

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FLUIDMASTER, INC.,
Petitioner,

v.

DANCO, INC.,
Patent Owner.

IPR2024-00635
Patent 10,934,698 B1

Before MEREDITH C. PETRAVICK, JAMES A. TARTAL, and
ROBERT J. SILVERMAN, *Administrative Patent Judges*.

SILVERMAN, *Administrative Patent Judge*.

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

Petitioner Fluidmaster, Inc. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–14 of US 10,934,698 B1 (Ex. 1001, “the ’698 patent”). Paper 1 (“Pet.”). Petitioner states that it is the sole real party in interest. *Id.* at 1.

Danco, Inc. (“Patent Owner”), the owner of the ’698 patent, filed a Preliminary Response. Paper 13 (“Prelim. Resp.”). In addition to itself, Patent Owner identifies Hardware Holding, Inc., PPG, Inc., and NCH Corporation as real parties-in-interest. Paper 4, 1.

With our prior authorization (Paper 16), Petitioner filed a Reply (Paper 17, “Reply”) and Patent Owner filed a Sur-reply (Paper 19, “Sur-reply”).

After considering the Petition, the Preliminary Response, the Reply, the Sur-reply, and the evidence of record, we determine the information presented shows a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of at least one of the challenged claims of the ’698 patent, thus satisfying the standard for institution set forth in 35 U.S.C. § 314(a). Accordingly, we institute an *inter partes* review of claims 1–14 of the ’698 patent on the sole ground asserted in the Petition.

I. BACKGROUND

A. Related Matters

The ’698 patent is a subject of a district court action, *Danco, Inc. v. Fluidmaster, Inc. et al*, Civil Action No. 8:23-cv-01156-AB-DFM in the Central District of California (“the related litigation”). Pet. 2–3; Paper 7.¹

¹ The parties are reminded to update the Board regarding any material events occurring in the related litigation. See 37 C.F.R. § 42.8(a)(3).

The parties also identify the following related *inter partes* reviews:
IPR2024-00633 and IPR2024-00634. Paper 4, 1; Paper 7.

B. The '698 Patent

The '698 patent, which is titled "Toilet Valve," issued on March 2, 2021, from U.S. Application No. 16/686,328 (filed November 18, 2019). Ex. 1001, codes (21), (22), (45), (54). On its face, the application of the '698 patent states that it claims priority to several related earlier-filed applications. *Id.* at code (63), 1:6–24.

The '698 patent states:

A toilet fill valve in a toilet typically includes a water outlet that provides water for refilling a toilet bowl during a flush cycle. Unfortunately, the water flowing out of such conventional water outlets to fill a toilet bowl provide much more water than is necessary to fill the average toilet bowl. Consequently, much of the water that flows into a toilet bowl during the average flush cycle is lost down the drain. This translates into a loss of millions of gallons of water each year.

Ex. 1001, 1:28–36.

Figure 1 of the '698 patent is reproduced below.

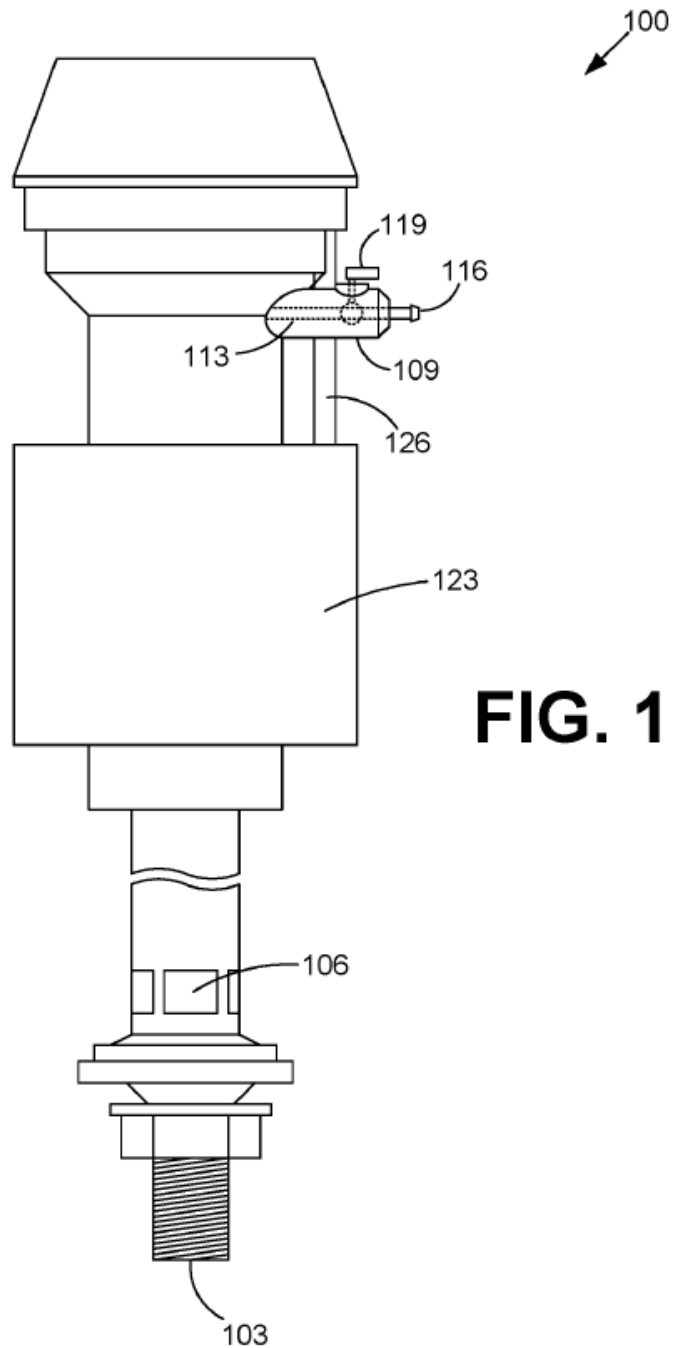


Figure 1 of the '698 patent depicts a perspective side view of an embodiment of a toilet fill valve, identified with reference number 100. Ex. 1001, 1:46–47.

