

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MAHLE BEHR CHARLESTON INC.,

Petitioner,

v.

FRANK AMIDIO CATALANO,

Patent Owner,

Patent No. RE47,494 to Catalano

Issue Date: July 9, 2019

Title: ELECTROLYSIS PREVENTION DEVICE AND METHOD OF USE

Inter Partes Review No.: IPR2023-00861

Petition for *Inter Partes* Review of U.S. Patent No. RE47,494
Under 35 U.S.C. §§311–319 and 37 C.F.R. §42.100 *et seq.*

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1001	U.S. Patent No. RE47,494 (“the ’494 Patent”)
1002	Complaint filed in <i>Electrolysis Prevention Solutions LLC v. Daimler Trucks North America LLC</i> , 3:21-cv-171 (W.D.N.C.) (Apr. 19, 2021)
1003	Plaintiff’s Second Amended Infringement Contentions served in <i>Electrolysis Prevention Solutions LLC v. Daimler Trucks North America LLC</i> , 3:21-cv-171 (W.D.N.C.) (Nov. 22, 2022)
1004	Declaration of Dr. Dana J. Medlin
1005	Japanese Patent Application Publication No. S55-68595 to Tomosada (“Tomosada”) and Certified Translation Thereof
1006	Japanese Patent Application Publication No. A-6-272069 to Hanazaki, <i>et al.</i> (“Hanazaki-069”) and Certified Translation Thereof
1007	Japanese Patent Application Publication No. H1-217196 to Hanazaki, <i>et al.</i> (“Hanazaki-196”) and Certified Translation Thereof
1008	International Patent Application Publication No. 03/100337 to Godefroy, <i>et al.</i> (“Godefroy”) and Certified Translation Thereof
1009	Prosecution history of U.S. Patent No. 8,236,145 (“the ’145 Patent”)
1010	Prosecution history of the ’494 Patent
1011	U.S. Patent No. 5,649,591 to Green (“Green”)

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1012	U.S. Patent No. 1,514,903 to Gush (“Gush”)
1013	U.S. Patent No. 6,109,987 to Watanabe, <i>et al.</i> (“Watanabe”)
1014	Chinese Patent No. 1225998A to Guo (“Guo”)
1015	Ford Care and Home Repair, How to Enjoy Your Ford Car, <i>Radiator Repairs</i> , 1922 Ed. to Murray Fahnestock (“Fahnestock”)
1016	Markman Order filed in <i>Electrolysis Prevention Solutions LLC v.</i> <i>Daimler Trucks North America LLC</i> , 3:21-cv-171 (W.D.N.C.) (May 4, 2022)
1017	U.S. Patent No. 4,776,392 to Loyd (“Loyd”)
1018	SEALED – 10/3/22 Letter from DTNA to MAHLE Behr Charleston Inc. – CONFIDENTIAL – ATTORNEYS’ EYES ONLY
1019	SEALED – DTNA Purchase Order Terms and Conditions– CONFIDENTIAL – ATTORNEYS’ EYES ONLY
1020	SEALED – 4/17/23 Letter from MAHLE-Behr Charleston Inc. to DTNA– CONFIDENTIAL – ATTORNEYS’ EYES ONLY
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Exhibit No.	Exhibit Name
1024	Petitioner's Motion to Seal

I. INTRODUCTION

Pursuant to 35 U.S.C. §§311–19 and 37 C.F.R. §42.100 *et seq.*, Petitioner, MAHLE Behr Charleston Inc. (“Petitioner”), requests *Inter Partes* review of Claims 12, 15–17, 19–29, 31–40, and 42–47 (the “Challenged Claims”) of U.S. Patent No. RE47,494 (the “’494 Patent,” EX1001), which does not have a recorded assignment. Electrolysis Prevention Solutions LLC (“EPS”) represents that it “is the exclusive licensee . . . with all substantial rights to the ’494 Reissue Patent including the exclusive right to enforce, sue, and recover damages for past and future infringements.” EX1002, 4. The Challenged Claims should be found unpatentable and canceled.

II. MANDATORY NOTICES

A. Real Party-In-Interest

Petitioner identifies MAHLE Behr Charleston Inc. (Petitioner) as a real party-in-interest (“RPI”). MAHLE Behr Charleston Inc. is a wholly owned subsidiary of MAHLE Industries, Incorporated, which is also an RPI.

Petitioner is in exclusive control of its participation in this proceeding and is the exclusive party funding this proceeding. Although EPS has sued one of Petitioner’s customers, Daimler Trucks North America LLC (“DTNA”) for alleged infringement of the ’494 Patent (EX1002, 1 (the “North Carolina Action”)), Petitioner is not, and has never been, a party to nor in control of that proceeding.

1. DTNA is not a Real Party-In-Interest

EPS's complaint in the North Carolina Action does not accuse Petitioner's products of infringing the '494 Patent (or any other patent). EX1001, 1. Indeed, Petitioner is not, and has never been, a party to the North Carolina Action or any other action involving the '494 Patent. Petitioner only learned that EPS was accusing certain DTNA vehicles containing certain of Petitioner's radiator products of infringing the '494 Patent when it received correspondence from DTNA on October 3, 2022 indicating that "radiators supplied to DTNA by MAHLE Behr may soon become part of this litigation." EX1018, 1.¹ On November 17, 2022, EPS served Petitioner with a subpoena seeking information relating to certain of Petitioner's radiators, but including no express allegation of infringement. *See* EX1021. On November 22, 2022, EPS served second amended infringement contentions on DTNA that, for the first time, accused a Petitioner radiator of infringement. *See* EX1003. As a courtesy, DTNA provided Petitioner with these contentions on November 23, 2022.

There is no bright-line test for determining an RPI, but relevant considerations

¹ DTNA sought indemnity from Petitioner in the same letter, pursuant to certain Purchase Order Terms and Conditions. *Id.* (citing Terms, EX1019). Petitioner has since denied DTNA's indemnity claim. *See* EX1020, 1.

include whether a party exercises control or could exercise control over a petitioner's participation in a proceeding, or whether a party is funding or directing the proceeding. *Applications in Internet Time, LLC v. RPX Corp.*, 897 F.3d 1336, 1351 (Fed. Cir. 2018). DTNA has no control over this proceeding (and could not control this proceeding), and DTNA is not funding or directing this proceeding. Petitioner and DTNA have had no communications regarding this Petition or proceeding.

Petitioner's commercial relationship with DTNA does not make DTNA a real-party-in-interest. Standard supplier relationships do not make an entity an RPI. *Samsung Elecs. Co., Ltd. v. Seven Networks, LLC*, IPR2018-01114, Paper 27 at 9 (PTAB Jan. 22, 2019); *WesternGeco LLC v. ION Geophysical Corp.*, 889 F.3d 1308, 1321 (Fed. Cir. 2018). Petitioner supplies certain radiator products to DTNA pursuant to DTNA's standard Terms. *See* EX1019. DTNA is not Petitioner's exclusive customer of radiator products, and likewise Petitioner is not DTNA's exclusive supplier of radiator products.

Indeed, EPS' complaint accuses a third-party radiator of infringement, and its second amended infringement contentions likewise accuse third-party radiators of infringement. EX1002; EX1003, 9–12. Petitioner could be sued separately from DTNA and thus, although DTNA may benefit from this proceeding, Petitioner's interests in invalidating the '494 Patent extend beyond those of DTNA. Petitioner thus seeks to eliminate the possibility of any future dispute with EPS regarding the

'494 Patent. *See Ecobee Techs ULC v. Causam Enterprises, Inc.*, IPR2022-01339, Paper 20, 10–11 (PTAB Mar. 22, 2023) (noting that separate lawsuits suggests that patent owner's infringement contentions against petitioner were not coextensive with its infringement contentions in the separate third-party litigation).

The mere fact that DTNA may derive some benefit from Petitioner invalidating the asserted claims of the '494 Patent is not enough to establish DTNA as an RPI. *See ASSA Abloy AB, et. al., v. CPC Patent Techs. Pty Ltd*, IPR2022-01093, Paper 20, 28 (PTAB Feb. 2, 2023) (“We recognize that Apple will derive *some* benefit if the claims of the '039 patent are determined to be unpatentable in a post-grant proceeding at the PTO, or found invalid by a district court. This derived benefit does not, however, make Apple an RPI to this proceeding”), citing *WesternGeco LLC*, 889 F.3d at 1321.

Ultimately, the RPI inquiry focuses on “whether a petition has been filed at a []party's behest.” *Applications in Internet Time*, 897 F.3d at 1351. Petitioner expeditiously filed the instant Petition at its own behest and, for at least the reasons provided above, is the RPI. Any conclusion rendering DTNA an RPI would work a manifest injustice to Petitioner as Petitioner would effectively be time-barred from filing the Petition before ever having one of its products accused of infringing the

'494 Patent.²

2. DTNA is not a Privy

Petitioner has not had a full and fair opportunity to litigate the issues it asserts in the instant Petition. *WesternGeco.*, 889 F.3d at 1319. The privity inquiry “has a dual-focus on preventing the petitioner from now lodging a successive attack for which it already had a first bite, thus, protecting the defending party from an unwarranted second attack, while also ensuring that the petitioner is not unfairly limited in its ability to lodge its challenges if it has not had a full and fair opportunity to do so already.” *Uniloc 2017 LLC v. Facebook Inc.*, 989 F.3d 1018, 1027-28 (Fed. Cir. 2021). Petitioner has had no control over the North Carolina Action, and no involvement other than responding to subpoenas. Accordingly, Petitioner has not had any opportunity, let alone a full and fair opportunity, to lodge its challenges. Moreover, it is Petitioner’s understanding that none of the prior art relied upon in the six Grounds set forth in the Petition has been raised by DTNA in the North Carolina Action.

