

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

PATENT OWNER'S PRELIMINARY RESPONSE

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. THE ASSERTED '582 PATENT.....	3
A. Specification.....	3
B. Claims.....	6
C. File History	8
D. Level of Ordinary Skill in the Art	9
E. Claim Construction	10
III. PETITIONER FAILS TO SHOW THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE	10
A. Petitioner's prior art references	10
1. Li '492.....	10
2. Liao	13
3. The Petition's "Interchangeable Audio Headset Prior Art"	14
B. The Petition fails to show an "ear hook" having first and second "plug ends" in the configuration required by the claims	19
1. The Petition's primary references do not teach element [1a], an ear hook including a first plug end and a second plug end.....	21
2. The Petition's primary references do not teach element [1c], "a core housing for accommodating an earphone core, the core housing being fixed to the first plug end and elastically abutted against the protective sleeve".....	26
3. The Petition's primary references do not teach element [1f], a "circuit housing... fixed to the second plug end."	29

TABLE OF CONTENTS (CONTINUED)

	Page
4. The Petition fails to show that a POSITA would have been motivated to modify Li '492 in the claimed manner.....	33
C. The Petition fails to show that the combination of Li '492 and Liao teaches a “core housing... elastically abutted against the protective sleeve” in element [1c].....	42
D. The Petition fails to show that the combination of Li '492 and Liao teaches element [1e], “wherein when the vibration frequencies of the housing panel and the housing back panel is within a range of 2000 Hz to 3000 Hz, an absolute value of a difference between the first phase and the second phase is less than 60 degrees”	44
E. The Petition’s remaining grounds fail for the same reasons as Ground 1	52
IV. CONCLUSION.....	53

EXHIBIT LIST

No.	Exhibit Description
Ex. 2001	Chinese patent no. CN107484054 (“Li ’054”), original
Ex. 2002	Chinese patent no. CN107484054 (“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
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
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
Ex. 2010	Mojawa Initial Invalidity Contentions cover pleading dated January 30, 2025
Ex. 2011	Comparison of text portions of EX1004 (Li ’492 certified translation) and EX2002 (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
EX. 2019	Möser, M., <i>Engineering Acoustics: An Introduction to Noise Control</i> , Second Edition, Chapters 1 and 4 (2009).

I. INTRODUCTION

Petitioner Suzhou Mojawa Intelligent Electronic Co., Ltd. (“Mojawa” or “Petitioner”) filed a petition for *Inter Partes* Review (“IPR”) against claims 1-12, 14, and 16-20 (“Challenged Claims”) of U.S. Patent No. 11,310,582 (“the ’582 Patent”) based on four grounds. Petitioner’s grounds fail to demonstrate a reasonable likelihood of unpatentability of the Challenged Claims, as shown in the sections below. Therefore, Patent Owner requests that the Board deny institution of this IPR.

The ’582 Patent relates to a loudspeaker apparatus, such as a bone conduction headset. The ’582 Patent describes and claims a specific configuration of elements, including an ear hook with plug ends at both ends that connect to a “core housing” contain a speaker and a “circuit housing” containing at least a circuit or a battery. Yet for the elements related to this specific configuration, Petitioner relies on a primary reference (EX1004, “Li ’492”) which wholly fails to teach or suggest any such “plugs” in the required configuration. Indeed, as Patent Owner’s Brief for Discretionary Denial previously explained, Li ’492 is largely identical to another Li reference already cited by the Examiner as the “closest prior art” during prosecution, which the Examiner found not to teach the claimed “plug” element. Petitioner attempts to make up this defect by citing a smorgasbord of various other references relating to a wide variety of “modular” audio devices. Yet

Petitioner fails to clearly show why any of these other references would lead a POSITA without the benefit of hindsight to modify its primary reference in the claimed matter.

The '582 Patent also describes structural characteristics that lead to improved acoustic performance, including controlling the phase of sound waves propagating through the housing containing the speaker such that vibrations of a housing panel and a housing back panel have a phase difference of less than 60 degrees. Nothing in Petitioner's cited prior art teaches this element; rather, Petitioner relies on conclusory unsupported assertions that it would be present. In fact, the Liao reference that Petitioner relies on is worse than silent on this element, because the only time it discusses phase differences within the housing is to encourage creating them, precisely the opposite of what the '582 Patent claims require.

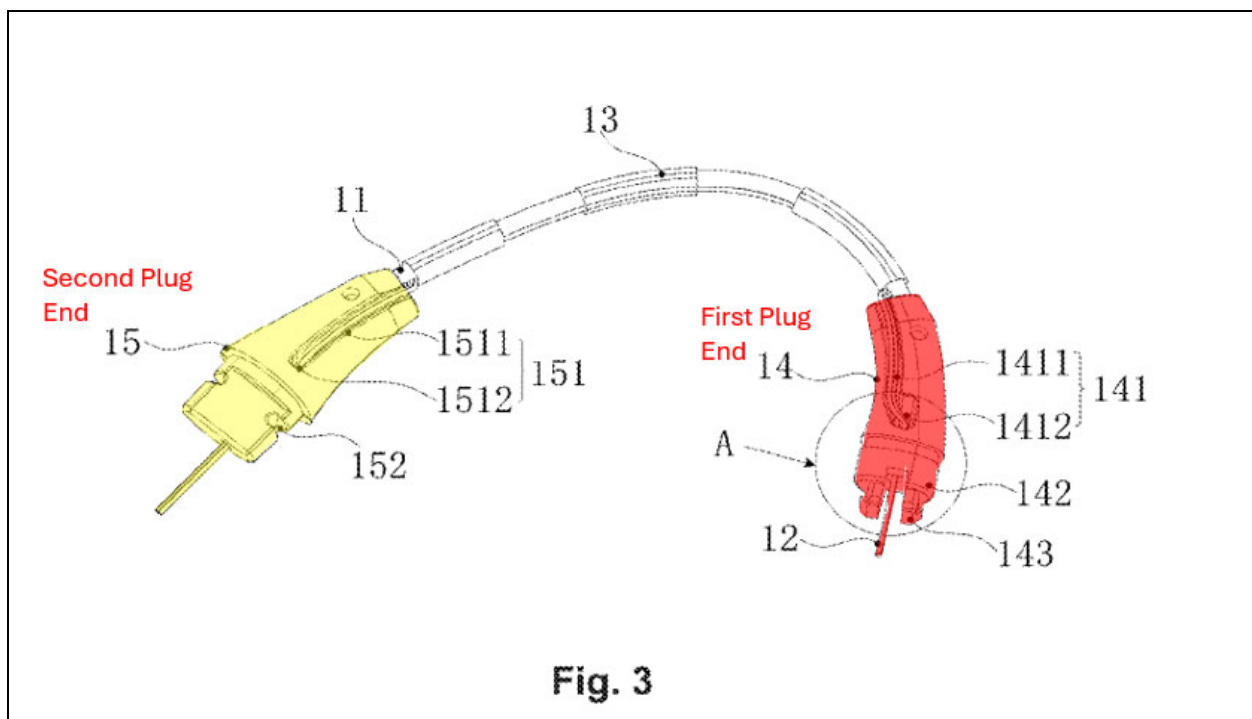
Petitioner has accordingly failed to show that any of its grounds (Ground 1, or Grounds 2-4 which rely on its Ground 1 arguments for the elements of the sole independent claim) demonstrate a reasonable likelihood of invalidity of any of the Challenged Claims. Institution should consequently be denied under 35 U.S.C. § 314.

II. THE ASSERTED '582 PATENT

A. Specification

The '582 Patent teaches a loudspeaker apparatus, such as an earphone, which may use bone conduction technology. EX1001, Abstract, 5:57-59. The '582 Patent notes a desire to provide earphones with a waterproof function so that such headphones can be used in situations such as swimming and on rainy days, while also being easy to produce and assemble. *Id.*, 1:14-32.

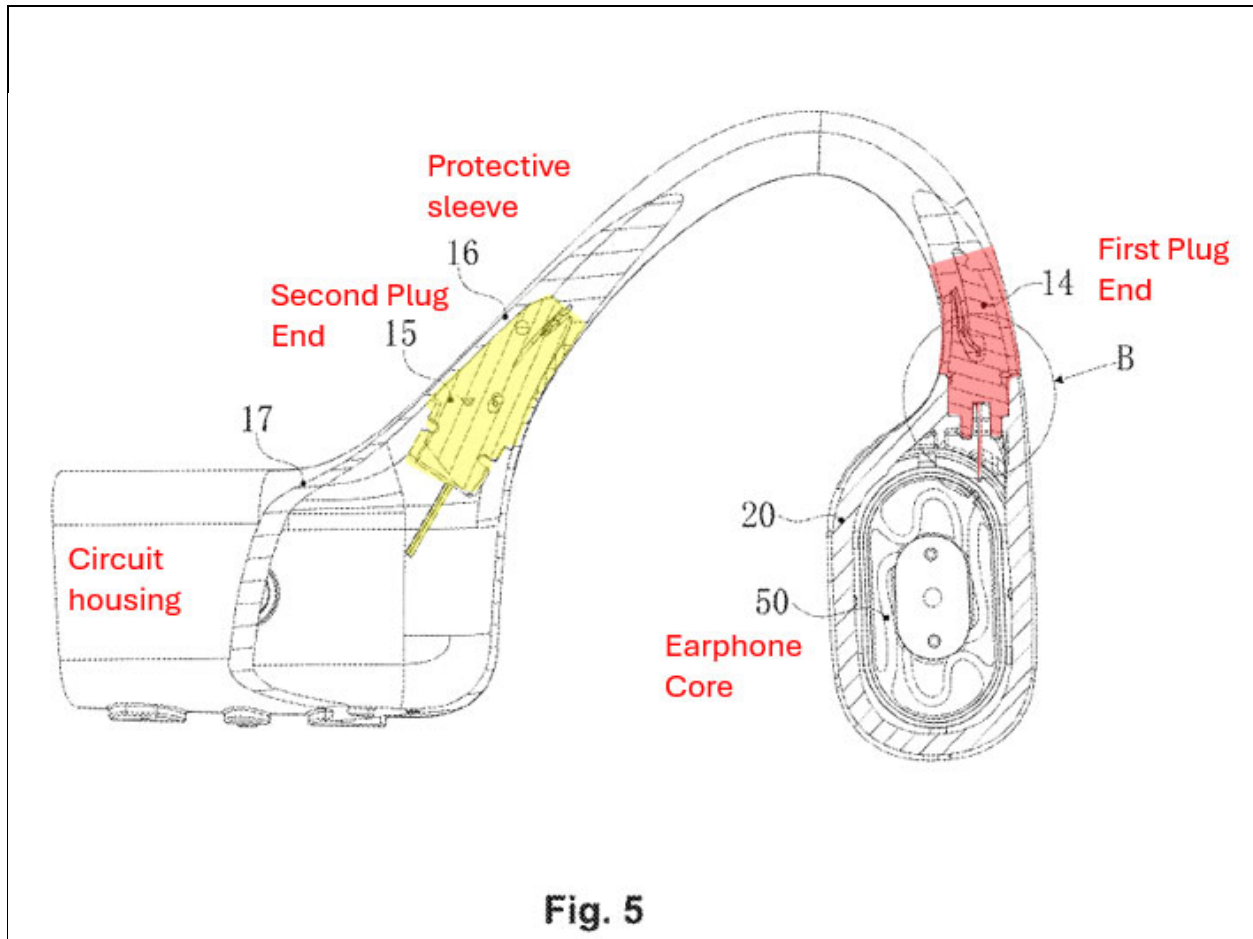
In order to meet both goals, the '582 Patent teaches a structure that enables the components of such a headset to be easily manufactured and assembled so that the final assembled product is waterproof. That structure may include an ear hook with plugs on both ends and a protective sleeve over the ear hook. EX1001, 8:63-67. Figure 3 illustrates the ear hook having first and second plug ends:



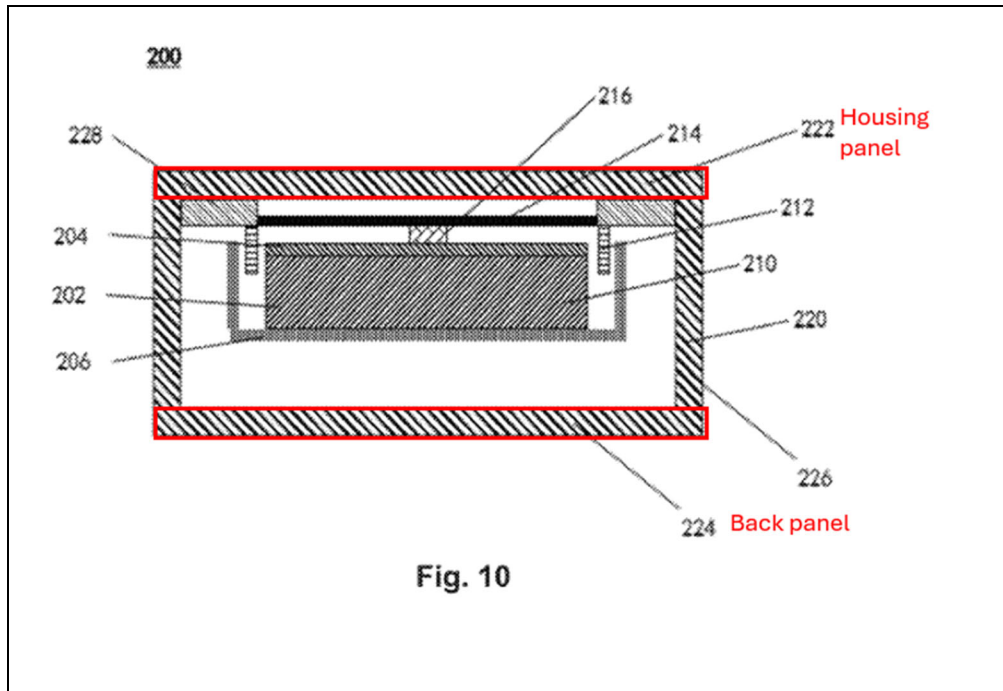
A first plug end may insert into a core housing 20 which may accommodate an earphone core, *i.e.* the part of the speaker apparatus that generates vibrations passed to the user. EX1001, 11:47-57. The plug is designed so that when inserted, the protective sleeve may elastically abut against the core housing, forming a waterproof seal protecting the earphone core inside the housing. EX1001, 13:4-11.

