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Paper No. 10
Entered: December 28, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COOLIT SYSTEMS, INC.,
Petitioner,

v.

ASETEK DANMARK A/S,
Patent Owner.

IPR2021-01195
Patent 10,613,601 B2

Before MICHAEL P. TIERNEY, *Vice Chief Administrative Patent Judge*, KEVIN W. CHERRY, and JASON W. MELVIN, *Administrative Patent Judges*.

MELVIN, *Administrative Patent Judge*.

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

I. INTRODUCTION

CoolIT Systems, Inc. ("Petitioner") filed a Petition (Paper 1, "Pet.") requesting institution of *inter partes* review of claims 1–16 of U.S. Patent No. 10,613,601 B2 (Ex. 1001, "the '601 patent"). Asetek Danmark A/S ("Patent Owner") filed a Preliminary Response (Paper 6, "Prelim. Resp."). In the Preliminary Response, Patent Owner notes that it has disclaimed claims 2–5, 8–10, and 13–16. Prelim. Resp. 9; Ex. 2008. Thus, claims 1, 6, 7, 11, and 12 remain at issue (the "challenged claims"). We authorized Petitioner to file a Preliminary Reply (Paper 7, "Prelim. Reply") and Patent Owner to file a Preliminary Sur-reply (Paper 8, "Prelim. Sur-reply"). Pursuant to 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a), we have authority to determine whether to institute review.

An *inter partes* review may not be instituted unless "the information presented in the petition . . . and any response . . . 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." 35 U.S.C. § 314(a). For the reasons set forth below, we conclude that Petitioner has shown a reasonable likelihood it will prevail in establishing the unpatentability of at least one challenged claim, and we institute *inter partes* review.

A. REAL PARTIES IN INTEREST

The Petition identifies CoolIT Systems, Inc. as the real party-in-interest for Petitioner. Pet. 78. Patent Owner identifies Asetek Danmark A/S, Asetek USA, Inc., Asetek A/S, and Asetek Holdings, Inc. as the real parties-in-interest for Patent Owner. Paper 4, 1 (Patent Owner's Mandatory Notices).

B. Related Matters

The parties identify *Asetek Danmark A/S v. CoolIT Systems, Inc.*, Case No. 3:19-cv-00410-EMC (N.D. Cal.) (filed on January 23, 2019, currently pending); *Asetek Danmark A/S v. Corsair Gaming, Inc.*, Case No. 3:20-cv-06541-EMC (N.D. Cal.) (filed on September 17, 2021, currently pending); and *Asetek Danmark A/S v. Shenzhen Apaltek Co.*, Case No. 6:21-cv-00501 (W.D. Tex.) (filed on May 14, 2021, currently pending) as the related co-pending district-court litigations. Pet. 78; Paper 4, 1. Petitioner also identifies the following pending petitions for *inter partes* review involving patents that are related to the '601 patent: IPR2020-00522 (No. 10,078,355 B2, filed February 7, 2019); IPR2020-00523 (No. 10,078,354 B2, filed February 7, 2020); IPR2020-00524 (No. 9,933,681 B2, filed February 7, 2020); and IPR2021-01196 (No. 10,599,196, filed concurrently). Pet. 78.

C. The '601 Patent

The '601 patent is titled "Cooling System for a Computer System." Ex. 1001, code (54). It issued from an application filed May 29, 2018, as a continuation of application No. 15/626,393, which issued as Patent No. 10,078,354 ("the '354 patent") and claims priority to a PCT application filed November 8, 2004. *Id.*, code (60).

The '601 patent relates to a liquid-cooling system for a computer system. *Id.*, code (57). The specification explains, at the time of the invention, air cooling arrangements were the most-used cooling system for cooling central processing units (CPUs) in computer systems. *Id.* at 1:29–:36. An alternative design known at the time of the invention was to use a cooling liquid circulating inside a closed system by means of a pumping unit with a heat exchanger past which the cooling liquid circulates. *Id.* at 1:43–

:47. The specification contends that liquid cooling is generally more efficient and quieter than air cooling, but that a liquid cooling design consists of "many components," which increases the total installation time, size, and risk of leakage of the cooling liquid from the system. *Id.* at 1:48–:53. Thus, one object of the invention is to provide a small and compact liquid-cooling solution that is more efficient than existing air-cooling arrangements and is produced at low cost, enabling high production volumes. *Id.* at 1:61–:65. Another object of the invention is to create an arrangement which is easy-to-use and implement, used with existing CPU types and computer systems, and requires a low level of maintenance or no maintenance at all. *Id.* at 1:65–2:5.