Petitioner is not bound to challenge the '494 Patent, and as discussed *supra*,

² EPS’ complaint against DTNA was filed April 19, 2021. EX1001. Petitioner did not learn that certain of its radiator products were accused of infringement until November 23, 2022.

DTNA did not instruct Petitioner to file the Petition, has no control over the proceeding, and is not funding the proceeding. DTNA is merely a customer of Petitioner, and otherwise legally unrelated. *See Samsung Elecs. Co., Ltd. v. Netlist, Inc.*, IPR2022-00615, Paper 20, 20 (PTAB Oct. 19, 2022) (“a customer relationship alone does not trigger privity”), citing *Wi-Fi One, LLC v. Broadcom Corp.*, 887 F.3d 1329, 1340–41 (Fed. Cir. 2018); *WesternGeco*, 889 F.3d at 1319–21 (“[a]s a general proposition, we agree with the Board that a common desire among multiple parties to see a patent invalidated, without more, does not establish privity”).

Because DTNA is not Petitioner’s exclusive customer, and Petitioner is not DTNA’s exclusive supplier, there is also not an exclusive and intertwined relationship that would suggest that Petitioner and DTNA’s arms-length relationship is “sufficiently close” to conclude that DTNA’s opportunity to challenge EPS has, in any way, constituted an opportunity for Petitioner to challenge EPS. *See, e.g., Ecobee*, IPR2022-01339, Paper 20, at 8–11.

B. Related Matters

The ’494 Patent is the subject of the following matter, which may be affected by a decision in this proceeding: *Electrolysis Prevention Solutions LLC v. Daimler Trucks North America LLC*, 3:21-cv-171 (W.D.N.C.), filed on April 19, 2021.

Petitioner is not aware of any post-grant proceeding before the Office involving the ’494 Patent. *See* 37 C.F.R. §§42.8(b)(3), 42.8(b)(4), 42.10(a), and

42.10(b).

C. Lead Counsel, Back-Up Counsel, and Service Information

Pursuant to 37 C.F.R. §§42.8(b)(3) and 42.10(a), Petitioner designates Jeanne M. Gills (Reg. No. 44,458) as lead counsel and Roberto J. Fernandez (Reg. No. 73,761) as back-up counsel.

Pursuant to 37 C.F.R. §42.10(b), Petitioner has filed a power of attorney for the above-designated counsel.

D. Service Information

Per 37 C.F.R. §42.8(b)(4), Petitioner provides the following service information for designated counsel:

Lead Counsel	Back-Up Counsel
Jeanne M. Gills Reg. No. 44,458 FOLEY & LARDNER LLP 321 North Clark Street, Suite 2800 Chicago, Illinois 60654 312-832-4583 jmgills@foley.com	Roberto J. Fernandez Reg. No. 73,761 FOLEY & LARDNER LLP 321 North Clark St., Suite 2800 Chicago, Illinois 60654 312-832-4530 rfernandez@foley.com

Petitioner consents to service via email at the addresses listed above.

III. PAYMENT OF FEES

The required fee is paid by credit card, with authorization to charge any fee deficiencies and credit overpayments to Deposit Acct. No. 19-0741 (Customer No. 22428).

IV. GROUNDS FOR STANDING

Pursuant to 37 C.F.R. §42.104(a), Petitioner certifies that the '494 Patent is available for *Inter Partes* review and that Petitioner is not barred or estopped from requesting *Inter Partes* review on the Grounds identified herein.

V. PRECISE RELIEF REQUESTED

A. Identification of Claims

Pursuant to 37 C.F.R. §§42.22(a)(1) and 42.104(b), the precise relief sought by Petitioner is that the Board review and cancel Claims 12, 15–17, 19–29, 31–40, and 42–47 of the '494 Patent as being unpatentable under 35 U.S.C. §§ 102 or 103, as set forth by this Petition and supported by the Declaration of Dr. Dana J. Medlin (EX1004), under the following Grounds:

Ground #	Challenged Claims	Ground
1	12, 15, 16, 19–21, 24–26, 29, 31–34, 37, 40, 42, 43, and 45	Anticipated by and/or Obvious over Japanese Patent Application Publication No. S55-68595 to Tomosada (“Tomosada”)
2	22, 23, 27, 35, 36, 38, 39, 46, and 47	Obvious over Tomosada and Japanese Patent Application Publication No. A-6-272069 to Hanazaki, <i>et al.</i> (“Hanazaki-069”)
3	12, 15–17, 19–21, and 24	Anticipated by and/or Obvious over Japanese Patent Application Publication No. H1-217196 to Hanazaki, <i>et al.</i> (“Hanazaki-196”)
4	22, 23, 25–29, 31–40, and 42–47	Obvious over Hanazaki-196 and Hanazaki-069

Ground #	Challenged Claims	Ground
5	12, 15–17, 19–21, 24–29, 31–34, 37–40, and 42–45	Anticipated by and/or Obvious over International Patent Application Publication No. 03/100337 to Godefroy, <i>et al.</i> (“Godefroy”)
6	22, 23, 35, 36, 46, and 47	Obvious over Godefroy and Hanazaki-069

Petitioner establishes below that the Challenged Claims are unpatentable under the Grounds identified above, including by identifying where each claim element is found in the prior art, to demonstrate that Petitioner has at least a reasonable likelihood of prevailing on these Grounds.

B. Prior Art Patent Application Publications

1. Tomosada

Tomosada (EX1005) published May 23, 1980, and is prior art under at least 35 U.S.C. §102(b). Tomosada was not referenced during prosecution of the '494 Patent. Tomosada is not in English. A certified translation is provided before the original text in the Exhibit, which is the text referenced below.

2. Hanazaki-069

Hanazaki-069 (EX1006) published September 27, 1994, and is prior art under at least 35 U.S.C. §102(b). Hanazaki-069 was not referenced during prosecution of the '494 Patent. Hanazaki-069 is not in English. A certified translation is provided before the original text in the Exhibit, and is the text referenced below.

3. Hanazaki-196

Hanazaki-196 (EX1007) published August 30, 1989, and is prior art under at least 35 U.S.C. §102(b). Hanazaki-196 was considered during prosecution of the '494 Patent, but never discussed or applied, and never considered in combination with the other references relied upon in this Petition. Hanazaki-196 is not in English. The only English portion of Hanazaki-196 that is of record is an Abstract. EX1010, 117. A certified translation is provided before the original text in the Exhibit, and is the text referenced below.

4. Godefroy

Godefroy (EX1008) published December 4, 2003, and is prior art under at least 35 U.S.C. §102(b). Godefroy was not referenced during prosecution of the '494 Patent. Godefroy is not in English. A certified translation is provided before the original text in the Exhibit, and is the text referenced below.

VI. THE '494 PATENT

A. Specification

The '494 Patent is generally directed to “radiators and engines and preventing corrosion in the cooling system of [] vehicles, especially those with components of dissimilar metal construction which present most cooling system corrosion problems.” EX1001, 1:35–41; EX1004, ¶32. The '494 Patent states that “an unfortunate side effect of using dissimilar metals is an increase in electrolytic

activity, leading to increased vulnerability to corrosion” and that “[i]n response to the electrolytic activity, also known as electrolysis, aluminum components corrode and become porous and may begin to leak in as little as two weeks.” EX1001, 1:61–67; EX1004, ¶33. The ’494 Patent states that “sacrificial anodes, constructed of active metals, that is metals that react with oxygen, such as magnesium, aluminum, zinc or combinations thereof, have also been used as corrosion inhibitors.” EX1001, 2:6–9; EX1004, ¶34.

The ’494 Patent states that “FIG. 1A is a left side cross-sectional view of a radiator 11 having an electrolysis prevention device 12 in accordance with a first preferred embodiment of the present invention” and that “an electrolysis prevention device 12 includes a sacrificial anode 13 supported at the end of a sleeve wire, metal slide, clip 15 or the like such that the anode is disposed adjacent the radiator inlet 17.” EX1001, 6:27–33; EX1004, ¶37.

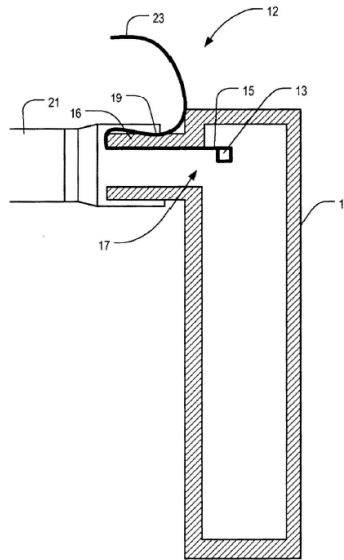


FIG. 1A

B. Prosecution History

The '494 Patent is a reissue of U.S. Patent No. 8,236,145 ("the '145 Patent"), filed December 7, 2009. The '145 Patent claims the benefit of U.S. Provisional Patent Application No. 61/120,296, filed December 5, 2008.

During prosecution of the '145 Patent, the Examiner rejected claims as anticipated or obvious. EX1009, 51–57. The applicant largely argued against the Examiner's rejections. *Id.*, 22, 32–39. Following an interview, the Examiner allowed the application. *Id.*, 17; *see* EX1004, ¶¶47–48.

The applicant filed a reissue application of the '145 Patent. EX1010, 2. In addition to numerous other rejections and objections, the Specialist rejected several claims as being anticipated by U.S. Patent No. 5,649,591 to Green ("Green," EX1011), and other claims as being obvious in view of Green and U.S. Patent

No. 1,514,903 to Gush (“Gush,” EX1012). EX1010, 104–115. The applicant argued that “Green is completely silent regarding where the cap is positioned on the radiator or any relationship to the position of the inlet that receives hot water from the engine.” *Id.*, 144–45; *see* EX1004, ¶¶49–53. The Specialist again rejected several claims as being anticipated by Green. EX1010, 169.