The second plug end 15 may be connected to a circuit housing 30. In some embodiments, the circuit housing 30 on one side of the headphones contains a circuit, while the circuit housing 30 on the other side contains a battery. EX1001, 16:5-8. The use of plugs in this manner also allows the ear hook to be formed separately from the circuit housing 30 and core housing 20, then assembled after the form is completed. EX1001, 11:52-57, 16:15-20.

Figure 5 illustrates the ear hook with the first and second plug ends inserted into the core housing 20 and the circuit housing 30, respectively:



The '582 Patent also addresses the problem of “sound leakage,” *i.e.* the audibility of headphone sound in the environment to others besides the user of the headphones. The housing of the earphone core may include a housing panel 222 facing the user and a back panel 224 facing away from the user, as shown in Fig. 10:



When the entire housing is very rigid, the vibration amplitudes and phases of the housing panel and back panel may be the same or substantially the same, so that the leaked sound waves from the housing panel and the back panel are superimposed on each other, thus reducing overall sound leakage. EX1001, 20:29-42.

B. Claims

Claim 1, the sole independent claim, describes the two plug ends on the ear hook and the way that those components connect to other components (bold) and the specific vibration characteristics of the housing panel and back panel of the earphone core:

1. A loudspeaker apparatus, comprising:

an ear hook including a **first plug end** and a **second plug end**, the ear hook being surrounded by a protective sleeve, the protective sleeve being made of an elastic waterproof material;

a core housing for accommodating an earphone core, **the core housing being fixed to the first plug end and elastically abutted against the protective sleeve**, wherein

the core housing including a housing panel facing human body and a housing back panel opposite to the housing panel, and

the vibration of the earphone core drives the housing panel and the housing back panel to vibrate, the vibration of the housing panel having a first phase, the vibration of the housing back panel having a second phase, wherein when the vibration frequencies of the housing panel and the housing back panel is within a range of 2000 Hz to 3000 Hz, an absolute value of a difference between the first phase and the second phase is less than 60 degrees; and

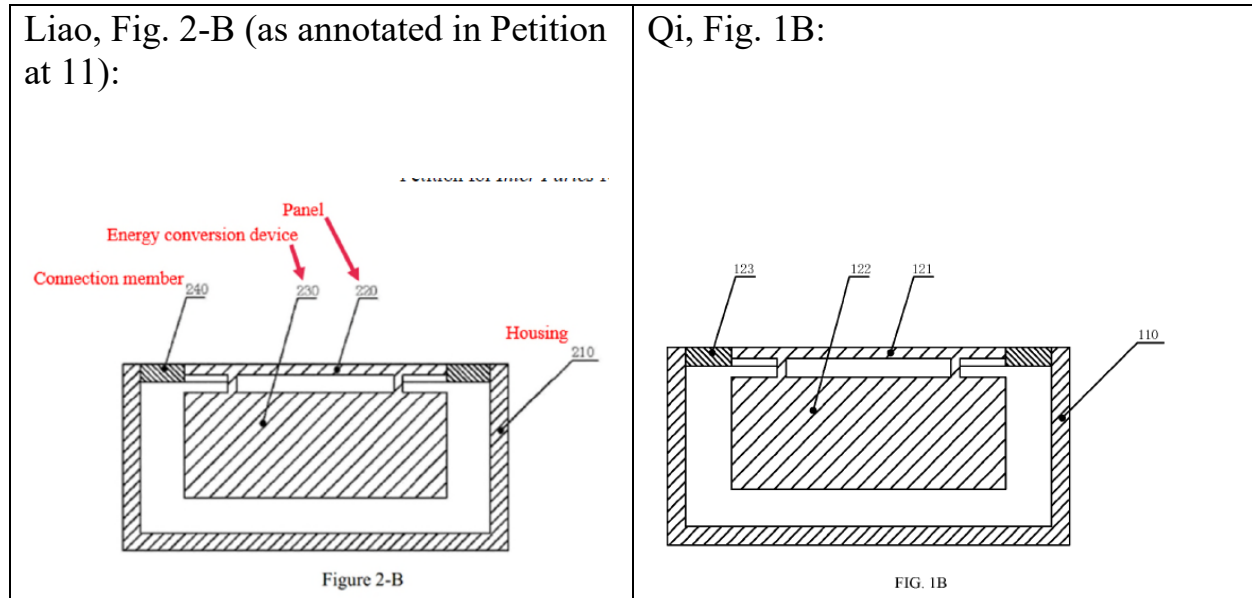
a circuit housing for accommodating a control circuit or a battery, **the circuit housing being fixed to the second plug end**, the control circuit or the battery driving the earphone core to vibrate to generate a sound.

C. File History

The Petition's summary of the '582 Patent's file history omits any discussion of the Examiner's stated reasons for allowance. While the Examiner did not issue any substantive rejections, the Examiner explained in the Notice of Allowance that the "closest prior art of record" was Chinese patent no. CN107484054 to Li *et al.* ("Li '054"). EX1002, 46-47; Exs. 2001, 2002. The specification of Li '054 is identical to the Li '492 reference that the Petition relies on as its primary reference. EX2004, ¶¶3-4. The Examiner explained that Li '054 did not teach limitations of independent claim 1 including, *inter alia*, "the core housing being fixed to the first plug end and elastically abutted against the protective sleeve," and "the vibration of the housing panel having a first phase, the vibration of the housing back panel having a second phase, wherein when the vibration frequencies of the housing panel and the housing back panel is within a range of 2000 Hz to 3000 Hz, an absolute value of a difference between the first phase and the second phase is less than 60 degrees." EX1002, 46-47. Applicants submitted the original and a translation of Li '054 during prosecution. EX1002, 141-160, 163, 207-221.

Applicants also submitted a reference highly similar to Liao, the Petition's secondary reference for the independent claims: U.S. Patent Application Publication No. 2016/0329041A1 to Qi and Liao ("Qi," EX2003). EX1002, 162.

Two of the four inventors listed on Liao are also the inventors of Qi. Qi's Fig. 1B is the same as Liao's Fig. 2-B, the primary figure from Liao cited by the Petition (*e.g.* at 11):



Qi also teaches that the transducer may pass vibrations from the “vibration board” 121 (identical to Liao’s panel 220) to the housing 110. EX2003, [0003].

D. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art at the time of the ’582 Patent’s priority date (January 5, 2019) would have had “a Bachelor’s degree in electrical or computer engineering, or a comparable field of study, plus approximately two to three years of professional experience with acoustic technology. Additional graduate education could substitute for professional experience, and significant experience in the field could substitute for formal

education.” For the purposes of this Preliminary Response only, Patent Owner relies on the definition proposed by Petitioner because Petitioner has not shown that any challenged claims are unpatentable given this level of skill.

E. Claim Construction

Patent Owner believes that all claim terms should be interpreted according to their plain and ordinary meaning, under which the asserted prior art clearly fails to teach all elements of the asserted claims.

Petitioner only proposes construction of a single claim term in a dependent claim (claim 5). Patent Owner does not believe that the Board needs to reach that issue because claim 5 depends indirectly on independent claim 1, and Petitioner has failed to show a reasonable likelihood of invalidating claim 1. Therefore, the Board need not construe the claims in order to find that Petitioner has failed to show that institution is warranted. *See Nidec Motor Corp. v. Zhongshan Board Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (only terms in controversy need be construed, and only if necessary to resolve the controversy).

III. PETITIONER FAILS TO SHOW THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE

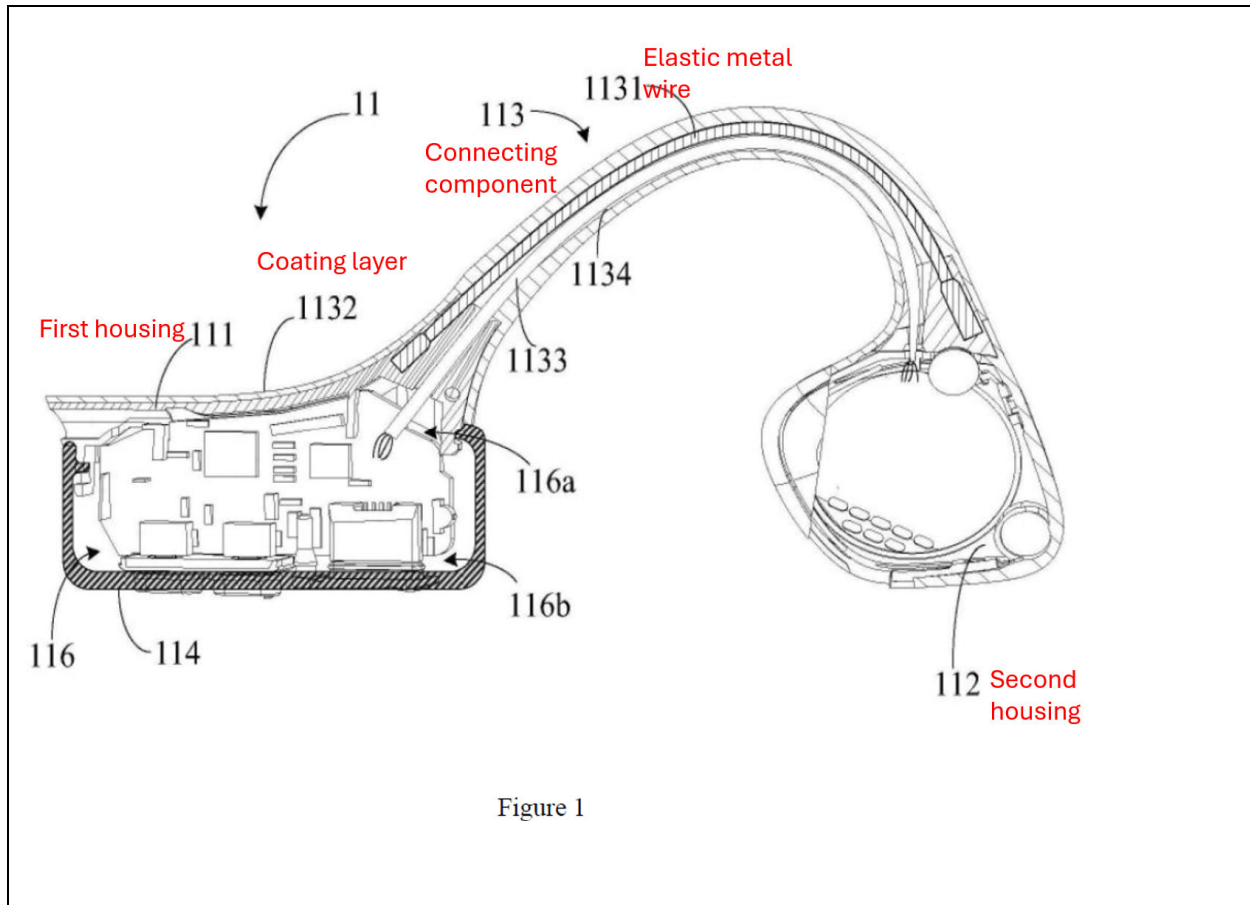
A. Petitioner’s prior art references

1. Li ’492

Li ’492 is a Chinese patent application by Patent Owner, sharing common inventors and a nearly identical specification to the Li ’054 reference cited by the

Examiner as the “closest prior art” during the prosecution of the ’582 Patent. The “detailed description” (paragraphs [0006]-[0081] and figures of Li ’492 are identical to Li ’054. EX2004, ¶¶2-4; EX2011 (comparison of text portions of EX1004, EX2002).

Li ’492 teaches an invention to “effectively enhance the bending performance of bone conduction earphones.” EX1004, Abstract. To that end, Li ’492 teaches an integrated ear hook assembly 11, which comprises “a first housing 111, a second housing 112, and a connecting component 113 connecting the first housing 111 and the second housing 112, wherein the connecting component 113 comprises a first elastic metal wire 1131 connecting the first housing 111 and the second housing 112 at both ends, and a first elastic coating layer 1132 wrapped around the first elastic metal wire 1131.” EX1004, [0023]. These components are shown in Fig. 1, annotated by Patent Owner below:



Li teaches that the two housings are fixed at both ends of the connecting component by injection molding:

Optionally, the first housing 111 and the second housing 112 are plastic housings, **fixed at both ends** of the first elastic metal wire 1131 **by injection molding**, and **the first elastic coating layer 1132 is integrally formed** to cover the first elastic metal wire 1131. This makes the connection between the first housing 111, the second housing 112, and the first elastic metal wire 1131 more stable, and enhances the sense of unity and texture of the bone conduction earphone, making the structure of the

bone conduction earphone more compact and lightweight.

EX1004, [0029]; *see also id.*, [0036].