The '698 patent states:

The toilet fill valve 100 includes a water inlet 103 at the bottom of the toilet fill valve 100 that is configured to be coupled to a water source outside of a toilet tank within which the toilet fill valve 100 is installed. The toilet fill valve 100 includes one or more water outlets 106 that are configured to supply water into a toilet tank within which the toilet fill valve 100 is installed. . . . The toilet fill valve 100 also includes a bowl fill valve 109 according to an embodiment of the present invention. The bowl fill valve 109 includes a bowl fill valve inlet 113 and a bowl fill valve outlet 116. In addition, the bowl fill valve 109 includes a handle 119 that facilitates a manual adjustment of the bowl fill valve 109.

Id. at 2:9–24. Additionally,

the bowl fill valve inlet 113 is operatively coupled to the water inlet 103. In this respect, when the toilet fill valve 100 is open and water flows from the water inlet 103 to the water outlets 106 and into a toilet tank, an amount of water is also supplied to the bowl fill valve inlet 113 that flows through the bowl fill valve 109 and out the bowl fill valve outlet 116. By virtue of the manual setting of the handle 119 of the bowl fill valve 109, the flow of water through the bowl fill valve 109 is regulated. In this manner, the flow of water is regulated so that enough water flows out of the bowl fill valve 109 to fill a toilet bowl without wasting any water down a drain.

Id. at 2:35–46.

The '698 patent states that the disclosed embodiments provide additional beneficial features. For example, “[b]y virtue of the fact that the bowl fill valve 109 is integrated within the toilet fill valve 100, a pressure head is prevented from being created due to any potential pinching of the tube 146 or other similar adjustment mechanism.” Ex. 1001, 4:63–67.

C. The Challenged Claims

Petitioner alleges that all claims of the '698 patent (claims 1–14) are unpatentable. Pet. 7. Of these challenged claims, claims 1, 8, 10, and 12 are independent claims. *See* Ex. 1001, 10:16–38, 10:65–11:13, 11:17–12:6, 12:9–21.

Claim 1, reproduced below, including Petitioner's added sub-numbering (*see, e.g.*, Pet. vii), illustrates the subject matter at issue:

1[Pre] A toilet system, comprising:

1[A1] a toilet fill valve that comprises:

a body comprising an extended portion that forms a bowl fill outlet port;

1[A2] a water inlet configured to couple to a water source; and

1[A3] a tank water outlet configured to output water to a toilet tank;

1[B1] a bowl fill valve configured to attach directly to the body of the toilet fill valve, the bowl fill valve comprising:

1[B2] a bowl fill valve inlet port configured to mate directly to the bowl fill outlet port of the body of the toilet fill valve;

1[B3] a bowl fill valve outlet port;

1[B4] a protrusion configured to insert into a recess of the toilet fill valve and retain the bowl fill valve to the toilet fill valve, the protrusion being configured to snap fit into the recess;

1[B5] a water flow adjustment handle; and

1[B6] a slot configured to receive an extension of the toilet fill valve and prevent rotation of the bowl fill valve relative to the toilet fill valve; and

1[C] a tube configured to attach directly to the bowl fill valve outlet port of the bowl fill valve.

Ex. 1001, 10:15–39.

D. The Asserted Ground

Petitioner contends that claims 1–14 of the ’698 patent are unpatentable based on the following ground (Pet. 7):

Claims Challenged	35 U.S.C. §	Basis
1–14	103	Guoxin, ² Ho, ³ “Quick Connection Art”

The Petition’s expression “Quick Connection Art” refers to three further prior art references: Calmettes,⁴ Hall,⁵ and Kimber.⁶ *See* Pet. 6.

In addition to the foregoing identified prior art references, Petitioner relies upon the Declaration of Kimberly Cameron (Ex. 1004). *See* Pet. 6.

II. ANALYSIS

A. Discretionary Denial

“The decision whether to institute inter partes review is committed to the Director’s discretion.” *Oil States Energy Servs. LLC v. Greene’s Energy Grp., LLC*, 138 S. Ct. 1365, 1371 (2018).

Patent Owner argues that the Board should exercise its delegated discretion to deny the Petition, under two bases. First, Patent Owner argues

² Registered Utility Model Publication Number CN2447417Y, published Sept. 12, 2001 (Ex. 1015). A certified English language translation is Exhibit 1016.

³ U.S. Patent No. 5,862,538, issued June 26, 1999 (Ex. 1022).

⁴ U.S. Patent No. 5,249,830, issued Oct. 5, 1993 (Ex. 1018).

⁵ U.S. Patent No. 989,251, issued Apr. 11, 1911 (Ex. 1019).

