

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

KOHLER CO.,
Petitioner,

v.

DELTA FAUCET CO.,
Patent Owner.

Case No. IPR2024-00700
U.S. Patent No. 10,393,363

PATENT OWNER'S RESPONSE

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. THE '363 PATENT (EX. 1001).....	4
A. Overview of the Patent	4
B. Challenged Claims	6
III. CLAIM CONSTRUCTION	7
IV. LEVEL OF ORDINARY SKILL IN THE ART	7
V. SCOPE AND CONTENT OF THE ASSERTED PRIOR ART	8
A. U.S. Pub 2015/0354186 to Tseng (Ex. 1004)	8
B. JP 2003027537A to Mizuno (Ex. 1007; Ex. 1008 for translation)	11
C. U.S. Pub. 2015/0221206 to Schneider (Ex. 1009)	12
D. WO 2009/000109 to Tse (Ex. 1005)	14
E. U.S. Pub. 2010/0046199 to Carter (Ex. 1006)	15
F. U.S. Pub. 2013/0299608 to Spangler (Ex. 1014)	16
VI. PETITIONER FAILS TO SHOW THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE.....	17
A. Ground 1: Claims 1-5, 10, And 12-16 Would Not Have Been Obvious Over Tseng.	17
B. Ground 2: Claims 9 And 11 Would Not Have Been Obvious Over Tseng and Mizuno.	46
C. Ground 3: Claims 17 And 18 Would Not Have Been Obvious Over Tseng and Schneider.	55

D.	Ground 4: Claims 1, 6-9, and 19-23 Would Not Have Been Obvious Over Tse.	62
E.	Ground 5: Claims 1, 6-9, and 19-23 Would Not Have Been Obvious Over Tse and Carter.	69
F.	Ground 6: Tse (or Tse in view of Carter) in view of Spangler does not render dependent claim 24 obvious.....	72
VII.	SECONDARY CONSIDERATIONS SHOW THE CLAIMS WOULD NOT HAVE BEEN OBVIOUS	72
A.	Nexus.....	73
B.	Objective Indicia Demonstrating Non-Obviousness.....	75
VIII.	CONCLUSION.....	77

TABLE OF AUTHORITIES

	Page(s)
CASES	
<i>ActiveVideo Networks, Inc. v. Verizon Commc'ns., Inc.</i> , 694 F.3d 1312 (Fed. Cir. 2012)	57
<i>Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.</i> , 876 F.3d 1350 (Fed. Cir. 2017)	54
<i>Barrday, Inc. v. Lincoln Fabrics Inc.</i> , No. 2022-1903, 2023 WL 7871688 (Fed. Cir. Nov. 16, 2023)	38
<i>Chemours Co. FC, LLC v. Daikin Indus.</i> , 4 F.4th 1370 (Fed. Cir. 2021)	73
<i>Comcast Cable Commc'ns, LLC v. Promptu Sys. Corp.</i> , 838 F. App'x 555 (Fed. Cir. 2021)	45
<i>Game & Tech. Co. v. Activision Blizzard Inc.</i> , 926 F.3d 1370 (Fed. Cir. 2019)	44
<i>Graham v. John Deere Co.</i> , 383 U.S. 1 (1966)	44
<i>Henny Penny Corp. v. Frymaster LLC</i> , 938 F.3d 1324 (Fed. Cir. 2019)	50
<i>Homeland Housewares, LLC v. Whirlpool Corp.</i> , 865 F.3d 1372 (Fed. Cir. 2017)	26
<i>In re Kotzab</i> , 217 F.3d 1365 (Fed. Cir. 2000)	44
<i>In re Magnum Oil Tools Int'l, Ltd.</i> , 829 F.3d 1364 (Fed. Cir. 2016)	17

<i>In re Stepan Co.</i> , 868 F.3d 1342 (Fed. Cir. 2017)	18, 22
<i>Intelligent Bio-Systems, Inc. v. Illumina Cambridge, Ltd.</i> , 821 F.3d 1359 (Fed. Cir. 2016)	21, 44, 45, 68
<i>Leo Pharm. Prods., Ltd. v. Rea</i> , 726 F.3d 1346 (Fed. Cir. 2013)	72, 76
<i>Medtronic, Inc. v. Barry</i> , 891 F.3d 1368 (Fed. Cir. 2018)	24
<i>Netflix, Inc. v. DivX, LLC</i> , 80 F.4th 1352 (Fed. Cir. 2023)	69
<i>Nichia Corp. v. Lighting Sci. Grp.</i> , IPR2019-01261 (PTAB Jan. 10, 2020).....	55
<i>Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.</i> , 520 F.3d 1358 (Fed. Cir. 2008)	72
<i>SAS Inst., Inc. v. Iancu</i> , 584 U.S. 357 (2018).....	20, 72
<i>Securus Techs. Inc. v. Glob. Tel*Link Corp.</i> , 701 F. App'x 971 (Fed. Cir. 2017)	40, 56
<i>Square, Inc. v. 4361423 Canada Inc.</i> , IPR2019-01649, Paper 43, 32-33 (PTAB Apr. 22, 2021)	21
<i>TQ Delta, LLC v. CISCO Sys., Inc.</i> , 942 F.3d 1352 (Fed. Cir. 2019)	45
<i>TriVascular, Inc. v. Samuels</i> , 812 F.3d 1056 (Fed. Cir. 2016)	45, 60
<i>U.S. v. Adams</i> , 383 U.S. 39 (1966).....	54

Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.,
97 F.4th 882 (Fed. Cir. 2024) 22

Wasica Fin. GmbH v. Cont’l Auto. Sys., Inc.,
853 F.3d 1272 (Fed. Cir. 2017) 46, 67

WBIP, LLC v. Kohler Co.,
829 F.3d 1317 (Fed. Cir. 2016) 51, 73

Xerox Corp. v. Bytemark, Inc.,
IPR2022-00624, Paper 9 (PTAB Aug. 24, 2022).....20, 40, 55

STATUTES AND RULES

37 C.F.R. §42.24(d) 80

37 C.F.R. §42.65(a).....40, 56

37 C.F.R. §42.107 79

35 U.S.C. §287(a) 73

35 U.S.C. §316(e) 17

OTHER

Merriam-Webster’s Collegiate Dictionary, 11th Ed. (2003).....78

Patent Owner Delta Faucet Co. (“Delta”) submits the following Patent Owner Response (“POR”) to the Petition filed by Kohler Co. (“Petitioner”) requesting *inter partes* review of claims 1–24 of U.S. Patent No. 10,393,363 (“the ’363 patent”).

I. INTRODUCTION

Petitioner brought this *inter partes* review in the absence of Delta’s assertion of or any co-pending proceeding involving the ’363 patent. Petitioner dismissively oversimplifies the claimed invention to overlook the features recited in the challenged claims. In contrast, the ’363 patent presents and expressly recites in its claims technical improvements to faucet sprayheads.

The Petition fails on multiple fronts. First, the Petition fails to set forth a *prima facie* case to meet its burden. The Petition asserts obviousness for all grounds, and explicitly concedes that the references do not anticipate the claims. Yet despite admitting the references are deficient for Grounds 1 and 4, the Petition does not articulate what the references lack, much less what would have motivated a person of ordinary skill in the art at the time of the ’363 patent (“POSITA”) to change those references, how a POSITA would have done so, or any reasonable expectation of success in modifying the references. Second, the Petition improperly cherry-picks various elements from different embodiments of the Tseng reference, but again does not allege any motivation a POSITA would have had to combine the elements of

Tseng's different embodiments. These flaws are fatal because the Petition fails to set forth the essential elements of an obviousness analysis. Third, the Cook Declaration provides little or no meaningful evidence, but instead merely parrots the attorney arguments from the Petition. Finally, even if the Petition had set forth a *prima facie* case, the references still fail to disclose the claimed features of the '363 patent; thus, the claims' patentability should be affirmed.

Petitioner's expert, Mr. Cook, is a mechanical engineer with substantial professional experience in electronics for high-voltage power systems and communications, but he has limited experience with the claimed subject matter. *See* Ex. 2005, 39:21-50:8, 50:9-55:18, 55:19-56:14 ("Q: Have you ever seen a lighted plumbing fixture? A: Prior to this patent, yes, actually I've seen one at a friend's house."); Ex. 1003, ¶¶8-14, Appendix A. Mr. Cook is also inexperienced in patent analysis. Ex. 2005, 99:22-100:1. Nor has Mr. Cook reviewed the necessary materials to properly consider the claims, or the challenges presented in the Petition. *See, e.g.*, Ex. 2005, 27:2-30:18 (Mr. Cook admitting he did not review any dictionaries, books, websites, articles, or the '874 patent Tseng seeks to improve). As such, Mr. Cook's declaration is nearly verbatim to the Petition. Ex. 2005, 31:17-21 ("Q: So [Kohler's Counsel] Mr. Herman wrote the first draft of your declaration and then he sent it to you for review; is that correct? ... A: That is correct."). The

net effect is that his declaration misinterprets the express teachings of the references. For example, in his deposition, Mr. Cook agreed the Tseng reference's light moves in a completely different direction than that described in his declaration. *Cf.* Ex. 1003, ¶174 (Tseng's "LEDs 40 face ***inward*** and emit light towards the center of the spray head."); Ex. 2005, 80:9-12 ("Q: So it's your understanding of Tseng that light emanating from the LED would emanate ***downward*** toward input face 311, correct? A: Correct."). Mr. Cook's analysis is unreliable and should be given no weight.

The Board's Institution Decision relied on erroneous or misleading information from the Petition. Now, after Delta has had an opportunity to examine Petitioner's declarant and evaluate the record, the mistaken information is manifest. Mr. Cook admitted there are structural differences between Tseng's three embodiments, yet the Petition indiscriminately refers to various features pulled from all three embodiments. The Petition mischaracterizes how light travels directionally in Tseng's sprayhead. And the Petition ignores the objectives set forth in the references themselves, resulting in alleged motivations to combine that are incompatible with the solutions the references propose for the problems the references seek to solve.

As set forth in this Response, and as explained by Dr. Klopp, the Board should reject the Petition's incorrect, unsupported arguments. Dr. Klopp clearly explains—

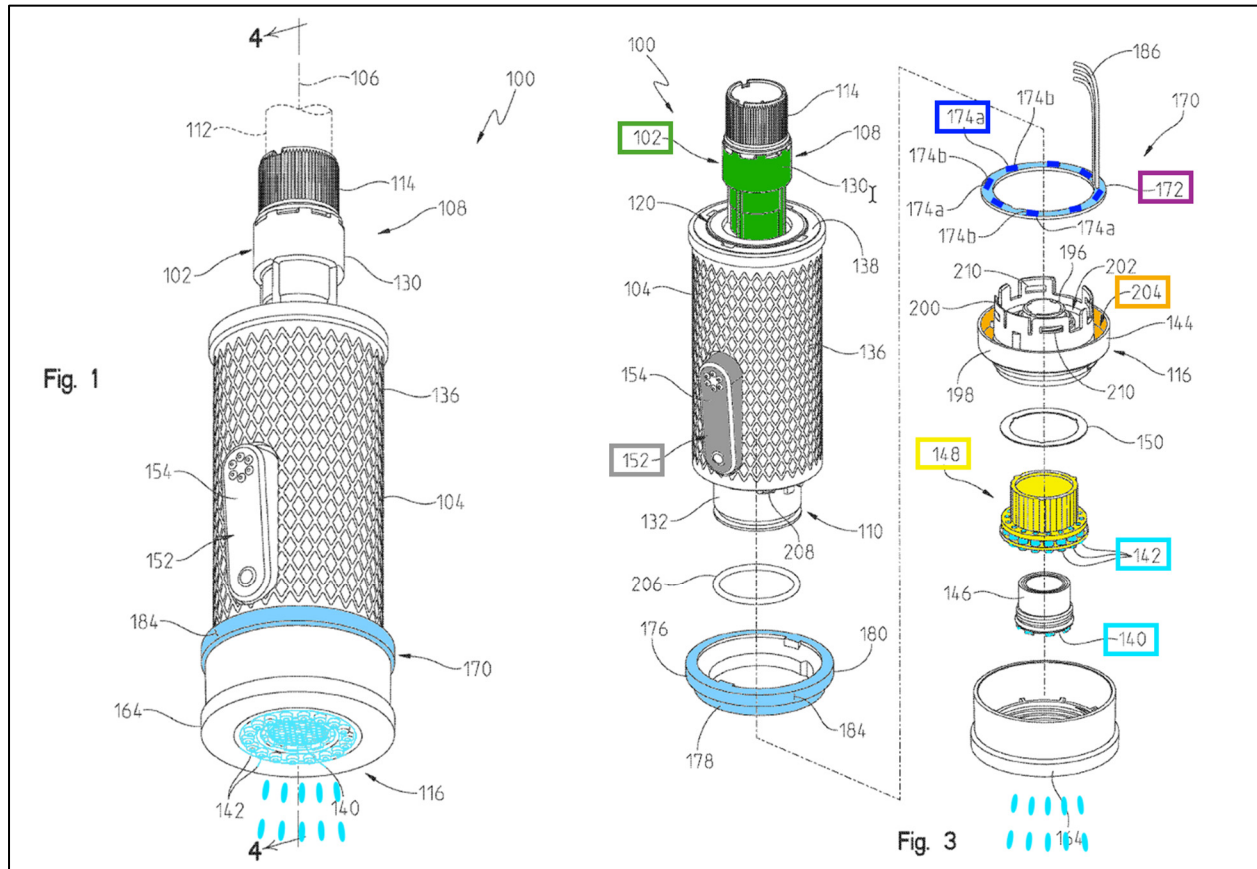
from the perspective of an expert with copious experience in the relevant art—the actual teachings of the cited documents, their intended objectives, and why a POSITA would not have modified or combined Tseng or Tse with the secondary references in the way alleged in the Petition.

The Board should confirm the patentability of all claims.

II. THE '363 PATENT (EX. 1001)

A. Overview of the Patent

The '363 patent presents technical improvements for fluid-delivery devices, such as a pull-down sprayhead for a kitchen faucet or a pendant showerhead, with illumination. Ex. 1001, 1:15-17, 1:27-33. One of the problems the '363 patent solves in such illuminated fixtures is “hot spots,” i.e., discrete or uneven lighting. *Id.*, 1:24-26. The '363 patent describes placing **light emitters 174** on a **substrate 172** and then placing a translucent closed-loop **light pipe 176** on top of the substrate, such that the translucent light pipe defines a closed loop to diffuse light. *See, e.g., id.*, 1:40-2:3, 3:52-58, Figures 1-4. The fixture may also include outer **annular space 204** to protect the light emitters from water damage. *Id.*, 4:33-34, Figure 3.

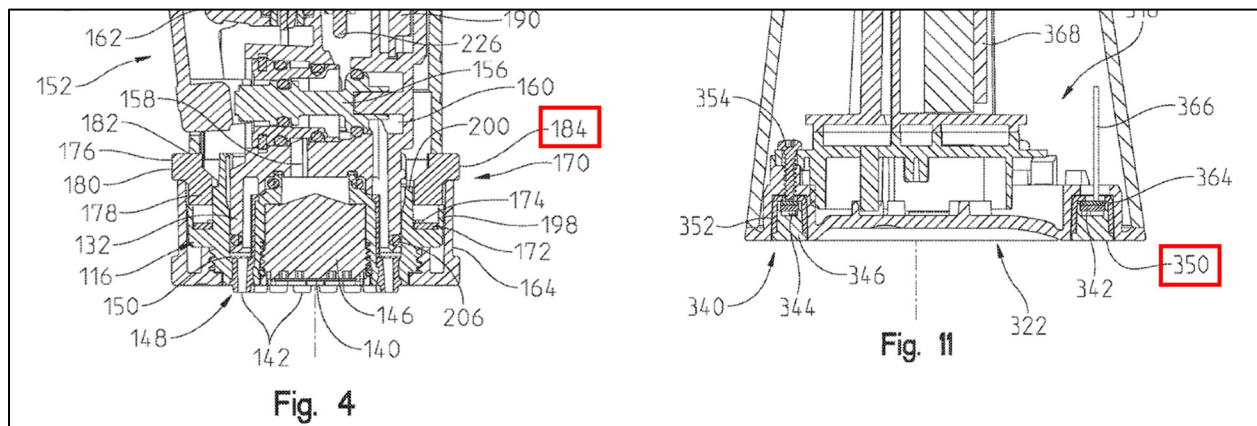


Ex. 1001, Figures 1, 3.¹ Ex. 2003, ¶¶29-31.

The '363 patent also describes other improvements. For example, the light emitters can be powered by a “hydro-generator fluidly coupled to the **waterway 102**.” Ex. 1001, 4:39-41. The '363 patent explains how its hydro-generator functions in a compact sprayhead design. *Id.*, 4:42-52. The light emitters can be configured to emit different colored light based on water temperature. *Id.*, 5:5-16. Ex. 2003, ¶¶32-36.

¹ All annotations and emphasis added unless otherwise noted.

The '363 patent provides different user benefits via different embodiments. For example, light emitted in a direction perpendicular to a longitudinal axis of the sprayhead lets the user easily view water temperature. *See, e.g.*, Ex. 1001, 1:52-59, 3:52-4:38 (“**outer illumination surface 184**”), Figures 1-4. Light emitted from a shower sprayhead in a direction parallel to the longitudinal axis of the sprayhead provides light in a shower area. *See, e.g., id.*, 5:65-6:14 (“**outer illumination surface 350**”), Figures 7-11.



Ex. 1001, Figures 4 (excerpted), 11 (excerpted). Ex. 2003, ¶37.