The applicant then argued “Green cannot anticipate claim 12 because Green does not disclose or describe any inlet at all.” *Id.*, 195; *see* EX1004, ¶¶54–56. The Specialist then rejected several claims as anticipated by U.S. Patent No. 6,109,987 to Watanabe *et al.* (“Watanabe,” EX1013), other claims as anticipated by Gush, and other claims as obvious in view of Gush and Green. EX1010, 221–223.

The applicant then argued that “[t]he only inlet for coolant described in Watanabe is the inlet 75 in which uncooled water...enters the engine cylinder block.” *Id.*, 236; *see* EX1004, ¶¶57–59. The Specialist rejected several claims as being anticipated by Chinese Patent No. 1225998A to Guo (“Guo,” EX1014), several claims as being anticipated by Watanabe, and several claims as being anticipated by Gush. EX1010, 249–251. The Specialist also rejected another claim as being obvious in view of Guo and Green. *Id.*, 252.

The applicant amended independent claim 12 to recite “wherein the sacrificial anode is placed within 10 inches of a hot liquid inlet to the radiator,” and added a new independent claim that recited “a sacrificial anode installed within 10 inches of

the hot liquid inlet of the radiator.” *Id.*, 315, 317. The applicant argued that “Figure 1 in Gou (sic) does not explicitly or inherently teach that ‘the sacrificial anode is placed within 10 inches of a hot liquid inlet to the radiator’ because in Gou, ‘sacrificial anode 3 mounted on a bleed valve 4’ does not explicitly or inherently anticipated ‘a hot liquid inlet to the radiator’, as recited in amended claim 12.” *Id.*, 320 (emphasis omitted); EX1004, ¶¶60–61.

The Specialist rejected most of the claims as being obvious in view of Guo, several claims as being obvious in view of Gush, and other claims as being obvious in view of Guo and Green. EX1010, 333, 337–38. The applicant argued that “the Office [] fails to explain how any such ‘ideal location’ derived from Guo would be ‘within 10 inches of a hot liquid inlet’ as recited by independent claims 12, 37, and 49.” *Id.*, 356 (emphasis omitted); *see id.*, 358 (similarly discussing Gush); EX1004, ¶¶62–64.

The Specialist rejected claims as being obvious in view of Gush and Ford Care and Home Repair, How to Enjoy Your Ford Car, *Radiator Repairs*, 1922 Ed. to Murray Fahnestock (“Fahnestock,” EX1015), claims as being obvious in view of Gush, Fahnestock, and Guo, some of the claims as being obvious in view of Gush, Fahnestock, and Green, and a claim as being obvious in view of Gush, Fahnestock, Guo, and Green. EX1010, 397, 401, 404, 405. The applicant argued that “Gush does not teach or suggest a ‘sacrificial anode’” and that “Gush instead discloses an

electrode that is connected to a source of electricity and is used to introduce current into the water in a radiator.” *Id.*, 479–480 (emphasis omitted). The applicant stated that “[a] person of ordinary skill in the art would understand that a ‘sacrificial anode’ is generally a piece of metal used to protect another from corrosion by preferentially corroding” and that “[n]othing in Gush describes the electrode it discloses as having any of those characteristics, e.g., being constructed of a relatively more active metal or being preferentially corroded or consumed.” *Id.*, 480–481 (emphasis omitted); EX1004, ¶¶65–69.

The Specialist then allowed the application, stating that the prior art fails to teach a “sacrificial anode [that] is installed within ten inches of a hot liquid inlet of the radiator as recited in claims 12, 25 or 37.” EX1010, 492; EX1004, ¶¶70–71.

Those features, however, were known in the relevant field and fail to distinguish over the prior art identified below. For example, Godefroy explicitly teaches a sacrificial anode 14 that is disposed at the hot liquid inlet and accordingly “within ten inches of a hot liquid inlet.” EX1008, 8; *see* EX1004, ¶¶142, 144, 361. *See* Section IX.E (Ground 5).

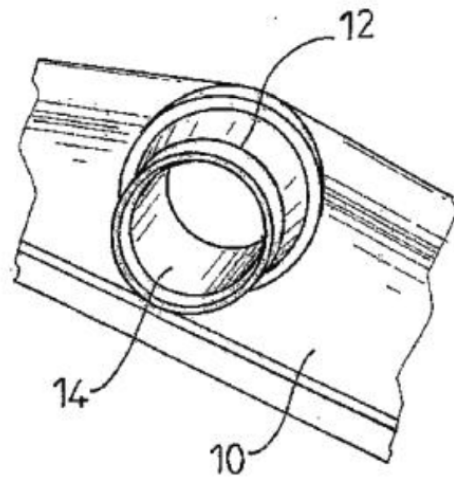


FIG.1

Godefroy, Figure 1. Thus, the only allegedly distinguishing feature identified by the Examiner was disclosed by at least Godefroy.

Additionally, Tomosada and Hanazaki-196 each disclose the exact same feature, as detailed below.

VII. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art (“POSITA”) as of the earliest claimed priority date of December 5, 2008³ would have had at least a bachelor’s degree in mechanical engineering, metallurgical engineering, or materials science engineering, and have two or more years of experience in mechanical engineering, metallurgical engineering, or materials science engineering and/or corrosion prevention system design. EX1004, ¶¶72–75. A person could also have qualified as

³ While not disputed for purposes of the asserted Grounds, Petitioner reserves the right to dispute the priority claim of the Challenged Claims in other proceedings.

a POSITA with some combination of more formal education (*e.g.*, a Ph.D.) and less technical experience or less formal education and more technical or professional experience in the foregoing fields. *Id.* Superior education could compensate for a deficiency in work experience, and vice-versa. *Id.* To the extent necessary, the POSITA may have collaborated with other skilled artisans, such that the individual and/or team collectively would have had experience and/or knowledge of particular characteristics of a radiator system. *Id.*

VIII. CLAIM CONSTRUCTION

A claim is construed in an IPR proceeding using the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316-1317 (Fed. Cir. 2005) (en banc). 37 C.F.R. §42.100(b). Except as discussed specifically below, Petitioner submits that the Board need not specially construe any terms of the Challenged Claims to institute IPR because they are shown to be anticipated and/or obvious regardless of construction. *Toyota Motor Corp. v. Cellport Sys., Inc.*, IPR2015-00633, Paper 11, 16 (PTAB Aug. 14, 2015). Petitioner reserves all rights to raise claim construction and related challenges under 35 U.S.C. §112 in other proceedings.

In the North Carolina Action, the following constructions have been applied:

Claim(s)	Term(s)	Construction
25, 26, 29, 33, 37	“sacrificial anode”	“piece of metal used to

Claim(s)	Term(s)	Construction
		protect another piece of metal by preferentially corroding”
25, 37	“within 10 inches of the hot liquid inlet” / “within 10 inches of a hot liquid inlet”	“within 10 inches of the center axis of [the hot liquid inlet / a hot liquid inlet]”
25, 29, and 37	“installed” / “installation”	plain and ordinary meaning with no clarifying statement
26, 27, and 37	“active metal”	“metal that reacts with oxygen”
37	“an anode holder” / “the anode holder”	plain and ordinary meaning
12	“sacrificial anode assembly”	“sacrificial anode and at least one other connected part that forms one unit”

See EX1016, 8, 25. While Petitioner is not a party in the North Carolina Action and

had no involvement or input on these constructions, Petitioner adopts them for consistency.

Claim 27 recites that “the active metal is at least one of aluminum, magnesium, and zinc.” In *Simo Holdings Inc. v. H.K. uCloudlink Network Tech., Ltd.*, the Court of Appeals for the Federal Circuit reiterated the “general grammatical principle” for interpreting a claim which recites “at least one of X and Y” as requiring at least one of X *and* at least one of Y (instead of at least one of X or at least one of Y). 983 F.3d 1367, 1377 (Fed. Cir. 2021) (citing *SuperGuide Corporation v. DirecTV Enterprises, Inc.*, 358 F.3d 870 (Fed. Cir. 2004)). Thus, for purposes of this proceeding, Petitioner takes the position that claim 27 requires that the sacrificial anode includes only or essentially only a combination of aluminum, magnesium, and zinc.

IX. GROUNDS OF UNPATENTABILITY

As established below, all features of the Challenged Claims were well known in the prior art.

As discussed in Section VI.B, above, the only purportedly distinguishing feature of the Challenged Claims identified during prosecution (the “10 inches” limitation) was disclosed in the prior art. Tomosada (Ground 1), Hanazaki-196 (Ground 3), and Godefroy (Ground 5) each disclose a sacrificial anode that is installed within 10 inches of a center axis of a hot liquid inlet. Although also

discussed in the Grounds, relevant teachings of Godefroy, Tomosada, and Hanazaki-196 with regard to this feature are provided here.

Godefroy states that “[r]eference is first made to Fig. 1, which shows a manifold 10 of a heat exchanger, in particular of a motor vehicle, to which a pipe 12 is connected, intended for the inlet or the outlet of a heat transfer liquid.” EX1008, 8. Godefroy also states that “[t]o prevent any risk of corrosion, inside the pipe 12, there is a sacrificial resist 14 made here in the form of a tubular insert applied against the internal wall of the pipe 12.” *Id.* As explained by Dr. Medlin, a “POSITA would understand from Figure 1 that the sacrificial anode 14 is within 10 inches of a center axis of a hot liquid inlet because the sacrificial anode 14 is disposed on the inside of the connector 12, which Godefroy teaches is ‘intended for the inlet...of a heat transfer liquid.’” EX1004, ¶145 (quoting EX1008, 8). Thus, Godefroy discloses a sacrificial anode that is placed within 10 inches of a center axis of a hot liquid inlet to a radiator.