⁶ Canadian Patent No. 1,320,235, published July 13, 1993 (Ex. 1020).

that the Petition is ambiguous and lacks the particularity required in the presentation of evidence and argument. *See* Prelim. Resp. 19–25. Second, Patent Owner argues that the Petition violates 35 U.S.C. § 325(d), by relying on the same (or substantially the same) evidence already considered by the Office, during the examination of applications that led to the issuance of the '698 patent. *See id.* at 25–29.

1. Alleged Ambiguity and Lack of Particularity

Patent Owner argues:

The Board should deny institution under 35 U.S.C. § 314(a) because the Petition is ambiguous, fails to identify evidence with particularity, and fails to account for how each claim is unpatentable as required under 35 U.S.C. § 312(a)(3) and 37 C.F.R. § 42.104(b). The Petition is deficient on its face under 37 C.F.R. § 42.104(b)(4) and § 42.104(b)(5).

Prelim. Resp. 19–20 (footnotes omitted).

For example, Patent Owner argues that annotations and labels are missing from prior art figures reproduced in the Petition and that these annotations and labels are necessary for Petitioner to meet its burden. Prelim. Resp. 20–23; *see also* Sur-reply 1–3. In addition, Patent Owner disputes the propriety of referring to any of multiple references, under the shorthand of Quick Connection Art. *See* Prelim. Resp. 23.

Petitioner responds that “[t]he Petition as a whole and the discussion of the references within it are complete and unambiguous standing alone.” Reply 2. Petitioner notes that the Declaration of Dr. Cameron contains the same images with the missing annotations and that most images in the Petition are followed by direct citations to the portions of Dr. Cameron’s testimony containing the same image. *See id.* at 2–5.

Patent Owner's argument is unpersuasive. We have considered the information presented in the Petition and the cited testimony of Dr. Cameron. As can be seen from our discussion of Petitioner's challenge, herein, we determine that the information in the Petition is sufficiently amenable to understanding and analysis. Thus, contrary to Patent Owner contention, the Petition is not "deficient on its face." Prelim. Resp. 20.

2. Alleged Reliance on Positions Presented Previously to the Office

Patent Owner argues that "[t]he Board should deny institution under 35 U.S.C. § 325(d) . . . , because the Petition is based on patents or publications that are either the same or substantially the same as those previously presented to the Office." Prelim. Resp. 25.

In determining whether to deny institution under § 325(d) we undertake the following two inquiries:

- (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of [the] first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential) (footnote omitted). The *Becton, Dickinson* factors provide useful insight into how to apply the framework under 35 U.S.C. § 325(d). *Id.* at 9 (referencing *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first paragraph)).

In evaluating § 325(d), in regard to Patent Owner's assertions, we consider, at the outset, "whether the same or substantially the same art

previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office,” based upon *Becton, Dickinson* factors (a), (b), and (d). *Advanced Bionics*, Paper 6 at 8, 10. Those factors are:

- (a) the similarities and material differences between the asserted art and the prior art involved during examination;
- (b) the cumulative nature of the asserted art and the prior art evaluated during examination; [and]
- (d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art.

Becton, Dickinson, Paper 8 at 17–18. The above-referenced previously presented art includes art made of record by the Examiner, as well as art provided to the Office by an applicant, such as on an Information Disclosure Statement (“IDS”), in the prosecution history of the challenged patent. *Advanced Bionics*, Paper 6 at 7–8.

Patent Owner contends that “the Petition highly relies on at least one reference that was previously considered and cited by the Office during prosecution — namely, Bjerke.” Prelim. Resp. 26 (citing Ex.1002, 63–67). We disagree with Patent Owner that the Petition *highly* relies upon Bjerke.⁷ The Petition does not identify Bjerke as part of the “Quick Connection Art” set forth in the sole ground; although, Petitioner cites Bjerke as further evidence (in addition to the other references cited and the Cameron Declaration) that one of ordinary skill in the art would have known that male and female connectors are interchangeable. Pet. 24–25, 37–40. The

⁷ U.S. Patent No. 5,926,868, issued July 27, 1999 (Ex. 1017).

Petition's sole ground, however, does not rely upon Bjerke alone and primarily relies upon a combination of Guoxin, Ho, Calmettes, Hall, and Kimber. *See id.* at 26–45.

With respect to the other references of the asserted ground, Patent Owner does not contend that any of Guoxin, Ho, Calmettes, Hall, and Kimber was previously presented to, or considered by, the Office. *See* Prelim. Resp. 27–29.

Patent Owner argues that “Guoxin, Ho, and the Quick Connection Art are the same or substantially the same as DeMarco⁸ and Bjerke,” two references that were previously presented to the Office and relied upon to reject the claims. Prelim. Resp. 27. Patent Owner argues: “Guoxin and Ho, like DeMarco, do not show or suggest the above-mentioned protrusion, recess, and snap fit, and is [sic] not a more material reference than DeMarco, despite allegations of so by Petitioner.” *Id.* (citing Pet. 21). Further, Patent Owner argues that “Guoxin, Ho, and Bjerke do not teach [claim 1’s] ‘a slot configured to receive an extension of the toilet fill valve and prevent rotation of the bowl fill valve relative to the toilet fill valve.’” *Id.* (citing Ex. 1001, 10:34-36). “Thus,” Patent Owner continues, “the Petition relies on the amalgamation of the Quick Connection Art to selectively piece together various components of the claims relying on impermissible hindsight and without advancing sufficient motivation to combine these six references.” *Id.* at 27–28. “To be clear,” Patent Owner argues,

the use of Bjerke as a secondary reference was overcome by Patent Owner during prosecution through amendment and argument. Petitioner, however, again attempts to utilize Bjerke

⁸ U.S. Patent No. 5,708,991, issued Jan. 20, 1998 (Ex. 1024).

to indicate that Claims 1–14 are invalid in a manner nearly identical to the Office, despite Patent Owner overcoming Bjerke and other references cited by the Office. As such, the proposed combination of references advanced by Petitioner merely substitutes the primary reference cited during prosecution, DeMarco, with a different primary reference, Guoxin, and reutilizes Bjerke, despite Bjerke being overcome by Patent Owner during prosecution. To this end, Petitioner is pleading the Board to reexamine the claims using nearly the same art cited during prosecution.