2. Liao

Liao (EX1005) is also a Chinese patent assigned to Shokz relating to a bone conduction speaker. Liao teaches a bone conduction speaker which includes a vibration transmission panel for transmitting vibrations to a user. EX1005, Abstract. In some embodiments, such as Fig. 2-B (as annotated in the Petition at 11), which the Petition relies on heavily, the panel 220 may be connected to the housing 210 by connection members 240.

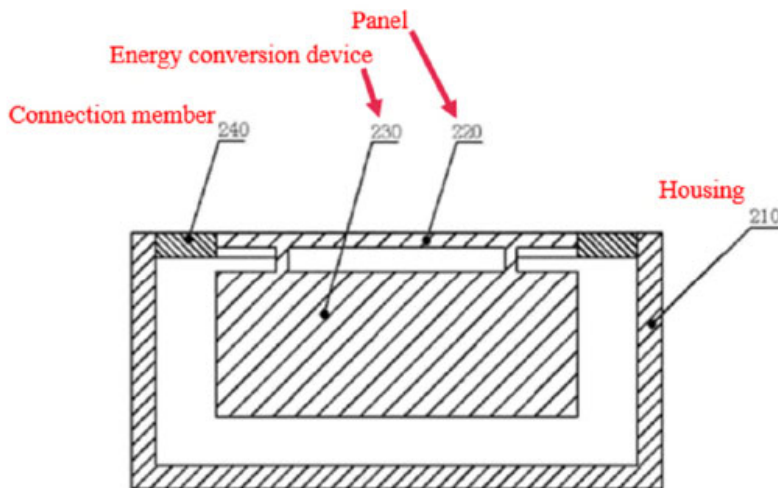


Figure 2-B

EX1005, Fig. 2-B, [0056]. The connection member 240 may have a certain degree of elasticity. *Id.*, [0061]. Liao discusses how that elasticity may be

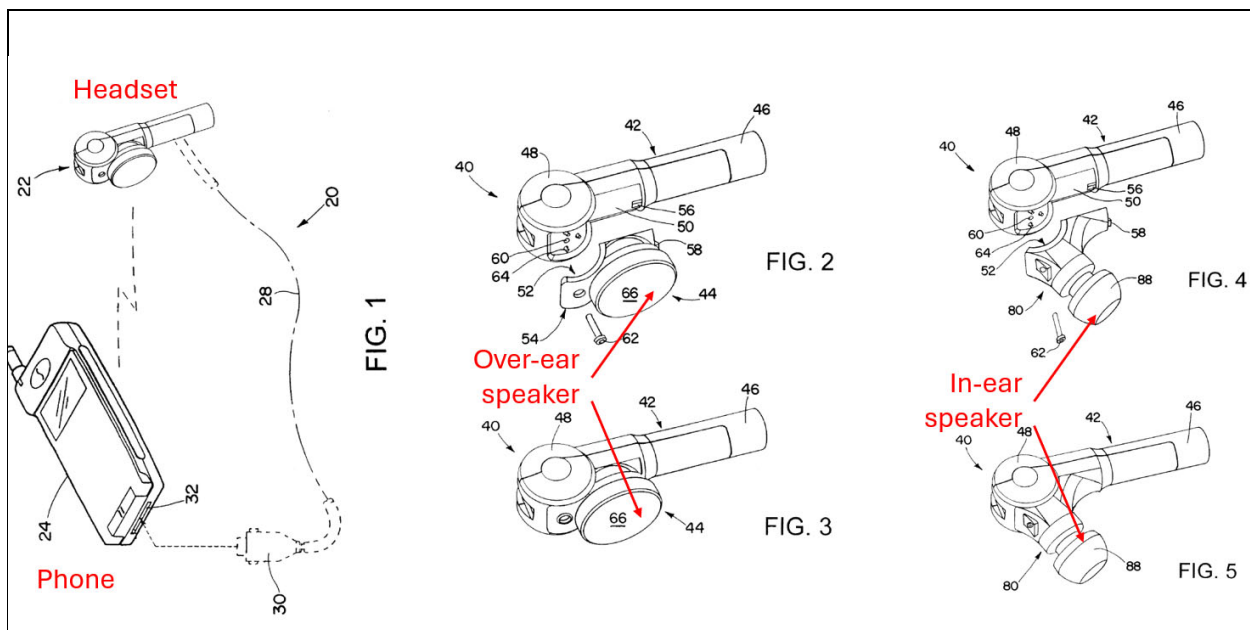
controlled to impact the transmission of vibrations to the housing, which may cause sound leakage. For example, Liao teaches that reducing the rigidity of the connection member may reduce the vibration of the housing and thus reduce sound leakage. *Id.*, [0068], [0069]. Sound leakage may also be controlled by using sound absorbing materials on at least a portion of the housing. *Id.*, [0069]. Sound leakage may also be addressed by “using phase adjusting materials... as portion of the housing material, so that the phase of the air vibration transmitted is within the range of 90° to 270° with the vibration phase of other portions of the housing, thereby achieving the purpose of sound offsetting.” *Id.*, [0096].

3. The Petition’s “Interchangeable Audio Headset Prior Art”

Although the Petition does not directly include any of them in its combinations, the Petition also relies on a group of disparate references that it characterizes as “Interchangeable Audio Headset Prior Art,” including US2008/0279409 (“Hupkes,” EX1011), US 7,672,469 (“Dryer,” EX1012), US 8,515,103 (“Mei,” EX1013), US 2016/0080853 (“Chen,” EX1014), US 9,866,966 (“Lott,” EX1015), US 2018/0316999 (“Bellas,” EX1016), and US 2014/0126742 (“Eggebraaten,” EX1019). The Petition never discusses any of these references individually beyond conclusory citations to them for general assertions about headphones relying on modular components. A closer analysis shows that these references have little in common with the Petition’s primary references (Li ’492

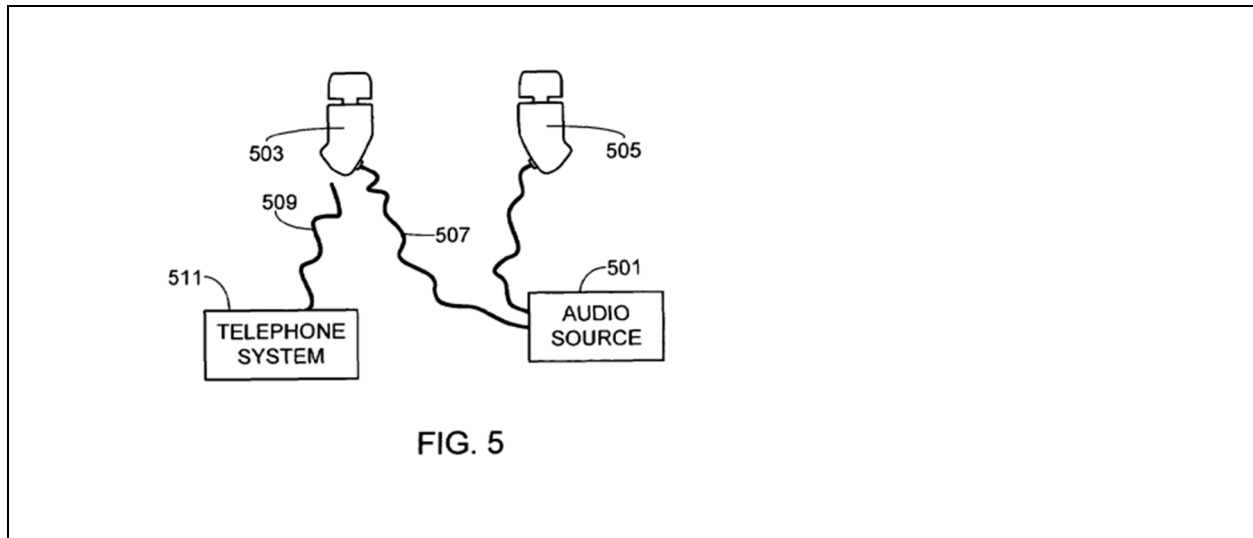
and Liao) beyond being within the general field of headsets (if even that).

For example, Hupkes (EX1011) discusses an earpiece for a portable device such as a cell phone (Fig. 1), which enables the user to switch headset modules 40 between an “in-concha” (or over-ear) speaker 66 that sits outside of the ear canal (Figs. 2, 3) and an “in-ear” earpiece 88 (Figs. 4, 5) that goes into the ear canal, dependent on user’s preference:



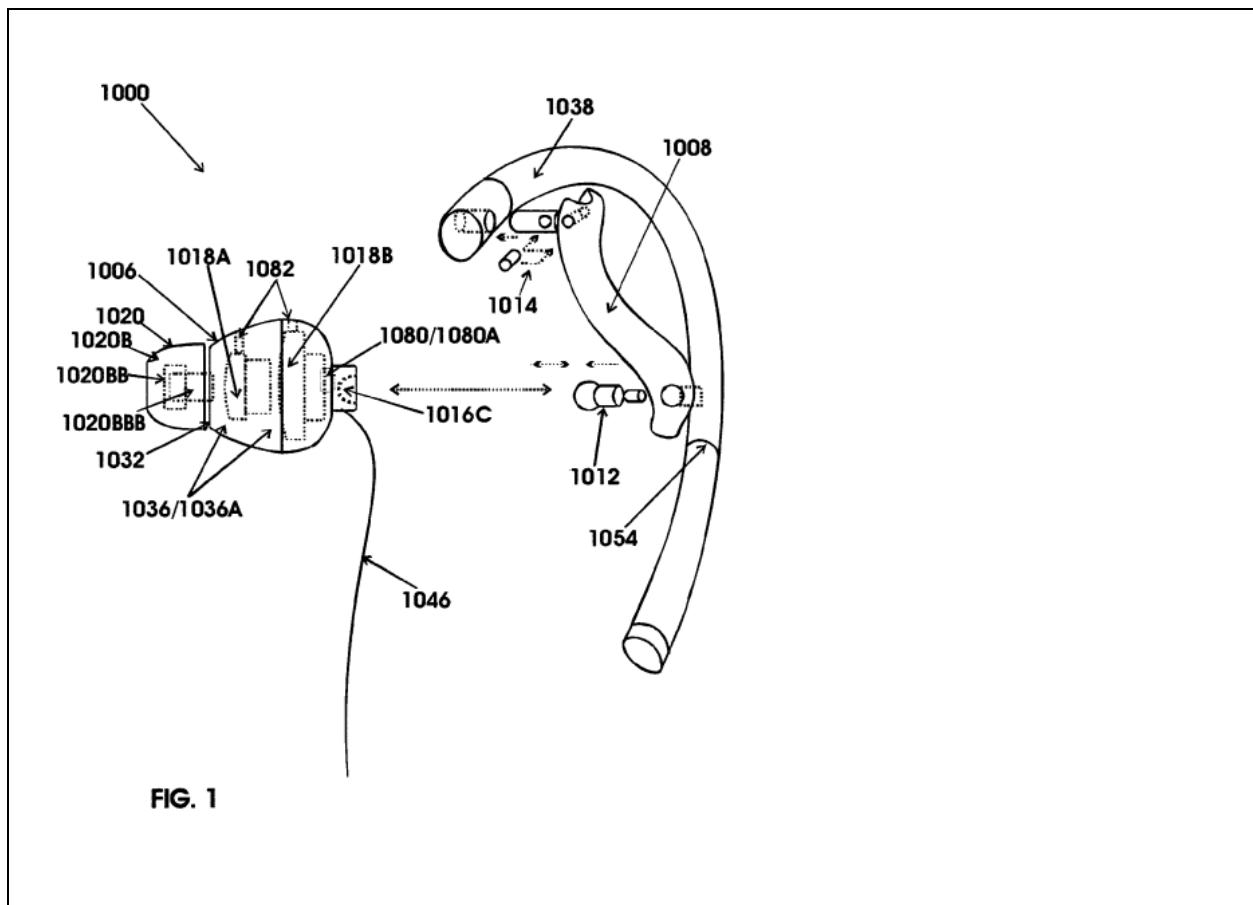
EX1011, [0031]-[0037].

Meanwhile, Dryer (EX1012) discusses in-ear monitors which allow the user to plug in different cables 209/211 to listen to different audio sources during the day:

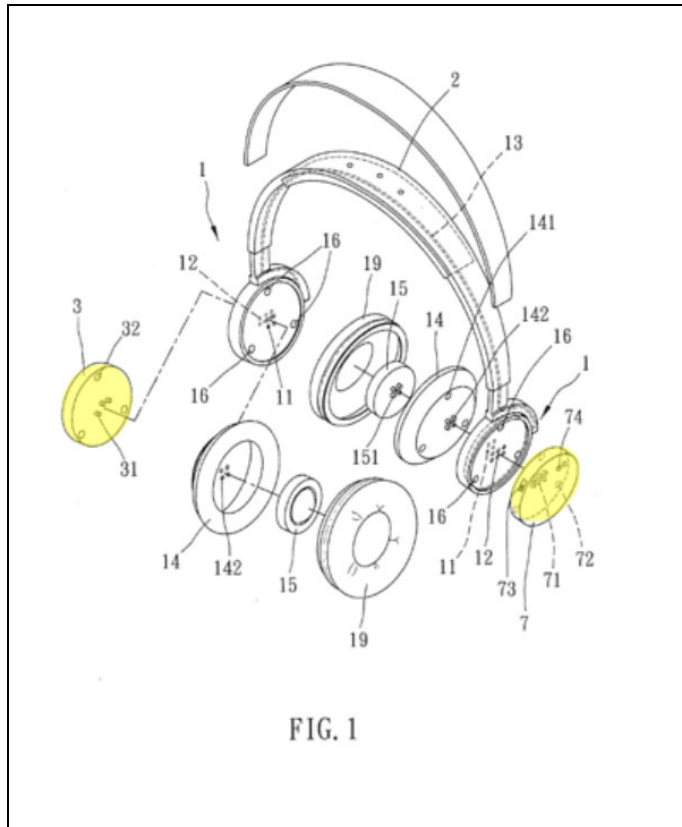


EX1012, 3:63-4:19.