B. Challenged Claims

The table below maps the grounds and the asserted prior art with each challenged claim, with the independent claims bolded:

Challenged Claims	Grounds	Asserted References
1	1, 4, 5	Tseng; Tse; Tse and Carter
2-5	1	Tseng
6-8	4, 5	Tse; Tse and Carter
9	2, 4, 5	Tseng and Mizuno; Tse; Tse and Carter

Challenged Claims	Grounds	Asserted References
10	1	Tseng
11	2	Tseng and Mizuno
12-16	1	Tseng
17-18	3	Tseng and Schneider
19-23	4, 5	Tse; Tse and Carter
24	6	Tse (or Tse and Carter) and Spangler

Ex. 2003, ¶38.

III. CLAIM CONSTRUCTION

For the purposes of this IPR, Delta applies the plain and ordinary meaning of the claim terms to show that Petitioner fails to demonstrate that the challenged claims are unpatentable. If Petitioner later proposes construction for any claim term, Delta reserves the opportunity to respond. Ex. 2003, ¶¶43-46.

IV. LEVEL OF ORDINARY SKILL IN THE ART

The Petition proposes an inadequate definition of a POSITA. According to Petitioner, “[a] POSITA in the field of the ’363 patent would have had a degree in industrial design or an equivalent field, along with 2 years of professional experience working with kitchen, bath, or other plumbing fixtures (or similar products), or an equivalent level of skill, knowledge, and experience. This POSITA would have been aware of and generally knowledgeable about the standard features and functionality of kitchen, bath, and other plumbing fixtures (or similar products).” Petition, 14. Petitioner’s proposed POSITA lacks critical experience or education necessary to

understand the claimed features, including the claimed “illumination device” with a “substrate,” “light emitters,” and a “light pipe.” Ex. 2003, ¶¶47-49.

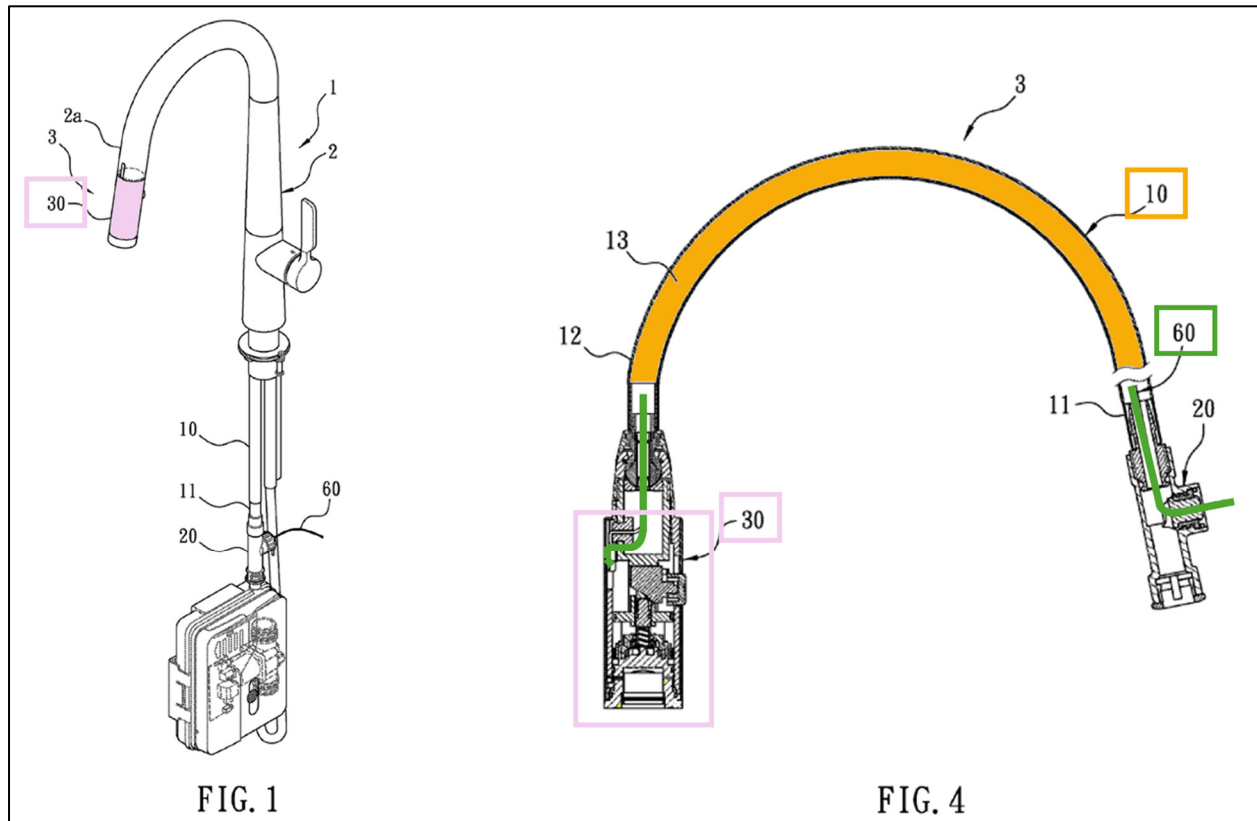
The correct standard is that a POSITA would have had (1) a degree in mechanical engineering, industrial design, or an equivalent field, including education in the field of optics, (2) at least two years of professional experience designing or analyzing kitchen, bath, or other similar plumbing fixtures or consumer products, and (3) at least two years of professional experience designing or analyzing optical apparatus. Additional education could compensate for professional experience or vice versa. Ex. 2003, ¶¶50-51.

V. SCOPE AND CONTENT OF THE ASSERTED PRIOR ART

A. U.S. Pub 2015/0354186 to Tseng (Ex. 1004)

Tseng describes “a pull-out faucet which contains a shower assembly to illuminate lights.” Ex. 1004, ¶1. Tseng states that, in a conventional illuminated showerhead, electric wires can easily break due to rotational movement of the showerhead. *Id.*, ¶4. Tseng acknowledges the difficulty of integrating a printed circuit board (PCB) into the narrow space of a showerhead, as there are many components packed inside a faucet. *Id.*, ¶¶7, 15. Tseng proposes using a flexible printed circuit to fit into the narrow space of a **spray head 30**, inserting an **electric wire 60** into a **flexible pipe 10** to protect the wire from water damage, and limiting

the rotation of the spray head to prevent damaging the electric wire. *Id.*, ¶¶30, 107-110. Tseng's pull-out faucet has the same size as conventional faucets. *Id.*, ¶106.



Ex. 1004, Figures 1 (left) and 4 (right). Ex. 2003, ¶¶53-58.

Tseng discloses three embodiments; the Petition relies on Tseng's second embodiment (Figures 30 and 31 below) and third embodiment (Figures 35 and 36 below). Petition, 15 ("this petition focuses on the second and third embodiments."). In those two embodiments, each **LED 40** is oriented to face and transmit light downward into **input face 311** of the light conductors 37 and 38. The light exits

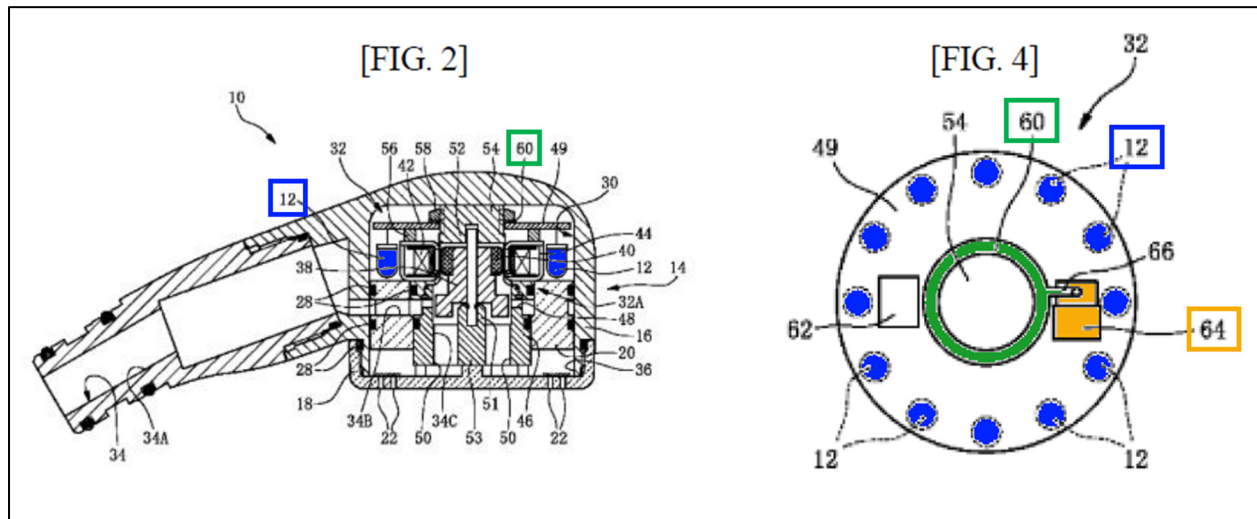
B. JP 2003027537A to Mizuno (Ex. 1007; Ex. 1008 for translation)

Mizuno was considered by the Examiner during prosecution of the '363 patent and is listed on the face of the '363 patent. *See* Ex. 1001, 3; Ex. 1002, 63. Ex. 2003, ¶60.

Mizuno describes a faucet with an LED lamp powered by a hydroelectric generator. Ex. 1008, ¶1. Mizuno proposes a hydroelectric generator that generates power using the flow of the water, replacing the wiring altogether. *Id.*, ¶6 (“there is no need to perform electrical wiring”). Mizuno concedes that using a hydroelectric generator introduces additional problems—the excessive power from high water flow, which causes malfunctions. *Id.*, ¶7. Thus, Mizuno proposes pairing a **voltage-stabilizing element 64** with the hydroelectric generator to stabilize the excessive power, but it too can overheat and become inoperable. *Id.*, ¶8. Ex. 2003, ¶¶61-64.

As such, Mizuno includes several additional components inside its faucet sprayhead. A **metal heat transfer ring 60**, cooled by water flow, is connected to the heat dissipation part 66 of the voltage-stabilizing element, thereby preventing the voltage-stabilizing element from overheating when excessive power is generated. Ex. 1008, ¶¶14, 31-32. More **LED illumination lamps 12** can be added, or their luminance increased, to consume excessive power. *Id.*, ¶¶15, 33-38. A “relief valve” and/or a “pressure-reducing valve” limits the inflow water pressure to the generator

or limits the power generation, respectively. *Id.*, ¶¶16-17, 39-40. A “residual light circuit” can be added to consume surplus power by keeping the lights on even after the water flow stops. *Id.*, ¶35. In sum, Mizuno’s solution removes electrical wiring, but adds multiple other components.



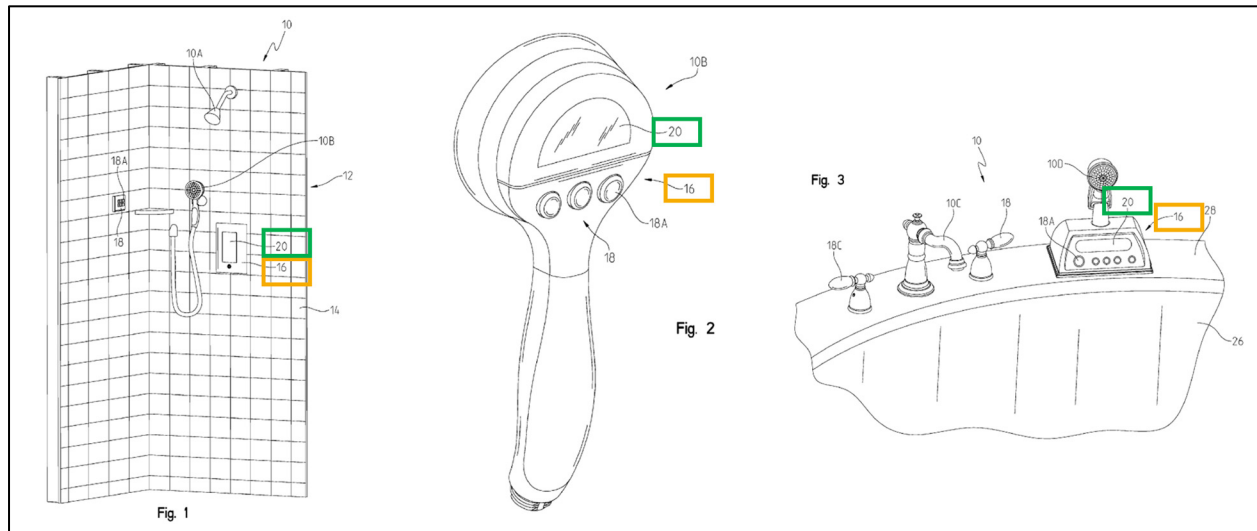
Ex. 1008, Figures 2, 4. Ex. 2003, ¶65.

C. U.S. Pub. 2015/0221206 to Schneider (Ex. 1009)

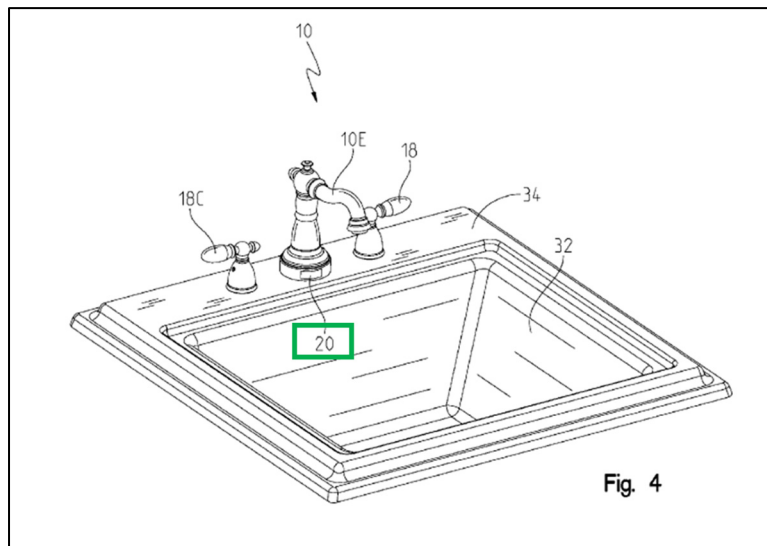
Schneider is assigned to the same assignee as the '363 patent, Delta. Ex. 2003, ¶66.

Schneider describes a “user interface” for water environments to control flow and temperature of water. Ex. 1009, ¶3. Schneider’s “display unit” displays various properties such as water temperature, operating mode, time, date, and other information about the fluid-delivery device. *Id.*, ¶¶2-4. Schneider discloses placing its **user interface 16** and **display unit 20** on a shower wall (Figure 1), on a hand

shower rear side (Figure 2), at a tub (Figure 3), or at the base of a sink faucet (Figure 4).



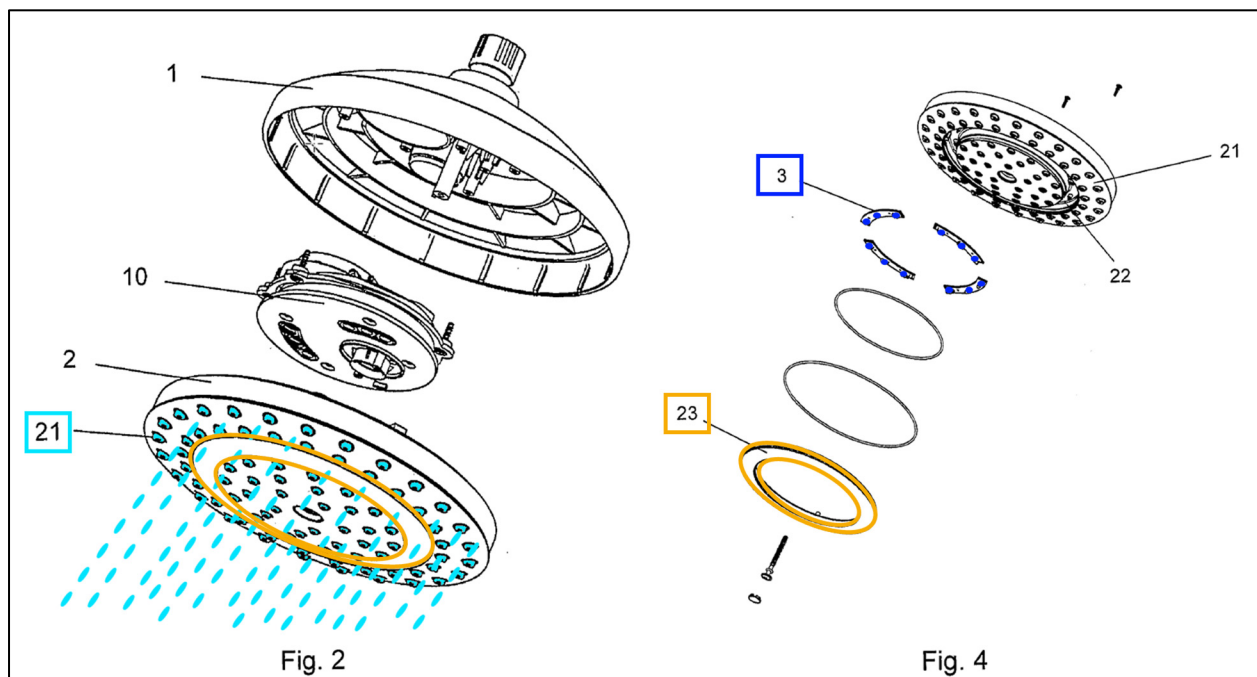
Ex. 1009, Figures 1 (left), 2 (middle), 3 (right).



Ex. 1009, Figure 4. Ex. 2003, ¶¶67-69.