Id. at 28.

Patent Owner’s arguments are unpersuasive. As can be seen from our patentability analysis below, on this record, we disagree with Patent Owner that the combination of these references does not teach the claimed protrusion, recess, and snap-fit. Further, Patent Owner’s argument that Guoxin and Ho lack certain features that are also alleged to be absent from DeMarco (*see* Prelim Resp. 27) does not indicate that either Guoxin or Ho would necessarily be similar to DeMarco. Indeed, Patent Owner does not sufficiently compare the disclosure, of any of the prior art references relied upon in the Petition, to the disclosure of DeMarco (or any prior art reference provided to the Office), in conjunction with the examination of the ’698 patent’s application. Consequently, we are not persuaded that Guoxin, Ho — or any of the Quick Connection Art — is cumulative of DeMarco.

We determine that the combination of references asserted in the Petition is not the same or substantially the same as that previously presented to the Office. Accordingly, we determine that discretionary denial is not warranted. Because we determine that part one of the *Advanced Bionics* framework is not satisfied, we need not turn to part two to determine

whether Petitioner demonstrates that the Office erred in a manner material to the patentability of the challenged claims.

For the reasons discussed above, we decline to exercise our discretion under § 325(d) to deny the Petition.

B. Evaluating the Petition

We have authority to determine whether to institute an *inter partes* review. *See* 35 U.S.C. § 314; 37 C.F.R. § 42.4(a). Under 35 U.S.C. § 314(a), we may not authorize an *inter partes* review unless the information in the Petition and the Preliminary Response (including any authorized submissions) “shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

For the reasons that follow, and solely for the purposes of this Decision, we determine that Petitioner’s asserted ground satisfies the standard for institution.

1. Legal Standards

“In an IPR, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d, 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)); *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review). Although this Decision might appear to indicate that certain Patent

Owner arguments would not be persuasive, we do not shift the ultimate burden away from Petitioner.

The asserted ground of unpatentability is based upon obviousness under 35 U.S.C. § 103. *See* Pet. 7.

A claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art;⁹ and (4) when in evidence, objective evidence of obviousness or non-obviousness (i.e., so-called secondary considerations).¹⁰ *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We also recognize that prior art references must be “considered together with the knowledge of one of ordinary skill in the pertinent art.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (citing *In re Samour*, 571 F.2d 559, 562 (CCPA 1978)).

The Supreme Court has explained that an obviousness determination may consider, the teachings of multiple prior art references, the knowledge and capabilities of persons having ordinary skill in the art (at the relevant

⁹ *See infra* Section II(B)(2).

¹⁰ The present record does not include any evidence of any proposed objective evidence of non-obviousness.

time), as well as “the effects of demands known to the design community or present in the marketplace,” “in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” (alteration in original))). As the Federal Circuit has stated, “[w]ithout any explanation as to how or why the references would be combined to arrive at the claimed invention, we are left with only hindsight bias that *KSR* warns against” and “we cannot allow hindsight bias to be the thread that stitches together prior art patches into something that is the claimed invention.” *Metalcraft of Mayville, Inc., v. The Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017). “Whether an ordinarily skilled artisan would have been motivated to modify the teachings of a reference is a question of fact.” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1327 (Fed. Cir. 2016) (citations omitted).

Further, the Federal Circuit has explained that, “where a party argues a skilled artisan would have been motivated to combine references, it must show the artisan ‘would have had a reasonable expectation of success from doing so.’” *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1360–61 (Fed. Cir. 2017) (quoting *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Pat. Litig.*, 676 F.3d 1063, 1068–69 (Fed. Cir. 2012)). “Evidence of a reasonable expectation of success, just like evidence of a motivation to combine, may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or,

in some cases, from the nature of the problem to be solved.” *Elekta Ltd. v. ZAP Surgical Sys., Inc.*, 81 F.4th 1368, 1377 (Fed. Cir. 2023) (citations and internal quotation marks omitted).

2. *Level of Ordinary Skill in the Art*

The Declaration of Dr. Cameron, provided with the Petition, characterizes the level of ordinary skill in the art, as follows:

28. A person of ordinary skill in the art (“POSITA”) with respect to the subject matter of the ’698 patent at the time of the priority date, March 11, 2004, would have had an undergraduate degree in mechanical engineering, or other technical training in product design or equivalent work experience. This person would also possess at least one year of experience in developing and/or evaluating mechanical aspects of fluid systems. I consider myself a person of ordinary skill in the art under this definition.

Ex. 1004 ¶ 28.

Patent Owner argues:

A PHOSITA in the field to which the ’698 Patent is directed would have had at least a Bachelor of Science degree in mechanical engineering or a related field or, as a substitute, at least two years of work or research experience in the design or development of toilet products, parts, and accessories.

Prelim. Resp. 14.