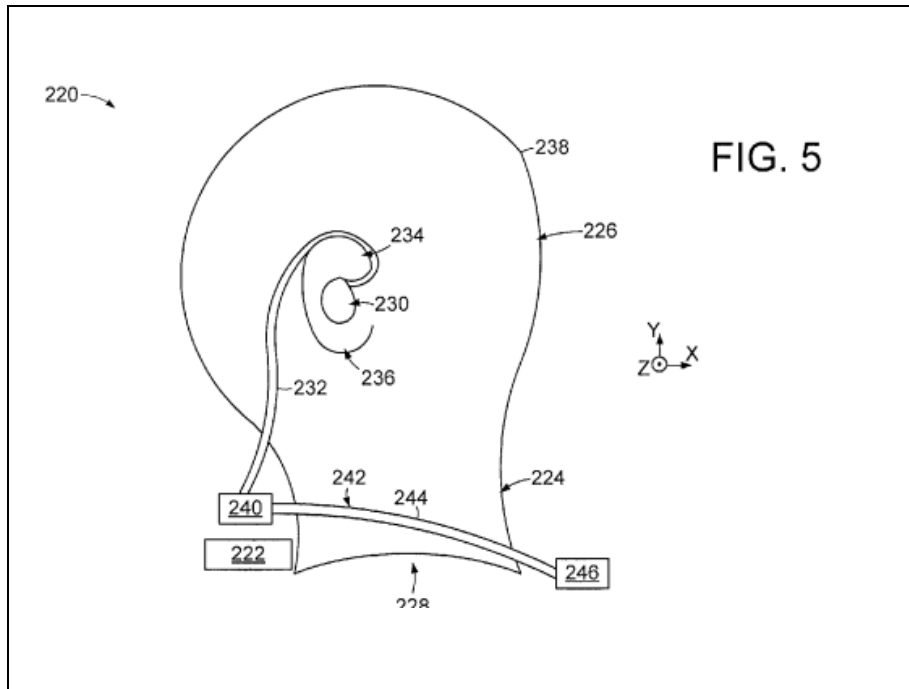
Mei (EX1013) discusses a “3D stereo earphone” (*see* Abstract) with a speaker cup that attaches via a ball and socket joint:



Chen (EX1014) describes a set of headphones with a circuit module 3 and power module 7 (annotated in Fig. 1 below) which may be replaced in order to upgrade the system (*see* [0006], [0017]):

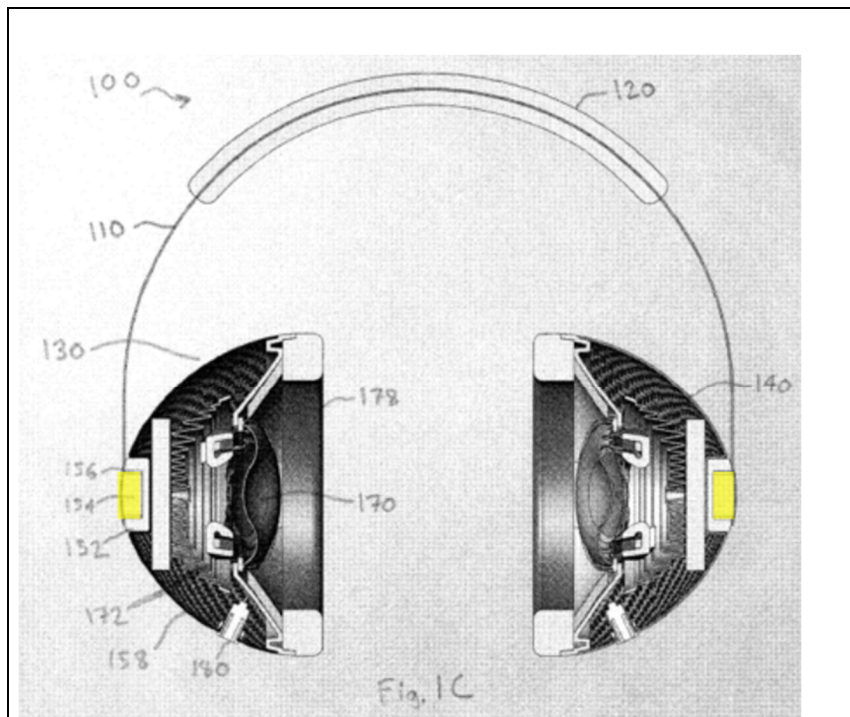


Lott (EX1015) describes a wireless in-ear monitor that may have various extensions (such as a microphone) attached via auxiliary extension 232. *See* Fig. 5:



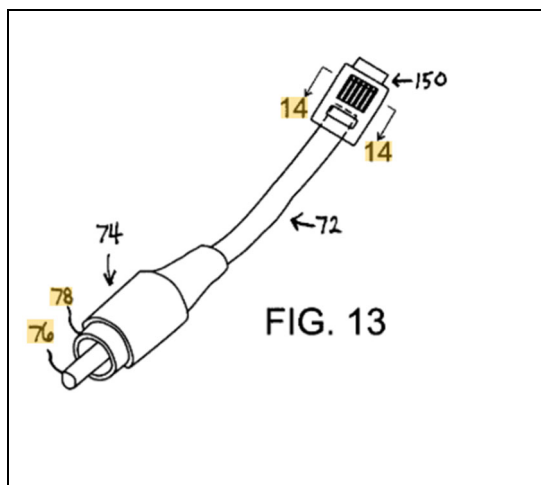
EX1015, 5:45-58.

Bellas (EX1016) describes an over-ear headphone assembly that relies on a magnetic attachment mechanism 154 (annotated in Fig. 1C below):



EX1016, [0011], [0067], [0072].

Finally, Eggebraaten (EX1019) generally describes "multi-room audio distribution system having a plurality of audio cable adapters." EX1019, Abstract. The Petition appears to cite Eggebraaten for the general proposition that networked audio devices may use plugs or jacks. In particular, the Petition (at 25) pastes Fig. 13, which is a generic illustration of an RCA cable adapter 72 used to connect components within such a multi-room audio distribution system:



EX1019, [0028], [0030], [0046], [0050]. However, there is no mention in EX1019 of using such a jack to connect components within a headphone set of any kind.

The Petition cites nothing in any of these references that discusses bone conduction headsets, much less waterproof or even water-resistant headsets.

B. The Petition fails to show an “ear hook” having first and second “plug ends” in the configuration required by the claims

Claim 1, from which all other Challenged Claims depend, requires an “ear hook” with plug ends in a specific configuration. As shown below, three elements

of claim 1 relate to the ear hook and how the “plug ends” of the ear hook connect to a “core housing” and “circuit housing” of the loudspeaker apparatus:

1. A loudspeaker apparatus, comprising:

[1a] an ear hook including a **first plug end** and a **second plug end**,

[1b] the ear hook being surrounded by a protective sleeve, the protective sleeve being made of an elastic waterproof material;

[1c] a core housing for accommodating an earphone core, **the core housing being fixed to the first plug end and elastically abutted against the protective sleeve**, wherein

[1d] the core housing including a housing panel facing human body and a housing back panel opposite to the housing panel, and

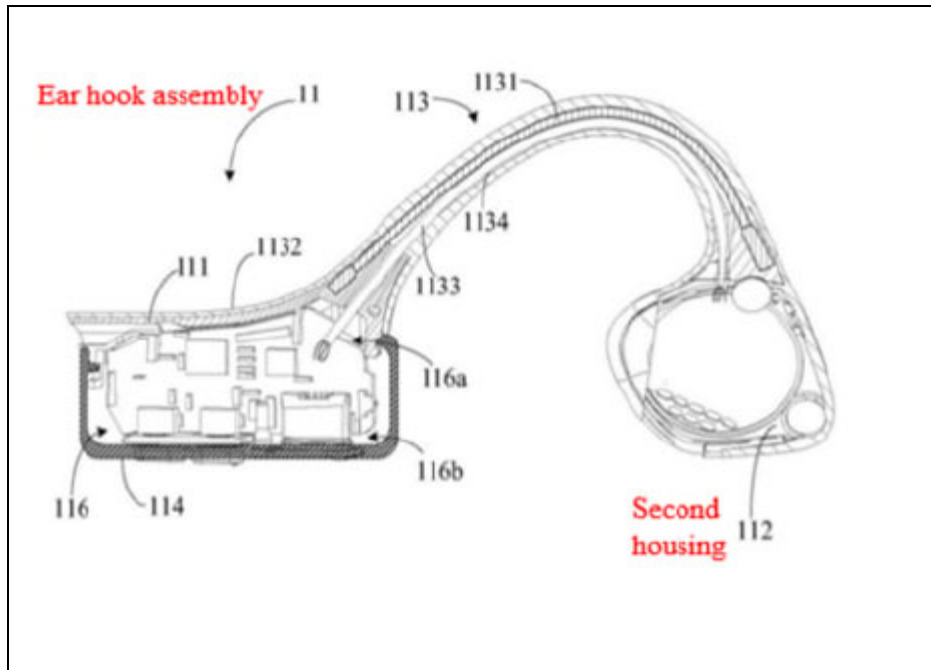
[1e] the vibration of the earphone core drives the housing panel and the housing back panel to vibrate, the vibration of the housing panel having a first phase, the vibration of the housing back panel having a second phase, wherein when the vibration frequencies of the housing panel and the housing back panel is within a range of 2000 Hz to 3000 Hz, an absolute value of a difference between the first phase and the second phase is less than 60 degrees; and

[1f] a circuit housing for accommodating a control circuit or a battery, **the circuit housing being fixed to the second plug end**, the control circuit or the battery driving the earphone core to vibrate to generate a sound.

Therefore, claim elements [1a], [1c], and [1f] all relate to the “plug ends” on the ear hook and how those plug ends are fixed to a core housing and a circuit housing. However, the Petition’s cited prior art fails to teach any of these elements.

1. The Petition’s primary references do not teach element [1a], an ear hook including a first plug end and a second plug end

The Petition first fails to show that any of its references teach an ear hook having first and second plug ends *at all*. The Petition (at 21) maps the “ear hook” to a “connecting component” 113 on an ear hook assembly 11. *See* Fig. 1, as annotated by Petitioner at 21:



That ear hook, however, does not have “plug ends.” Unlike Fig. 5 of the ’582 Patent (annotated by Patent Owner below) which illustrates how the first and second plug ends insert into their respective housings (core housing and circuit housing), Fig. 1 of Li ’492 (also annotated by Patent Owner below) does not show any plug ends between the connecting component 113 and the first and second housings 111 and 112 on either end:

'582 Patent Fig. 5:

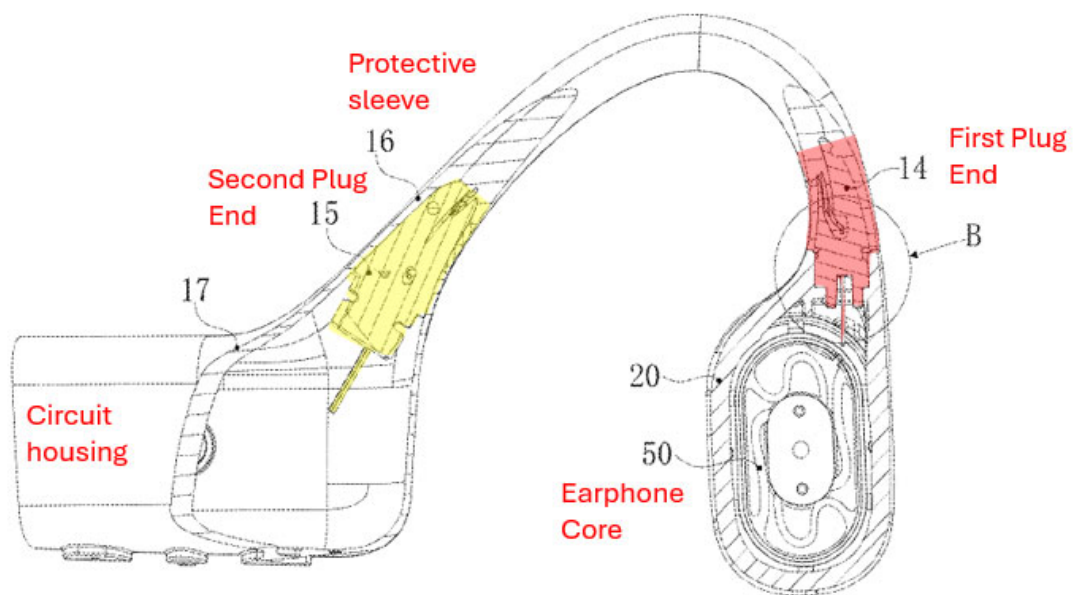
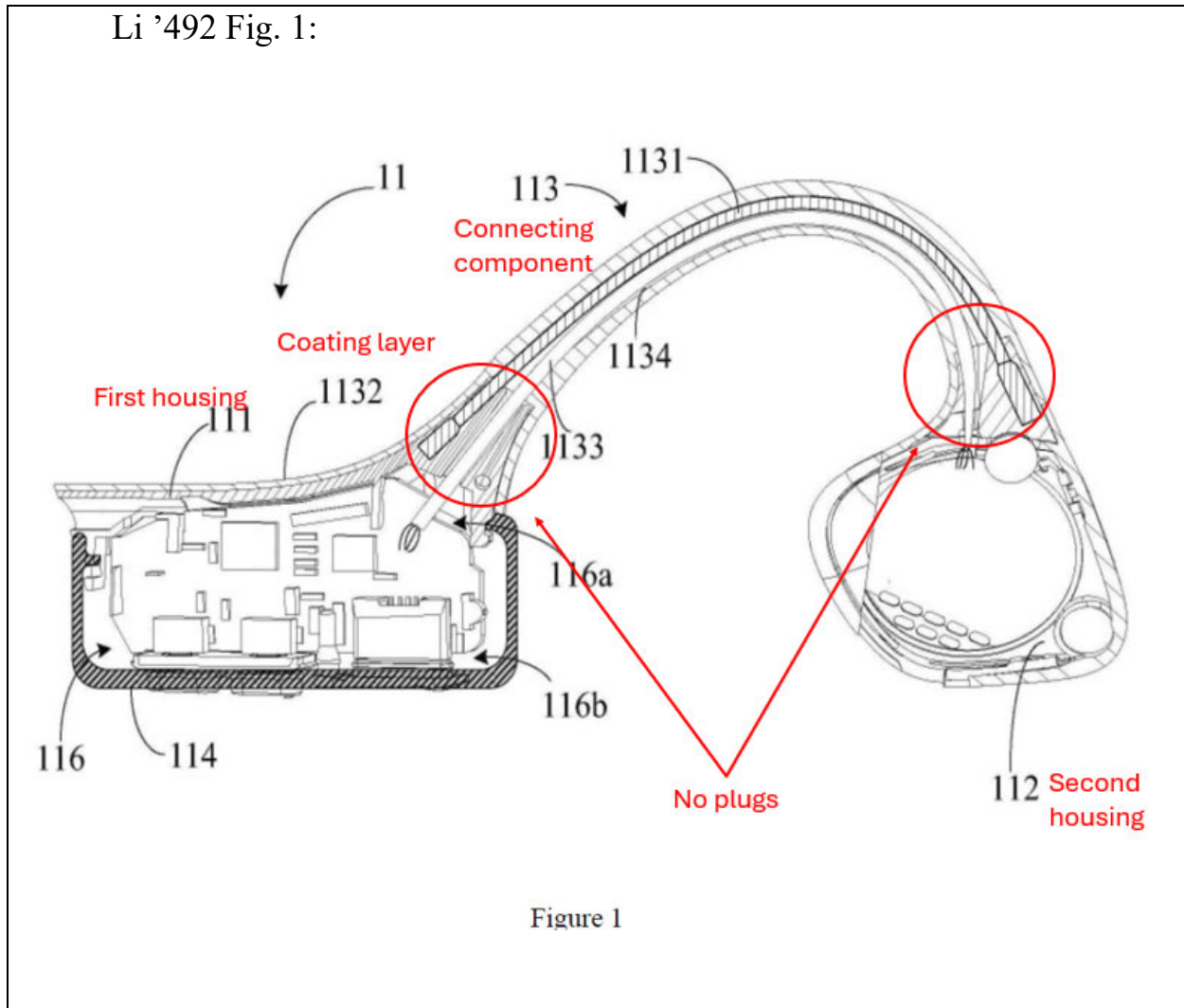
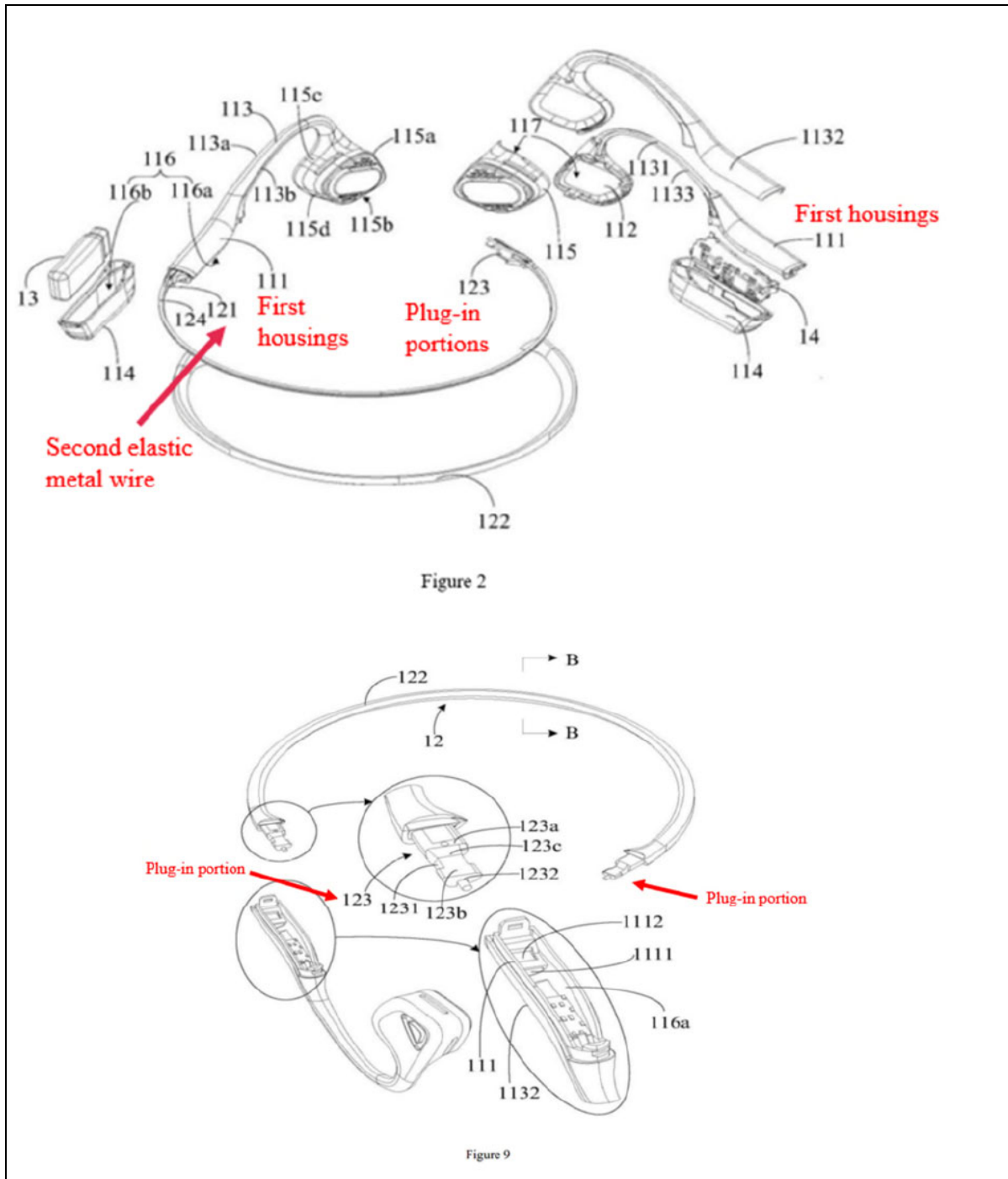


Fig. 5



The Petition does not even argue that the connecting component 113 (*i.e.*, the “ear hook”) has plug ends. Rather, as the Petition relies (at 22-23) on “plug-in portions” 123 at the end of a *different component*, a “second elastic metal wire” 121 on a “rear hook assembly” 12. EX1004, [0058]. These components are shown in the Petition’s annotation of Li ’492’s Figs. 2 and 9:



The second elastic metal wire 121 is a distinct component from the connecting component 113 that Petitioner identifies as the “ear hook.” The Petition does not suggest that the elastic metal wire 121, nor any other portion of the rear hook assembly 12, constitutes an “ear hook,” and it is not. Therefore, the

Petition fails to demonstrate that Li '492 teaches an ear hook having a first plug end and a second plug end.

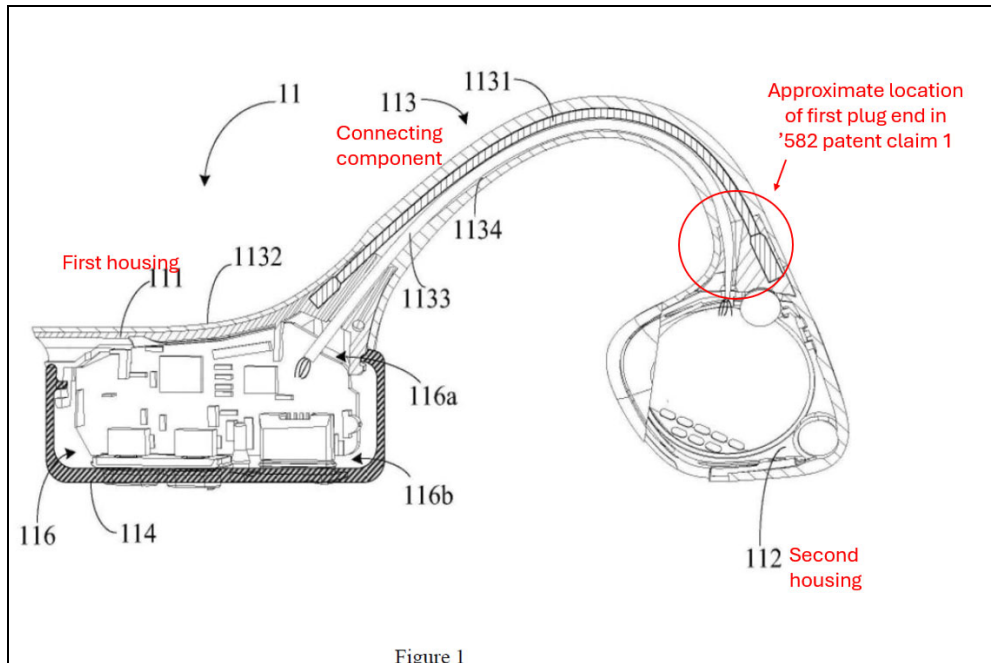
Despite the clear absence of plugs at the ends of Li '492's ear hook, the Petition nevertheless argues (at 23-28) that it would have been obvious to a POSITA to add them. As discussed with respect to elements [1c] and [1f] below, this feature is absent from Petition's references, and a POSITA would not have had any reason for adding the claimed plugs, and would not have found such contrived modifications obvious.

2. The Petition's primary references do not teach element [1c], "a core housing for accommodating an earphone core, the core housing being fixed to the first plug end and elastically abutted against the protective sleeve"

The Petition relies entirely (at 30-33) on Li '492 for element [1c], "a core housing for accommodating an earphone core, the core housing being fixed to the first plug end and elastically abutted against the protective sleeve."

The Petition asserts that the connecting component 113 of Li '492 (shown in Fig. 1) maps to the claimed "ear hook," and that Li '492's second housing 112 and fourth housing 115 map to the claimed "core housing." Petition, 28-30. Because "the first plug end" in element [1c] relies on element [1a] for antecedent basis, this element requires the core housing to be fixed to the first plug end *of the ear hook*. However, there are no teachings or suggestions in Li '492 about a plug of any kind where component 113 meets either components 112 or 115. Li '492's Fig. 1

(annotated by Patent Owner below) shows no plug ends or any similar structure at the location required by the claim, even assuming *arguendo* that (as argued by Petitioner) the connecting component 113 maps to the “ear hook” and the second housing 112 and fourth housing 115 map to the “core housing.”¹



Nothing else in Li '492 teaches or suggests plug ends at this location either. Nor does Li '492 teach joining the connecting component 113 to the first housing in such a way that the core housing elastically abuts the protective sleeve. Rather, Li '492 teaches that the two housings are fixed at both ends of the connecting

¹ The “fourth housing” 115 is not shown in Fig. 1, but would be behind the second housing 112 from the viewer’s perspective. See Li '492, Fig. 2.

component by injection molding:

Optionally, the first housing 111 and the second housing 112 are plastic housings, **fixed at both ends** of the first elastic metal wire 1131 **by injection molding**, and **the first elastic coating layer 1132 is integrally formed** to cover the first elastic metal wire 1131. This makes the connection between the first housing 111, the second housing 112, and the first elastic metal wire 1131 more stable, and enhances the sense of unity and texture of the bone conduction earphone, making the structure of the bone conduction earphone more compact and lightweight.

EX1004, [0029]; *see also id.*, [0036].

The Petition identifies nothing in Li '492 itself that teaches or even suggests putting a plug end in the configuration required by the claim, such that a core housing containing a headphone core is fixed to the plug end of an ear hook.

The Petition asserts (at 30-31) that various references to the plug end 123 in Li '492 would motivate a POSITA to add a similar plug end to the end of the ear hook facing the second housing 112 “to achieve the various benefits of a modular earphone design.” However, the cited portions of Li '492 all refer to the connection between the plugin portion 123 and the first housing 111; none of them refer at all to the connection between the ear hook (or “connecting component” 113) and the earphone core (or “second housing” 112 or “fourth housing” 115).

EX1004, [0058], [0059]. The Petition cites nothing in Li '492 even hinting at adding a plugged connection in the particular configuration required by claim 1 of the '582 Patent. Even if Li '492 suggested benefits to a headset that is “modular” by having plug-in connections *somewhere*, that does not explain the logical leap for a POSITA to add plug-in connections where the '582 Patent requires them.