An illustrative embodiment of such a device is depicted in Figures 7 and 8, reproduced below.

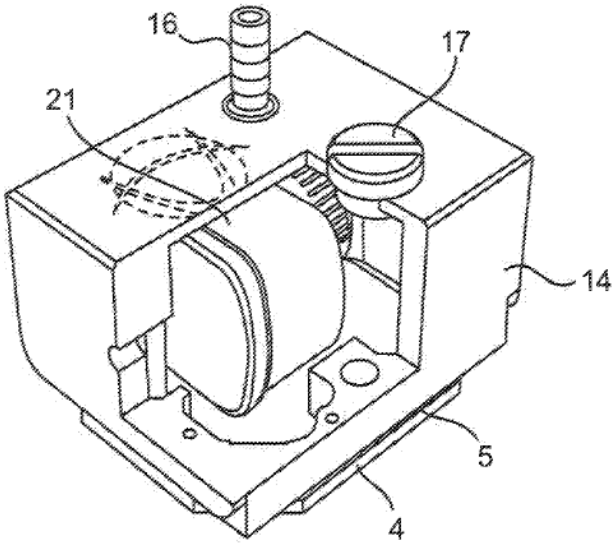


FIG. 7

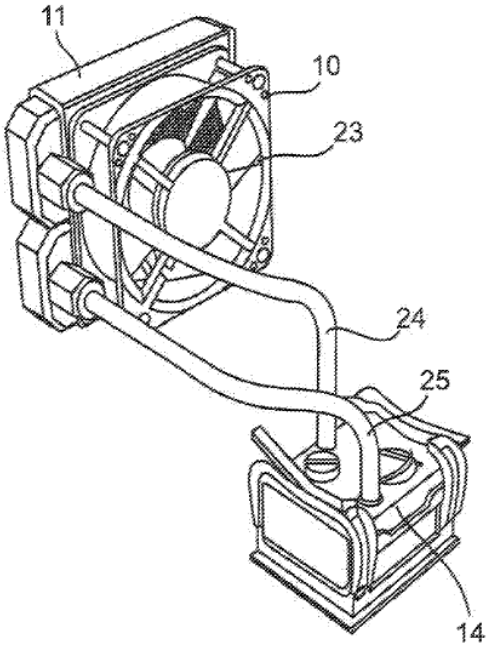


FIG. 8

Figure 7 is a cut-out view into the reservoir, when the reservoir and heat-exchanging surface 4 is assembled and pump 21 is situated inside the reservoir. *Id.* at 12:62–:64. Figure 8 is a perspective view of the cooling system showing reservoir 14 with the heat-exchanging surface (shown in Figure 7) and the pump (shown in Figure 7) inside the reservoir. *Id.* at 13:29–:32. The reservoir has a tube inlet connection (not shown in Figure 7), through which the cooling liquid enters the reservoir. *Id.* at 12:64–:66. From the tube inlet connection, the cooling liquid flows through the reservoir, passing heat-exchanging surface 4, and enters the inlet of the pump. *Id.* at 12:67–13:2. After the cooling liquid flows through the pump, the cooling liquid passes out of the outlet of the pump and further out through tube outlet connection 16. *Id.* at 13:2–:4. As shown in Figure 8, tube inlet connection (not shown in Figure 7) and tube outlet connection 16 are connected to heat radiator 11 by means of connecting tubes 24 and 25. *Id.* at 13:32–:35. Cooling liquid flows into and out of the reservoir and the heat radiator through connecting tubes 24 and 25, respectively. *Id.* Within heat radiator 11 (shown in Figure 8), the cooling liquid passes channels for radiating heat thereby cooling the cooling liquid before it passes back into the reservoir. *Id.* at 13:35–:43. The reservoir may be provided with channels or segments for establishing a certain flow-path for the cooling liquid through the reservoir to prevent the cooling liquid passing the reservoir too quickly to take up a sufficient amount of heat from the heat-exchanging surface. *Id.* at 13:63–14:7.