In view of the present record, we see no material difference between the level of skill proposed by Patent Owner and that proposed by Dr. Cameron. Accordingly, for purposes of this Decision, we adopt Patent Owner’s proposed definition of a POSITA, as it appears to be consistent with the ’698 patent and the asserted prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

3. *Claim Construction*

Petitioner contends:

The Challenged Claims should be construed in accordance with their plain and ordinary meaning, as would be understood by a person of ordinary skill in the art (“POSITA”) upon review of the ’698 patent and its prosecution history. Here, there is one term that requires construction: “*means for adjusting water flow*.”

Pet. 7. The “means for adjusting water flow” limitation appears only in independent claim 12 and claim 13 depending therefrom. Ex. 1001, 12:20–24.

Patent Owner “agrees with Petitioner that the term ‘means for adjusting water flow’ recited in Claim 12 is a means-plus-function limitation under 35 U.S.C. § 112” and “[f]or purposes of this petition, ‘means for adjusting water flow’ should cover an adjustment handle and equivalents thereof (structure) for adjusting or regulating water flow (function).”

Prelim. Resp. 14–15. For the purposes of this Decision, we apply Patent Owner’s construction of this limitation.

We do not need to construe explicitly any other claim terms to reach our decision on whether to institute *inter partes* review. *See Realtime Data LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

4. The Prior Art Relied Upon

a. Guoxin

Guoxin is a Chinese Utility Model Patent Specification titled “Toilet Water Tank Water Supply Switching Device.” Ex. 1016, code [54].

Guoxin’s Figures 3–5 are reproduced below.

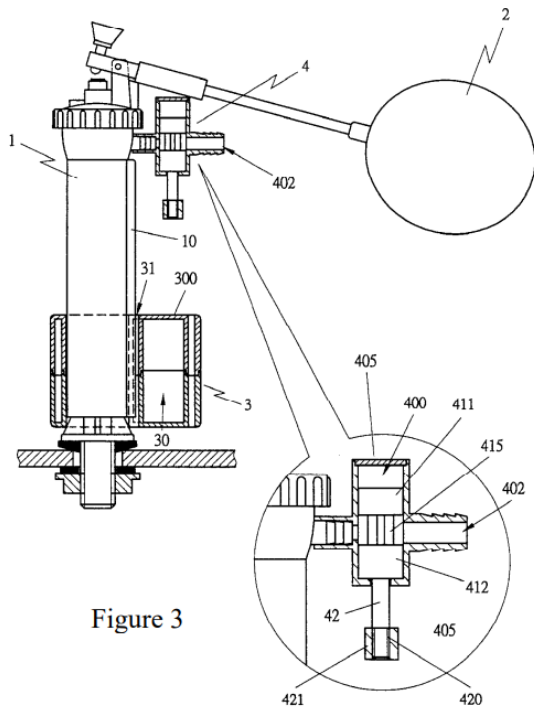


Figure 3

Figure 4

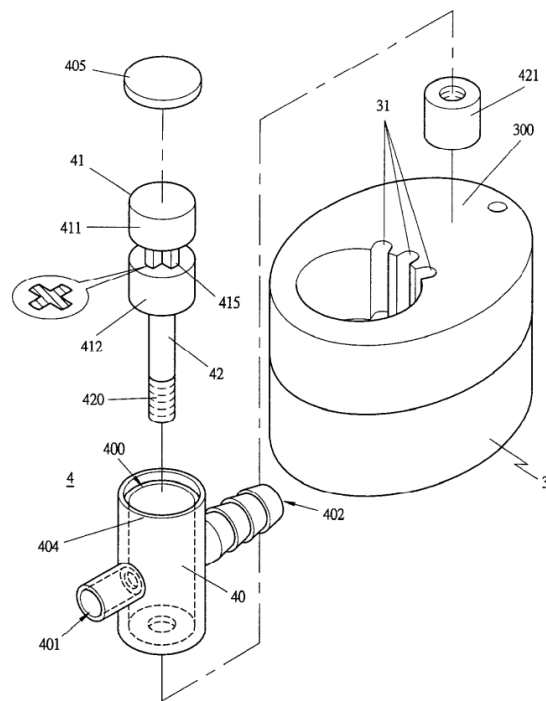


Figure 5

Figure 3 shows an embodiment of the disclosed device, Figure 4 is an enlarged view of Figure 3, and Figure 5 is an exploded view of the same embodiment. Ex. 1016, 5:7–8. Figures 3–5 depict switching mechanism 4, which Guoxin describes as follows:

The switching mechanism 4 is equipped with a valve seat 40. This valve seat 40 has a slot 400 to accommodate a switching valve 41. The valve seat 40 has water inlet and outlet 401 and 402, where the water outlet 402 can be connected to the water supply pipeline 403, and the water supply line 403 is

directed to the toilet to directly provide water supply to the toilet. . . .

The switching valve 41 is equipped with upper and lower annular surrounds 411 and 412, and between these two annular surrounds 411 and 412, there is a smaller annular surround 415, which the smaller annular surround 415 can be cross-shaped or another shape. This facilitates a state as shown in Figures 3 and 4, where the water inlet and outlet can be aligned in a straight line, allowing water to flow into the toilet. However, when the water in the toilet water tank gradually reaches a set level of height (as shown in Figure 2), the lower annular surround 412 will block between the water inlet and outlet 401 and 402, thus discontinuing the water supply to the toilet through this switching mechanism. Furthermore, the valve stem 42 is equipped with external threads 420, which are combined with a T-shaped nut 421. This T-shaped nut has an appropriate weight, such that when the water level in the water tank decreases, the weight of the nut will automatically lower the switching valve. By simply turning the T-shaped nut, the length of the valve stem can be altered, thus changing the position at which the switching valve's stem is driven by the secondary ball float.