D. WO 2009/000109 to Tse (Ex. 1005)

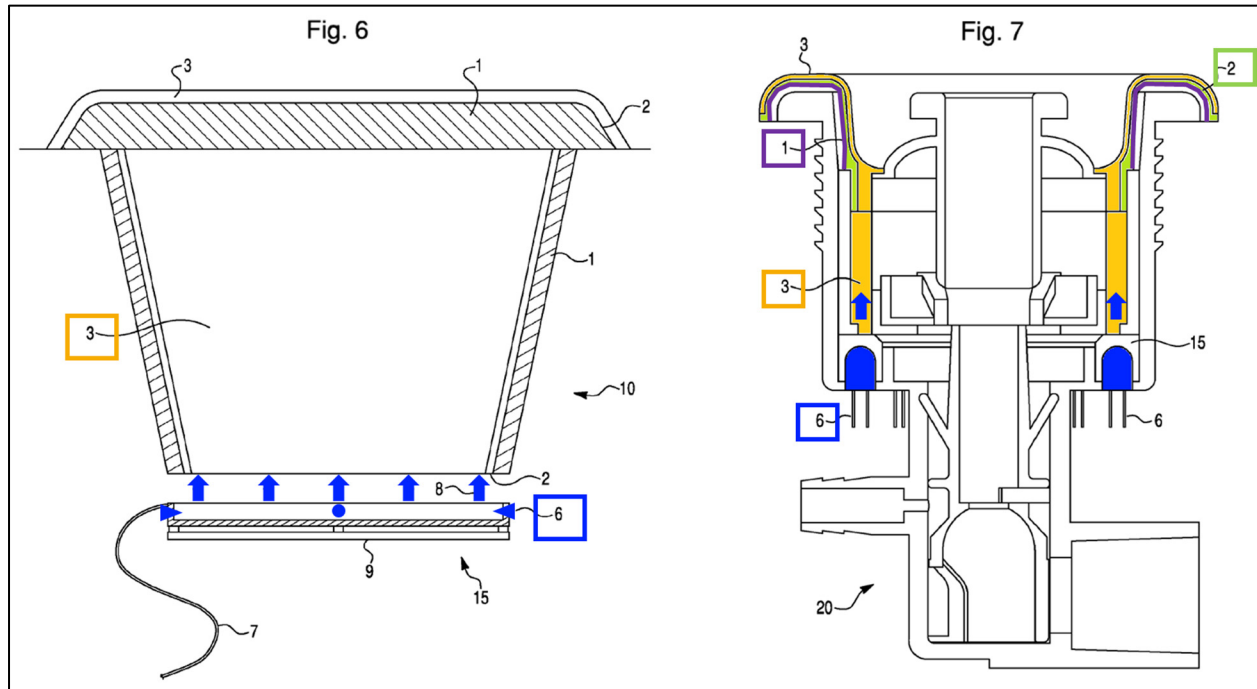
Tse discloses a showerhead with lighting. Ex. 1005, 1:4-5. Tse proposes using a hydroelectric generator instead of a battery. Tse discloses a **perforated member 21** that sprays water through water outlets. *Id.*, 5:16-17. In the middle of perforated member 21, radially, **LEDs 3** sit in a groove 22, and **cover 23** seals the groove to prevent water from entering. *Id.*, 5:19-22. Cover 23 is “transparent” or “semi-transparent.” *Id.*, 6:27-29. Cover 23 is positioned generally in the middle of the water outlets, with some water outlets positioned radially within cover 23 and some water outlets positioned radially without cover 23, so that “a user can have visual enjoyment of the color light while showering.” *Id.*, 4:17-19, Figures 2, 4.



Ex. 1005, Figures 2, 4 (excerpted). Ex. 2003, ¶¶70-72.

E. U.S. Pub. 2010/0046199 to Carter (Ex. 1006)

Carter describes a fixture for spas or pools covered with a molded-in-place, “integrated light pipe” made of “transparent, light channeling plastic.” Ex. 1006, Abstract, ¶3. Carter purports to improve the durability of submerged light fixtures by injection-molding in place a plastic layer over the substrate, “...suited to the rigorous environment.” *Id.*, Abstract, ¶8. Carter’s jet includes **decorative layer 2** applied to the surface of molded **substrate 1**. *Id.*, ¶¶22, 24. Carter’s jet, which uses low-voltage power or battery power, transmits light from **light sources 6** “...through the molded in place integrated **light pipe 3**, past the barrier wall 4 of the appliance/structure and is disbursed across a partial or complete exposed surface area of the targeted part(s) 10 and 20,” which are then illuminated. *Id.*, ¶¶3, 7-8, 17-18, 25.



Ex. 1006, Figures 6, 7. Ex. 2003, ¶¶73-75.

F. U.S. Pub. 2013/0299608 to Spangler (Ex. 1014)

Spangler is assigned to the same assignee as the '363 patent, Delta. Spangler's disclosure is incorporated by reference in the '363 patent. Ex. 1001, 5:61-64. Spangler was considered by the Examiner during prosecution of the '363 patent, and is listed on the face of the '363 patent. *See* Ex. 1001, 3; Ex. 1002, 66. Spangler describes details of illustrative fluidic devices, such as a showerhead assembly with fluid dispensing units that provide multi-dimensional spray patterns. Ex. 1014, Abstract, ¶¶1, 50. Ex. 2003, ¶¶76-77.

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

Petitioner has the burden of proving a proposition of unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1375 (Fed. Cir. 2016). Petitioner cannot employ mere conclusory statements and must instead articulate specific reasoning based on evidence of record. *Id.*, 1380. Yet the Petition consistently fails to meet its burden.

A. Ground 1: Claims 1-5, 10, And 12-16 Would Not Have Been Obvious Over Tseng.

Ground 1 fails because Petitioner does not meet its burden. The Petition fails to provide evidence that Tseng renders obvious the claimed “*translucent* light pipe” (claims 1 and 10). The Petition misinterprets Tseng and thus fails to show that Tseng renders obvious the “outer illumination surface extending *perpendicular* to the longitudinal axis of the housing” (claim 10) and “annular ring configured to transmit light *radially outwardly*” (claims 3 and 12). The Petition fails to provide evidence that Tseng renders obvious “a translucent light pipe defining a *closed loop to diffuse light* from the light emitters outwardly away” (claims 1 and 10). Ex. 2003, ¶¶79-80.

1. Tseng's second and third embodiments the Petition relies on do not disclose or render obvious a “translucent light pipe.”

Claims 1 and 10 require a “*translucent* light pipe.” To show this feature, the Petition relies only on Tseng's light conductor 31 from Tseng's first embodiment.

Petition, 29-30. Yet the Petition clearly states that the Ground 1 arguments rely on Tseng's *second* and *third* embodiments—and cites Figures 30 and 37, respectively (Petition, 15, 29-30), to show other features of claims 1 and 10. Tseng does *not*, however, disclose that those other embodiments include a “translucent” light pipe.² In short, the Petition improperly mixes and matches various features from different embodiments of Tseng, without acknowledging that it does so, much less alleging any motivation that a POSITA would have had to combine those features or providing any expert evidence to allege or support such a combination. *In re Stepan Co.*, 868 F.3d 1342, 1346 n.1 (Fed. Cir. 2017) (“*[C]ombining multiple embodiments from a single reference[] [needs] ... motivation to ... combin[e] and a reasonable expectation [of] succes[s].*”). Petitioner's hindsight-driven approach cannot support a conclusion of obviousness and should be rejected. Ex. 2003, ¶¶81-82.

Tseng discloses three *different* embodiments with different structures, as the Board correctly recognized. Institution Decision, 9 (“Tseng discloses three embodiments in which the light conductors and circuit boards differ structurally”). Figures 1-26, 27-31, and 32-37 are directed to the first, second, and third embodiments, respectively. *See* Ex. 1004, ¶¶31-56, ¶¶57-61, ¶¶62-67. The Petition

² For portions of claim 10, the Petition only relies on Tseng's third embodiment.

admits that Tseng has three different embodiments. Petition, 15 (“Tseng includes three embodiments with slightly *different* internal structures.”); Ex. 1003, ¶90 (same). The experts agree. Ex. 2005, 63:15-70:8; Ex. 2003, ¶82.

In the entirety of Tseng, the word “translucent” appears only once, with respect to its *first embodiment*. Ex. 1004, ¶70 (“a light conductor 31 made of translucent material to guide lights, *as shown in FIGS. 7 to 10*”); *see* Ex. 2005, 66:11-21. Tseng explicitly suggests that the light conductor 31 of the first embodiment is *not* used in the second or third embodiments. *See* Ex. 1004, ¶90 (“[A] difference of a pull-out faucet of a second embodiment from that of the first embodiment comprises: ... *it does not have* the plural input faces 311, the light transmission portion 312, and the output face 313 of *the light conductor 31 of the first embodiment*.”); *see also* Ex. 1004, ¶¶70 (“light conductor 31” for the first embodiment), 91 (“light conductor 37” for the second embodiment), 97 (“light conductor 38” for the third embodiment). Tseng is silent about the light conductor material for the second and third embodiments—which the Petition relies on for other claim features (Petition, 15). Ex. 1004, ¶¶91, 97. Ex. 2003, ¶¶82-86.

To show the claimed translucent material, the Petition cites only to the translucent material used for Tseng’s *first* embodiment. Petition, 29-30; *see also* Ex. 2005, 74: 3-8 (“Q: And in support of your statement that Tseng's light conductor

is made from translucent material, the only paragraph of Tseng that you rely on is paragraph 70; is that correct? A: That is correct, in this paragraph, yes.”). Mr. Cook merely repeats the Petition.

Petition, 29-30	Ex. 1003, ¶¶163-164
Next, Tseng explains that its “light conductor” is “made of translucent material to guide lights.” (<i>Id.</i> , ¶0070; <i>see also id.</i> , ¶0072 (“light conductor” is a light “guiding member”).) Figures 30 and 37 provide two examples of how this “light conductor” can be structured[.]	Next, Tseng explains that its “light conductor” is “made of translucent material to guide lights.” (Ex. 1004, ¶0070.) Similarly, Tseng explains that its “light conductor” functions as a light “guiding member.” (<i>Id.</i> , ¶0072.) Figures 30 and 37, both reproduced below, provide two examples of how this “light conductor” can be structured[.]

Such testimony is entitled to little or no weight. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, 15 (PTAB Aug. 24, 2022) (expert declaration that “merely repeats, *verbatim*, the conclusory assertion for which it is offered to support” without citing “any additional supporting evidence or provide any technical reasoning to support” is entitled to little weight). In an IPR, the petition guides the life of the IPR by describing “each claim challenged” and “the grounds on which the challenge to each claim is based”—and here, Petitioner specifically chose to rely on Tseng’s second and third embodiments for other claim features, while relying on Tseng’s first embodiment to show the translucent material. Petition, 15, 29-30; *see also SAS Inst., Inc. v. Iancu*, 584 U.S. 357, 366 (2018). Ex. 2003, ¶¶82-87.

The Petition is silent on Tseng's lack of disclosure regarding the material for the light conductors in the second and third embodiments. Petition, 29-30. Instead, the Petition at most conclusorily states that "because Tseng's three embodiments are overlapping and have numerous common structural features—many of which are discussed only in the context of the first embodiment—this petition also cites to certain first embodiment passages." Petition, 15. But even that statement is not followed by any support, nor does the Petition tie it to the material used for Tseng's light conductors. The Petition fails to allege that Tseng's three different light conductors 31, 37, and 38 use the same material, much less explain *how* or *why* Tseng's three different light conductors would have used the same material. Mr. Cook similarly fails to do so. The paragraph from the Cook Declaration that appears to correspond to this statement—which the Petition does *not* cite, and thus should not be relied on or given any weight (*e.g.*, *Square, Inc. v. 4361423 Canada Inc.*, IPR2019-01649, Paper 43, 32-33 (PTAB Apr. 22, 2021))—merely parrots the Petition. Ex. 2003, ¶¶84-87.

The Petition fails to suggest, much less provide any reason why, a POSITA would have been motivated to use the same translucent material from Tseng's first embodiment to modify its second and third embodiments. *Intelligent Bio-Systems, Inc. v. Illumina Cambridge, Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) ("It is of the

utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify with particularity the evidence that supports the grounds for the challenge to each claim.”). Petitioner cannot mix and match different embodiments within a reference without presenting evidence that a POSITA would have been motivated to combine them. *In re Stepan Co.*, 868 F.3d at 1346 n.1; *Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 887 (Fed. Cir. 2024). Ex. 2003, ¶¶84-85.

In the Institution Decision, because the Petition did not clearly explain that it was mixing and matching features from various embodiments, the Board was misled to rely on the Petition’s improper arguments treating all three light conductors of Tseng the same. *See, e.g.*, Institution Decision, 14; *cf.* Petition, 30 (citing Tseng’s *first* embodiment for the translucent material, and Tseng’s *second and third* embodiments for the “circular rib” or other pipe-like elements). Mr. Cook again parroted the Petition. Ex. 1003, ¶¶168-169; *cf.* Petition, 30-31. *See also* Ex. 2005, 73:14-74:20. The Board should disregard Petitioner’s misguidance. *See* Institution Decision, 9-14 (citing only Tseng’s first embodiment for the translucent material). Ex. 2003, ¶¶84-87.

And even if Petitioner had proposed combining Tseng’s first embodiment with the second or third embodiments—which it did not—the proposed combination

should also fail because a POSITA would have understood that Tseng's three different embodiments have different objectives. Tseng explains that the light conductor of the first embodiment "enhance[s] illumination effect." Ex. 1004, ¶79. By contrast, Tseng explains that the second embodiment is "differen[t]" from the first embodiment and "enhance[s] light *transmission* and illumination." Ex. 1004, ¶¶90, 94, 95. Similarly, Tseng explains that the third embodiment also enhances light *transmission*. Ex. 1004, ¶98. In other words, a POSITA would have recognized that Tseng's second and third embodiments focus more on light "transmission," such as a flashlight-type output. As Dr. Klopp explains, a POSITA would understand that translucent material would not be a good choice for Tseng's second and third embodiments because it would not transmit light as well as transparent material. Ex. 2003, ¶¶88-90.

In sum, Petitioner did not present any evidence supporting its contention that Tseng discloses, much less teaches or suggests, a single embodiment that includes all the claim features along with a "*translucent* light pipe," as recited in claims 1 and 10. The Petition relies only on a single statement describing Tseng's first embodiment, but does not allege that a POSITA would have understood Tseng's

second or third embodiments to use a translucent material,³ or that a POSITA would have been motivated to modify Tseng's second or third embodiment to use a translucent material. Nor does the Petition explain what such a modification would have resulted in or any reasonable expectation of success a POSITA would have had in making such a modification. Petitioner's expert, Mr. Cook, similarly fails to propose any such modification, much less provide any explanation of *how* or *why* a POSITA would have made such a modification. By contrast, Dr. Klopp provides evidence explaining why a POSITA would have understood that Tseng's second and third embodiments do *not* necessarily use translucent material. As such, the only evidence in the record supports a conclusion of non-obviousness. *Medtronic, Inc. v. Barry*, 891 F.3d 1368, 1377 (Fed. Cir. 2018) (The Board rejected Petitioner's "characterization and pointed out that [Petitioner] and its expert failed to cite to any particular passage or figures from [the prior art] that 'explicitly disclose'" the claimed feature). Ex. 2003, ¶¶84-90.

³ The Petition does not allege that Tseng anticipates the claims, nor does the Petition allege inherency or that Tseng's second or third embodiments necessarily would have used translucent material. Petition, 2 ("This ground [1] is premised on obviousness—*not anticipation*. ...").

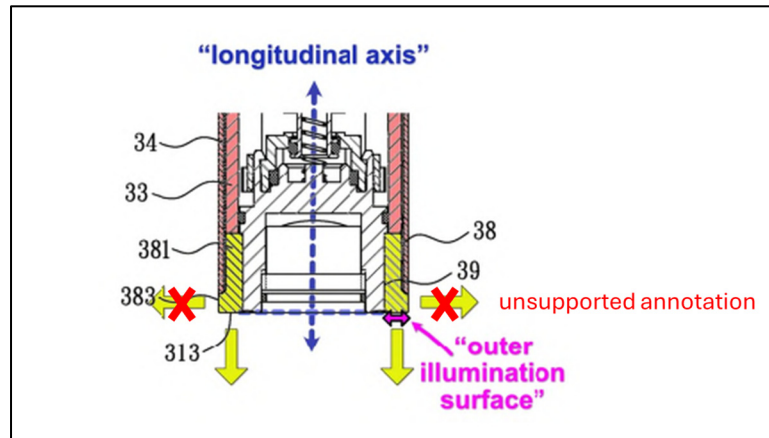
2. **Tseng does not render obvious an “outer illumination surface extending perpendicular to the longitudinal axis of the housing” and an “annular ring configured to transmit light radially outwardly.”**

Independent claim 10

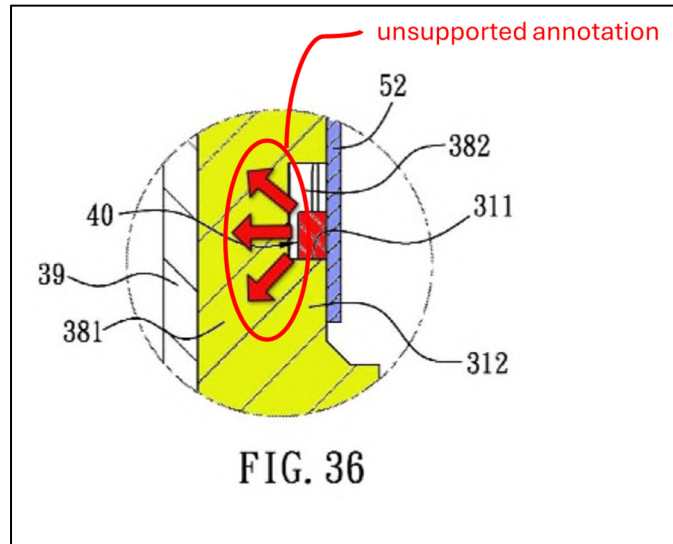
Tseng does not disclose, much less render obvious, the claimed light pipe including an “outer illumination surface extending *perpendicular* to the longitudinal axis of the housing.” Ex. 2003, ¶91. To show this feature of claim 10, the Petition exclusively relies on Tseng’s *third embodiment* (Figures 32-37)— annular protrusion 383 and output face 313⁴—and an *incorrect* description of Tseng’s third embodiment. *See* Petition, 35-38. The Petition annotates, without evidence, Tseng’s Figures 32 and 37 by adding yellow arrows meant to suggest emanating light (“unsupported annotation” below), and then relies on the added highlighting to incorrectly allege that Tseng’s side of protrusion 383 discloses the claimed outer illumination surface extending perpendicular to the longitudinal axis of the housing.