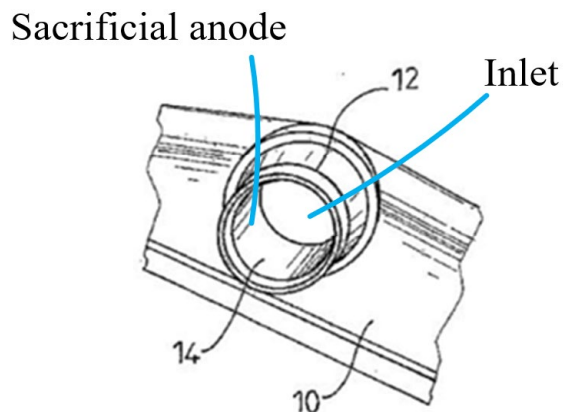
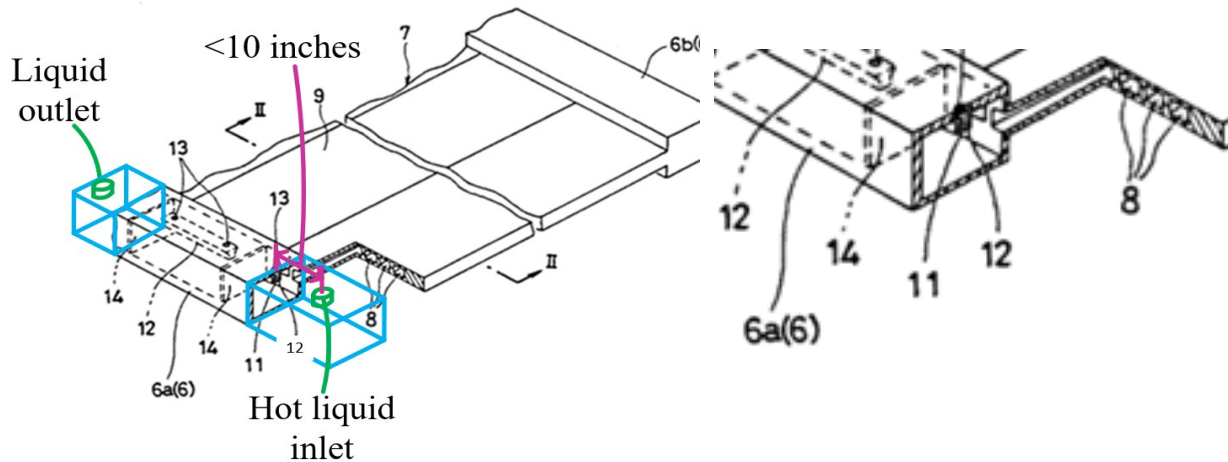


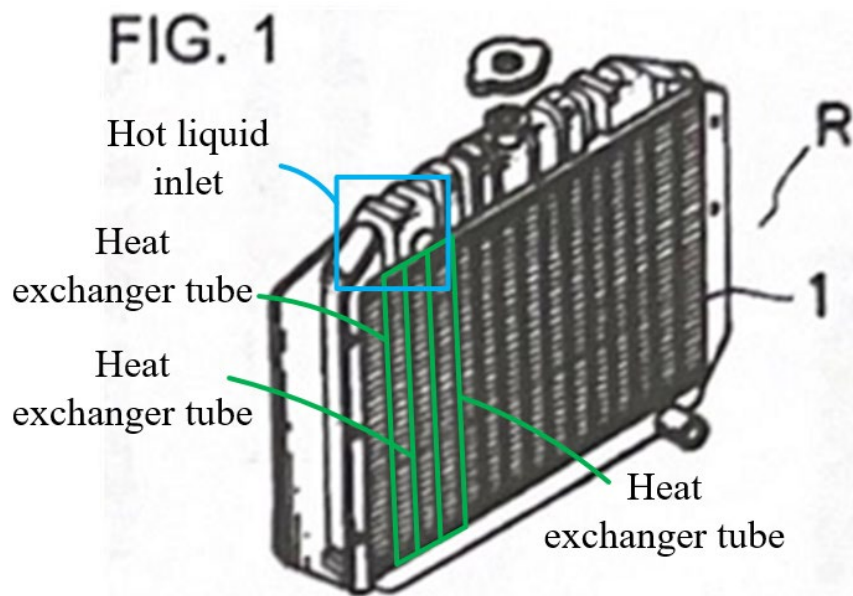
FIG.1

Similarly, Hanazaki-196 discloses a sacrificial anode 12 that is “on the inner surface side” of a “header pipe 6.” EX1007, 4. As explained by Dr. Medlin, a “POSITA would have understood at least one of the sacrificial anodes 12 depicted in Figure 2A to be within 10 inches of a center axis of the hot liquid inlet.” EX1004, ¶265. Thus, Hanazaki-196 also discloses a sacrificial anode that is placed within 10 inches of a center axis of a hot liquid inlet to a radiator.

FIG. 2A



Similarly, Tomosada teaches turbulators that include sacrificial anodes. *See* EX1005, 1–2; EX1004, ¶¶155–161. As explained by Dr. Medlin, Tomosada teaches locating these turbulators 2 in heat exchanger tubes 1 “directly underneath the hot liquid inlet” and that a “significant portion of each of these heat exchanger tubes 1 is within 10 inches of a center axis of the hot liquid inlet.” EX1004, ¶¶166–167. Thus, Tomosada also discloses a sacrificial anode that is placed within 10 inches of a center axis of a hot liquid inlet to a radiator.

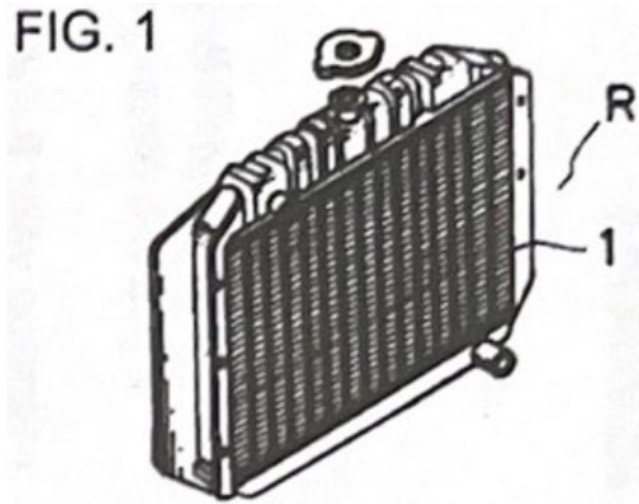


A. Ground 1: Claims 12, 15, 16, 19–21, 24–26, 29, 31–34, 37, 40, 42, 43, and 45 Are Anticipated by and/or Obvious Over Tomosada

Claims 12, 15, 16, 19–21, 24–26, 29, 31–34, 37, 40, 42, 43, and 45 of the '494 Patent are unpatentable under 35 U.S.C. §102 as anticipated by Tomosada and/or under 35 U.S.C. §103 as obvious over Tomosada.

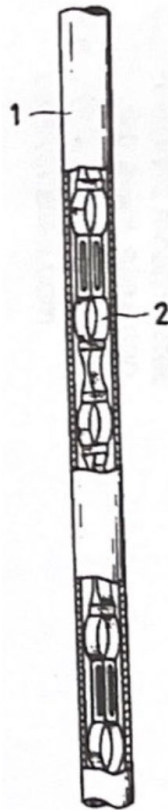
1. Tomosada

Tomosada is directed to an “aluminum heat exchanger.” EX1006, 1; EX1004, ¶76. Tomosada states that “[i]n FIG. 1 a radiator R for an automobile is illustrated,” that “[a] heat exchanger tube 1 formed of anti-corrosion aluminum alloy such as that illustrated in FIG. 2 is arranged inside the radiator R.” EX1006, 1; EX1004, ¶¶81–83.



Tomosada explains that “[w]hen the heat exchanger tube 1 is filled with coolant, this turbulator 2 becomes a sacrificial anode relative to the heat exchanger tube 1 formed using an aluminum material with the heat exchanger tube 1 becoming the cathode and thus protected from corrosion.” EX1006, 1–2; EX1004, ¶84; *see id.*, 76–101.

FIG. 2



2. Claim 12

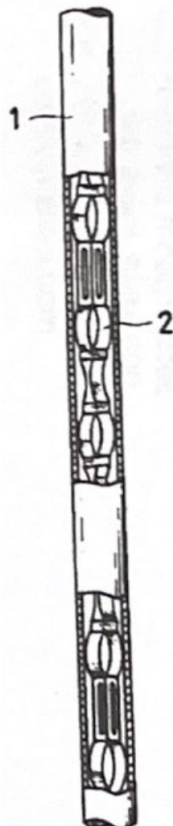
- i. **“A method of preventing corrosion of a radiator, the method comprising:”**

Tomosada discloses such a method. *See, e.g.*, EX1005, 1 (the “present invention solves the problems associated with conventional aluminum heat exchangers, and provides an aluminum heat exchanger which is excellent in anti-corrosion characteristics....”); EX1004, ¶154.

ii. “installing a sacrificial anode assembly including a sacrificial anode within the radiator,”

Tomosada discloses that the turbulator 2 is inserted within the heat exchanger tube 1. *See, e.g.*, EX1005, 1; EX1004, ¶155. Tomosada states “[w]hen the heat exchanger tube 1 is filled with coolant, this *turbulator 2 becomes a sacrificial anode* relative to the heat exchanger tube 1 formed using an aluminum material with the heat exchanger tube 1 becoming the cathode and thus protected from corrosion.” EX1005, 1–2; EX1004, ¶¶155–57. The turbulator 2 is therefore necessarily a “sacrificial anode assembly including a sacrificial anode.” *Id.*, ¶¶158–61.