Id. at 5:7–15.

c. Calmettes

Calmettes is a U.S. Patent entitled “Device for Locking Two Coaxial Tubes,” which discloses coupling devices for connecting the ends of coaxial tubes, such as those found in motor vehicle cooling circuits or other industrial applications. Ex. 1018, code [54], 1:4–10. A disclosed embodiment includes a locking mechanism having an outer tube with a longitudinal groove and an inner tube with radially projecting guides. *Id.* at 2:10–24, 3:30–63, Figs. 1a–4. A flexible locking tab, attached to the outer tube and positioned adjacent to a groove, contains apertures to receive the bosses. *Id.* at 3:59–4:21.

d. Hall

Hall is a U.S. Patent titled “Hose Coupling,” which relates to hose-coupling techniques that enable connection of adjacent hose sections, without using coupling threads. Ex. 1019, 1:8–14. A disclosed embodiment includes one section having bayonet slots and the other section having corresponding lugs that fit into the bayonet slots. *Id.* at 1:66–85. A feature of this coupling is a spring-biased sleeve or collar that slides over one of the hose sections and is equipped with locking plates that close the entrance to the bayonet slots once the lugs are inserted, thereby locking the hose sections together. *Id.* at 1:100–2:7. The embodiment also includes a gasket to prevent leakage at the junction of the hose sections. *Id.* at 1:86–99.

e. Kimber

Kimber is a Canadian patent document titled “Quick Connect Pipe Coupling,” which discloses coupling techniques for creating a sealed connection between two conduits, such as hoses and radiators in

automobiles. Ex. 1020, code [54], 1. The coupling technique employs a tubular male fitting with an external conical portion and a tubular female fitting that snugly fits over the male fitting, featuring a complementary internal conical portion. *Id.* at 2. An embodiment includes axially oriented guide means (in the form of keying members on one fitting and guide slots on the other fitting) for proper angular alignment and relative axial movement of the fittings, as well as locking means (in the form of detent projections, on one fitting, that are received within apertures, on the other fitting) that secure the fittings axially upon assembly. *Id.* at 3, 6–7.

5. Analysis of the Asserted Ground of Unpatentability

The sole ground in the Petition states that claims 1–14 of the ’698 patent are unpatentable, because they are obvious over “Guoxin in view of Ho, further in view of Quick Connection Art.” Pet. 7. The Petition articulates the basis for this ground, with support from Dr. Cameron’s Declaration (Ex. 1004), as to all the limitations of claims 1–14. *Id.* at 21–59.

a. Claim 1

As to claim 1 of the ’698 patent, using Petitioner’s identification scheme (*see* Pet. vii), the Petition states: each of Guoxin and Ho satisfies limitations 1[Pre], 1[A1], 1[A2], 1[A3], 1[B1], 1[B2], 1[B3], and 1[C] (*id.* at 30–36, 44); only Guoxin satisfies limitation 1[B5] (*id.* at 42); and only the combination of Guoxin with the Quick Connection Art (i.e., without relying on Ho) satisfies limitations 1[B4] and 1[B6] (*id.* at 36–42, 43–44). Therefore, notwithstanding Petitioner’s allegation that Ho satisfies certain limitations of claim 1, Petitioner also maintains that the combination of

Guoxin with the Quick Connection Art (without Ho) satisfies all the limitations of claim 1.

Patent Owner disputes that the identified references satisfy claim limitations 1[B4] (*see* Prelim. Resp. 33–41) and 1[B6] (*see id.* at 41–48).

Further, Patent Owner argues that the Petition’s reasons for combining prior art teachings relies upon impermissible hindsight. Prelim. Resp. 48–50. This portion of the Preliminary Response does not explicitly identify any claim limitation that would be subject to such defect; however, in the only citation to the Petition appearing in the related discussion, the Preliminary Response identifies a quotation appearing in the Petition’s discussion of limitation 1[B4]:

Petitioner selectively cites, in an ad hoc manner, to various references unrelated to toilets, toilet flush valves, toilet fill valves, and the like, in an effort to piece together various components of the toilet fill valves claimed in the ’698 Patent. The only purported rationale to modify the protrusion, recess, and snap connection, as claimed in the ’698 Patent, is a single conclusory sentence advanced by Petitioner: “swapping the mating surfaces such that a protrusion is located on the bowl fill valve and inserts into a recess in the toilet fill valve would have been obvious to a POSITA as a matter of design preference.” [Pet.] 37.

Prelim. Resp. 48–49.

We address Patent Owner’s respective arguments, below — including the Preliminary Response’s “hindsight” argument as part of the discussion of limitation 1[B4].

i. Limitation 1[B4]

Limitation 1[B4] recites:

a protrusion configured to insert into a recess of the toilet fill valve and retain the bowl fill valve to the toilet fill valve, the protrusion being configured to snap fit into the recess.

Ex. 1001, 10:29–32.

As noted, above, the Petition relies upon the combination of Guoxin with the Quick Connection Art to satisfy limitation 1[B4]. *See* Pet. 36–42.