⁴ Elsewhere the Petition claims to rely on Tseng’s second and third embodiments (*see, e.g.*, Petition, 15), but for this feature of claim 10, the Petition only cites to portions corresponding to Tseng’s third embodiment. Petition, 35-38. The Petition’s mixing and matching of features from different embodiments without explanation of motivation to combine is improper. *See* Section VI.A.1.

See Petition, 35-36 (“protrusion 383 forms an outer surface that proceeds circumferentially around the spray head like a belt”).



Petition, 36. The Petition also incorrectly annotates Figure 36 to allege an unsupported direction of light travel: “as shown in Figures 35 and 36, LEDs 40 face *inward* and emit light towards the center of the spray head (**red arrows**).” Petition, 31. Mr. Cook parrots the Petition, and should be disregarded. Ex. 1003, ¶¶173-175. *Homeland Housewares, LLC v. Whirlpool Corp.*, 865 F.3d 1372, 1378 (Fed. Cir. 2017) (“we must disregard the testimony of an expert that is plainly inconsistent with the record”).



Petition, 31. Ex. 2003, ¶¶92-95.

The Petition's assertion about Tseng's light direction should be disregarded because it has no basis in the record, and is inconsistent with the explicit teachings of Tseng. Nowhere does Tseng suggest that LED 40 faces inward and emits light towards the center of the sprayhead, as the Petition annotates Figure 36 to suggest. Instead, as explained below, Tseng's LED faces and emits light *downward* towards input face 311, which is formed at the bottom of indentation 382. Ex. 1004, ¶97 ("each indentation 382 has an input face 311 formed on a *bottom end thereof*, and the outer cliff 381 also has an output face 313 defined on a *bottom end thereof*"). The Petition relies on its mischaracterization of the LED's orientation and direction of the light to incorrectly conclude, "[b]ecause faces 313 and 383 are oriented in different directions than LEDs 40, a POSITA would have understood that Tseng's

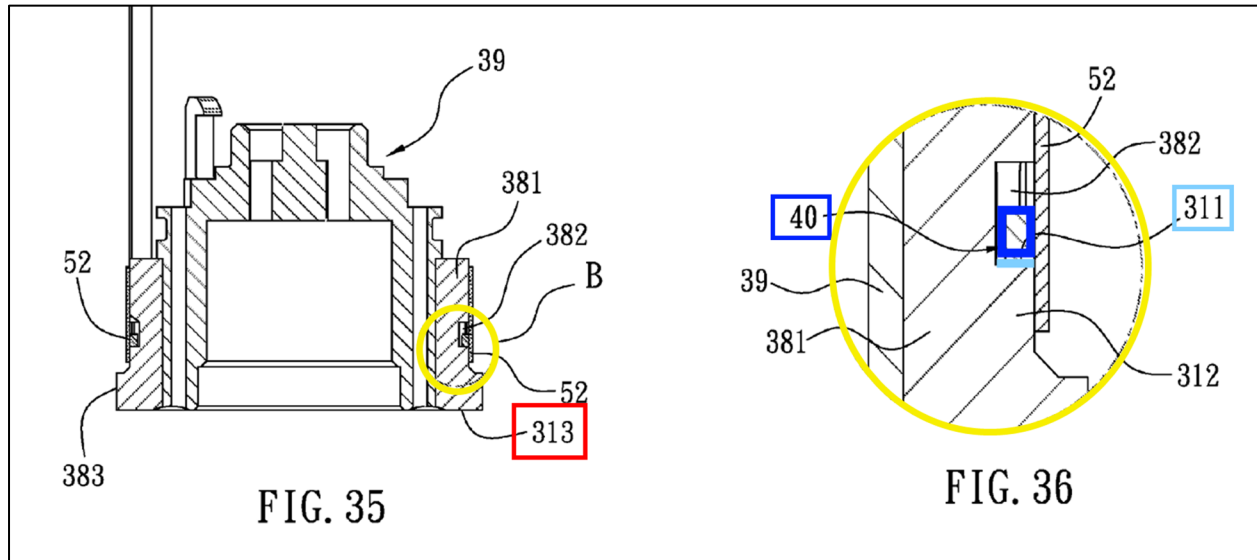
light conductor engages in internal light diffusion and reflection to transmit the light emitted from the LEDs through (and eventually out of) the conductor.” Petition, 32. This statement is simply wrong. As explained below, the output face is oriented in the *same* direction as the LED, and Tseng only describes the *bottom face* of the annular protrusion—not the entire protrusion—as the output face 313, which is also oriented in the same direction as input face 311. Furthermore, there is no disclosure in Tseng that light conductor 38 engages in internal light diffusion and reflection. See Ex. 1004, ¶¶96-103, Figures 32-37. Mr. Cook’s declaration provides no other support and merely parrots the Petition’s mischaracterization of Tseng:

Petition, 31-32	Ex. 1003, ¶¶173-175
The relative positioning of LED elements within Tseng’s housing and the light output faces emphasizes this. For example, as shown in Figures 35 and 36, LEDs 40 face inward and emit light towards the center of the spray head (red arrows). Faces 313 and 383, however, emit light outwards (yellow arrows)[.] [omitted figure] Because faces 313 and 383 are oriented in different directions than LEDs 40, a POSITA would have understood that Tseng’s light conductor engages in internal light diffusion and reflection to transmit the light emitted from the LEDs through (and eventually out of)	173. The relative positioning of LED elements within Tseng’s housing and the light output faces emphasizes this operation. 174. For example, as shown in Figures 35 and 36, LEDs 40 face inward and emit light towards the center of the spray head (red arrows). Faces 313 and 383, however, emit light outwards (yellow arrows). In this regard, Tseng explains that “face 313” is an “output” face, and that “protrusion 383” “enhance[s] light transmission.” (<i>Id.</i>, ¶¶0097, 0098.) [omitted figure] 175. In my opinion, because faces 313 and 383 are oriented in different directions than LEDs 40, a POSITA

Petition, 31-32	Ex. 1003, ¶¶173-175
the conductor. (See Ex. 1003, ¶¶173-175.)	would have understood that Tseng's light conductor engages in internal light diffusion and reflection to transmit the light emitted from the LEDs through (and eventually out of) the conductor. Because this occurs, the light conductor both conducts light (its intended purpose) and operates to enhance light transmission and illumination as Tseng teaches.

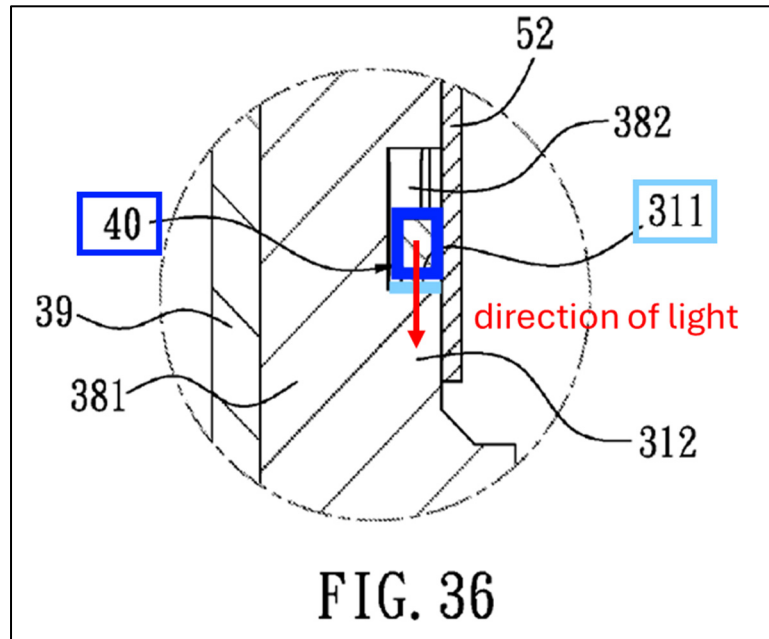
Ex. 2003, ¶¶95-99.

Tseng itself does not disclose, teach, or suggest that its light conductor 38 includes an outer illumination surface extending *perpendicular* to the longitudinal axis of the housing. Instead, as shown in the figures below, Tseng makes clear that, in the third embodiment, the light from each **LED element 40** enters light conductor 38 through **input face 311** and exits through **output face 313**. Ex. 1004, ¶97 (“each indentation 382 has an *input face 311 formed on a bottom end thereof*, and the outer cliff 381 also has an *output face 313 defined on a bottom end thereof*. In addition, the outer cliff 381 among input faces 311 of the plural indentations 382 and the output face 313 forms a light transmission portion 312.”).



Ex. 1004, Figures 35 (excerpted), 36. Specifically, Tseng explains that the light conductor has an outer cliff 381, which has indentations 382 into which the LEDs 40 are inserted. Ex. 1004, ¶97. The indentation 382 has an input face 311 formed on the “*bottom end*” of the indentation. Ex. 1004, ¶97. That is, as shown below with Figure 36, the LED element 40 faces *downward*, and the light projects from LED element 40 downwardly through the input face 311, then exits through output face 313 at the bottom of the assembly, shown in Figure 35 above. When examined, Mr. Cook changed positions from his declaration (e.g., Ex. 1003, ¶¶174-175), and instead agreed that “Tseng describes light transmitting from LED 40 downward, through input face 311, downward through output face 313.” Ex. 2005, 81:16-20; *see also id.*, 78:2-4 (Mr. Cook admitting that the light enters through the “input face”), 78:9-12 (admitting that the input face 311 is at the bottom of the indentation

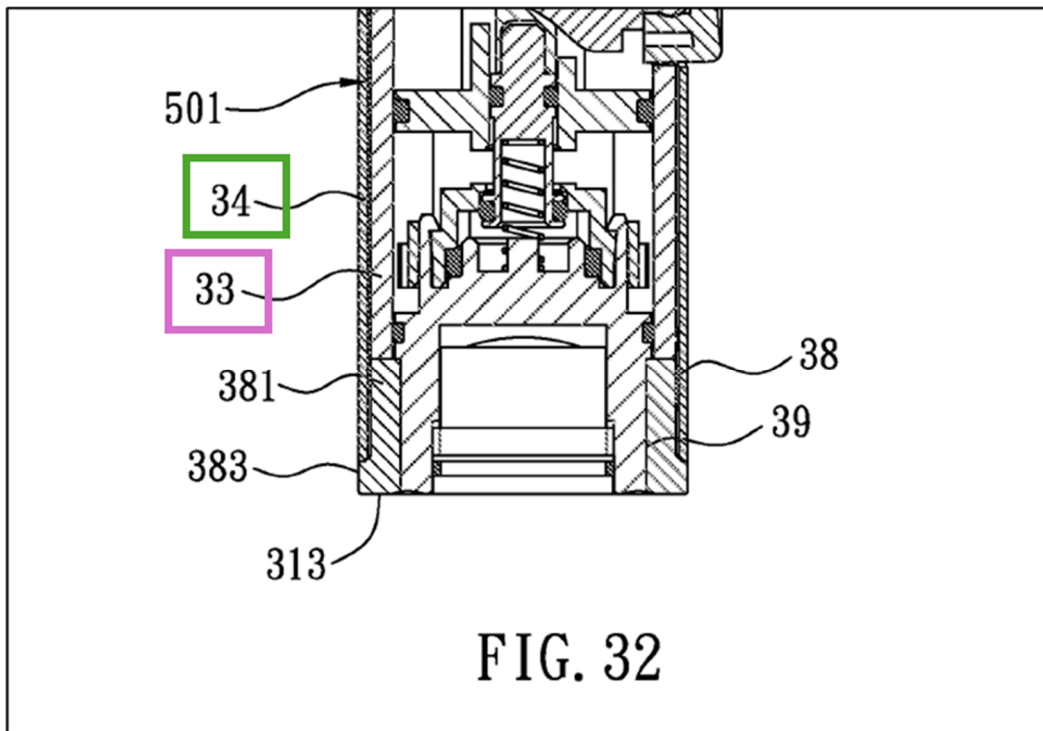
382), 80:9-12 (admitting that the LED faces downward towards the input face 311), 81:5-7 (admitting that the light exits through the “output face”), and 81:22-82:5.



Ex. 1004, Figure 36. A POSITA would have understood that light would pass from LED element 40 downward through input face 311 and through output face 313 in the *same downward direction*, not through the three directions the Petition annotates without evidence in page 31. *See* Ex. 2005, 81:22-82:5 (“Q: Other than the bottom surface of Figure 35, no other surfaces are marked as output face 313, correct? A: That is correct, from what I see in Figures 35 and 36.”). Ex. 2003, ¶¶99-101.

The side of Tseng’s annular protrusion 383, however, does not show the claimed “outer illumination surface,” as the Petition alleges. Tseng mentions annular protrusion 383 only once—that the outer cliff 381 has an annular protrusion

383 extending outwardly. Ex. 1004, ¶98. Tseng does not, however, describe that the side of the annular protrusion is an output face, as Tseng does for the *bottom* of the annular cliff. Ex. 1004, ¶¶97-98. Instead, Tseng explains that annular protrusion extends outwardly “to contact with a bottom end of an external sleeve 34.” Ex. 1004, ¶98. Moreover, Tseng explains, as shown in Figures 32 (below) and 36 (above), the side of the outer cliff 381 is covered by C-shaped ring 52, **internal sleeve 33**, and **external sleeve 34**, which would block light transmission in the perpendicular direction. Neither the Petition nor Mr. Cook addresses *why* a POSITA would have thought that—even if Tseng’s light conductor 38 were a light pipe, as the Petition alleges—light moving vertically through Tseng’s light conductor 38 would have leaked out the side of annular protrusion 383, rather than continuing to move vertically in the direction of light conductor 38. Ex. 1003, ¶¶38-41. The vertical movement of light would have been further enhanced by Tseng’s internal and external sleeves that would block any perpendicular light from leaking, and thereby further directing light toward bottom output face 313.



Ex. 1004, Figure 32 (excerpted). Ex. 2003, ¶101.

All of these indicia suggest that a POSITA would understand the purpose of the extension of the annular protrusion 383 is to enlarge the *bottom* illumination surface—*output face 313*—to make the illumination effect brighter. See, Ex. 1004, ¶¶98, 103 (“brilliant illumination”). The Petition alleges, again without any support from Tseng, that some light would be “diffused” from the side. Petition, 37. But again, the Petition’s reasoning is predicated on the incorrect interpretation of Tseng that its LEDs are oriented inward, not downward as Mr. Cook admitted. Cf. Petition, 31-32, 36; Ex. 2005, 81:22-82:5. As explained in Section VI.A.1, there is no evidence in Tseng that the light conductor 38 in this embodiment diffuses light. And

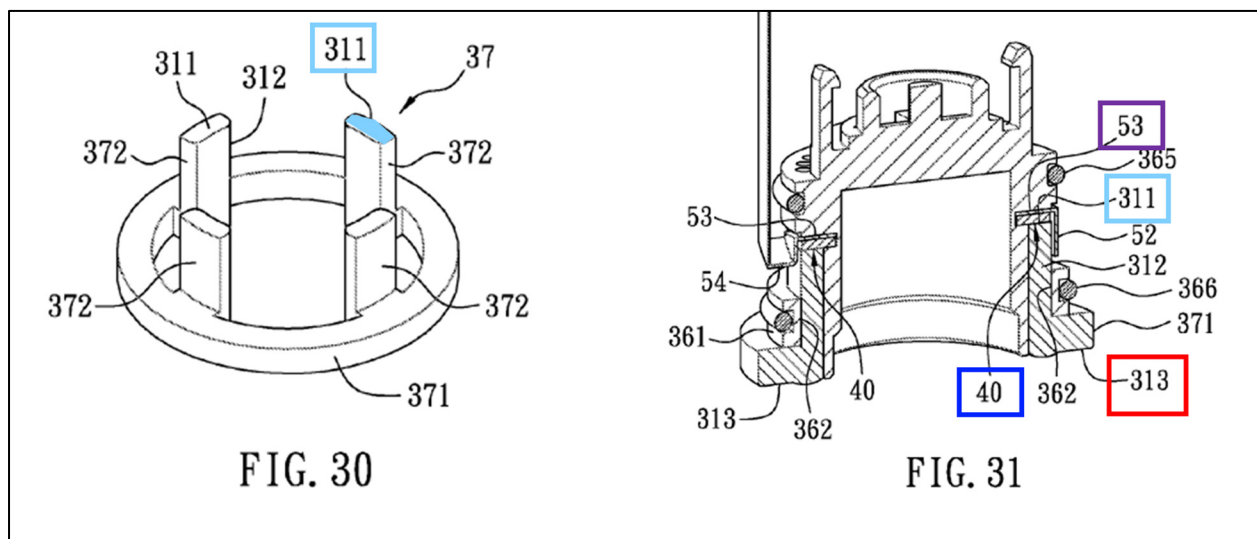
nowhere does Tseng describe or suggest that light emanates from the *side* of the annular portion 383, or that the side of annular portion 383 is another output face 313. Ex. 2003, ¶¶101-102.