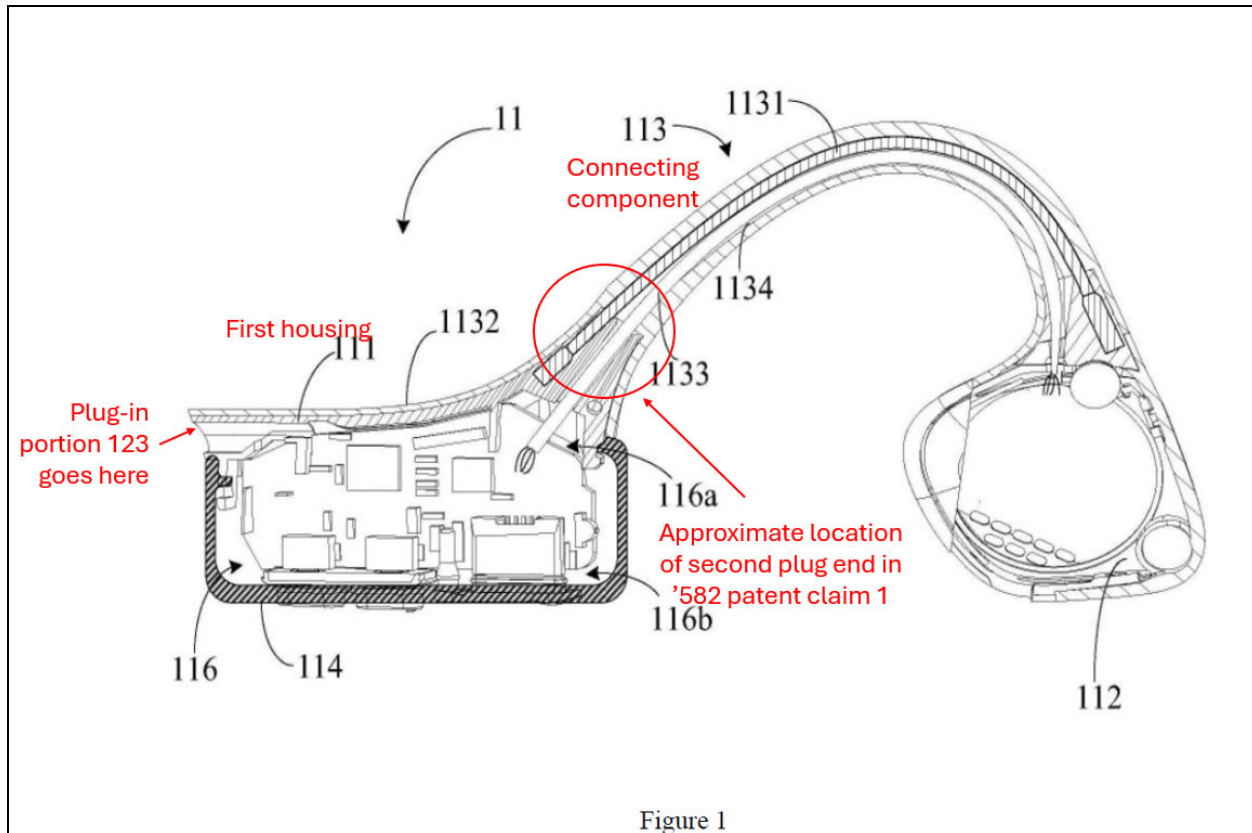
Petitioner’s expert declaration does little more than parrot the conclusory assertions about “modular” headsets made by the Petition; like the Petition, Petitioner’s expert never explains why a POSITA would have been motivated to put a plug connection in the configuration required by claim 1 of the '582 Patent. EX1003, ¶¶128-130. Therefore, the Petition completely fails to show how Li '492 teaches or suggests a missing limitation. *See, e.g. ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1327 (Fed. Cir. 2012) (expert testimony that POSITA would have combined references in claimed manner based on “modular” nature of components was “not sufficient and [] fraught with hindsight bias”); *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1366 (Fed. Cir. 2016) (generalized evidence that searches for data in databases were common knowledge did not provide teaching or suggestion to search for particular data field which was missing from prior art).

3. The Petition’s primary references do not teach element [1f], a “circuit housing... fixed to the second plug end.”

Petitioner’s failure regarding element [1c] carries over to element [1f],

including a “circuit housing... fixed to the second plug end.” The Petition again (at 38-40) relies exclusively on Li ’492 for this element. As with element [1c], “the second plug end” in element [1f] relies on element [1a] for antecedent basis. The element therefore requires the circuit housing to be fixed to a second plug end of the ear hook.

Li ’492 does not teach or suggest such a configuration. The Petition maps Li ’492’s connecting component 113 to the claimed “ear hook” and its first housing 111 to the claimed “circuit housing.” But Li ’492 does not show or describe any plug end connecting these components. While Li ’492 does teach (at [0058]) that plug-in portions 123 connect to the first housing 111, these are not plug ends of an ear hook, and therefore do not teach the element. Fig. 1 (annotated by Patent Owner below) shows the absence of a “plug end” connecting the connecting component 113 to the first housing 111, as well as the different location where the plug-in portions 123 of the rear hook assembly connect to the first housing:



As with element [1c], the Petition fails to explain why Li '492 teaches the claimed “plug end” in the required configuration. The Petition’s discussion for element [1f] (at 39) just refers back to its discussion of element [1c], even though element [1f] requires a plug end connected to a different component than [1c]. The Petition never explains why its arguments for inserting a plug end at one end of the ear hook would apply to the other, much less why a POSITA would be motivated to modify Li '492 to add *both* plug ends.

The Petition argues that Li '492’s paragraph [0059] suggests a “second plug end” of an ear hook in the claimed configuration. That paragraph is quoted below

(Patent Owner's emphasis):

By connecting the plug-in portion 123 **of the rear hook assembly 12** with the first housing 111 of the two ear hook assemblies 11, the issue of large earphone size caused by screw fixation in existing bone conduction earphones are improved, simplifying the structure, reducing the weight of bone conduction earphones, facilitating later wiring, and reducing costs.

Nothing about this paragraph teaches adding a plug end to an ear hook (i.e., connecting component 113 as mapped by Petitioner), much less a second plug end in the configuration required by element [1f]. In context, the paragraph suggests that prior art products may have had an “issue of large earphone size caused by screw fixation” at the particular location described, *i.e.* the connection between a **rear** hook assembly or headband and the rest of the headset, and that added plugs **at that location** (between the rear hook 12 and first housing 111) mitigated that concern. This paragraph says nothing about why adding a plug connection between the connecting component 113 and first housing 111 would mitigate those concerns, nor why any of the other benefits of a plug at that location would apply to the different context of the connection between the ear hook and a circuit housing. As discussed above regarding element [1c], Li '492 already teaches to fix the connecting component 113 and first housing 111 via injection molding. EX1004, [0029]. The Petition points to nothing in Li '492 that suggests that

replacing the injection molded connections on the connecting component 113 with a “plug end” would provide any benefits whatsoever, much less those associated with the plug-in portions of the rear hook 12.

Therefore, the references that the Petition identifies as its primary grounds fail to teach critical claim limitations.

4. The Petition fails to show that a POSITA would have been motivated to modify Li '492 in the claimed manner

a. The Petition’s reliance on numerous “interchangeable headset prior art” references fails to identify with particularity the grounds on which its challenge is based

The Petition attempts to fix the deficiencies in Li '492 regarding the claimed configuration of the “plug ends” by citing *seven* other references that the Petition refers to as “interchangeable headset prior art.” Petition at 17-18, 23-26, citing Exs. 1011-1015, 1019. The Petition does not identify any of these references as part of its Ground 1 combination, yet it appears to rely entirely on this set of references for its assertions that a POSITA would have modified Li '492 to add two plug ends in the specific configuration required by the '582 Patent. The Petition also does not articulate any reason to combine Li '492 and Liao with any one or more of the seven references that it describes as “interchangeable headset prior art.” Nor does the Petition even clearly identify what its proposed combination is. Indeed, the Petition is internally inconsistent: its statutorily

required “statement of precise relief requested (Petition at 1) lists only specified references, e.g. Li ’492 and Liao for Ground 1; however, the Petition’s introductory headings for each ground add “and the knowledge of a POSITA.” Petition at 18, 42, 62, 93. The Petition’s adding seven references under the guise of the “knowledge of a POSITA” effectively means that it adds any possible combination of one or more of these seven (that is, any one of them, any combination of two through six of them, or all seven) to the base combination of Li ’492 and Liao. Moreover, the Petition’s reliance on up to seven additional references to teach two critical claim elements results in a lack of particularity that results in voluminous and excessive grounds. This lack of specificity alone is sufficient reason for the Board to conclude that the Petition fails to show a reasonable likelihood of prevailing on any ground. *See, e.g. Adaptec Ltd. v. Perfect Co.*, IPR2018-01596, Paper 20 at 24 (March 6, 2019).

b. The Petition fails to show a motivation to combine its primary references with any of the “interchangeable headset prior art” references in the claimed manner

Even if the Petition’s use of multiple “interchangeable headset prior art” references to supply missing claim limitations was proper (it is not), the Petition would still fail to show that a POSITA would have been motivated to combine the nebulous “modular” teachings from these references with its Li ’492/Liao combination to produce the claimed structure. The Petition’s motivation to

combine analysis (at 18-20) focuses solely on the purported motivation to combine Li '492 and Liao. But as discussed above in §III(B)(1), Li '492 itself does not provide any teaching or suggestion to place plug ends of an ear hook in the configuration required by the claims, and the Petition does not even argue that Liao provides such a suggestion either.

Rather, the Petition's arguments regarding the claimed "plug ends" in the configuration claimed all rely on assertions that a POSITA would have known to duplicate Li '492's plugs into different positions on the headset based on teachings obtained from the "Interchangeable Headset Prior Art." Yet the Petition fails to explain why, much less present any evidence, that a POSITA would have been motivated to incorporate those teachings into the specific headphone structure described by Li '492. Nor does the Petition explain why the various teachings that it cites would lead to a plug between an ear hook and a core housing containing a speaker.

For example, regarding the assertion that a POSITA would have added a plug between Li '492's connecting component 113 and housing 112, the Petition merely asserts (at 24) that "[t]he speaker portions were modular for various reasons, such as component replacements and removability, upgrades, and reducing manufacturing and production costs due to the simple shape of components." The first three citations to the Petition's "interchangeable"

references are just general statements about providing modular components, none of which say anything about adding a plug between an ear hook and a speaker module. EX1012, 2:4-15 (“...what is needed in the art is an in-ear monitor system that provides the user with greater capabilities to either replace, or upgrade, specific system components”); EX1014, [0004] (“...Further conventional headphone systems do not allow the consumer to upgrade its specifications or changing its internal circuit module or other component parts”); EX1015, 2:6-17 (“various embodiments configure a wireless audio system that provides... a diverse range of capabilities that may, or may not, be facilitated by attachments physically connected to a wireless monitor”).

As for the Petition’s assertion of “reducing manufacturing and production costs due to the simple shape of components,” Bellas (EX1016) is the only reference cited with any teaching even arguably related to this assertion. However, the only references to “reducing manufacturing and production costs due to the simple shape of components” in the cited portions of Bellas relate to reducing the cost of the particular magnetic sphere mechanism that Bellas itself uses to separate its earphone cups from a headband:

Additionally, because the magnetic force can be strong, sphere magnet 154 can be relatively light weight to reach the target magnetic level. In some embodiments, **sphere magnet 154 can be smaller in size and lower in price**

than comparable magnets. Accordingly, sphere magnet 154 can reduce the overall size of the headphone assembly, as well as reduce the overall production cost.

EX1016, [0079]

Headband 110 can substantially form around the shape of the sphere magnet 154 and/or sphere cup 152, such that the components are essentially form fitting over and/or around one another. This can improve the connection and fit of the components, as well as **reduce the need for the sphere magnet 154 to be large or powerful, which in turn reduces the size and cost of the headphone assembly.**

Id., [0085].

As mentioned previously, attachment assembly 250 can utilize an air gap. For example, one side or pole of tip magnet 254 can face the headband 210. The opposite side or pole of tip magnet 254 can pass through low permeability air gap, which can complete the magnetic circuit of flux flowing through the headband 210. This aspect of attachment assembly 250 can help the components attach to one another. **One advantage of this type of attachment assembly is that the components can be a relatively simple shape, which can lower production costs.**

Id., [0096]. Nothing in Bellas' discussion about its own magnetic attachment

mechanism, nor any of Petitioner's other citations for this point, teaches or suggests anything about how or why adding a plug between an ear hook and a speaker housing would lower manufacturing costs. Rather, the Petition relies on the *'582 Patent itself* for the assertion that "reducing manufacturing cost and adjusting for design changes as a benefit of its modular design" would have been benefits motivating a POSITA to add a plug between Li '492's ear hook and core housing. Petition at 25, citing '582 Patent at 11:58-12:3, 16:21-32. But that is hindsight, not a teaching from the prior art.

The Petition's arguments for adding yet another plug between Li '492's connecting component 113 and first housing fare no better. The Petition again relies (at 25-26) on passing references to its "interchangeable" prior art for the assertion that a POSITA would have modified Li '492 in this way, with no analysis or discussion of the similarities or differences between each one and how or why a POSITA would have combined them. None of these references show an end of an ear hook which is a plug inserted into a circuit housing, nor describe any reason for a POSITA to add a plug in this position.