D. CHALLENGED CLAIMS

Challenged claims 1, 6, and 12 are independent; claim 1 is reproduced below:

1. A cooling system for a computer system processing unit, comprising:

a reservoir configured to circulate a cooling liquid therethrough, the reservoir including:

an upper chamber and a lower chamber, wherein the upper chamber and the lower chamber are vertically displaced fluid-containing chambers that are each surrounded by boundary walls;

a first passage that fluidly couples the lower chamber to the upper chamber, wherein the first passage is substantially central to the lower chamber;

a second passage positioned at a perimeter of the lower chamber;

wherein the lower chamber includes a plurality of parallel channels configured to split the flow of cooling liquid and direct the cooling liquid from the central region toward the perimeter of the lower chamber where the cooling liquid is collected along the perimeter and directed from the lower chamber through the second passage;

a heat exchanging interface attached to the reservoir to form a boundary wall of the lower chamber, the heat exchanging interface configured to provide thermal contact between a processing unit and the cooling liquid;

a pump having a motor and an impeller, the impeller being positioned within the upper chamber of the reservoir; and

a radiator spaced apart from and fluidly coupled to the reservoir.

Ex. 1001, 18:64–19:26. Claims 6 and 12 recite limitations similar to claim 1's, further requiring a "frame configured to fasten the reservoir to a board on which a computer system processing unit is configured to be mounted,

wherein the frame has four holes." *Id.* at 19:43–20:9, 20:33–21:2. Challenged claims 7 and 11 depend, directly or indirectly, from claim 6.

E. PRIOR ART AND ASSERTED GROUNDS

Petitioner asserts the following grounds of unpatentability:[1]

Claims Challenged	35 U.S.C. §	References/Basis
1	103	Batchelder[2], Shin[3]
6, 7, 12	103	Batchelder, Shin, Admitted Prior Art[4]
7, 11	103	Batchelder, Shin, Admitted Prior Art, Nakano[5]

Pet. 2–3. Petitioner relies also on the Declaration of Himanshu Pokharna, Ph.D. Ex. 1003.

II. ANALYSIS

A. REAL PARTIES IN INTEREST

Patent Owner argues that we should deny institution under 35 U.S.C. § 312(a)(2) because the Petition does not name all real parties in interest ("RPIs"). Prelim. Resp. 1–2. Section 312(a)(2) requires that the "petition identif[y] all real parties in interest." 35 U.S.C. § 312(a)(2). This provision

[1] As noted above, Patent Owner disclaimed claims 2–5, 8–10, and 13–16 (*see* Ex. 2008), so we consider only the grounds that address claim 1, 6, 7, 11, or 12.
[2] US 6,019,165, issued Feb. 1, 2000 (Ex. 1006).
[3] Translation of Japanese Pub. No. 2002-151638, published May 24, 2002 (Ex. 1007).
[4] Petitioner relies on prior art admissions made in the specification of the '601 patent. Specifically, Petitioner relies on Figs. 1–3 of the '601 patent and the descriptions thereof. Pet. 11–12.
[5] US 6,915,653, issued July 12, 2005 (Ex. 1008).

serves important notice functions to patent owners, to identify whether the petitioner is barred from bringing an IPR due to an RPI that is time barred or otherwise estopped, and to the Board, to identify conflicts of interests that are not readily apparent from the identity of the petitioner. Patent Owner argues that Corsair Gaming, Inc. and Corsair Memory, Inc. (collectively, "Corsair") are Petitioner CoolIT's longstanding customers, co-defendants, and indemnitees in the district-court litigation.[6] Prelim. Resp. 1–2. Patent Owner asserts that this is not an inadvertent omission, but rather that CoolIT and Corsair are deliberately trying to hide Corsair's status as an RPI, and thus trying to lay the groundwork for an argument that Corsair should not be subject to estoppel in the district-court action. *Id.* at 2. Petitioner asserts that the Petition correctly names all RPIs and further contends that there is no time bar implication and no evidence that Corsair is attempting to advance invalidity arguments beyond those put forward by Petitioner. Prelim. Reply 9–10.