A POSITA would have appreciated that one potential purpose of a larger bottom output face 313 (e.g., along the bottom of annular protrusion 383) may be “[t]o enhance light transmission” by projecting more light, and thereby amplifying the “illumination function.” Ex. 1004, ¶¶98, 105. For example, a faucet with a larger bottom surface could project more light downward, which would help in spotting dirty dishes. This objective further suggests, however, that Tseng’s third embodiment does *not* intend to have a side illumination surface, as that would unnecessarily spread the light in an undesired direction (i.e., perpendicular to the direction of the shower of water) and thereby detract from Tseng’s objective of “brilliant illumination.” *Id.*, ¶103. For the same reason, using a translucent material in Tseng’s third embodiment would work against Tseng’s objective—brilliant illumination—because a translucent material would scatter the light, making the lighting dimmer. *See* Section VI.A.1. Thus, even if the Petition would have alleged modifying Tseng’s third embodiment—which it did not—Tseng suggests there would not have been motivation to do so. Ex. 2003, ¶¶103-104.

For the sake of completeness, Tseng's second embodiment, which the Petition relies on elsewhere but not for claim 10,⁵ also does not show this feature. There, the light conductor 37 has a circular rib 371 and light columns 372 extending upwardly from an inner wall of the circular rib 371. Ex. 1004, ¶91. Each light column 372 has an **input face 311** "formed on a *top end* [of the light column]," and a "*bottom end* of the circular rib 371" defines the **output face 313**. Ex. 1004, ¶91. The LED elements 40 are similarly oriented to face the input faces 311 (i.e., each LED light projects light toward each input face 311). Ex. 1004, ¶101. The circular rib 371 is exposed outside the external sleeve 34 to "enhance light transmission and illumination." Ex. 1004, ¶94. Like the third embodiment, this structure would result in light projecting *parallel* to the longitudinal axis of the housing, similar to a flashlight effect, and does not disclose an illumination surface perpendicular to the longitudinal axis of the housing. Mr. Cook again agreed. Ex. 2005, 68:16-18, 82:12-

⁵ Because the Petition does not rely on Tseng's first or second embodiments to show this feature of claim 10 and also does not allege any combination of Tseng's various embodiments for claim 10, Petitioner cannot rely on Tseng's teachings regarding those other embodiments without alleging a motivation to combine elements from different embodiments, which it does not do.

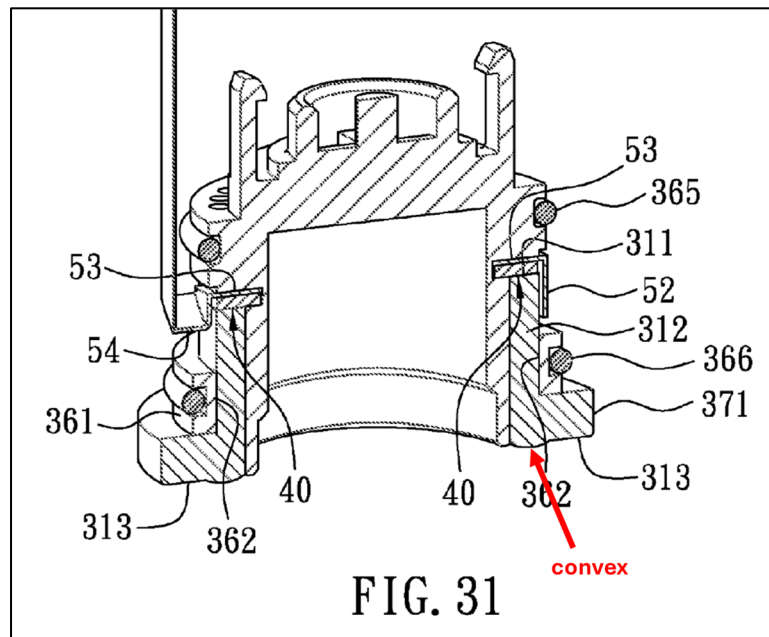
83:1 (Mr. Cook agreeing that, for the second embodiment, light enters through the input face 311 and exits through the output face 313). Just like the third embodiment, a POSITA would have understood the circular rib's purpose as to enlarge the **bottom** illumination surface—i.e., **output face 313**—and thereby “enhance light transmission and illumination.” See, Ex. 1004, ¶103 (“brilliant illumination”).



Ex. 1004, Figures 30 (left), 31 (excerpted) (right). Ex. 2003, ¶105.

As an additional point in support of what a POSITA would have understood from Tseng's disclosure, POSITA would have also noticed that Tseng's output face 313 of the circular rib 371 includes a **convex** portion, as shown below. A POSITA would have appreciated that one potential purpose of this convex surface may be to focus the light, thereby further enhancing the light transmission **through the output face 313**. See, Ex. 1004, ¶103 (“brilliant illumination”). As explained above regarding the third embodiment, this further suggests that Tseng's light conductor is

meant to channel light from input face 311 to output face 313, which would provide “illumination function by using the shower assembly 3.” Ex. 1004, ¶105.



Ex. 1004, Figure 31 (excerpted). Ex. 2003, ¶106.

Dependent claims 3 and 12

Claims 3 and 12 require an “annular ring configured to transmit light radially outwardly.” The Petition argues, like its argument for claim 10, that the circular rib 371 in Figure 30 and annular protrusion 383 in Figure 37 of Tseng teach the claims because the circular rib and annular protrusion extend outwardly. Petition, 39-41. But as explained above, even if Tseng’s circular rib and annular protrusion extend outwardly, Tseng does *not* disclose, teach, or suggest that its structure is “configured to transmit light radially outwardly” from the sides of the circular rib or the annular protrusion. Instead, as explained above in Section VI.A.2, Tseng consistently

explains only that the light emits from output face 313, which is at the bottom side of the circular rib and annular protrusion. Ex. 2003, ¶107.

As another point of distinction, the Petition improperly relies on the same annular protrusion 383 of Tseng to show multiple claimed elements. *Barrday, Inc. v. Lincoln Fabrics Inc.*, No. 2022-1903, 2023 WL 7871688, at *4 (Fed. Cir. Nov. 16, 2023) (finding with respect to mechanical components that “where a claim lists elements separately, ... there is a presumption that those components are distinct.”). For example, for claims 1 and 10, the Petition relies on Tseng’s annular protrusion 383 to show the claimed “light pipe” (*e.g.*, Petition, 34-35), and for claim 10 to further show the claimed “outer illumination surface extending perpendicular to the longitudinal axis of the housing” (*e.g.*, Petition, 35-36). But then for claims 3 and 12, the Petition again refers to Tseng’s annular protrusion 383 to show the claimed “annular ring configured to transmit light radially outwardly [from the longitudinal axis].” Petition, 39-40. The Petition’s failure to refer to different elements of Tseng to show the separately claimed “light pipe [including an outer illumination surface]” and “annular ring configured to transmit light radially outwardly [from the longitudinal axis]” further evinces the Petition’s failure to demonstrate obviousness of the claims. Ex. 2003, ¶108.

Therefore, similar to the above arguments for claim 10, the arguments against claims 3 and 12 fail, as Tseng does not teach an “annular ring configured to transmit light *radially outwardly*.” Ex. 2003, ¶109.

3. Tseng does not teach or render obvious “a translucent light pipe defining a closed loop to diffuse light from the light emitters outwardly [away from the housing / to the outer illumination surface].”

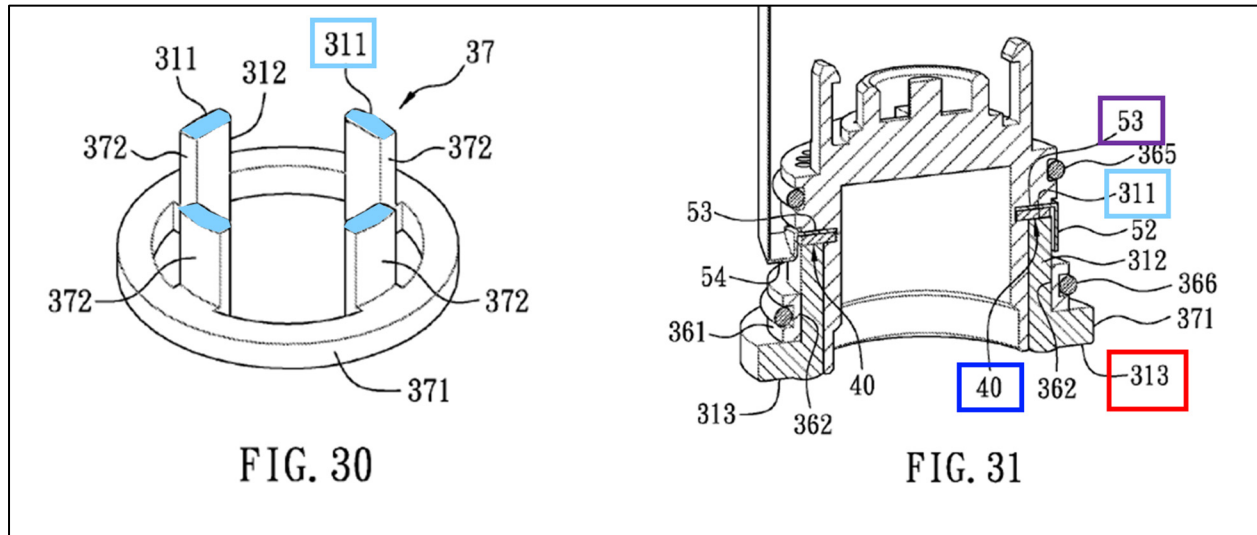
Claims 1 and 10 require a “translucent light pipe defining a closed loop *to diffuse light* from the light emitters outwardly [away from the housing / to the outer illumination surface].” The Petition fails to demonstrate that Tseng discloses, much less teaches or suggests this feature. The Petition concedes that Tseng does not disclose the claimed “light pipe,” but argues that a POSITA would have understood Tseng’s “light conductor” to correspond to this feature. Petition, 30. In doing so, the Petition relies on Mr. Cook’s declaration to fill Tseng’s gaps. But Mr. Cook’s declaration is also not supported by any evidence other than Mr. Cook’s *verbatim* repeat of the Petition. *Compare* Petition, 30-31 *with* Ex. 1003, ¶¶167-172. The Petition’s obviousness allegations are unsupported by evidence and should be rejected. Ex. 2003, ¶110.

The Petition states that Tseng’s light conductors “uniformly diffuse light.” Petition, 31 (citing Ex. 1004, ¶¶11, 24, 79, 94, 98 and Ex. 1003, ¶¶167-172). But Tseng does not say anything about diffusing light. In fact, Tseng instead states that

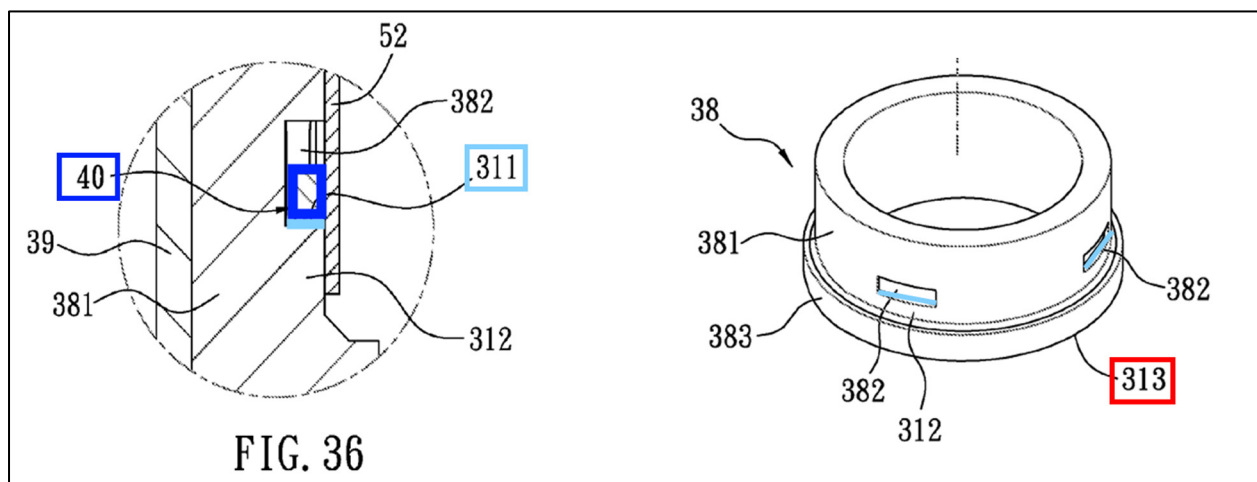
the second and third embodiment light conductors 37, 38 “*enhance*” light transmission and illumination. *E.g.*, Ex. 1004, ¶¶94, 98. Mr. Cook admitted that none of Tseng’s paragraphs he cited describe “uniformly diffuse light.” *See* Ex. 1004, ¶¶11, 24, 79, 94, 98; Ex. 2005, 90:6-9, 90:22-91:4, 92:4-93:1 (Mr. Cook confirming they do not). Because Mr. Cook provides no evidence or analysis to explain *why* Tseng’s light conductors 37 or 38 allegedly “uniformly diffuse[] light,” as the Petition alleges—particularly in view of Tseng’s own silence—the Board should not give any weight to this opinion from Mr. Cook and should reject this assertion of the Petition. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, 15; *Securus Techs. Inc. v. Glob. Tel*Link Corp.*, 701 F. App’x 971, 974-976 (Fed. Cir. 2017) (affirming Board’s determination that conclusory testimony by an expert witness was insufficient to satisfy Petitioner’s burden); 37 C.F.R. §42.65(a). Ex. 2003, ¶111.

The Petition also fails to sufficiently explain what motivation a POSITA would have allegedly had to modify Tseng’s light conductor 37 or 38 to diffuse light outwardly away from the housing or to the outer illumination surface. At most, the Petition alleges benefits of “substantially uniform” light without “hot spots,” (Petition, 36-37), but does not identify what Tseng is allegedly missing, much less explain *why* and *how* a POSITA would have been motivated to modify Tseng, or

what reasonable expectation of success (if any) a POSITA would have had in such a modification. The Petition thus fails to set forth a *prima facie* case of obviousness. Moreover, the Petition is incorrect that Tseng would have diffused light. Petition, 36-37. A POSITA would have understood that Tseng's light conductors 37 and 38 are structured to further Tseng's objective to enhance and transmit light, which suggests *not* to diffuse light. Ex. 1004, ¶¶94 (“to enhance light transmission and illumination”), 98 (“to enhance light transmission and illumination”), 103 (“brilliant illumination”). In Tseng's second embodiment (Figures 30 and 31, below), light enters light conductor 37 from four *distinct input faces 311* located below four *distinct extensions 53* where each *LED 40* is placed, and is projected downward through the *output face 313*. Ex. 1004, ¶¶90-95. Tseng's third embodiment (Figures 36 and 37, below) similarly shows light conductor 38 with four *distinct indentations 382*, each with *input face 311* located at the bottom facing each *LED 40*, from which light is projected downward through the *output face 313*. Ex. 1004, ¶¶96-101.



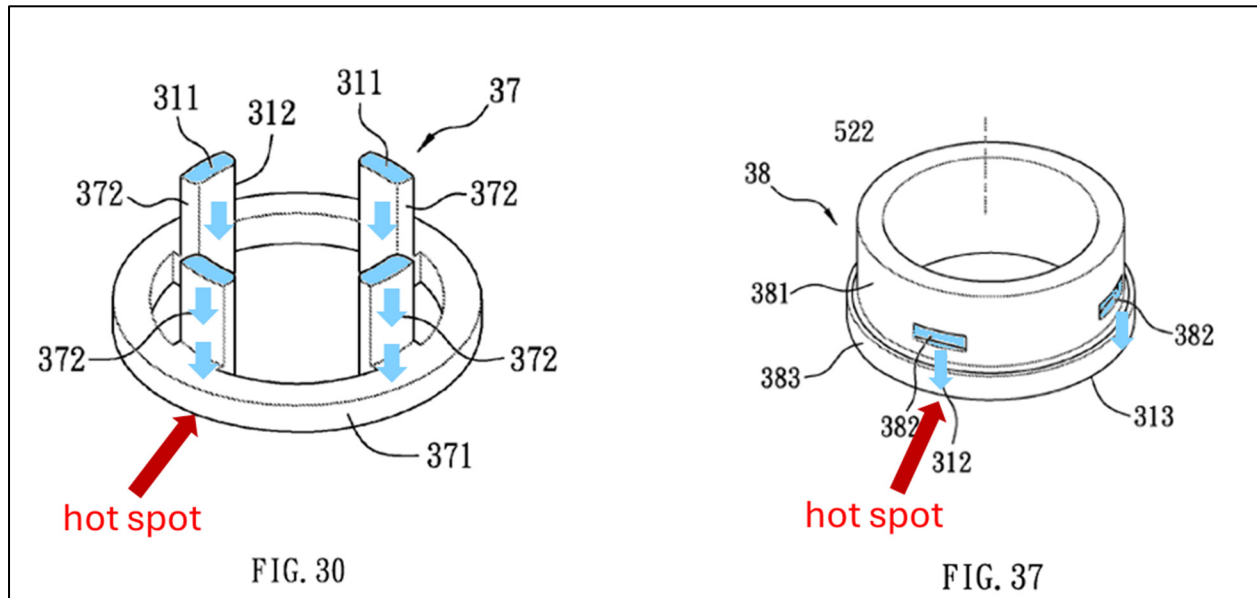
Ex. 1004, Figures 30, 31 (excerpted).