The Petition then argues (at 26) that adding a second plug end to Li "would achieve well-known modular earphone benefits, including simplifying the structure and reducing costs, especially when it comes to replacing the housing containing the earphone's battery or control circuit." The Petition then goes on to reference

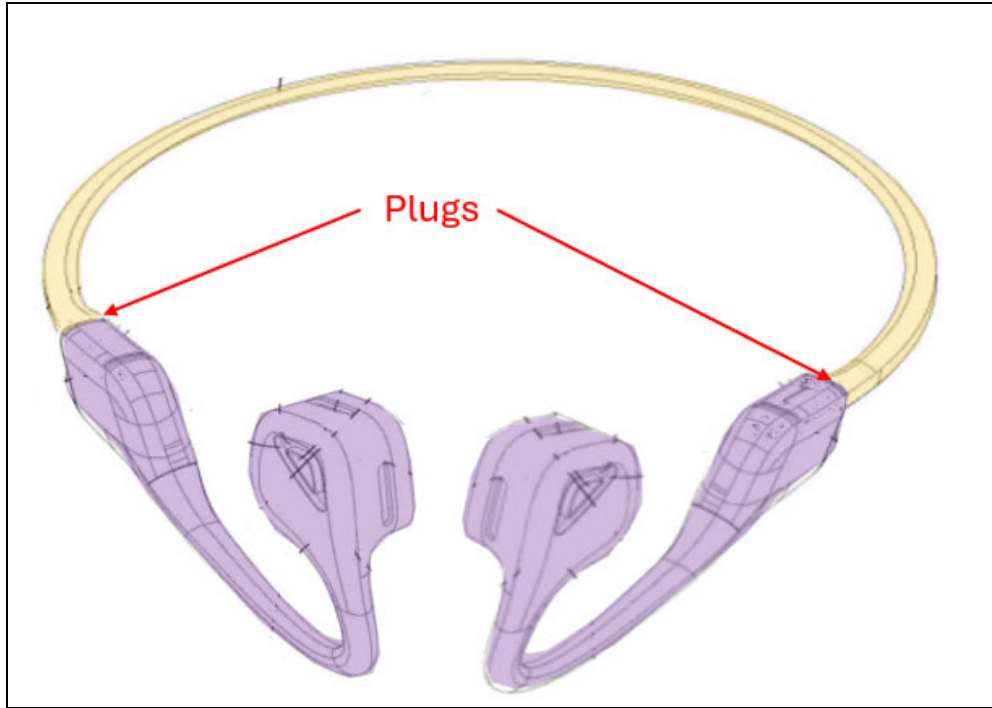
the *exact same citations* that it relied on for the corresponding assertion about the “first plug end.” Petition at 26, citing EX1004, [0059]; see also EX1012, 2:4-15; EX1014, [0004]; EX1015, 2:6-17, EX1016, [0056], [0079], [0085], [0096]; EX1015, 2:6-17; *cf.* Petition at 24 (same citations). As discussed above, none of these citations explain why a POSITA without the benefit of hindsight would have been motivated to add a plug end to Li ’492 in *either* of the two places where claim elements [1c] and [1f] require a plug end, much less *both*.

c. Li ’492 teaches a different approach that would discourage Petitioner’s proposed modifications

Li ’492 itself, however, teaches away from the Petition’s proposed modifications. As noted above in §§III(A)(1) and III(B)(2), Li ’492 teaches that the first and second housings are fixed at both ends of the connecting component by injection molding, which “makes the connection... more stable” between these components and “enhances the sense of unity and texture of the bone conduction earphone, making the structure of the bone conduction earphone more compact and lightweight.” EX1004, [0029]. The Petition’s proposed modifications would negate all these goals taught by Li ’492 and result in a significantly more complex structure.

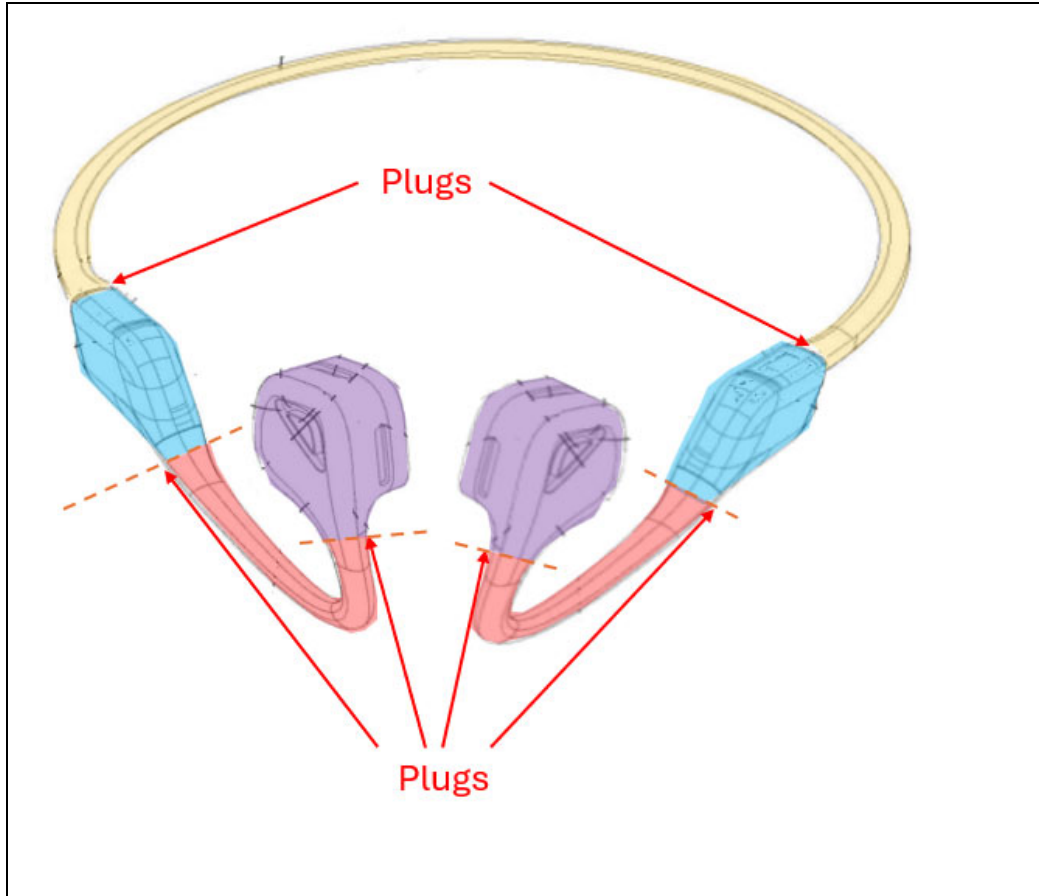
When Li ’492’s teaching to join the housings and connecting component with integrated injection molding is applied to the preferred embodiment of a binaural headset, there will be only three separately molded assemblies (the rear

hook, annotated yellow below, and the two integrated assemblies of first and second housings and ear hook, annotated purple below) joined by two plugs:²



Yet Petitioner's proposed modification would split the assembly into *seven* separate molded assemblies, joined by a total of *six* plugs:

² Graphics created from EX1004, Figs. 5 and 9.

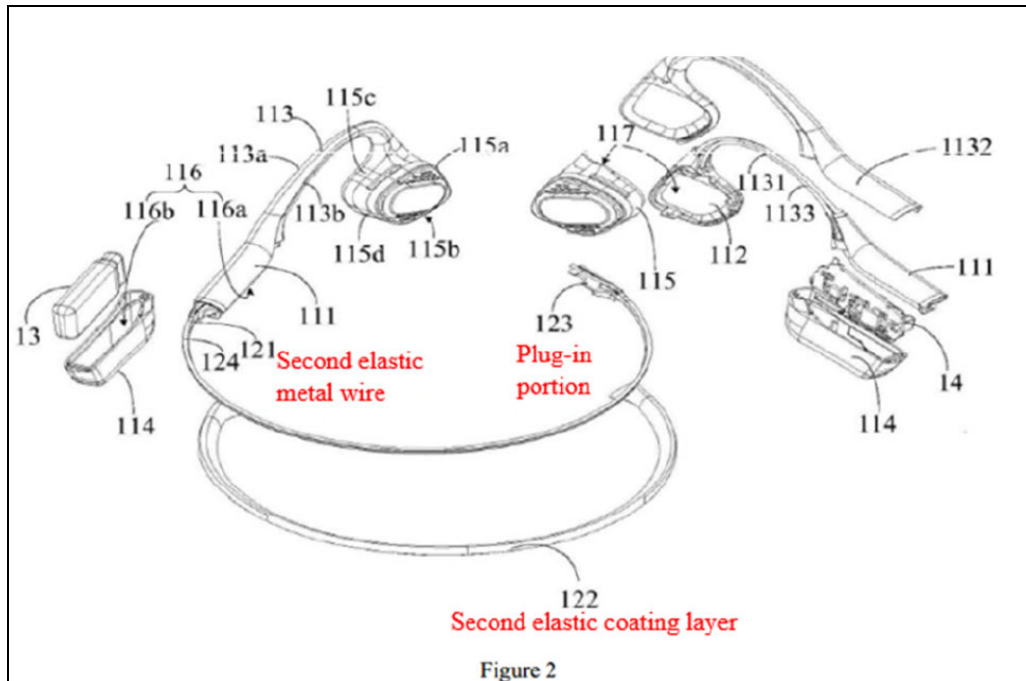


This is not only a significant revision to Li '492's structure, but it directly contradicts Li '492's teaching that the housings and connecting components on both sides of the headphones should be fixed by injection molding to make the structure more stable, compact, and lightweight. Therefore, Li '492 teaches away from this Petitioner-proposed modification, or at the very least, a POSITA reading Li '492 itself without the benefit of hindsight and the '582 Patent itself would be discouraged, and would not have been motivated, to modifying Li '492's simple, unitary structure to add multiple plug junctions.

C. The Petition fails to show that the combination of Li '492 and Liao teaches a “core housing... elastically abutted against the protective sleeve” in element [1c]

In addition to Petitioner’s failure to show “plug ends” in the configuration required by the claims of the '582 Patent, Petitioner also fails to establish that the core housing would be “elastically abutted against the protective sleeve” even if Petitioner’s proposed modification were made. Petitioner’s argument (at 32-33) is that Fig. 2 of Li '492 shows the second elastic coating layer 122 elastically abutted against the first housing, and that duplicating that structure between the connecting component and the second housing 112 would result in the claimed “core housing... elastically abutted against the protective sleeve.” But the initial premise is wrong. Petitioner merely asserts (at 32), without any further explanation, that “[a]s shown in Figure 2, the second elastic coating layer 122 abuts the third housing 114 at the plug-in portion 123.”

However, Fig. 2 of Li '492 does not show that. Fig. 2 of Li '492 is an “exploded” illustration, where many of the components (including the second elastic coating layer 122 and the housing 114 that Petitioner relies on) are shown separated from each other rather than in their assembled configuration (annotations below in Petition):



Accordingly, Fig. 2 does not show whether the second elastic coating layer 122 and the third housing 114 make contact at all, much less whether they “elastically abut[]” in the claimed manner. The Petition does not explain further how a POSITA would glean the claimed “elastically abutted” limitation from Fig. 2. Nor does Petitioner’s expert, who merely parrots the corresponding assertions in the Petition. EX1003, ¶130.

The Petition (at 33) further implies that the “first elastic coating layer” 1132 of Li ’492’s Fig. 1 teaches or suggests this element. However, as discussed above in §§III(A)(1) and III(B)(1), Li teaches that the first and second housings are fixed to the first elastic metal wire 1131 of the connecting component 113 by injection molding, so that the elastic coating layer covers at least portions of all three. EX1004, [0036]. Nothing in this excerpt suggests any benefit to adding a

connection formed by a plug with a protective sleeve abutted against a housing.

While the Petition argues (at 33) that Li '492 teaches benefits of the elastic coating such as “wear resistance,” those benefits are achieved in Li '492 by fixing the housings to the connecting component by injection molding, not by plug junctions. Moreover, the Petition fails to explain why replacing the fixed injection-molded connections with plug junctions would improve such wear resistance. The Petition does not rely on any of its other references (either Liao or the series of “interchangeable” references) for “elastically abutted” limitation. Therefore, the Petition fails to show that its proffered combination satisfies this element.

- D. The Petition fails to show that the combination of Li '492 and Liao teaches element [1e], “wherein when the vibration frequencies of the housing panel and the housing back panel is within a range of 2000 Hz to 3000 Hz, an absolute value of a difference between the first phase and the second phase is less than 60 degrees”**
 - a. Lia does not teach a phase difference less than 60 degrees between a housing panel and housing back panel**

The Petition (at 34-36) relies entirely on Liao for this element, but fails to show that Liao teaches it. In particular, the Petition fails to show that “an absolute value of a difference between the first phase [of a housing panel] and the second phase [of a housing back panel] is less than 60 degrees.” For this element, the Petition relies (at 35) entirely on a conclusory assertion that “if panel 220 is

vibrating, housing 210 is also vibrating in phase (the absolute value of the phase difference is nearly zero) because panel 220 and housing 210 are rigidly connected without connection members 250, as taught by Liao.” However, the Petition cites nothing in Liao explaining why this would be the case. Petitioner’s only citations from Liao following this assertion are paragraphs [0057] and [0058], which are reproduced in their entirety below:

[0057] It shall be noted that the method of fixing the energy conversion device and the panel in the housing is not limited to the connection method described in figure 2-B. Obviously, for those skilled in the art, whether to use the connection member 240, or to use the connection member 240 made of different materials, adjust the energy conversion device 230, or connect the panel 220 to the housing 210, will all exhibit different mechanical impedance characteristics, produce different vibration transmission effects, thereby affecting the overall vibration efficiency of the vibration system and producing different sound quality.