Under the Board's precedential decision in *SharkNinja Operating LLC v. iRobot Corp.*, when no time-bar or estoppel would apply once determining Petitioner did not name all RPIs, the Board need not address the issue. IPR2020-00734, Paper 11 (Oct. 6, 2020) (precedential); *see also Lumentum Holdings, Inc. v. Capella Photonics, Inc.*, IPR2015-00739, Paper 38 at 6 (PTAB Mar. 4, 2016) (precedential) ("[O]ur jurisdiction to consider a petition does not require a 'correct' identification of all RPIs in a petition."); *Mayne Pharma Int'l Pty. Ltd. v. Merck Sharp & Dohme Corp.*, 927 F.3d 1232, 1240 (Fed. Cir. 2019) ("[I]f a petition fails to identify all real parties in

[6] The panel confirms that it does not have a conflict with Corsair Gaming, Inc. or Corsair Memory, Inc.

interest under § 312(a)(2), the Director can, and does, allow the petitioner to add a real party in interest." (quoting *Wi-Fi One, LLC v. Broadcom Corp.*, 878 F.3d 1364, 1374 n.9 (Fed. Cir. 2018) (en banc))). This approach also serves the interest of cost and efficiency.[7]

Here, there is no allegation that the one-year time bar under 35 U.S.C. § 315(b) would prevent Corsair from bringing an independent IPR. *See* Prelim. Sur-reply 5–6; Prelim. Resp. 1–2. Nor have the statutory estoppel provisions been implicated. The statutory estoppel provisions aim to protect patent owners from harassment via successive petitions by the same or related parties, to prevent parties from having a "second bite at the apple," and to protect the integrity of both the USPTO and federal courts by assuring that all issues are promptly raised and vetted. *Cf.* Fed. R. Civ. P. 17(a) (Advisory Committee Note to 1966 Amendment to Rule 17(a)). Here, there is no evidence that Corsair is pursuing estopped invalidity grounds (*see* Prelim. Reply 10; Prelim. Sur-reply 5–6; Prelim. Resp. 1–2), and if it were, that would be an issue for the district court to resolve. Thus, on this record, we will not consider whether Corsair must be named as an RPI in this proceeding.

B. Discretionary Denial Under 35 U.S.C. § 314(a) Based on Parallel Proceeding

Patent Owner contends we should exercise our discretion to deny the Petition under § 314(a), because of the copending district-court litigation involving the parties, which will be resolved before the Board's final written decision. Prelim. Resp. 1. As guided by our precedent, we consider a number

[7] *See* 37 C.F.R. § 42.1(b) ("This part shall be construed to secure the just, speedy, and inexpensive resolution of every proceeding.").

of factors when determining whether to deny institution based on the parallel district-court litigation. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 5–6 (PTAB Mar. 20, 2020) (precedential).

1. Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted

Petitioner moved to stay the district-court case, but the district court denied the motion. Ex. 2014, 1. Petitioner argues that the court "effectively stayed almost all of the remaining case to wait for the IPR institution decision." Prelim. Reply 7. The court, however, set a new trial date for July 25, 2022, adding two and a half months to the schedule, because of a criminal case on the docket taking priority. Ex. 1023, 7:25–10:2. Thus, the court did not issue a stay but directed the parties to meet and confer to stipulate a new schedule based on the July 25, 2022, trial date and continue with expert reports and depositions. *Id.* at 11:22–13:19; *see* Ex. 1020. Further, although the court denied a stay, it indicated that, "[i]f an IPR is instituted, then that's a different matter." Ex. 1023, 4:11–:16. The court recognized that we have issued a Final Written Decision for Petitioner's challenge to the '354 patent, in which we determined all challenged claims unpatentable (*see* IPR2020-00523, Paper 36; Ex. 1023, 7:12–:14), and indicated that it would "sever and stay with respect to anything that's been invalidated." Ex. 1023, 40:3–:14. We will not speculate as to whether the court will be inclined to stay its case in light of this Institution Decision. We determine that this factor is neutral.