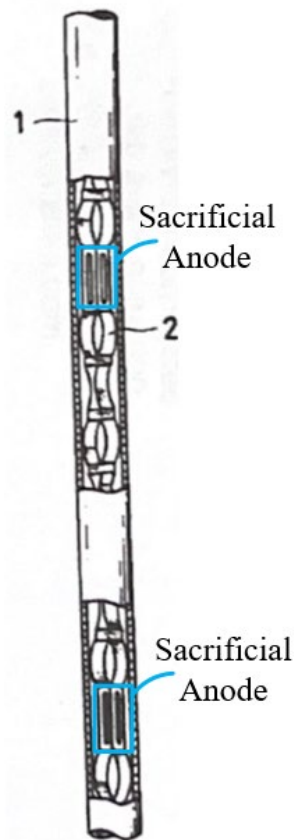
FIG. 2



As shown in Figure 2 of Tomosada, the turbulator 2 includes multiple different components that are connected together. *Id.*, ¶¶86, 155. As explained by Dr. Medlin, “the entirety of the turbulator 2 would not have been understood to be a sacrificial anode” and that “[i]nstead, a POSITA would have understood that only certain components (the rectangular components) of the turbulator 2 are sacrificial anodes.” *Id.*, ¶155. For example, a POSITA would have understood that the ring-shaped components would corrode at a vastly different rate than the bone-shaped components. *Id.*, ¶¶86–93.

As a result of these differing rates of corrosion, the turbulator 2 would break apart into multiple segments based on the components that would corrode the most quickly, which would have been undesirable. *Id.* Thus, a POSITA would have understood that when Tomosada states that the “turbulator 2 becomes a sacrificial anode relative to the heat exchanger tube 1,” Tomosada means that at least one component, but *not all components*, of the turbulator 2 become a sacrificial anode relative to the heat exchanger tube 1. *Id.*

FIG. 2



As explained by Dr. Medlin, a POSITA would have understood that the rectangular components taught by Tomosada are sacrificial anodes because they are suspended within the flow path of the heat exchanger tube and are the components best suited to prevent corrosion. *Id.*, ¶¶86–93, 156. Specifically, a POSITA would have understood that the rectangular components would have corroded more slowly than the ring-shaped or bone-shaped components. *Id.*, ¶87. As stated by Dr. Medlin, a “POSITA would have understood that if these components were all electrochemically corroded, these components would be electrochemically corroded

at different rates due to their different shapes and sizes” and “a POSITA would have understood that the ring-shaped components and the bone-shaped components would be electrochemically corroded more quickly than the rectangular components due to the minimum cross-sectional area of the rectangular components being greater than the minimum cross-sectional areas of the ring-shaped components and the bone-shaped components.” *Id.*

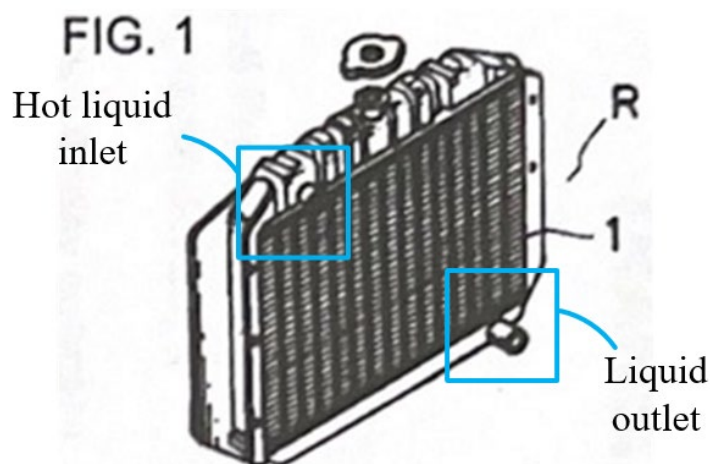
A POSITA would have understood the turbulator 2 as being a “sacrificial anode and at least one other connected part that forms one unit.” *See id.*, ¶89 (“[a] POSITA would have understood that these various components (bone-shaped component, rectangular component, ring-shaped component) are assembled to form the turbulator 2”). Similarly, a POSITA would have understood the turbulator 2 as including a “piece of metal used to protect another piece of metal by preferentially corroding.” *Id.*, ¶87. Accordingly, Tomosada discloses “installing a sacrificial anode assembly including a sacrificial anode within the radiator.” *Id.*, ¶¶83–90, 155–158.

Even assuming, *arguendo*, that Tomosada is not found to teach that the rectangular components are sacrificial anodes (which they are), a POSITA would have found it obvious to construct the turbulator 2 such that only the rectangular components are sacrificial anodes. *Id.*, ¶¶92–93, 159–161. Such a construction would have inured the benefits described above. Moreover, such a construction would have decreased the cost of the turbulator 2 because it would require less

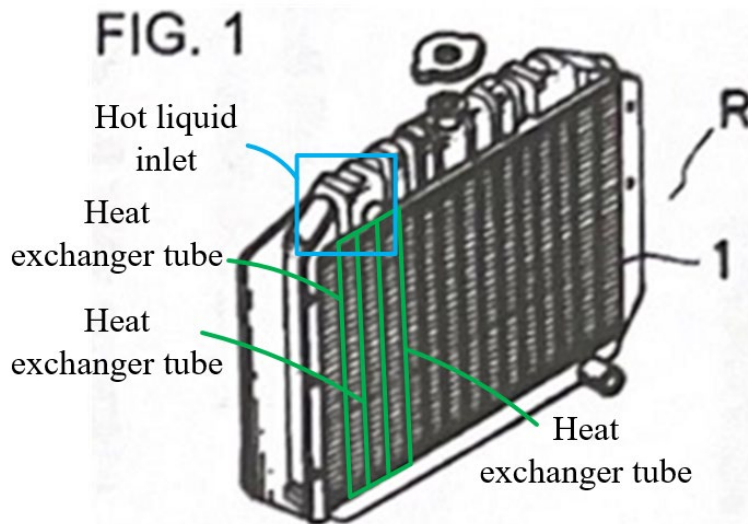
anodic material. *Id.*, ¶¶93, 160. A POSITA would have understood that reducing the cost of the turbulator 2 would have been desirable because the turbulator 2 is intended to be replaced and decreasing the cost of replacement would have been desirable. *Id.* Thus, a POSITA would have found it obvious to construct the turbulator 2 such that Tomosada teaches “installing a sacrificial anode assembly including a sacrificial anode within the radiator” when inserting the turbulator 2 in the heat exchanger tube 1. *Id.*, ¶¶83–90, 92–93, 159–161.

iii. “wherein the sacrificial anode is placed within 10 inches of a hot liquid inlet to the radiator.”

Tomosada teaches that the radiator includes a hot liquid inlet and a hot liquid outlet, as shown in the annotation of Figure 1 reproduced below. *See, e.g.*, EX1005, 1–2; EX1004, ¶¶82, 162.

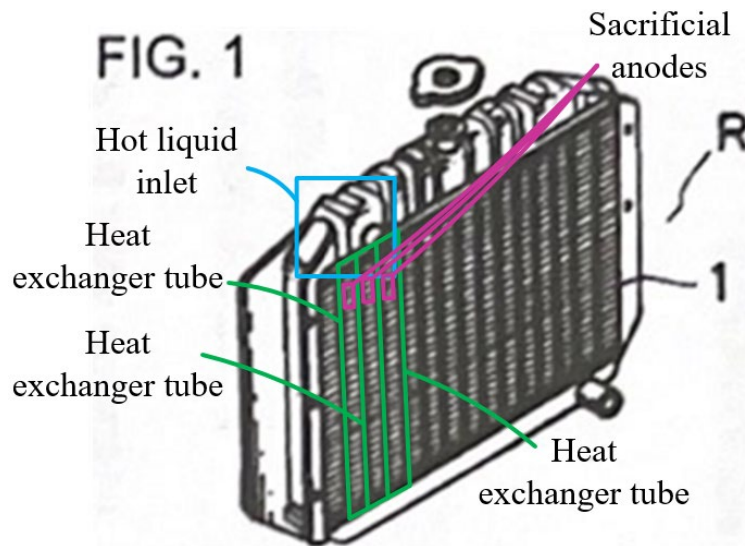


As explained by Dr. Medlin, a “POSITA would have understood that Tomosada teaches that the radiator R includes a plurality of heat exchanger tubes 1 extending between its top header and its bottom header.” *Id.*, ¶¶94; *see, e.g.*, EX1005, 1 (“A heat exchanger tube 1 formed of anticorrosion aluminum alloy such as that illustrated in FIG. 2 is arranged inside the radiator R”); EX1004, ¶83. Referencing annotated Figure 1 below, Dr. Medlin states that the “turbulators 2 would be located within the heat exchanger tubes 1 underneath the hot liquid inlet” and that a “POSITA would have understood that as a result of the turbulators 2 being located underneath the hot liquid inlet, the sacrificial anodes contained in each of the turbulators 2 would be placed within 10 inches of a center axis of a hot liquid inlet to the radiator of Tomosada.” *Id.*, ¶96; *see also id.*, ¶¶94, 95, 162–167.



Tomosada does not limit the turbulator 2 to any particular location within the heat exchanger tube 1. *Id.*, ¶¶168–69. As explained by Dr. Medlin, “[i]n view of the

teaching that each turbulator 2 extends at least almost an entire length of the heat exchanger tube 1 between the first header and the second header, a POSITA would have understood that at least one of the sacrificial anodes (the rectangular components) taught by Tomosada is placed within 10 inches of the center axis of the hot liquid inlet.” *Id.*, ¶169; *see id.*, ¶170.



