 is unpatentable

First, claim 10 is patentable because Petitioner has failed to show unpatentability of base claim 9.

Second, Element [10b] recites: "...the protective sleeve elastically abuts against the core housing to realize sealing." The Petition itself admits that the abutment in 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., 100)—not sleeve-against-core-housing. That admission independently defeats [10b] and reinforces Patent Owner's Element [1c] argument. *See* Section III.E *supra*. EX2020 ¶¶174-177.

VI. GROUND 5 IS DEFICIENT

A. Petitioner shifting of invalidity grounds should be rejected

In their original filing, Petitioner and its expert clumped claims 16-20 under the same five-reference invalidity ground, and provided motivations to combine Nielson with the other four references. Pet., Table of Contents, 101-103; EX.1003, ¶¶256-262. Petitioner is now asking the Board to include claims 16-19 as part of a four-reference combination without Neilson. This shifting of invalidity grounds at this late stage is improper and should not be allowed.

B. Petitioner's arguments against claim 20 are unavailing

Petitioner's arguments about combining/replacing Fujita's pivoting piezoelectric system with a magnetic system would not have been obvious to a POSITA for the same reasons discussed regarding the Fukuda combination (*see* Section IV.B), and those in the POR. POR, 81.

VII. CONCLUSION

Petitioner has failed to show that the Challenged Claims are unpatentable.

Dated: June 29, 2026

Respectfully submitted,

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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 5,597 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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The undersigned hereby certifies that true copies of the foregoing PATENT OWNER'S SUR-REPLY were served in their entirety by electronic mail on the Patent Owner via its attorneys of record:

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