2. Proximity of the court's trial date to the Board's projected statutory deadline for a final written decision

The district-court litigation has a trial date of July 25, 2022, which is five months before the deadline for a final written decision in this proceeding (one year after this Institution Decision). Ex. 1020, 1. We determine that this factor weighs slightly in favor of exercising discretion to deny institution.

3. Investment in the parallel proceeding by the court and the parties

Petitioner contends that because the asserted claims in the '601 patent almost completely overlap with the '354 patent, which was also asserted in the litigation, the parties have not invested significant time and effort in the litigation that is unique to the '601 patent. Pet. 71–72; Prelim. Reply 8–9. Patent Owner, however, contends that at the time of the expected institution decision in December 2021, the parties will have completed the bulk of the work in the district-court litigation, including completing claim construction specific to the '601 patent, closing fact discovery, and serving opening expert reports. Prelim. Sur-reply 3–4. In addition, rebuttal expert reports will be served by December 8, 2021, and expert discovery will close soon after the Board's institution decision. Prelim. Sur-reply 3–4. These facts counsel against institution.

Petitioner filed the Petition here approximately five months after Patent Owner served its amended infringement contentions, first asserting the '601 patent. *See* Pet. 71 (citing Ex. 1004, 3, 13); Ex. 1009, 7–8; *Fintiv*, IPR2020-00019, Paper 11, 11 ("If the evidence shows that the petitioner filed the petition expeditiously, such as promptly after becoming aware of the claims being asserted, this fact has weighed against exercising the

authority to deny institution under *NHK*."). Thus, although the district-court proceeding has completed substantial fact discovery and some expert discovery, that is not a result of Petitioner's delay. The litigation involves numerous other patents, so preparing a petition less than five months after asserted claims are identified was a diligent approach by Petitioner. Given that diligence and the work that remains to be done, we conclude this factor weighs slightly against exercising discretion to deny institution.

4. Overlap between issues raised in the petition and in the parallel proceeding

Following Patent Owner's disclaimer, only claim 7 stands challenged here but not at issue in the district court. Petitioner submits that, "[s]hould the IPR trial based on this Petition be instituted, Petitioner hereby stipulates that it will not pursue any invalidity grounds against the '601 patent in the district court that have been raised in this Petition." Pet. at 72. Petitioner asserts that "if the IPR trial is instituted, there will be no overlap or concerns of duplicative efforts between the district-court trial and this IPR proceeding." *Id.* However, "Petitioner stipulates only that it will not pursue, in district court, the 'same grounds' presented in the Petition in this case." *Sand Revolution II, LLC v. Continental Intermodal Group – Trucking LLC*, Case IPR2019-01393, Paper 24, 12 n.5 (June 16, 2020). Petitioner did not stipulate that it would not pursue any ground raised or that could have been reasonably raised in an IPR.[8] *Id.*

[8] I.e., any ground that could be raised under §§ 102 or 103 on the basis of prior-art patents or printed publications.

Nonetheless, Petitioner's stipulation mitigates to some degree the concerns of duplicative efforts between the district court and the Board, as well as concerns of potentially conflicting decisions. *Id.* at 12; *Sand Revolution II*, IPR2019-01393, Paper 24, 12. Thus, we find that this factor weighs somewhat against exercising discretion to deny institution.

5. Whether the petitioner and the defendant in the parallel proceeding are the same party

The parties in the district-court litigation and this proceeding are the same. Pet. 76; *see* Prelim. Resp. 11. Thus, this factor weighs in favor of exercising discretion to deny institution.