Ex. 1004, 36, 37 (excerpted). Ex. 2003, ¶112.

The Petition alleges—again, without evidence—that Tseng’s light conductor would emit light “substantial[ly] uniformly without the type of ‘hot spots’ referenced in the ’363 patent’s background section.” Petition, 36. But a POSITA would have understood that Tseng’s structure *would* create hot spots, by projecting and directing

light from four LEDs directly downward toward output face 313. *See* Section VI.A.2. Each of these LEDs would create a hot spot.



Ex. 1004, Figures 30, 37 (excerpted). Mr. Cook does not address this issue; rather, he simply repeats the Petition's unsupported proposition. Ex. 1003, ¶202; *cf.* Petition, 37. Ex. 2003, ¶¶111-113.

The Petition fails to offer substantial evidence to support its allegation that Tseng's light conductor would diffuse light outwardly away from the housing; thus it fails to show obviousness of this feature. Ex. 2003, ¶114.

4. The Petition Does Not Allege Any Motivation to Modify Tseng or Reasonable Expectation of Success in Doing So

The Petition relies on Tseng alone in Ground 1, but explicitly states that "[t]his ground is premised on obviousness—and not anticipation." But despite conceding

that Tseng does not anticipate, the Petition does not articulate reasoning to support a legal conclusion of obviousness. The Petition fails to explicitly identify any claim elements that are missing from Tseng's embodiments on which the Petition relies. *See* Petition, §IX.A; *cf. Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966) (“[D]ifferences between the prior art and the claims at issue are to be ascertained.”). Nor does the Petition identify any motivation that a POSITA would have had to modify Tseng's embodiments to arrive at the claimed features. *See* Petition, §IX.A; *cf. Game & Tech. Co. v. Activision Blizzard Inc.*, 926 F.3d 1370, 1381 (Fed. Cir. 2019) (“A patent can be obvious in light of a single prior art reference *if* it would have been obvious to modify that reference to arrive at the patented invention”). The Petition does not explain what any modifications to Tseng's embodiments would have resulted in or how they would have worked. *See* Petition, §IX.A. And the Petition fails to identify any reasonable expectation of success that a POSITA would have had in modifying Tseng's embodiments. *See* Petition, §IX.A. Mr. Cook's declaration similarly fails. *See* Ex. 1003, §VIII.B.1.

Any of these failures alone would doom the Petition—combined, they show the Petition wholly fails to provide the basic requirements of a *prima facie* case of obviousness. *Intelligent Bio-Sys.*, 821 F.3d at 1369. The Petition fails to identify any motivation to modify any portion of Tseng. *In re Kotzab*, 217 F.3d 1365, 1370

(Fed. Cir. 2000) (“Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference.”); *TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1359 (Fed. Cir. 2019) (“[A] conclusory assertion with no explanation is inadequate to support a finding that there would have been a motivation to combine.”). The Petition fails to provide any description of how a POSITA would have modified Tseng or what any proposed modification would have resulted in. *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1066 (Fed. Cir. 2016)) (“the Board ‘must still be careful not to allow hindsight reconstruction of references ... without any explanation as to *how* or *why* the references would be combined to produce the claimed invention.’”) (emphasis in original). The Petition fails to set forth any reasonable expectation of success in a proposed modification. *Intelligent Bio-Sys.*, 821 F.3d at 1367 (“one must have a motivation to combine accompanied by a reasonable expectation of achieving what is claimed in the patent-at-issue”). The Board has previously rejected—and the Federal Circuit has upheld—petitions that provided far more support for obviousness than the Petition does here. *See, e.g., Comcast Cable Commc’ns, LLC v. Promptu Sys. Corp.*, 838 F. App’x 555, 557 (Fed. Cir. 2021) (“the Board simply found that [Petitioner]’s conclusory, threadbare arguments were not enough to establish motivation to combine”).

Accordingly, the Petition has not shown that Tseng renders obvious claims 1-5, 10, or 12-16 of the '363 patent. *Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc.*, 853 F.3d 1272, 1286 (Fed. Cir. 2017) (affirming Board's rejection of single-reference obviousness argument where petition "lack[ed] the factual substantiation necessary for an obviousness evaluation" and instead merely relied on "conclusory allegation that any differences between [the prior art reference] and claim [] would have been obvious.")

B. Ground 2: Claims 9 And 11 Would Not Have Been Obvious Over Tseng and Mizuno.

Claims 9 and 11 require "a hydro-generator fluidly coupled to the waterway and in electrical communication with the illumination device." As an initial matter, because Tseng does not render obvious independent claims 1 or 10—and Mizuno does not cure those deficiencies, nor does the Petition even suggest that Mizuno does so—Ground 2 fails for the same reasons as Ground 1. Ex. 2003, ¶¶115-116.

The Petition fails to show that a POSITA would have been motivated to combine Mizuno's hydro-generator with Tseng's pull-out faucet. A POSITA would not have been motivated to combine Mizuno with Tseng because doing so would have destroyed Tseng's objective of *improving* its wiring to its external electrical power source. Nor would a POSITA have had a reasonable expectation of success in the combination because Mizuno explicitly says that using a hydrogenator

requires additional components, which take up more space—something Tseng explicitly say it does not have. Ex. 2003, ¶117.

1. The Petition fails to address the lost benefits of Tseng's external wired power supply in the alleged combination with Mizuno.

According to the Petition, Mizuno explains that using a battery as a power source makes the faucet undesirably large, and a POSITA “would have recognized that Tseng is subject to these problems.” Petition, 44. This assertion mischaracterizes the references—Tseng's faucet is *wired* to a power supply, and frequently does not use a battery *at all*—and is misleading because Tseng and Mizuno propose two divergent designs, each with different benefits. Ex. 2003, ¶118.

A POSITA reading Tseng would have understood that Tseng's objective is to improve a faucet powered by a wired power source, not to get rid of the faucet's wiring or external power supply altogether. Tseng expressly states that its objective is to improve the “conventional illuminative faucet [that] is disclosed in U.S. Pat. No. 7,467,874 [(“874 patent,” Ex. 2009)].” Ex. 1004, ¶3. Mr. Cook agreed. Ex. 2005, 94:19-95:1. Tseng explains that the conventional illuminative faucet “contains an electric wire [] extending into the shower head from an inlet segment of the pull-out faucet along a flexible pipe,” and Mr. Cook agreed that one of Tseng's

objectives is to “avoid[] damage [to] an electric wire[.]” Ex. 1004, ¶9; Ex. 2005, 85:5-8. Ex. 2003, ¶119.

A POSITA reading the '874 patent that Tseng seeks to improve would have understood that the '874 patent describes multiple advantages of its faucet being powered by a wired power source. For example, “[t]he *supply of electrical energy* to [] the light source 70 *is ensured* via the electrical line 84.” Ex. 2009, 4:24-26. The '874 patent also describes that “many diverse possibilities are conceivable” due to its described structures, such as allowing “a dimmer switch.” Ex. 2009, 8:25-29. Another possibility is that “the light intensity can be adapted to the current light conditions in the room by a sensor.” or “the light source may be switched off with a time delay.” Ex. 2009, 8:30-31, 8:40-42. Thus, a POSITA would have recognized that among Tseng's objectives for protecting the electric wire is to *maintain* these benefits of a wired external power supply, while improving the “conventional illuminative faucet” described in the '874 patent. Ex. 2003, ¶120.

The Petition does not acknowledge, much less address this issue, and thus fails to consider Tseng as a whole. Mr. Cook admitted he had never seen the '874 patent. Ex. 1003, ¶19; Ex. 2005, 30:5-18. Ex. 2003, ¶120.

Tseng boasts that its design includes several “advantages” *improving* how the electrical wiring is integrated with the “conventional illuminative faucet”—all of

which *retain*, rather than dispose of, the electrical wiring. Ex. 1004, ¶¶102-110. Ex. 2005, 87:6-20, 88:19-89:19 (Mr. Cook agreeing). As such, Tseng expressly set out to provide an advantageous design that *included* the electrical wiring to the external power supply, and was successful in doing so. Tseng does *not*, however, call for a different solution that removes the external wired power supply altogether, as doing so would have lost the *advantages* of the external wired power supply that the '874 patent describes. Ex. 2003, ¶¶120-121.

A POSITA would have thus recognized that Tseng's wiring to an external power supply was an intentionally chosen approach to obtaining power, which was different from and incompatible with Mizuno's hydro-generator. *See* Sections V.A, V.B. Tseng published *twelve years* after Mizuno. Petition, 14 and 21. Nevertheless, the Petition alleges that Mizuno "avoids" the electric wiring issue Tseng attempts to solve ("the wire will be subject to stress and strain which could lead its failure over time") because Mizuno uses a "hydraulic generator." Petition, 44-45; Ex. 1003, ¶¶253-260 ("wire 60 ... is eliminated as a point of possible failure"); Ex. 2005, 116:16-18 (Mr. Cook agreeing that Mizuno removes electrical wiring). Ex. 2003, ¶122.

Moreover, Mizuno's hydro-generator would have been unable to achieve the benefits of an external power supply explained in the '874 patent that Tseng sought

to improve. The '874 patent's external wired power supply *ensures* consistent power, whereas Mizuno's hydro-generator inside the faucet would be another component subject to failure or inconsistent operation. As another example, the '874 patent's external wired power supply allows for light intensity to increase or decrease with a dimmer switch, or adapt to light conditions by a sensor. Ex. 2009, 8:27-31. By contrast, Mizuno explains that the intensity of lights powered by its hydro-generator is dependent on the "feed-water pressure," and even suggests that "when the power generated by the generator 32A becomes excessive due to high feed-water pressure, the excessive power can be consumed by increasing the number of LED illumination lamps." Ex. 1008, ¶38. Mizuno makes no mention of the possibility of dimming the lights via a dimmer switch or sensor, and instead suggests that the number of LEDs is tied to the water flow, such as using fewer LEDs if water flow is too low, or adding extra LEDs when water flow is too high to avoid "excessive power generation." *Id.* In sum, the Petition does not even acknowledge the benefits described in connection with the '874 patent's "conventional illuminative faucet" that Tseng explicitly sought to improve, much less offer any explanation of why a POSITA would have been motivated to give up those benefits. *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019) ("The

benefits, both lost and gained, should be weighed against one another.”). Ex. 2003, ¶¶123-125.

Nonetheless, Tseng chose a *different* solution, instead focusing on retaining the electrical wiring—not removing it—and improving the integration of the electrical wiring in its design. Specifically, Tseng proposed using a flexible printed circuit and a flexible pipe to protect the wire, while keeping a wired power source. As such, a POSITA reading Tseng would have had no reason to implement a major redesign of Tseng—changing the power source entirely from a wired external power source to a hydro-generator as in Mizuno—and lose the attendant benefits of Tseng’s external wired power source. *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1337 (Fed. Cir. 2016) (“The real question is whether that skilled artisan would have plucked one reference out of the sea of prior art ... and combined it with [other] ... elements to address some need present in the field. ... Whether a skilled artisan would be motivated to make a combination includes whether he would select particular references in order to combine their elements.”). Ex. 2003, ¶126.

2. The Petition alleges benefits that would not have improved Tseng’s existing system.

The Petition alleges that “that application of Mizuno would also produce other benefits,” including “various features to avoid damage to both the generator itself and the LED lights.” Petition, 45. Specifically, to mitigate damage caused by

Mizuno's hydro-generator, the Petition concedes that using Mizuno's approach would also have required adding a voltage stabilizer, cooling component, and relief valve to the faucet. Petition, 45; Ex. 2005, 126:19-127:4, 127:13-18. But a POSITA would have recognized that the potential for damage only arose *from adding Mizuno to Tseng*. Ex. 2005, 119:2-4. Avoiding that damage would not have provided a motivation to combine Mizuno with Tseng in the first place. Ex. 2003, ¶127.

A POSITA would have had *no reason* to implement Mizuno's voltage stabilizer, metal heat transfer ring, and relief valve—all part and parcel of Mizuno's disclosed design (Ex. 2005, 126:19-127:4)—in Tseng, because Tseng does not have the same problems that Mizuno had to solve. Mizuno states that the additional components solve the problem *arising* from replacing the power source with the hydro-electric generator. Section V.B; Ex. 1008, ¶¶7-8, 14-17, 31-40; Ex. 2005, 119:6-11 (Mr. Cook agreeing that Mizuno's hydro-electric generator causes excessive power problem), 121:19-122:11 (Mr. Cook agreeing that Mizuno adds components to solve the excessive power problem). But Tseng does not need those additional components because Tseng does not suffer from excessive power caused by high water flow. Therefore, a POSITA would have realized Mizuno's approach is unnecessary and inapplicable to Tseng, and would not have been motivated to combine as the Petition proposes. Ex. 2003, ¶¶128-129.

3. A POSITA would not have had a reasonable expectation of success implementing Mizuno in Tseng.

The Petition asserts that a POSITA would have had a reasonable expectation of success in integrating Mizuno's hydro-generator into Tseng's faucet showerhead. Petition, 46. The Petition asserts that Mizuno's hydro-electric generator would be "integrated into the faucet's shower head" because "a POSITA would have recognized that the *large* internal 'chamber 321' within Tseng's shower head could be readily adapted to accommodate Mizuno's hydro-generator." Petition, 46; Ex. 1003, ¶270. But the references themselves warn that physical space is limited and comes at a premium inside a faucet, so a POSITA would *not* have had a reasonable expectation of success in applying Mizuno's teachings to Tseng's different faucet. Ex. 2003, ¶130.

The Petition incorrectly characterizes Tseng's faucet as having sufficient space to add all Mizuno's needed components. Petition, 46. Tseng never says its chamber 321 is "large"—Tseng is silent on the relative size of inlet chamber 321. Ex. 2005, 95:10-99:13. In fact, Tseng explicitly states that space inside its device is "*narrow*." Ex. 1004, ¶¶7, 108; Ex. 2005, 88:8-11 (Mr. Cook agreeing "Tseng's faucet is a narrow space"). The Petition's argument is unsupported by evidence. Ex. 2003, ¶131.

Nor does the Petition allege, much less cite evidence to suggest, a POSITA would have been motivated to *enlarge* Tseng's faucet sprayhead to fit Mizuno's hydro-generator and other required components (e.g., voltage-stabilizer, cooling components, relief valve). Petition, 43-46; *cf.* Ex. 1008, ¶¶7-8, 14-17, 31-40; Ex. 2005, 122:3-11 (Mr. Cook agreeing). For example, even if Mizuno's hydro-electric generator fit inside Tseng's chamber 321, Mizuno's required voltage stabilizer would have to be placed on Tseng's flexible circuit board 50 and connect to the cooling component, which also requires space. Tseng instead describes a "narrow" space and thus is not "readily adapt[able]," as the Petition alleges without support. Thus, a POSITA would have been discouraged to implement Mizuno to Tseng, because—taking Mizuno's teachings as a whole—to make Mizuno's then-twelve-year-old solution work, the combination would have had to include multiple additional devices beyond the hydro-electric generator. *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1360 (Fed. Cir. 2017) (prior art teaches away if a POSITA, "upon reading the reference, would be discouraged from following the path set out in the reference" and "known disadvantages in old devices which would naturally discourage") (citing *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994), *U.S. v. Adams*, 383 U.S. 39, 52 (1966)). Ex. 2003, ¶¶132-133.

Accordingly, the Petition fails to show that a POSITA would have looked to Mizuno to solve Tseng's problems, been motivated to combine Tseng with Mizuno, or had a reasonable expectation of success in the combination. Ex. 2003, ¶134.

C. Ground 3: Claims 17 And 18 Would Not Have Been Obvious Over Tseng and Schneider.

As an initial matter, because Tseng does not render obvious the independent claims—and Schneider does not cure those deficiencies, nor does the Petition even suggest that Schneider does so—Ground 3 fails for the same reasons described with respect to Ground 1.

Similar to the flawed combination in Ground 2, the Petition combines two references that deal with different problems without explaining *why* a POSITA, after reading Tseng, would further look to Schneider. Tseng deals with solving the electric wiring and limited spacing problems inside the faucet's sprayhead, while Schneider proposes adding a user interface disclosed as a separate component of a larger scale kitchen/shower system. The only motivations the Petition provides in support of its alleged Tseng and Schneider combination are conclusory statements also parroted in the Cook Declaration, without citing the prior art or any other evidence. See Ex. 1003, ¶¶298-303. These conclusory, unsupported assertions should be given no weight. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, 15; *Nichia Corp. v. Lighting Sci. Grp.*, IPR2019-01261 (PTAB Jan. 10, 2020),

Paper 23, 20 (finding insufficient Petitioner's rationale where Petitioner's expert's "opinion on the alleged obviousness and simplicity of the combination appears to be based on nothing more than his *ipse dixit*; he provides no explanation why an ordinarily skilled artisan would have made the combination.") (internal citation omitted); *Securus Techs.*, 701 F. App'x at 974-76; *see also* 37 C.F.R. §42.65(a). Ex. 2003, ¶¶135-136.