The Preliminary Response states: “The Petition concedes that Guoxin does not disclose the coupling arrangement of the ’698 Patent.” Prelim. Resp. 33 (citing Pet. 21). This assertion mischaracterizes the Petition. To the contrary, on the cited page, the Petition indicates that Guoxin teaches the recited feature — *except for* the disposition of which one (of the two elements being joined) contains the “protrusion” and which one contains the “recess”:

Guoxin discloses a coupling arrangement between the bowl fill valve and the toilet fill valve where the toilet fill valve has an extension that forms the bowl fill outlet port (male connector), which is inserted into a recess in the bowl fill valve (female connector) This is the reverse of the mating arrangements depicted in the ’698 patent, *but as explained below, is the same arrangement claimed in the patent.*

Pet. 21 (emphasis added).

Thereafter, the Preliminary Response argues that Ho fails to teach the claim limitation at issue — whether considered alone or in combination with Guoxin. Prelim. Resp. 34–36. Yet, as noted above, the Petition does *not* rely upon Ho, in the analysis of limitation 1[B4]. *See* Pet. 36–42.

Patent Owner does not dispute that the cited Quick Connection Art teaches the switched version Guoxin's coupling — wherein the male ("protrusion," per limitation 1[B4]) and female ("recess") elements are rearranged. The remaining disputed issue, in the Preliminary Response's discussion of limitation 1[B4], is whether there is a sufficient basis for Petitioner's argument that "swapping the mating surfaces" of Guoxin's coupling, "such that a protrusion is located on the bowl fill valve and inserts into a recess in the toilet fill valve would have been obvious to a POSITA" — e.g., "as a matter of design preference." Pet. 37.

Whether a person of ordinary skill in the art would have had a reason to modify Guoxin (or to combine it with any of the Quick Connection Art teaching the recited version of a coupling) is "a question of fact." *WBIP*, 829 F.3d at 1327. Petitioner's argument is supported by the unrebutted testimony of Dr. Cameron. *See* Pet. 36–42 (citing Ex. 1004 ¶¶ 128–135); *see also* Pet. 39–40 (citing Ex. 1017, 7:15–24, Fig. 4 (Bjerke teaching that male and female connectors can easily be interchanged)). At the present stage of this proceeding, Patent Owner's contrary view (*see* Prelim. Resp. 35–41, 48–50) relies upon attorney argument, which does not persuade us, in this instance, that there is not at least a reasonable likelihood that Petitioner would prevail at trial.

ii. Limitation 1[B6]

Limitation 1[B6] recites:

a slot configured to receive an extension of the toilet fill valve
and prevent rotation of the bowl fill valve relative to the
toilet fill valve

Ex. 1001, 10:34–36.

The Preliminary Response states that “the Petition is void of any explanation to which of the several references merged into the Quick Connection Art show the particular connections as claimed” in limitation 1[B6] and, instead, makes “a non-permissible, vague assertion” that “does not set forth a prima facie case” of unpatentability. Prelim. Resp. 42.

The Preliminary Response then addresses alleged shortcomings of the Hall reference, regarding the in limitation 1[B6]. Prelim. Resp. 43–45.

Further, the Preliminary Response asserts deficiencies in the Kimber reference, stating that “Kimber does not . . . disclose a bowl fill valve with a slot configured to receive an extension of the toilet fill valve and prevent rotation of the bowl fill valve relative to the toilet fill valve.” Prelim. Resp. 46. In addition, the Preliminary Response states that “Petitioner does not provide any explanation or detail how to modify the connections of Guoxin or Ho using the devices of Kimber” and “the Petition is devoid of any explanation regarding why further modification of Guoxin and Ho is necessary, assuming Guoxin and Ho are modified to include the coupling arrangement of Hall.” *Id.* at 46–47.

Patent Owner’s arguments do not persuade us of any deficiency in the Petition.

As to the alleged failure to identify teachings of particular prior art references (*see* Prelim. Resp. 42), the Petition relies upon the combination of Guoxin with the Calmettes and Kimber references (of the Quick Connection Art) to satisfy limitation 1[B6]. *See* Pet. 43–44. Although Patent Owner points to various deficiencies of the Hall reference (*see* Prelim. Resp. 43–45), the Petition does not rely upon Hall, with respect to limitation 1[B6]. *See* Pet. 43–44.

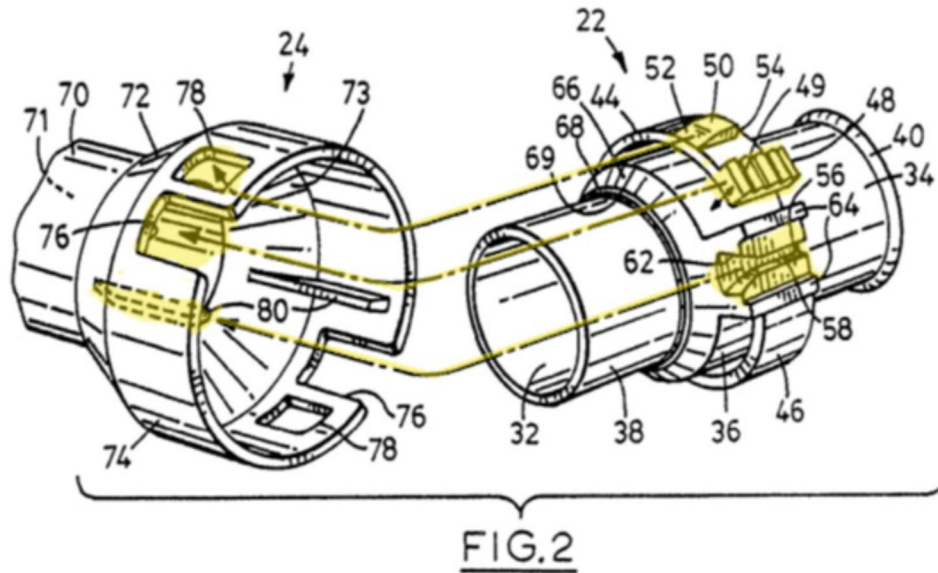
Consequently, Patent Owner does not address any argument actually presented in the Petition, by asserting that the Petition fails to explain why a person of ordinary skill in the art would have added any of Kimber's teachings to the combination of "Guoxin and Ho" that has been "modified to include the coupling arrangement of Hall." Prelim. Resp. 47.