6. Other circumstances that impact the Board's exercise of discretion, including the merits

Petitioner argues that it presents a substantively strong case, weighing against discretionary denial. Pet. 68–69. Patent Owner disagrees. Prelim. Resp. 11–13. In this regard, Petitioner notes the similarity between the claims of the '601 patent and those of its parent, the '354 patent. *See* Pet. 69–70 (comparing claim 1 of the '601 patent with claim 1 of the '354 patent); *accord* Prelim. Reply 3–4 (same). And Petitioner points out that the grounds here are based on the same prior-art combination of Batchelder and Shin as was at issue in IPR2020-00523. Prelim. Reply 1–5. In that proceeding, we issued a Final Written Decision on August 19, 2021, determining all challenged claims unpatentable. IPR2020-00523, Paper 36. Further, Petitioner submits that the Examiner determined that claim 1 of the '354 patent comprises the limitations of the '601 patent's claim 1. Pet. 6 (citing Ex. 1002, 230).

In light of the similarity between the claims at issue here and those of the '354 patent, the overlap in the asserted prior art, and our prior determination of unpatentability regarding the '354 patent, we conclude that the merits of Petitioner's case in this proceeding are substantively strong. Thus, this factor weighs strongly in favor of institution.

7. Holistic assessment of factors and conclusion

We consider the above factors and take "a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review." *Fintiv*, Paper 11 at 6. In weighing the totality of the evidence, we decide not to exercise discretion under § 314(a) to deny institution.

C. Level of Ordinary Skill in the Art

Petitioner proposes that a person of ordinary skill

> would have been knowledgeable regarding liquid cooling systems for computer systems, would have earned at least a bachelor's degree, such as a B.S. (bachelor of science), or equivalent thereof, in electrical or mechanical engineering or a closely related field, and would have possessed at least two or three years of experience in liquid cooling systems for computer systems or in similar systems.

Pet. 7–8 (citing Ex. 1003 ¶¶ 23–26). Patent Owner does not dispute this definition of a person of ordinary skill. *See generally* Prelim. Resp. For purposes of this Decision, we adopt Petitioner's proposed level of ordinary skill as it appears to be consistent with the level of skill reflected by the specification and in the asserted prior art references. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art itself can reflect the appropriate level of ordinary skill in the art).

D. CLAIM CONSTRUCTION

For an *inter partes* review petition filed after November 13, 2018, we construe claim terms "using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b)." 37 C.F.R. § 42.100(b) (2019). The parties stipulated to constructions of "reservoir" and "chamber" in the district-court litigation. Ex. 1005, 2. Petitioner proposes additional constructions for "impeller" and "radiator." Pet. 8–10. Patent Owner does not dispute those constructions. *See generally* Prelim. Resp.

Based on our analysis of the issues in dispute at this stage of the proceeding, we conclude that none of the claim terms identified by the parties require express construction at this time. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

E. OBVIOUSNESS OVER BATCHELDER IN VIEW OF SHIN

Petitioner relies primarily on Batchelder for most of the limitations of independent claims 1, 6, and 12 as depicted in Batchelder's Figure 2, reproduced below:

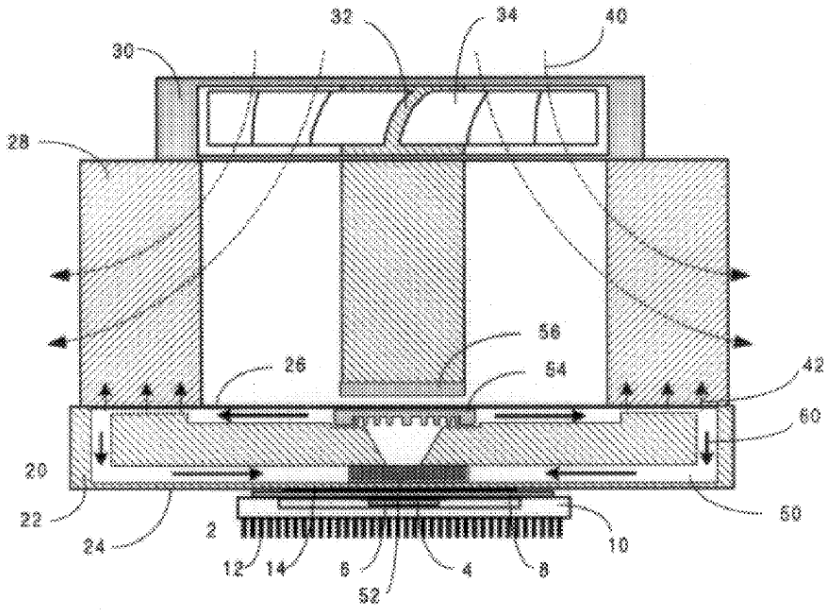


FIG.2

Ex. 1006, Fig. 2. Figure 2 depicts a heat-transfer device where heat from metal cover 8 of semiconductor chip 4 moves into lower surface 24 of active spreader plate 20, into metallic fin array 52, then into heat-transfer fluid sealed in flow channels 50 inside the active spreader plate 20. Figure 2 also depicts a centripetal or centrifugal pump with impeller 54, immersed in heat-transfer fluid and driven through magnetic coupling to rotor 32, which is outside active spreader plate 20. *Id.* at 4:63–5:26. As indicated by arrows in Figure 2, the heat-transfer fluid flows outward from impeller 54 to the perimeter of active spreader plate 20, down to the bottom surface, in to the center where metallic fin array 52 is located, and then up a passage back to impeller 54. *Id.* at 5:21–:32, Fig. 2.

Independent claims 1, 6, and 12 require both an "upper chamber" and a "lower chamber," which Petitioner maps to the flow channels on the top and bottom of active spreader plate, respectively. Pet. 14–16, 18–21

(showing annotated versions of Batchelder's Figures 2, 7, and 8). Claims 1, 6, and 12 further require that "the lower chamber includes a plurality of parallel channels configured to split the flow of cooling liquid and direct the cooling liquid from the central region toward the perimeter of the lower chamber." Ex. 1001, 19:10–:13. Petitioner asserts first that Batchelder's flow pattern satisfies this requirement—when using a viscosity pump as the impeller 54 in the active spreader plate 20—because "the cooling fluid enters from the upper chamber and *flows from the periphery to the center* of the impeller . . . before exiting underneath the rotor and into the lower chamber." Pet. 24, 28–30 (citing Ex. 1006, 8:16–:27) (showing an annotated version of Batchelder's Figure 2).

Petitioner asserts further that it would have been obvious to a skilled artisan "to reverse the flow direction . . . such that the cooling liquid is directed from the central region toward the perimeter of the lower chamber." *Id.* at 30–31 (citing Ex. 1003 ¶ 73). According to Petitioner, "[a] POSITA would have recognized that this flow direction could be achieved by using 'viscosity pump' 260" or alternatively, "'displacement pump' 280 shown in Figure 9 of Batchelder." *Id.* at 31 (citing Ex. 1003 ¶ 75). Petitioner asserts that it would have been obvious to try the claimed flow pattern because the flow could only move in two directions (i.e., center-to-periphery or periphery-to-center). *Id.* Petitioner asserts that skilled artisans had reason to change the flow pattern because they "would have known that pushing cooling fluid against the heat sink would result in an impinging, center-to-periphery, flow with a higher heat transfer coefficient." *Id.* at 32 (citing Ex. 1003 ¶ 77). Finally, Petitioner asserts that "a POSITA would have been motivated to reverse the flow direction" because heat can "negatively impact

the life of the electromagnetic pump" and the reversed flow direction would move the liquid heated by the heat exchanging interface away from the pump's impeller rather than toward it. *Id.* 32–33 (citing Ex. 1003 ¶ 78). Petitioner contends that Shin also supports the motivation because it "teaches a pump orientation where heated liquid is diverted away from the pump." *Id.* (citing Ex. 1003 ¶ 79).

For the claimed "radiator spaced apart from and fluidly coupled to the reservoir," Petitioner asserts that it would have been obvious for a skilled artisan to modify Batchelder's system to include Shin's radiator. Pet. 36–42. Shin discloses a cooling system for computer components, in which a pump is affixed to a liquid-cooled heat sink and circulates coolant through the heat sink and then through a "heat exchanger" to release heat to the environment. Ex. 1007 ¶¶ 23–25, Fig. 3. Petitioner submits that modifying Batchelder's device to include Shin's radiator would have been obvious and reasonably likely to be successful because a radiator is "a well-known component used to transfer thermal energy (e.g., heat) from one medium to another." Pet. 38 (citing Ex. 1003 ¶ 85). According to Petitioner, a skilled artisan had reason to modify Batchelder "to further increase heat management efficiency by using an external radiator that cools the heated cooling liquid," especially as the power dissipated by semiconductor devices increases with time. *Id.* at 39–41 (citing Ex. 1007 ¶ 25; Ex. 1006, 1:31–:38).