Even assuming, *arguendo*, that Tomosada does not teach that the sacrificial anode of the turbulator 2 is located within 10 inches of a center axis of the hot liquid inlet (which it does), a POSITA would have found it obvious to locate the sacrificial anode of the turbulator 2 within 10 inches of a center axis of the hot liquid inlet. *Id.*, ¶¶97–99, 171–74. As explained by Dr. Medlin, “a sacrificial anode placed in a flow path provides anodic protection over a significantly smaller distance upstream of the sacrificial anode than the anodic protection it provides downstream of the sacrificial anode” and “a POSITA would have been motivated to locate the sacrificial anode of

the turbulator 2 as far upstream as possible (i.e., as close to a hot liquid inlet as possible, etc.) in order to provide protection to as much of the heat exchanger tube 1 as possible.” *Id.*, ¶171.

Moreover, a POSITA would have understood that corrosion is generally greater proximate the hot liquid inlet than the liquid outlet. *Id.*, ¶172. As a result, a POSITA would have found it obvious to locate the turbulator 2 within 10 inches of a center axis of the hot liquid inlet because this location is associated with increased corrosion. *Id.*

Finally, the '494 Patent does not include any teachings as to the importance of “10 inches.” *Id.*, ¶¶99, 173. A POSITA would have found this arbitrary distance to be merely a design choice that would have been obvious. *Id.*; *see also Rexnord Indus., LLC v. Kappos*, 705 F.3d 1347, 1355a–56 (Fed. Cir. 2013) (“we conclude that the Board erred in holding that it would not have been obvious to limit the space to the 10 mm maximum” where “[Petitioner] pointed out that the conveyor belts of the prior art show every element of the claims except the specific measure in millimeters of the maximum space between modules....A space that is small enough to avoid pinching of fingers is taught in the prior art, with the 10 mm dimension a design choice that takes account of the size of fingers and other small objects.”); *Airlite Plastics Co. v. Plastilite Corp.*, 526 F.2d 1078, 1082 (8th Cir. 1975) (claims obvious where difference over prior art limited to “form, proportions, or size”).

Therefore, a POSITA would have understood the turbulator 2 as including a sacrificial anode that is placed “within 10 inches of the center axis of a hot liquid inlet” or would have found it obvious to locate the sacrificial anode of the turbulator 2 “within 10 inches of the center axis of a hot liquid inlet.” *Id.*, ¶174. Accordingly, Tomosada teaches “wherein the sacrificial anode is placed within 10 inches of a hot liquid inlet to the radiator.” *Id.*

3. Claim 15 – “wherein the sacrificial anode consists essentially of an active metal.”

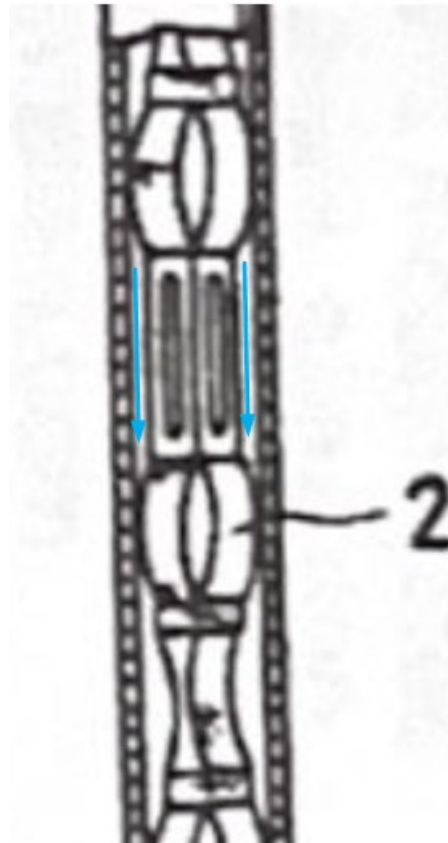
Tomosada states that “the turbulator 2 is made using zinc or a zinc compound material that is an electrochemical base relative to aluminum.” EX1005, 1, 2; EX1004, ¶¶84, 176; *see id.*, ¶¶175–77. Zinc reacts with oxygen and is an active metal according to the ’494 Patent. *See, e.g.*, EX1001, 2:6–9; EX1004, ¶176. As explained by Dr. Medlin, “Tomosada states that the turbulator 2 is ‘made using zinc’ so as to ‘become[] the anode,’” and therefore “Tomosada teaches that the sacrificial anodes (the rectangular components) of the turbulator 2 are made using zinc.” *Id.*, ¶177. Accordingly, Tomosada discloses “wherein the sacrificial anode consists essentially of an active metal.”

4. Claim 16 – “wherein the sacrificial anode consists essentially of aluminum, magnesium, or zinc”

See Section IX.A.3; EX1004, ¶¶84, 175–79.

5. Claim 19 – “wherein installing the sacrificial anode assembly further comprises: installing the sacrificial anode assembly within the fluid flow of the radiator”

See Section IX.A.2.ii; EX1004, ¶¶155–161, 180–182. As stated by Dr. Medlin, “Tomosada provides its sacrificial anodes (the rectangular components) in a fluid flow through the heat exchanger tube 1 when the turbulator 2 is inserted within the heat exchanger tube 1.” *Id.*, ¶181.



6. Claim 20 – “wherein the radiator comprises aluminum”

Tomosada teaches that the “heat exchanger tube 1 [is] formed of anticorrosion aluminum alloy such as that illustrated in FIG. 2 is arranged inside the radiator R.” EX1005, 1; EX1004, ¶183.

7. Claim 21 – “wherein the hot liquid is coolant”

Tomosada teaches that the “heat exchanger tube 1 is filled with coolant....”
EX1005, 1; EX1004, ¶¶184–85; *see* EX1005, 2.

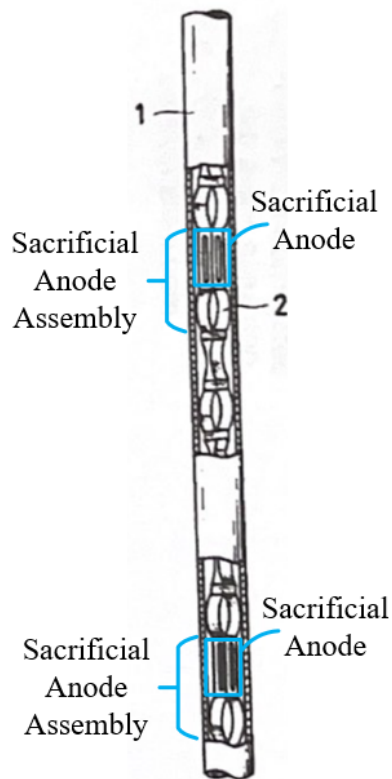
8. Claim 24 – “further comprising installing a second sacrificial anode assembly within the radiator.”

See Section IX.A.2.ii; EX1004, ¶¶155–61, 186–93.

Claim 24 does not require the “second sacrificial anode assembly” to be
“placed within 10 inches of a hot liquid inlet to the radiator.” *Id.*, ¶187.

As explained above with respect to claim 12, a POSITA would have understood
that the rectangular components taught by Tomosada are sacrificial anodes. *Id.*,
¶¶86–90, 156. Tomosada teaches that the turbulator 2 includes at least two of the
rectangular components, and therefore teaches a second sacrificial anode assembly,
as shown in the annotation of Figure 2 provided by Dr. Medlin, below. *Id.*, ¶¶91,
188.

FIG. 2



Tomosada also discloses that the radiator includes multiple heat exchanger tubes 1, and therefore multiple turbulators 2, each including at least one sacrificial anode assembly. *Id.*

Therefore, Tomosada teaches “installing a second sacrificial anode assembly within the radiator.” *Id.*, ¶193.

9. Claim 25

- i. “A radiator for use in a motor vehicle, the radiator further comprising:”

See Section IX.A.2.i; EX1004, ¶¶154, 194–96.

Tomosada states that “in the embodiment described above, the description used a radiator for an automobile as an example....” EX1005, 2; EX1004, ¶195.

- ii. “a hot liquid inlet to the radiator from an engine of the motor vehicle, the hot liquid inlet providing fluid communication for fluid flow of hot liquid from the engine; and”**

See Sections IX.A.2.i, IX.A.2.iii, and IX.A.9.i; EX1004, ¶¶154, 162–74, 194–200.

As explained by Dr. Medlin, a POSITA would have understood that the hot liquid inlet of the radiator of Tomosada is from an engine of a motor vehicle and provides fluid communication for fluid flow of hot liquid from the engine. *Id.*, ¶198.

- iii. “a sacrificial anode installed within 10 inches of the hot liquid inlet of the radiator.”⁴**

See Sections IX.A.2.ii–IX.A.2.iii; EX1004, ¶¶82–83, 94–99, 155–174, 201–204. As set forth above with respect to claim 12, Tomosada teaches that the turbulator 2 includes a sacrificial anode that is installed within 10 inches of a center axis of the hot liquid inlet of the radiator. *Id.*, ¶¶162–70, 203. As also set forth above with respect to claim 12, even assuming, *arguendo*, that Tomosada does not teach that its sacrificial anode is installed within 10 inches of a center axis of the hot liquid inlet of the radiator, a POSITA would have found it obvious to locate the sacrificial anode of Tomosada

⁴ Unlike claim 12, claim 25 does not recite a “sacrificial anode assembly.”

within 10 inches of a center axis of the hot liquid inlet of the radiator. *Id.*, ¶¶171–74, 204.

10.Claim 26 – “wherein the sacrificial anode consists essentially of an active metal.”

See Section IX.A.3; EX1004, ¶¶175–77, 205–06.