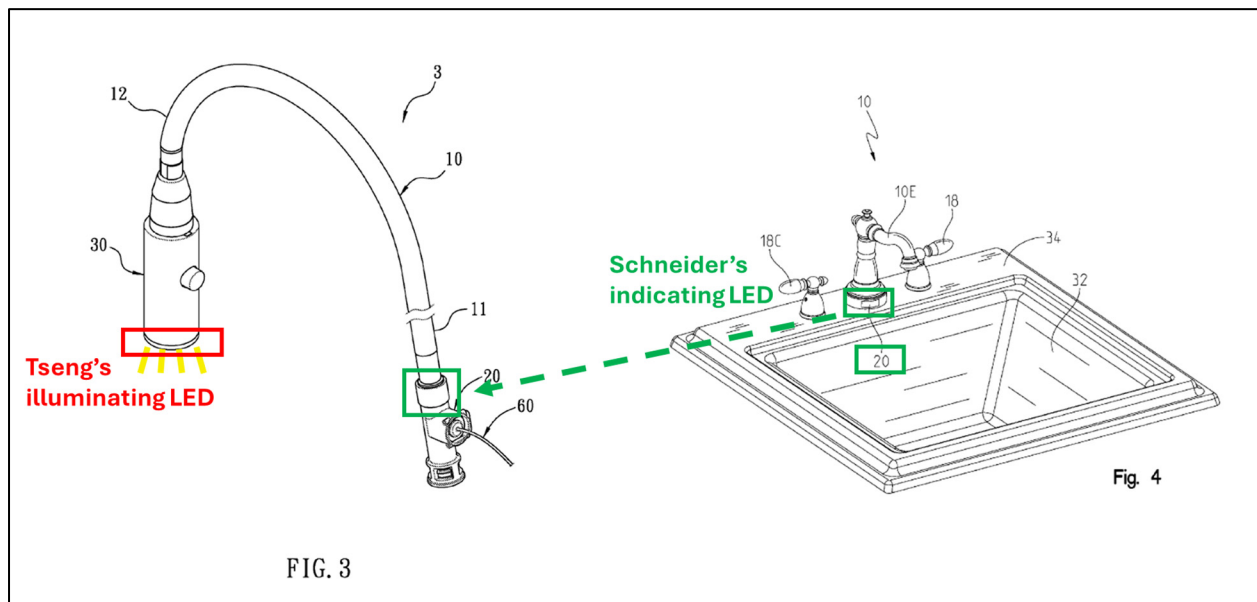
Moreover, the unsupported motivation the Petition does allege (Petition, 50-51) would not have prompted a POSITA to change Schneider's approach to achieve the features recited in dependent claims 17 and 18. For example, the Petition suggests the motivation for combination included "convey[ing] information to the faucet user regarding water temperature ... for safer and more convenient operation.". Petition, 51. But the benefits proposed in the Petition would be equally available in *any* faucet that provides temperature information to a user—including Schneider's. Those motivations do not, however, support the Petition's implicit suggestion to combine Tseng with Schneider by **changing** both Schneider and Tseng in a way not suggested by either reference but that results in the claimed features of dependent claims 17 and 18. Ex. 2003, ¶137.

The Petition relies on and cites only Figure 4 of Schneider.⁶ Nonetheless, the Petition fails to explain **how** a POSITA would have performed the combination or what the resulting combination would look like. *See* Petition, 46-52. The Petition alleges only that “[t]he combined faucet of Tseng and Schneider would continue to provide all this very same functionality,” referring to Tseng’s LEDs and Schneider’s temperature sensor and controller to change LED light color. Petition, 51. But without an explanation of **how** a POSITA would have combined the references, there is no way to compare the alleged combination to the claims. *ActiveVideo Networks, Inc. v. Verizon Commc’ns., Inc.*, 694 F.3d 1312, 1327 (Fed. Cir. 2012) (expert’s testimony “conclusory and factually unsupported” where “[t]he expert failed to explain **how** specific references could be combined, which combination(s) of elements in specific references would yield a predictable result, or **how any specific combination would operate** or read on the asserted claims.”). Ex. 2003, ¶138.

Indeed, the most straightforward combination of Tseng and Schneider would **not** have resulted in the features recited in the claims. A POSITA looking to add Schneider’s temperature-indicating user interface to Tseng’s faucet would have

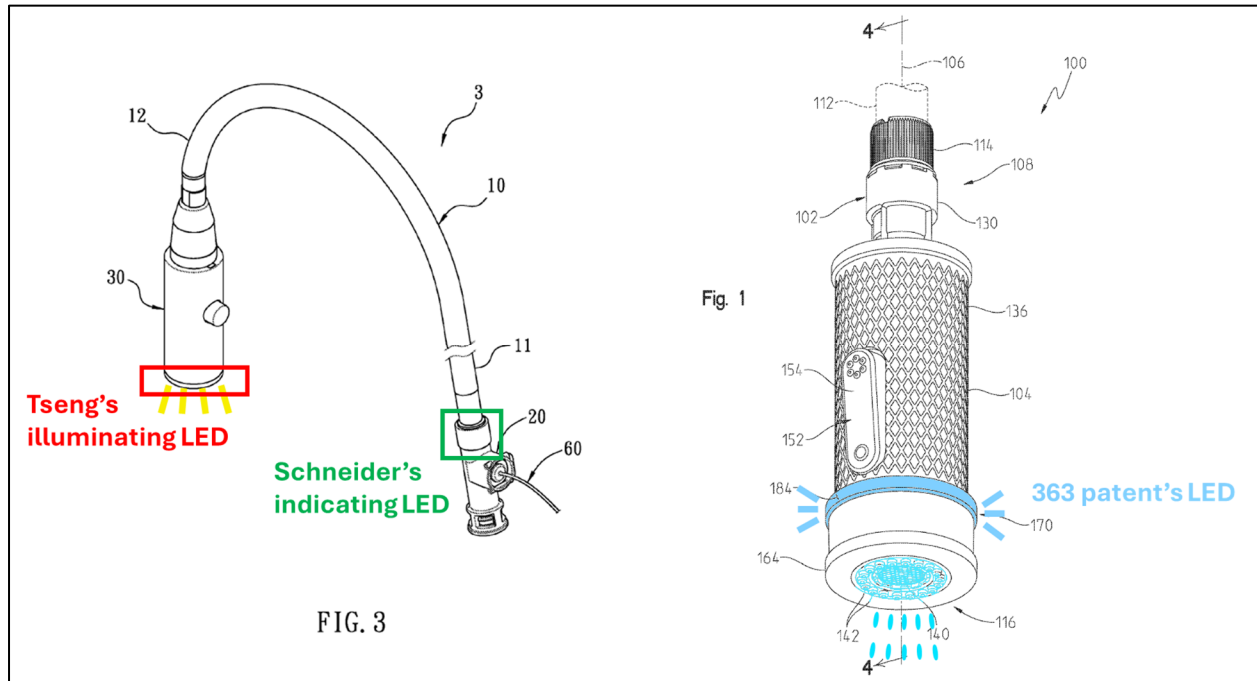
⁶ Schneider Figure 4 depicts a faucet, but it is neither a “pull-out faucet” as in Tseng, nor a “pull-down sprayhead” as required by the claims.

added Schneider's user interface to Tseng's faucet at the place that Schneider itself teaches its user interface should be placed on a faucet: at the base. Ex. 1009, ¶29, Fig. 4; *see also* Ex. 2005, 131:15-18 (Mr. Cook agreeing that Schneider's display interface is at the faucet base).



Ex. 1004, Figure 3; Ex. 1009, Figure 4. Ex. 2003, ¶139.

In the resulting combination, the sprayhead would retain **Tseng's illuminating LEDs** for illumination purposes, while the faucet would also have the added feature of **Schneider's indicating LEDs** at the base to indicate water temperature:



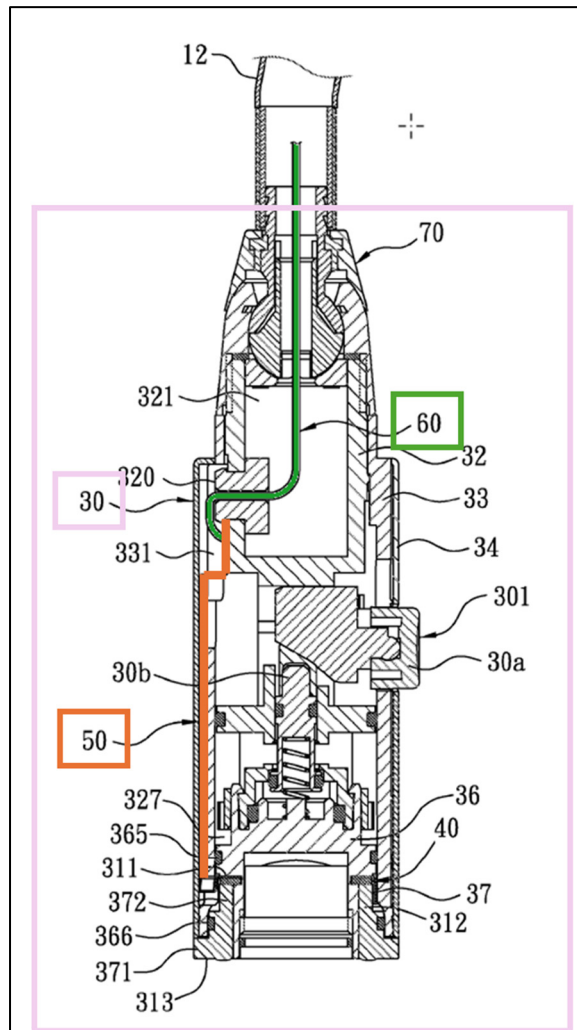
Ex. 1004, Figure 3; Ex. 1001, Figure 1. Ex. 2003, ¶140.

Thus, as shown in the figure above, the combined faucet—with **indicating LEDs at the base** and **illuminating LEDs in the sprayhead**—still would not “change the color of light emitted by *the* light emitters” in the faucet sprayhead “in response to the temperature detected by the temperature sensor,” as recited by claim 17. Nor would “*the* light emitters” in the faucet sprayhead “include a first light emitter configured to generate light of a first color” or “a second light emitter configured to generate light of a second color,” much less “blend the light of the first color and the light of the second color and generate light of a third color,” as recited by claim 18. The Petition fails to acknowledge—much less address—this distinction between Schneider’s user interface and the claims. Ex. 2003, ¶¶139-140.

At most, the Petition merely alleges that a POSITA would have cherry-picked one specific feature from Schneider (changing LED color based on water temperature) and added it into Tseng, but the Petition does not allege, much less explain *why*, a POSITA would have been motivated to move Schneider's colored LEDs from Schneider's faucet *base* into Tseng's faucet *sprayhead*. The Petition's failure to provide even an elementary attempt at such an explanation reveals that the Petition's proposed combination is merely driven by hindsight. *TriVascular*, 812 F.3d at 1066. Ex. 2003, ¶141.

The Petition's proposed reasonable expectation of success in combining Tseng with Schneider is also unconvincing because the alleged combination would *worsen* one of the problems Tseng sets forth to solve: limited space in the faucet sprayhead causing damaged electrical wires. Petition, 51-52. Tseng attempts to improve its electric wiring and limited spacing problem by using a flexible printed circuit and a flexible pipe. See §§V.A, VI.A. But the Petition does not explain *how* or *where* a POSITA would place Schneider's user-interface temperature sensor and controller, particularly in view of Tseng's flexible circuit board already needing to be purposely designed to "be fixed in a narrow space." Ex. 1004, ¶108. To add Schneider to Tseng, a POSITA would have needed to redesign Tseng's **flexible circuit board 50** and **wire 60**, and squeeze additional components including a

temperature sensor and a controller for changing the LED color based on the sensor output into Tseng's already narrow **spray head 30**. Ex. 1004, ¶¶7 (“narrow space”), 108 (“narrow space”), Figure 27; Ex. 2005, 88:8-11 (Mr. Cook agreeing that Tseng says its sprayhead has “narrow space”).



Ex. 1004, Figure 27. Ex. 2003, ¶141.

Both new components would need to be connected to electrical power. And the new temperature sensor would need to be connected to the new controller. The

wires added for connecting these new components would expose Tseng's wires to greater risk of damage. Again, the Petition does not even acknowledge any of these problems that would have attended the alleged combination, much less attempt to explain why these problems would not have deterred a POSITA, or why a POSITA would have been motivated to pursue the combination suggested in the Petition. Ex. 2003, ¶141.

Accordingly, the Petition fails to show a POSITA would have been motivated to combine Tseng with Schneider. Ex. 2003, ¶141.

D. Ground 4: Claims 1, 6-9, and 19-23 Would Not Have Been Obvious Over Tse.

The Petition fails to show that Tse's "cover" teaches or renders obvious "a translucent light pipe defining a closed loop to diffuse light from the light emitters." Particularly for claim 19, the Petition simply ignores the claim requirement, "a closed loop *surrounding the water outlet*," because Tse's "cover" (which allegedly forms the "closed loop") is surrounded *by* the water outlets instead of *surrounding* the water outlets. Ex. 2003, ¶¶142-144.

1. Tse's "cover" is not a light pipe.

Claims 1 and 19 recite a "light pipe." The Petition and Mr. Cook concede Tse never uses the word "light pipe." Petition, 60; Ex. 1003, ¶359. To show this feature, the Petition relies on Tse's cover 23. Petition, 60. But a POSITA would not have

understood Tse's cover to be a light pipe. Instead, Tse's cover seals a groove in Tse's showerhead to protect the LEDs from water damage. *E.g.*, Ex. 1005, 2:16-18, 5:19-22. Ex. 2003, ¶145.

Tse's cover is not shaped like a light pipe. As Dr. Klopp explains, a POSITA would have readily observed that Tse's cover's thickness-to-width aspect ratio is not adequate to be a light pipe. Mr. Cook suggests "a POSITA would have considered the use of a thicker, curved cover" (Ex. 1003, ¶¶380-385), implicitly admitting that Tse's *disclosed* cover is too thin to evenly disperse light. A POSITA would have understood that Tse's thin, transparent/semi-transparent cover is unlike a light pipe and instead is more like a window. Ex. 1005, 6:27-29, Fig. 4. Ex. 2003, ¶¶147-148.

Tse does not suggest that cover 23 functions as a POSITA would have understood a light pipe to function. Ex. 2003, ¶¶39-42. Tse discloses little regarding how light moves through cover 23—Tse never mentions terms like "diffuse," "scatter," "glow." The only disclosure the Petition relies on is the cover being "transparent" or "semi-transparent," (Petition, 60; Ex. 1003, ¶355), but a material being transparent does not make it a light pipe. Moreover, Tse's transparent/semi-transparent cover 23 would have showed "hot spots," which the '363 patent specifically seeks to avoid. Ex. 1001, 1:24-26. Ex. 2003, ¶¶146, 148.

Even if the Petition suggests that Tse's cover would have been modified to be thicker and curved to become a light pipe (e.g., Petition, 64), the Petition also explains that Tse's cover 23 sits "flush" with the surface of the sprayface. Petition, 68. A POSITA would have recognized that Tse's cover could not simultaneously be modified to be a thick, curved cover while still being a thin, flat cover that sits flush with the surface. The Petition does not choose either path. Ex. 2003, ¶149.

2. Tse's "cover" does not define a closed loop surrounding the water outlet.

Independent Claim 19

Claim 19 requires "a translucent light pipe defining a closed loop ***surrounding the water outlet.***" The '363 patent describes that "[a] translucent light pipe or diffuser 346 is coupled to the substrate 342 and defines a closed loop laterally surrounding the water outlet openings 332." Ex. 1001, 6:2-5. That is, in the '363 patent, all of the **water stream** is located inside the **closed loop** defined by the light pipe. Ex. 2005, 109:15-22. Ex. 2003, ¶150.

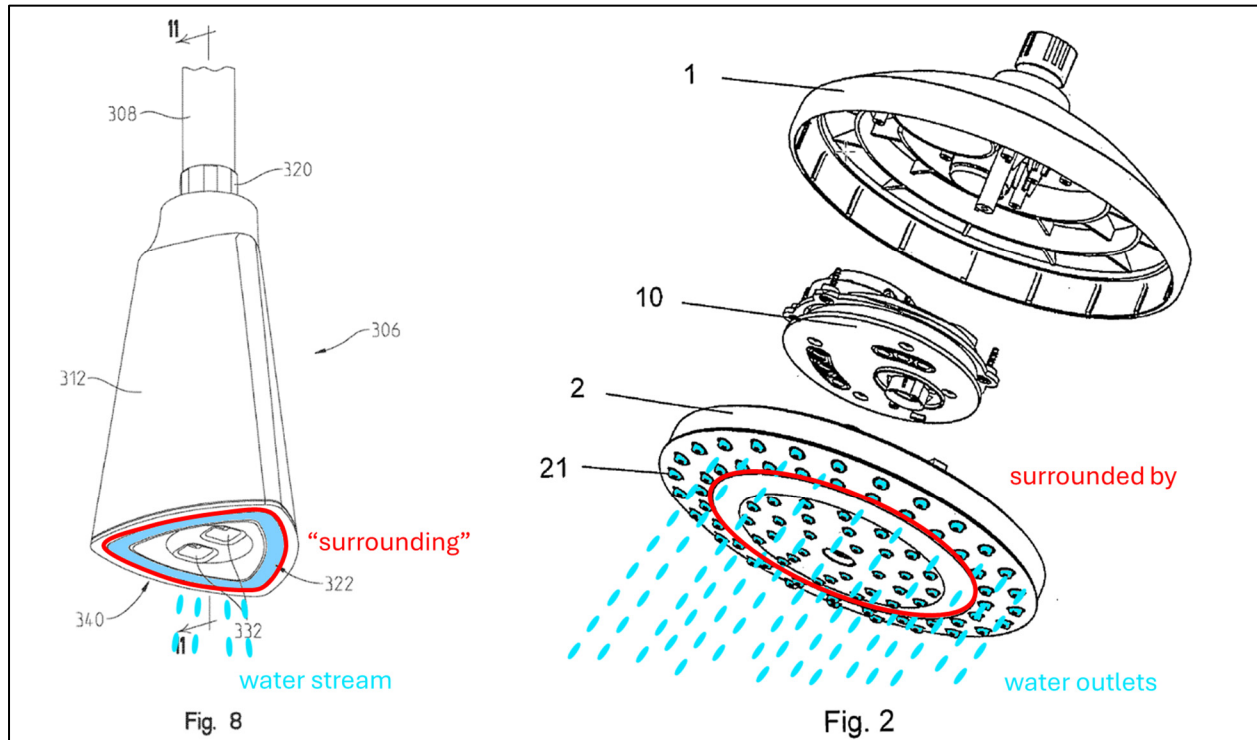
The Petition ignores the plain and ordinary meaning of "surrounding the water outlet." The plain and ordinary meaning of "surround" is to "enclose on all sides." Ex. 2007. A POSITA would have understood, based on the dictionary definition of the term and the specification and figures of the '363 patent, that ***surrounding the water outlet*** means to enclose all of the water stream on all sides of the water outlet,

and as opposed to, e.g., the light pipe being “between” multiple water outlets. *E.g.*, Ex. 1001, 6:2-5 (“surrounding the water outlet *openings* 332.”), 6:11-15 (“a closed loop positioned *laterally outside the water outlets* 332.”), Figure 8 (below at left).⁷ Ex. 2003, ¶¶151-152.