The Petition relies upon Kimber's teachings, with respect to limitation 1[B6], and provides sufficient reasoning for doing so, based upon citations to Dr. Cameron's Declaration. *See* Pet. 43–44 (citing Ex. 1004 ¶¶ 139–140). The Petition states that "a POSITA would . . . be motivated to select a connection that prevented relative rotation of the bowl fill valve with respect to the toilet fill valve," in view of Calmettes, which explains that "the immobilization of two coaxial tubes may be sought after, both with regard to a relative rotation and to a translation, whenever it is desired to obtain an efficient mechanical connection between the two tubes." *Id.* at 43 (quoting Ex. 1018, 1:17–22 and further citing 1:58–64). The Petition turns to Kimber for the precise teaching of a technique for achieving such an efficient mechanical connection, stating as follows (and providing a supporting reference to Dr. Cameron's Declaration):

Kimber (EX1020) discloses a snap fit pipe coupling that comprises a male fitting and a tubular female fitting where the male fitting has *slots* configured to receive an *extension* of the toilet fill valve and *prevent rotation* of the bowl fill valve relative to the toilet fill valve. Annotated Figure 2 below illustrates the coupling arrangement between male fitting 22 and tubular female fitting 24 where tabs can snap into apertures and axial grooves 62 mate with ribs 80 to prevent axial movement and rotation.

Id. at 43–44 (*italics added*) (citing Ex. 1004 ¶ 140).

Petitioner's annotated version of Kimber's Figure 2, appearing on page 44 of the Petition, is reproduced below.



Petitioner's annotated version of Kimber's Figure 2 is a perspective view of male fitting 22 (having slots 58, 62 defined in an outer surface thereof) and female fitting 24 (having keying members 80 in the form of extensions from an inner surface thereof), wherein arrows show the manner of moving fittings 22 and 24 toward each other, such that keying members 80 would be received within slots 58, 62. *See* Ex. 1020 at 5, 8–9.

In view of the foregoing, the Petition adequately demonstrates the obviousness of limitation 1[B6], for the purpose of instituting trial.

b. Remaining Claims in the Ground

“When instituting post-grant review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.” 37 C.F.R. § 42.208(a). We must “either (1) institute as to all claims challenged in the petition and on all grounds in the petition, or (2) institute on no claims and deny institution.”

Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 2019),¹¹ 5–6, 64; *see also* 37 C.F.R. § 42.108(a), *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1359–60 (Fed. Cir. 2018) (stating a decision to institute is “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

Because we have decided to institute trial with respect to claim 1 of the asserted ground, we must do the same for the remaining claims in the ground.

We note that for the remaining claims of the asserted ground, Petitioner has mapped the limitations of the challenged claims to the teachings of the prior art combinations and articulated reasons why one of ordinary skill in the art would have combined the references, supporting its contentions with citations to the Declaration of Dr. Cameron. *See* Pet. 45–59.

As to these remaining claims, we note that Patent Owner disputes whether the Petition adequately explains how limitation 8[B] (“a bowl fill valve outlet port configured to attach directly to a tube that provides water from the bowl fill valve outlet port to an overflow tube” (Ex. 1001, 11:1–3)) and limitation 12[B] (“a bowl fill valve outlet port configured to attach directly to a tube that provides water from the bowl fill valve outlet port to an overflow tube” (Ex. 1001, 12:12–14)) — of independent claims 8 and 12, respectively— would be met by the corresponding identified prior art

¹¹ Available at <https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf?MURL=TrialPracticeGuideConsolidated>

teachings. *See* Prelim. Resp. 30–33. The resolution of this issue would benefit from further development of the record during trial.

III. CONCLUSION

After considering the evidence and arguments presented in the current record, we determine that Petitioner has demonstrated a reasonable likelihood that it would prevail with respect to at least one claim. Therefore, we institute *inter partes* review as to the asserted ground and all claims challenged in the Petition. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1352–53, 1359–60 (2018), 37 C.F.R. § 42.108(a) (“When instituting . . . review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”)

Further, we decline to exercise our delegated discretion to deny institution under 35 U.S.C. § 325(d). In addition, the Petition does not violate the applicable standards of specificity and particularity. Thus, we institute *inter partes* review.

We clarify, however, that the analysis, herein, is based only on the record as it stands now and should not be understood as a final determination regarding claim construction or patentability. Further, no party should rely on any preliminary finding or determination in this Decision or assume that the evidence cited in this Decision for any preliminary finding or determination will result in a similar finding or determination in the Final Written Decision after a complete record is developed. We emphasize that no arguments from the Preliminary Response carry over to trial and any

arguments not presented by Patent Owner in a Response may be deemed to have been waived.

IV. ORDER

Accordingly, it is:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–14 of the '698 patent is hereby instituted on the asserted ground set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), notice is hereby given of the institution of trial, which will commence on the entry date of this Decision.

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