For claim 6 and 12's claimed "frame configured to fasten the reservoir to a board on which a computer system processing unit is configured to be mounted, wherein the frame has four holes," Petitioner relies on Admitted Prior Art. The '601 patent admits that "FIG. 1 is an exploded view of an embodiment of prior art cooling apparatus for a computer system." *Id.* at 48

(citing Ex. 1001, 7:40–:43). The Admitted Prior Art discloses "a frame configured to fasten" the claimed reservoir to the CPU and motherboard. *Id.* at 48–49 (citing Ex. 1001, 8:19–:33, 9:50–:60, FIGS. 4–5). Petitioner further contends that "[a] POSITA would have been motivated to modify the 'reservoir' of Batchelder in view of Shin" and would have had a reasonable expectation of success because the "reservoir" would need to be secured to the CPU to function properly and the dimensions of the reservoir taught in the Admitted Prior Art are comparable to those of Batchelder. *Id.* 50–51 (citing Ex. 1003 ¶ 117).

Patent Owner does not challenge the reason a skilled artisan would have modified Batchelder to reverse the flow direction, add an external radiator, or fasten the reservoir to a board on which a computer-system processing unit is configured to be mounted using a frame. *See generally* Prelim. Resp. Similarly, Patent Owner does not challenge whether one modifying Batchelder would have had a reasonable expectation of success. *See generally id.* We have reviewed Petitioner's contentions regarding obviousness over Batchelder, Shin, and the Admitted Prior Art and conclude that Petitioner has shown a reasonable likelihood of prevailing with respect to the obviousness of independent claims 1, 6, and 12.

F. Additional Obviousness Grounds

For claims 7 and 11, which directly or indirectly depend from claim 6, Petitioner asserts that Shin and Nakano disclose the additional limitations of those claims. *See* Pet. 3, 42–45 (claim 2, regarding Shin), 53 (claim 7, referencing claim 2 under Shin), 57 (claim 2, regarding Nakano), 65 (claim 7, referencing claim 2 under Nakano), 67–68 (claim 11, regarding Nakano).

Specifically, Petitioner cites Shin as teaching a control system in dependent claim 7. *Id.* at 42–45, 53. Petitioner cites Nakano for the control system in dependent claims 7 and 11. *Id.* at 57, 65, 67–68. Patent Owner does not challenge Petitioner's assertions that Shin and Nakano teach the additional limitations of dependent claims 7 and 11. *See generally* Prelim. Resp. We have reviewed Petitioner's contentions over Batchelder, Shin, Nakano, and Admitted Prior Art, and conclude that Petitioner has shown a reasonable likelihood of prevailing with respect to obviousness of dependent claims 7 and 11.

III. CONCLUSION

For the reasons discussed above, we conclude Petitioner has shown a reasonable likelihood of prevailing with respect to at least one claim. We have evaluated all of the parties' submissions and determine that the record supports institution. We conclude that instituting review in this proceeding is in the interest of efficient administration of the Office and the integrity of the patent system. *See* 35 U.S.C. § 316(b). Accordingly, we institute an *inter partes* review of all challenged claims under all grounds set forth in the Petition for those claims.

Our determination at this stage of the proceeding is based on the evidentiary record currently before us. This decision to institute trial is not a final decision as to patentability of any claim for which *inter partes* review has been instituted. Our final decision will be based on the full record developed during trial.

IV. ORDER

Accordingly, it is

ORDERED that, pursuant to 35 U.S.C. § 314(a), *inter partes* review of the '601 patent is instituted on claims 1, 6, 7, 11, and 12 and the grounds set forth in the Petition for those claims;

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

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