Every depiction of the light pipe in the '363 patent shows the light pipe completely surrounding all the water outlets of the sprayhead. Ex. 1001, Figures 1-11. Mr. Cook agreed. Ex. 2005, 101:6-16, 109:15-22. Ex. 2003, ¶152.

In contrast, in Tse's Figure 2 (below at right), the **water outlets** surround the cover (which the Petition alleges forms a **closed loop**). In other words, the alleged light pipe does not surround all of the water outlets, as claimed. *See e.g.*, Ex. 1005, Figure 2; *see also id.*, 1:24-2:1; Ex. 2005, 148:11-21 (Mr. Cook agreeing that Tse cover 23 does not surround all of the water outlets).

⁷ *See also, e.g.*, IPR2024-00790, Paper 9, 11-13 (“surrounding” means “encircling” or “to be all the way around (something)”).

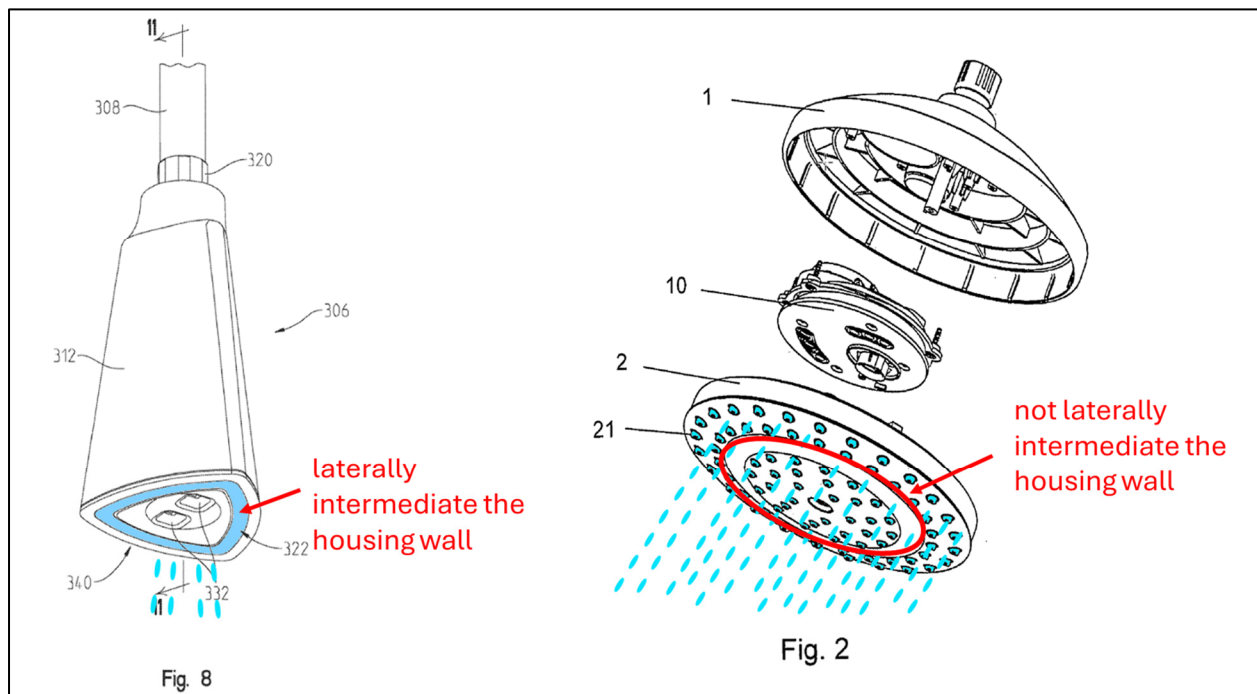


Ex. 1001, Figure 8 (left); Ex. 1005, Figure 2 (right). Tse does not disclose any case where all water streams are surrounded by its cover. *See* Ex. 2005, 148:11-21 (Mr. Cook agreeing that Tse's cover does not surround all of the water outlets), 153:1-3 ("Q: All of Tse's ten figures depict the same embodiment, correct? A: Correct"). The Petition simply ignores this gap and does not even attempt to argue a motivation to modify Tse or an expectation of success in modifying Tse to arrive at this claim element. Nor does Mr. Cook. Ex. 1003, ¶358; *cf.* Petition, 59.

Accordingly, the Petition fails to show that Tse renders obvious this limitation. Ex. 2003, ¶¶153-154.

Dependent Claims 8 and 22

Claims 8 and 22 further requires “the light pipe is supported within the spray face ***laterally intermediate the water outlet and the housing wall.***” A POSITA would have understood that for the light pipe to be “***laterally intermediate*** the water outlet and ***the housing wall***,” the light pipe would be at the outer edge of the sprayface, while still surrounding the water outlets. Ex. 1001, 6:5-9, Figure 8 (below left). Otherwise, “intermediate ... the housing wall” would be meaningless. *Wasica Fin. GmbH*, 853 F.3d at 1288 n.10 (“It is highly disfavored to construe terms in a way that renders them void, meaningless, or superfluous.”).



Ex. 1001, Figure 8; Ex. 1005, Figure 2. Ex. 2003, ¶¶155-156.

Tse's showerhead (above right) discloses water outlets between the cover and the housing wall, and therefore Tse's cover is not placed intermediate the water outlet and the housing wall. Thus, Tse does not disclose claims 8 and 22. The Petition does not admit that Tse fails to disclose this feature, much less propose any motivation a POSITA would have had to modify Tse or any expectation of success in doing so. The Petition fails to demonstrate that Tse renders obvious claims 8 and 22. Ex. 2003, ¶157.

3. The Petition Does Not Allege Any Modifications to Tse or Reasonable Expectation of Success in Doing So

The Petition relies on Tse alone in Ground 4, but does *not* allege that Tse anticipates claims 1, 6-9, and 19-23. Petition, 6. Instead, the Petition alleges that the challenged claims “are obvious over Tse” (*id.*), implicitly conceding that Tse does not anticipate the claims. Nevertheless—as with Ground 1 (*see supra*, §§VI.A and V.A)—the Petition fails to explicitly identify claim elements (e.g., “surrounding the water outlet”) that are missing from Tse or any reasonable expectation of success that a POSITA would have had in modifying Tse. *See* Petition, §X.A. Petitioner's expert declaration similarly fails. *See* Ex. 1003, §VIII.C.1. As with Ground 1, the Board should reject Ground 4 for failing to set forth a *prima facie* case of obviousness. *Intelligent Bio-Sys.*, 821 F.3d at 1369.

Accordingly, Tse does not render obvious claims 1, 6-9, and 19-23.

E. Ground 5: Claims 1, 6-9, and 19-23 Would Not Have Been Obvious Over Tse and Carter.

The Petition alleges that Tse in view of Carter renders obvious claims 1, 6-9, and 19-23. Petition, 70. Ex. 2003, ¶158.

1. Carter is non analogous art

Carter purports to improve the durability of submerged light fixtures in pool/spa water jets by over-molding. Carter is not analogous to the challenged claims, which are instead directed to a sprayhead or showerhead. A POSITA would not have looked to Carter. *Netflix, Inc. v. DivX, LLC*, 80 F.4th 1352, 1358 (Fed. Cir. 2023). Ex. 2003, ¶159.

Carter is not from the same field of endeavor as the '363 patent. Carter is directed to a water jet, which typically remains submerged in water in environments such as spas or pools. Since these jets are in constant contact with recirculating chlorinated water and must be designed to withstand the rigorous conditions of public-use environments like spas and pools, they must be “simple, rugged and well suited to the rigorous environment of recreational uses.” Ex. 1006, Abstract. Thus, Carter is concerned about the safety and durability of a water jet, even for the lighting component of the water jet. Ex. 1006, ¶6 (“If the integrity of the light and/or electrical source is compromised serious complications can result, including inadvertent electrocution”). In contrast, the '363 patented invention is directed to

improving a lighted faucet or showerhead, which is generally for individual, private home use in a less rigorous environment. Furthermore, Carter's water jets are designed to be wall-mounted to spas or pools, whereas sprayheads are intended to be movable. Aside from both being water-related products, there would have been little reason for a POSITA to turn to a pool water jet for solutions to lighted sprayhead problems. Ex. 2003, ¶¶160-161.

Carter is not reasonably pertinent to the particular problem addressed by the '363 patent. The problem Carter solves is the high cost and low durability of prior art fixtures with lighting. The rigid environment where Carter's jets are placed requires tighter integration of light components to ensure they last longer and do not cause inadvertent electrocution. Ex 1006, ¶6. Carter proposes using a "multi-shot molding or pre-mold/over-mold molding" technique to tightly integrate its light pipe cost-effectively. Ex. 1006, ¶8. Carter manufactures a durable, over-molded light pipe *in place*. By contrast, the '363 patent seeks to provide a faucet or showerhead with certain optical features while maintaining other benefits to a home user. Ex. 2003, ¶162.

Because Carter is not analogous art to the '363 patent, it is not art to which a POSITA would have looked when seeking to solve the problems addressed by the '363 patent. Ex. 2003, ¶¶159-162.

2. A POSITA would not have been motivated to replace Tse's cover with Carter's over-molded light pipe

Even if Carter were analogous art, a POSITA would not have been motivated to use Carter's over-molded light pipe for Tse's cover. Carter's light pipe is tightly integrated with the substrate and other layers and is inseparable from the substrate so that they last longer in a more rigorous environment. Ex. 1006, ¶¶6, 8. Simply replacing Tse's cover with Carter's integrated light pipe would actually block the light from Tse's LEDs, as Carter's substrate—integrated with the light pipe—would obstruct the light path. The Petition, however, fails to acknowledge this fact, much less explain anything beyond stating its simple substitution of Tse's cover with Carter's light pipe. *See* Petition, 73. Additionally, a POSITA would have considered that using Carter's over-molded light pipe would increase the cost and complexity for manufacturing Tse's showerhead. Furthermore, the alleged combination would result in Tse losing its flexibility—specifically, the cover would no longer be removable for maintenance—further discouraging such a combination. The Petition is silent on these problems. Petition, 70-74. Ex. 2003, ¶¶163-168.

3. Tse in view of Carter does not teach or render obvious “a translucent light pipe.”

The Petition asserts Carter to show the claimed “light pipe,” acknowledging that Tse's cover (Ground 4) could be insufficient to teach the “light pipe” as claimed.

Petition, 70 (“Patent Owner may argue (incorrectly) that Tse’s cover 23 is not a ‘light pipe’”). But Carter’s light pipe does not cure Tse’s deficiencies. Ex. 2003, ¶169.

The Petition and Mr. Cook explicitly state that Carter’s light pipe is “*transparent*.” Petition, 70; Ex. 1003, ¶418. As such, Petitioner’s reliance on Carter to show the claimed “light pipe” fails, at least because the claim requires a “translucent” light pipe. *SAS*, 584 U.S. at 366. Ex. 2003, ¶170.

F. Ground 6: Tse (or Tse in view of Carter) in view of Spangler does not render dependent claim 24 obvious.

The Petition alleges that Tse (or Tse and Carter) in further view of Spangler renders obvious claim 24. Petition, 74. For at least the same reasons described for Grounds 4–5, Ground 6 also fails because the Petition does not rely on Spangler to show the above-discussed features, and regardless, Spangler does not cure the deficiencies in Tse and Carter. Ex. 2003, ¶171.

VII. SECONDARY CONSIDERATIONS SHOW THE CLAIMS WOULD NOT HAVE BEEN OBVIOUS

Objective indicia “play a critical role in the obviousness analysis.” *Leo Pharm. Prods., Ltd. v. Rea*, 726 F.3d 1346, 1358 (Fed. Cir. 2013). They are “not just ... cumulative or confirmatory ... but constitute[] independent evidence of nonobviousness.” *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008).

A. Nexus

Delta's two product lines each embodies the '363 patent claims—the Allentown kitchen faucet and Pendant Raincan showerhead—as shown below. *WBIP*, 829 F.3d at 1329 (“[T]here is a presumption of nexus for objective considerations when the patentee shows that the asserted objective evidence is tied to a specific product and that product ‘is the invention disclosed and claimed. ...’”); *Chemours Co. FC, LLC v. Daikin Indus.*, 4 F.4th 1370, 1378 (Fed. Cir. 2021) (finding nexus where the evidence of objective indicia result from unique features of a claimed combination even if the combined elements were known). *See* Delta Faucet Company, *Patents*, available at <https://www.deltafaucetcompany.com/patent>. 35 U.S.C. § 287(a).



Ex. 2012.⁸

⁸ See also https://media.deltafaucet.com/elvis/Video/PRODUCT_19935L-SPSD-DST.mp4.



Ex. 2013.⁹ Ex. 2003, ¶¶172-173.

B. Objective Indicia Demonstrating Non-Obviousness

At least two objective indicia demonstrate non-obviousness. First, there was a long-felt but unsolved need in the industry for a lighted faucet or showerhead, as evidenced by the age of the very prior art Petitioner asserts. Second, hundreds of

⁹ See also https://media.deltafaucet.com/elvis/Video/PRODUCT_57140-25-L.mp4.

others have praised Delta's Allentown kitchen faucet and Pendant Raincan showerhead.

1. Long-Felt But Unsolved Need

Mizuno was published 14 years before the '363 patent's provisional application. Tse was published almost a decade before the '363 patent. But the particular claimed combination was not in the prior art. The length of the intervening time between the prior art and the claimed invention supports nonobviousness. *Leo Pharm. Prods.*, 726 F.3d at 1359. Ex. 2003, ¶¶174-176.

2. Praise by others

Delta's products have received high ratings and excellent reviews from customers. For example, major retailers—e.g., Home Depot, Amazon—collectively show hundreds of reviews in which customers identified and praised Delta's products embodying the specific claimed features. *See, e.g.*, Ex. 2015. For example, one customer stated, "Delta has outdone itself with this faucet." Ex. 2015, 5. Others had similarly positive reactions: "[t]he color coded temp LED light makes it safer to have my young boys help with the dishes"; "[t]his faucet changed the game for us...it also shows how hot/cold your water is with the LED light [sic, light], never get burnt again!"; "TempSense indicator is hydro powered, so no batteries needed." Ex. 2015, 2-4. Ex. 2003, 177.

The long-felt but unsolved need and praise by others show that the '363 patent was nonobvious.

VIII. CONCLUSION

Petitioner fails to meet its burden to demonstrate that the challenged claims are unpatentable. Delta respectfully requests that the Board confirm the patentability of the challenged claims.

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Respectfully submitted,

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PATENT OWNER'S TABLE OF EXHIBITS

Exhibit	Description
2001	Delvie's Plastics, "What's The Difference Between Transparent & Translucent?" available at https://www.delviesplastics.com/blog/transparent-vs-translucent.html . (last accessed July 6, 2024)
2002	United States Plastic Corp., "Definitions of opaque, translucent, and transparent." available at https://www.usplastic.com/knowledgebase/article.aspx?contentkey=824 . (last accessed July 11, 2024)
2003	Declaration of Dr. Richard Klopp
2004	CV of Dr. Richard Klopp
2005	Deposition Transcript for Mr. J. Chris Cook
2006	Reserved
2007	Merriam-Webster's Collegiate Dictionary, 11th Ed. (2003), pp. 1258-1259
2008	Declaration of Anna Mizzi in Support of Motion for Admission Pro Hac Vice
2009	U.S. Patent No. 7,467,874
2010	University Physics, Part II, Addison-Wesley Publishing, 5th ed. (1977)
2011	Reserved
2012	Delta, Allentown Single Handle Pull-Down Kitchen Faucet, available at https://www.deltafaucet.com/kitchen/product/19935L-SPSD-DST.html (last accessed Jan. 17, 2025)
2013	Delta, H2Okinetic Pendant Raincan Shower Head, available at https://www.deltafaucet.com/bathroom/product/57140-BL25-L.html (last accessed Jan. 17, 2025)
2014	Reserved
2015	Home Depot, Allentown Single Handle Pull-Down Kitchen Faucet, available at https://www.homedepot.com/p/Delta-Allentown-Single-Handle-Pull-Down-Sprayer-Kitchen-Faucet-with-TempSense-Indicator-and-Soap-in-SpotShield-Stainless-19935L-SPSD-DST/303230771#overlay (last accessed Jan. 17, 2025)
2016	Reserved
2017	Merriam-Webster's Collegiate Dictionary, 11th Ed. (2003), p. 720
2018	Tejido, Conception and Design of Illumination Light Pipes, 2000

CERTIFICATE OF SERVICE

I hereby certify that, on January 17, 2025, I caused a true and correct copy of:

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CERTIFICATE OF WORD COUNT UNDER 37 C.F.R. § 42.24(d)

I hereby certify that the foregoing Patent Owner's Response contains 13971 words, including text-based images, as measured by the word-processing software used to prepare the document, in compliance with 37 C.F.R. § 42.24(d).

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