[0058] For example, if connection members are not used, the panel can be directly attached to the housing, or connected to the housing by clamping or welding. If connection members are used, connection members with moderate elastic force have a shock-absorbing effect during the transmission of vibration, which can reduce the

vibration energy transmitted to the housing and effectively suppress the bone conduction speaker from leaking sound to the outside caused by housing vibration. It can also help avoid the occurrence of abnormal sound caused by possible abnormal resonance, achieving the effect of improving sound quality. The connecting pieces located at different positions inside/on the housing will also have varying degrees of impact on the transmission efficiency of vibration. Preferably, the connection members can keep the energy conversion device in different status such as a suspended or supported status.

Nothing in either of these paragraphs discusses the phase difference between the vibration panel 220 and the back side of the housing 210, nor does the Petition explain how a POSITA would glean such a teaching from these paragraphs. At most, these paragraphs merely suggest that the use of various different types of materials and designs might have “different mechanical impedance characteristics, produce different vibration transmission effects” and “have varying degrees of impact on the transmission efficiency of vibration.” Nothing in the cited paragraphs teaches that the housing panel contacting the user or the back panel vibrate in phase, or even suggests why this would be the case.

Furthermore, the Petition neither asserts that this limitation would be inherent in the structure of Liao, nor provides an inherency analysis. This fatal flaw in Petitioner’s position is confirmed by Patent Owner’s expert declaration that

explains a POSITA would not simply assume that two connected housings would vibrate in phase. That is because numerous physical properties of the housings would impact the phase difference of vibrations between an oppositely situated panel and back panel, including the materials used, the design of the housings, and the connection between them. EX2018, ¶¶46-48, 52-55.

b. Liao's approach to sound leakage is fundamentally different from the claimed phase difference

Notably, while Liao does address phase differences between its transmission plate and housing, it teaches a very different approach to managing these phase differences than that claimed. Liao addresses the problem of sound leakage, *i.e.* sound emitted into the air away from the user and thus audible in the surrounding environment, in various ways. For example, Liao teaches providing sound holes in the housing in such a configuration that the holes emit sound waves that offset the vibration of the housing itself. EX1005, [0087]. Liao provides a series of equations for calculating sound pressure from various sources of vibration, including the phase difference between them. EX1005, [0088]-[0095]. Liao then discusses using phase ***adjusting*** materials as part of the housing so that the sound leaked from the housing itself is offset from sources such as the sound holes:

For example, using **phase adjusting materials (such as but not limited to sound absorbing materials) as portion of the housing material**, so that the phase of the air vibration transmitted is **within the range of 90° to**

270° with the vibration phase of other portions of the housing, thereby achieving the purpose of sound offsetting... Furthermore, **by adjusting the connection method between the energy conversion device and the housing, the phase of vibration in other portions of the housing can be changed**, and the phase difference between it and the sound transmitted from the sound hole can be **within the range of 90° to 270°**, thus achieving the purpose of sound offsetting.

EX1005, [0096]. Therefore, Liao encourages using phase adjusting materials in the housing to *offset* the vibration of the housing from the source of the housing, not to use rigid materials so that the entire housing vibrates in approximately the same phase. EX2018, ¶¶57-58. Liao not only fails to teach the claim limitation that the housing panel and back panel vibrate in phase, but actively teaches away from this solution by encouraging its opposite the only time that it addresses the issue. EX2018, ¶¶50-51, 56-58.

c. Petitioner's expert's additional arguments beyond those in the Petition regarding element [1e] are improper

Petitioner's expert adds additional arguments and citations to the prior art which do not appear in the Petition itself. For example, while the section of the Petition discussing this element only cites to Liao, Petitioner's expert declaration argues that Li '492 *itself* teaches the phase limitation, citing several paragraphs

from Li '492. *See, e.g.* EX1003, ¶¶134-137, citing EX1004, [0024], [0029], [0043]. Neither this argument nor these citations to Li '492 appear in the corresponding section of the Petition (at 34-36). Petitioner's expert further goes on to raise additional arguments concerning Liao beyond those made in the Petition. *See, e.g.* EX1003, ¶140.

These arguments made solely in Petitioner's expert declaration are improper and should not be considered in the Board's Institution Decision. *See* 37 C.F.R. §42.6(a)(3) ("Arguments must not be incorporated by reference from one document into another document."); Consolidated Trial Practice Guide November 2019 at 35-36³ ("[P]arties that incorporate expert testimony by reference in their petitions ... without providing explanation of such testimony risk having the testimony not considered by the Board."), citing *Cisco Systems, Inc. v. C-Cation Techs., LLC*, IPR2014-00454, Paper 12 (PTAB Aug. 29, 2014) (informative) ("we will not consider arguments that are not made in the Petition, but are instead incorporated by reference to the [expert's] Declaration").

³ Available at

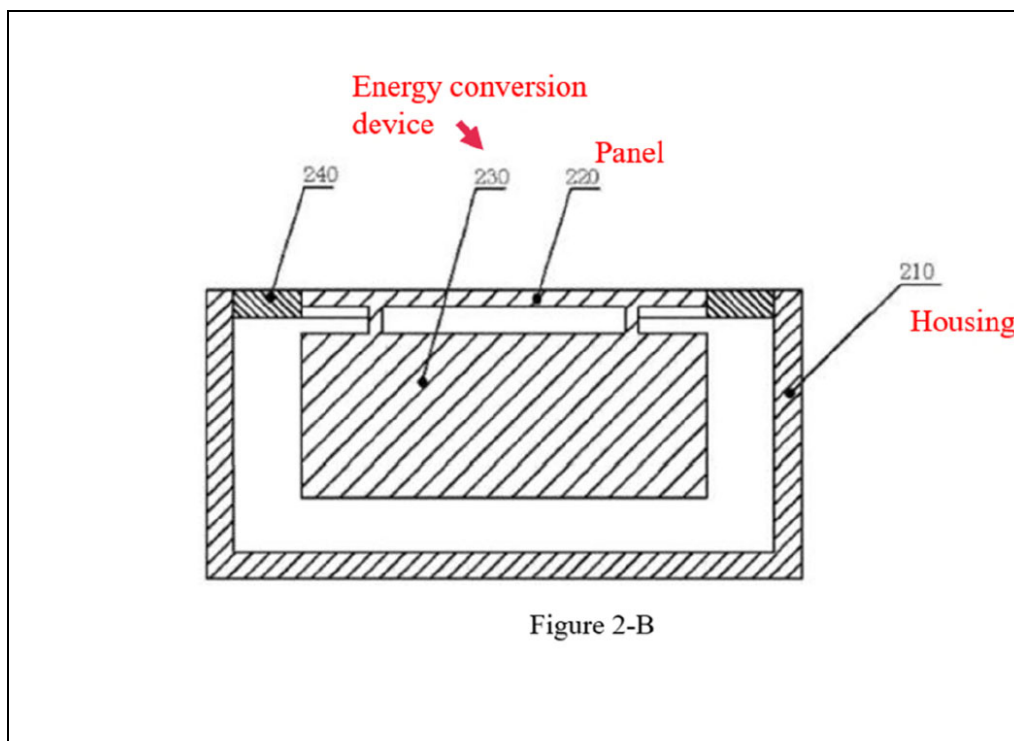
<https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf?MURL=TrialPracticeGuideConsolidated>

d. Petitioner's expert's additional arguments fail on their merits

Even if these arguments from Petitioner's expert's declaration were considered, they still fail. Petitioner's expert's argument boils down to the assertion that because the fourth housing 115 and second housing 112 of Li '492 are "rigidly connected to each other and made of rigid materials... their vibrations would be nearly in phase." EX1003, ¶136. But Petitioner's expert fails to cite anything in Li '492 justifying this assertion. EX2018, ¶¶59-60, 62. At most, Petitioner's expert cites references to Li '492 using "plastic" in its housings. EX1003, ¶135, citing EX1004, [0029], [0043]. However, the mere use of some form of plastic does not necessarily imply any particular rigidity such that a POSITA could infer that two housings would vibrate in phase. EX2018, ¶61. Plastics can include a wide range of materials having a wide range of rigidity or elasticity. *Id.* Indeed, Li '492 suggests the use of "elastic plastics" in some portions of its design. EX1004, [0028]. Without more specific information about the type of plastic, a POSITA could not conclude anything about the degree of phase shift that would occur as vibrations passed through plastic. EX2018, ¶61.

Perhaps recognizing this problem with Li '492, Petitioner's expert (in another argument not made in the Petition) cites to Liao and asserts that "Liao teaches that panel 220 is made of a rigid material and lists materials that are explicitly named in the '582 Patent as housing panel materials, further adding to

the POSITA's understanding that the Liao housing would vibrate similarly to the '582 Patent's housing." EX1003, ¶140, citing EX1005, [0075] and EX1001, 18:16-19:16. However, the "panel" referred to in Liao's paragraph [0075] is the "panel of a bone conduction speaker" referenced in the preceding paragraph which "transmits vibrations via human tissues to the human hearing system." EX1005, [0074]. As Petitioner's expert acknowledges (EX1003, ¶140), this panel corresponds to panel 220 in Liao's Fig. 2-B (annotated by Petitioner below), *not* the housing 210:



However, nothing in Liao suggests using such materials for the housing 210, nor does the Petition (which doesn't even make this argument) or Petitioner's expert explain any rationale for using such materials in the housing 210. The

purpose of the panel 220 is to transmit vibrations to the user's body, but that is not the purpose of the remainder of the housing 210. EX2018, ¶¶63-64. Petitioner's expert attempts to draw a parallel with sections of the '582 Patent itself which name certain types of rigid plastics to be used in the body of the housing itself. EX1003, ¶140, citing EX1001, 18:16-19:16. However, while the cited portions of the '582 Patent refer to use of rigid plastics in order minimize phase differences between the transmission panel and the opposite housing panel, that is not how Liao teaches to use such materials. Relying on the '582 Patent itself to suggest a redesign of Liao in this manner is impermissible hindsight. EX2018, ¶65. Indeed, where Liao itself discusses the relationship between materials used in the housing and their effect on the phase of vibrations propagating through them, it is only to suggest the use of phase delaying materials in contradiction to the requirements of the '582 Patent's claims. EX2018, ¶¶57-58.

Therefore, the Petition fails to show a reasonable likelihood of prevailing in showing that its prior art teaches or suggests element [1e] of the '582 Patent.

E. The Petition's remaining grounds fail for the same reasons as Ground 1

All of the Petition's remaining grounds depend on its Ground 1 challenge to claim 1. Claim 1 is the sole independent claim in the '582 Patent, and all of the remaining challenged claims depend from it. Ground 1 is the Petition's sole ground for challenge to claim 1, while the remaining grounds for challenge to

dependent claims (Grounds 2-4) merely add additional references to the primary combination in Ground 1. Petition at 1. The Petition's discussion of each of those remaining grounds merely refers back to its discussion of Ground 1 for the teachings of claim 1 without adding any further analysis regarding claim 1. Petition at 46, 67, 83, 95. None of the additional references cited by the Petition cure the defects identified above in the Petition's discussion of claim 1, nor does the Petition argue that they do. Therefore, the Petition's failure to demonstrate a reasonable likelihood of prevailing in Ground 1 in demonstrating that claim 1 is invalid carries over to its remaining Grounds 2-4, and the Petition has not demonstrated a reasonable likelihood of prevailing in demonstrating that any challenged claim is invalid.

IV. CONCLUSION

For the foregoing reasons, the Petition has not met its burden to demonstrate the invalidity of any challenged claim of the '582 Patent, and *inter partes* review accordingly should not be instituted.

Dated: September 2, 2025

Respectfully submitted,

/Babak Tehrani/

Lead Counsel

Babak Tehrani, Reg. No. 55,937

PERKINS COIE LLP

11452 El Camino Real, Ste. 300

San Diego, CA 92130

Back-Up Counsel

Bing Ai, Reg. No. 43,312

Wei Yuan, Reg. No. 71,772

John Esterhay, Reg. No. 73,512

Attorneys for Shenzhen Shokz Co., Ltd.

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

Under 37 C.F.R. § 42.24(d), the undersigned certifies that the word count for this Patent Owner's Preliminary Response to the Petition for *inter partes* review totals 8,917, excluding the parts exempted by 37 C.F.R. § 42.24(a). The word count was made using the built-in word count function in the Microsoft® Word software used to prepare this document.

Dated: September 2, 2025

Respectfully submitted,

/Babak Tehranchi/

Lead Counsel

Babak Tehranchi, Reg. No. 55,937

PERKINS COIE LLP
11452 El Camino Real, Ste. 300
San Diego, CA 92130

Back-Up Counsel

Bing Ai, Reg. No. 43,312

Wei Yuan, Reg. No. 71,772

John Esterhay, Reg. No. 73,512

Attorneys for Shenzhen Shokz Co., Ltd.

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I certify that I caused to be served a true and correct copy of the foregoing PATENT OWNER'S PRELIMINARY RESPONSE and accompanying exhibits by email to the electronic service addresses for Petitioner on the date indicated below:

James M. Heintz - jim.heintz@us.dlapiper.com
Matthew Satchwell - matthew.satchwell@us.dlapiper.com
Shaobin Zhu - shaobin.zhu@us.dlapiper.com
Michael L. Burns - michael.burns@us.dlapiper.com
Benjamin S. Mueller - benjamin.mueller@us.dlapiper.com
DLA-Mojawa-IPRs@us.dlapiper.com

Dated: September 2, 2025

Respectfully submitted,

PERKINS COIE LLP
1301 Second Avenue Suite 4200
Seattle, WA 98101-3804

/Meghan Bright/

Meghan Bright
Patent Paralegal