11.Claim 29 – “wherein the sacrificial anode is installed onto a surface of the radiator”⁵

See Section IX.A.2.ii; EX1004, ¶¶155–61, 207–10.

As discussed above, the ring-shaped components of the turbulator 2 contact the heat exchanger tube 1. This contact provides electrical contact with the heat exchanger tube 1 and therefore installation onto a surface of the radiator of Tomosada. *Id.*, ¶208. A detailed view of Figure 2 of Tomosada showing this contact is provided below.

⁵ Petitioner submits that claim 29 is also invalid under 35 U.S.C. § 112 for indefiniteness because “is installed onto” is a method step in a device claim. *See IPXL Holdings v. Amazon*, 430 F.3d 1377, 1383–84 (Fed. Cir. 2005).



12.Claim 31 – “wherein the radiator comprises aluminum”

See Section IX.A.6; EX1004, ¶¶183, 211–12.

13.Claim 32 – “wherein the radiator enables air-cooling of the hot liquid”

Petitioner submits that claim 32 merely recites a non-limiting intended use of the radiator without actually reciting its use or any structure required by the intended use. Thus, claim 32 should be given no patentable weight.

Regardless, as explained by Dr. Medlin, a POSITA would have understood that the radiator R is used for air-cooling the hot liquid within the heat exchanger tube 1. *Id.*, ¶¶77, 213. Dr. Medlin states that “a POSITA would have understood that a common application for a radiator is use in an automobile to air-cool an engine of the automobile” and that “the radiator provides this cooling by passing air across

tubes, such as the heat exchanger tubes 1 of Tomosada, circulating the hot fluid within the radiator.” *Id.*, ¶77.

14.Claim 33 – “further comprising a second sacrificial anode.”⁶

See Sections IX.A.2.ii and IX.A.8; EX1004, ¶¶155–61, 186–193, 214–17.

15.Claim 34 – “wherein the hot liquid is coolant”

See Section IX.A.7; EX1004, ¶¶184–85, 218–19.

16.Claim 37

- i. “An electrolysis prevention device for preventing corrosion, the electrolysis prevention device comprising:”**

See Section IX.A.2.i; EX1004, ¶¶154, 220–21. A POSITA would have understood that the turbulator 2 is an “electrolysis prevention device” because the turbulator 2 prevents corrosion due to electrolysis. *Id.*, ¶221.

- ii. “a sacrificial anode made of an active metal; and”**

See Sections IX.A.2.ii and IX.A.3; EX1004, ¶¶155–161, 175–177, 222–223.

- iii. “an anode holder supporting the sacrificial anode, the anode holder adapted for installation in an engine radiator within 10 inches of a hot liquid inlet to the engine radiator.”**

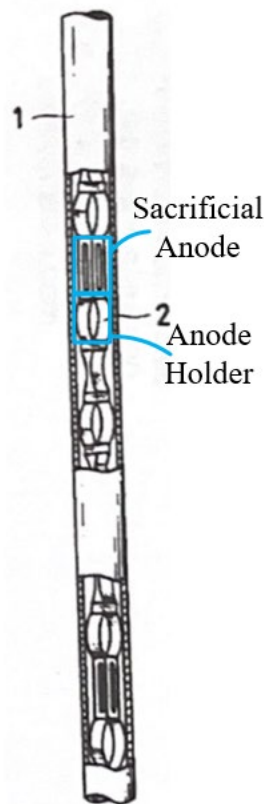
See Sections IX.A.2.ii–IX.A.2.iii and VIII.A.11; EX1004, ¶¶82, 83, 91, 94–99, 155–174, 207–210, 224–226.

⁶ Unlike claim 24, claim 33 does not recite a “sacrificial anode assembly.”

A POSITA would have understood that the turbulator 2 includes an anode holder (ring-shaped component), which holds the sacrificial anode (rectangular component), as shown in the annotation of Figure 2 of Tomosada reproduced below.

Id., ¶225.

FIG. 2



As explained by Dr. Medlin, “Tomosada teaches that the ring-shaped components contact the heat exchanger tube 1, as shown in the detailed view of Figure 2 of Tomosada shown below,” “[t]his contact occurs as a result of the turbulator 2 being inserted (installed) in the heat exchanger tube 1,” and “[t]his contact provides an electrical contact with the heat exchanger tube 1 which enables

the sacrificial anode (rectangular component) to prevent corrosion.” *Id.*, ¶208. Dr. Medlin also states that “the ring-shaped components function to position the rectangular components within the heat exchanger tube 1 and provide an electrical contact with the heat exchanger tube 1.” *Id.*, ¶225. Thus, a POSITA would have understood that the ring-shaped component is an anode holder. *Id.* As stated by Dr. Medlin, “the anode holder of Tomosada is adapted for installation in the radiator within 10 inches of a center axis of a hot liquid inlet to the radiator.” *Id.*, ¶226.

17.Claim 40 – “wherein the sacrificial anode comprises zinc”

See Section IX.A.3; EX1004, ¶¶175–177, 227–228.

18.Claim 42 – “wherein the engine radiator comprises aluminum”

See Section IX.A.6; EX1004, ¶¶183, 229–230.

19.Claim 43 – “wherein the anode holder enables the sacrificial anode to be located within fluid flow of the hot coolant inlet”⁷

See Sections IX.A.2.ii–IX.A.2.iii, IX.A.5, and IX.A.16.iii; EX1004, ¶¶155–74, 180–182, 224–26, 231–33. As explained by Dr. Medlin, “Tomosada teaches that the turbulator 2 is installed such that the sacrificial anodes are located within fluid flow of the radiator” and a “POSITA would have understood that this fluid flow is also “fluid flow of the hot coolant inlet.” *Id.*, ¶232.

⁷ Unlike claim 19, claim 43 recites “fluid flow of the *hot coolant inlet*.”

20.Claim 45 – “wherein the hot liquid is coolant”

See Section IX.A.7; EX1004, ¶¶184–85, 234–35.

B. Ground 2: Claims 22, 23, 27, 35, 36, 38, 39, 46, and 47 Are Obvious Over by Tomosada and Hanazaki-069

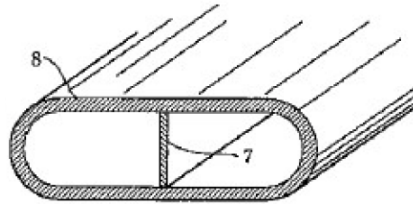
Claims 22, 23, 27, 35, 36, 38, 39, 46, and 47 of the '494 Patent are unpatentable under 35 U.S.C. §103 as obvious over Tomosada and Hanazaki-069.

1. Hanazaki-069

Hanazaki-069 is directed to an “aluminum alloy radiator having improved corrosion resistance by attaching a sacrificial anode to the inner surface of a tube.” EX1006, ¶[0001]; EX1004, ¶102. Hanazaki-069 recognizes that “the corrosive environment inside the radiator fluctuates in a complex manner, and simply placing a sacrificial anode in the radiator tube does not provide sufficient corrosion protection.” EX1006, ¶[0005]; EX1004, ¶105. Hanazaki-069 states that an “example of the use of this cathodic protection for heat exchangers such as radiators is also introduced in JP-A-55-68595,” which refers to Tomosada. EX1006, ¶[0005]; EX1004, ¶104.

Hanazaki-069 teaches that “[a]s shown in Figs. 4~12, sacrificial anode 7 was placed on the inner surface of tube 8 in various forms.” EX1006, ¶[0017]; EX1004, ¶107; *see id.*, 102–08.

【図4】



i. The Predictable Combination of Tomosada and Hanazaki-069

As set forth below, a POSITA would have had reason to combine Tomosada and Hanazaki-069, and would have had a reasonable expectation of success in doing so. *See* EX1004, ¶¶109–16. Further, a POSITA would have understood that the combination would have been successful in facilitating use of certain fluids or certain sacrificial anodes in applications where use of these fluids/anodes are desirable. *Id.*, ¶113; *Intel Corp. v. Pact XPP Schweiz AG*, 2022-1037, 13 (Fed. Cir. Mar. 13, 2023) (“It’s enough for [Petitioner] to show that there was a known problem...in the art, that [a secondary reference]...helped address that issue, and that combining the teachings of [the art and the secondary reference]...wasn’t beyond the skill of an ordinary artisan. Nothing more is required to show a motivation to combine under [*KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 421 (2007)]....”).

First, Tomosada and Hanazaki-069 are analogous art directed to the same field of endeavor as the ’494 Patent (*i.e.*, corrosion prevention systems for radiators). *See, e.g.*, EX1001, 1:35–41; EX1005, 1; EX1006, ¶[0001]; EX1004, ¶110. Like the ’494 Patent, Tomosada and Hanazaki-069 are directed to the same problem of how to

prevent corrosion of a radiator due to dissimilar metals. *See, e.g.*, EX1001, 1:61–67; EX1005, 1; EX1006, ¶[0005]; EX1004, ¶111. A POSITA faced with the problem to be solved in the '494 Patent would have looked to other references involving solutions to the same problem and within the same field of endeavor, such as Tomosada and Hanazaki-069. *See id.*, ¶¶110–12.

Petitioner submits that a POSITA would have understood that, similar to coolant, water and antifreeze are conventionally used in radiators. *Id.*, ¶113–14. Thus, a POSITA would have found it obvious to substitute water or antifreeze for the coolant in Tomosada. *Id.*, ¶113. The radiator R of Tomosada is capable of using fluids, such as water and antifreeze, as taught by Hanazaki-069, instead of coolant, as taught by Tomosada. *Id.* Tomosada does not teach that the turbulator 2 includes any structure that would preclude use of other fluids. *Id.* As explained by Dr. Medlin, “POSITA would have understood that there are certain types of applications where water is preferred, such as applications where the amount of cooling that the fluid is required to provide is relatively small (i.e., when the radiator is used with an engine that is relatively small). Similarly, a POSITA would have understood that there are certain types of applications where antifreeze is preferred, such as applications where the radiator is exposed to relatively cold temperatures.” *Id.* Moreover, a POSITA would have had a reasonable expectation of success in making such a modification of Tomosada. *Id.*, ¶114. Hanazaki-069 even teaches that it builds on Tomosada, thus

providing a further reason why combining Tomosada and Hanazaki-069 would have been obvious to a POSITA. *Id.*, ¶112.

Additionally, Tomosada does not preclude the use of metals, such as magnesium, for the sacrificial anode. *Id.*, ¶115. As explained by Dr. Medlin, a “POSITA would have understood that there are certain types of applications where an aluminum, zinc, and magnesium composition is preferred” and “[a]s explained by Hanazaki-069 and shown in its testing, the composition changes the potential difference, and it is desirable to control the potential difference so as to desirably prevent corrosion.” *Id.* Therefore, a POSITA would have found it obvious to include magnesium in the sacrificial anode, as taught by Hanazaki-069. *Id.*, ¶¶115–16. A POSITA would have understood that these benefits are desirable for certain applications. *Id.*, ¶115. Moreover, a POSITA would have had a reasonable expectation of success in making such a modification of Tomosada. *Id.*, ¶116.

2. Claim 22 – “wherein the hot liquid is water”

Hanazaki-069 states that “radiators are not always supplied with the ideal liquid, and sometimes tap water is supplied instead of the antifreeze liquid.” EX1006, ¶[0005]; EX1004, ¶¶102–14, 236–38. Thus, a POSITA would have understood Hanazaki-069 as disclosing use of water with a radiator and use of antifreeze with a radiator. *Id.*, ¶237.

3. Claim 23 – “wherein the hot liquid is antifreeze”

See Sections IX.B.1.i–IX.B.2; EX1004, ¶¶102–14, 236–40.

4. Claim 27 – “wherein the active metal is at least one of aluminum, magnesium, and zinc”

As established in Section VIII, claim 27 requires that the sacrificial anode includes only or essentially only a combination of aluminum, magnesium, and zinc.

As established in Section IX.A.3, Tomosada states that “the turbulator 2 is made using zinc *or a zinc compound material* that is an electrochemical base relative to aluminum.” EX1005, 1; EX1004, ¶¶175–77. Hanazaki-069 teaches an example where the sacrificial anode includes only a combination of aluminum, zinc, and magnesium. EX1006, Table 7; EX1004, ¶¶241–43.

5. Claim 35 – “wherein the hot liquid is water”

See Sections IX.B.1.i–IX.B.2; EX1004, ¶¶102–14, 236–38, 244–45.

6. Claim 36 – “wherein the hot liquid is antifreeze”

See Sections IX.B.1.i–IX.B.2; EX1004, ¶¶102–14, 236–38, 246–47.

7. Claim 38 – “wherein the sacrificial anode comprises aluminum”

See Sections IX.B.1.i and IX.B.4; EX1004, ¶¶175–77, 241–43, 248–49.

8. Claim 39 – “wherein the sacrificial anode comprises magnesium”

See Sections IX.B.1.i and IX.B.4; EX1004, ¶¶175–77, 241–43, 250–51.

9. Claim 46 – “wherein the hot liquid is water”

See Sections IX.B.1.i–IX.B.2; EX1004, ¶¶102–14, 236–38, 252–53.

10.Claim 47 – “wherein the hot liquid is antifreeze”

See Sections IX.B.1.i–IX.B.2; EX1004, ¶¶102–14, 236–38, 254–55.

C. Ground 3: Claims 12, 15–17, 19–21, and 24 Are Anticipated by and/or Obvious Over Hanazaki-196

Claims 12, 15–17, 19–21, and 24 of the ’494 Patent are unpatentable under 35 U.S.C. §102 as anticipated by Hanazaki-196 and/or under 35 U.S.C. §103 as obvious over Hanazaki-196.

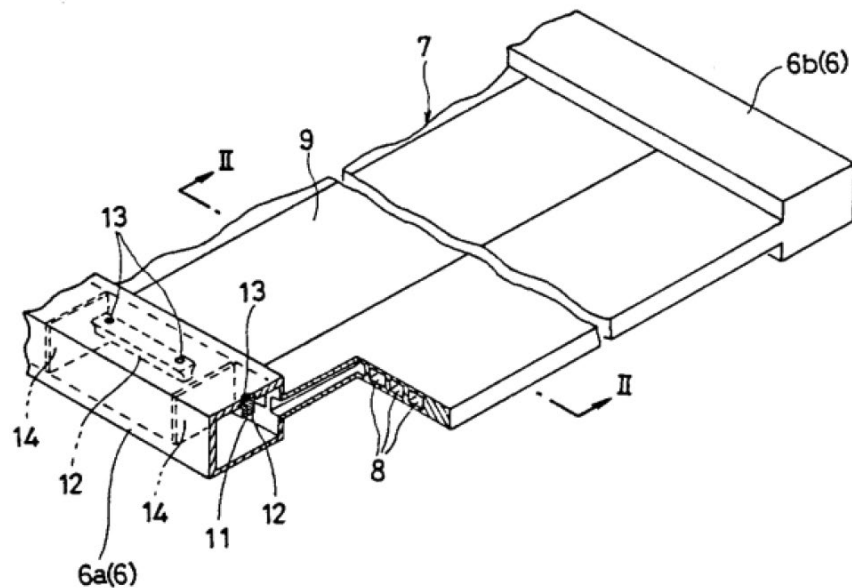
Hanazaki-196 was considered by the Examiner. EX1010, 116. However, the Examiner provided no discussion of Hanazaki-196 and no indication of what claim elements, if any, are allegedly missing from Hanazaki-196. Moreover, the only English portion of Hanazaki-196 that is of record is what appears to be an Abstract. EX1010, 117. Petitioner submits that the Examiner overlooked or misapprehended the teachings of Hanazaki-196 with respect to the claims, as established below.

1. Hanazaki-196

Hanazaki-196 states that its “present invention is a heat exchanger made from aluminum, that uses a brine made from an aqueous solution of calcium chloride or sodium chloride, wherein a sacrificial anode, formed from a metal that is less noble than aluminum, and that reduces the electropotential of the pipeline to 50 mv, at least, less than the pitting electropotential, is formed on an inner wall of a pipeline that forms a brine flow path.” EX1007, 2; EX1004, ¶117.

Hanazaki-196 explains that the “heat exchanger [of Figures 2A and 2B] is structured from a pair of header pipes 6 (6a and 6b) that have a relatively large diameter, arranged in parallel with a space therebetween, and heat exchanging pipe units 7, connecting between the header pipes 6a and 6b, where a coolant supplying opening and coolant exhausting opening are provided at the two ends of the primary side header pipe 6a that is positioned on the upstream side, where heat is exchanged in the heat exchange region during the time until the coolant that is introduced from the supplying opening arrives at the exhaust opening 10 after traveling serpentine through each of the brine flow paths 8 of each of the header pipes 6 and the heat exchanging pipe units 7.” EX1007, 4; EX1004, ¶119; *see id.*, 117–31.

FIG. 2A



2. Claim 12

i. ...

Hanazaki-196 discloses such a method. *See, e.g.*, EX1007, 2 (“the present inventors arrived at the present invention through solving this problem of corrosion in a heat exchanger....”); EX1004, ¶¶256–58.

ii. ...

Hanazaki-196 teaches that “as depicted in FIG. 3, which shows the primary side header pipe 6a enlarged...an attaching groove 11...is formed, spanning the total length, on the inner surface side thereof, and a sacrificial anode 12...is fitted into this attaching groove 11, followed by plug welding *at welding points 13 at at least five locations for a single sacrificial anode 12* is fitted into this attaching groove 11....” EX1007, 4; EX1004, ¶260; *see id.*, ¶¶259–63.

FIG. 2A

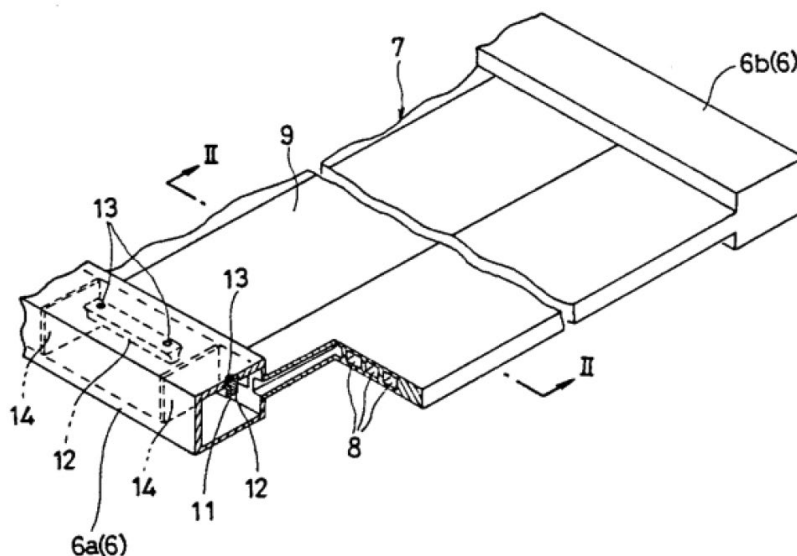
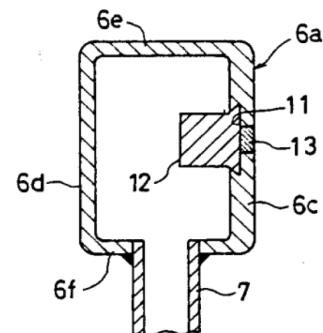


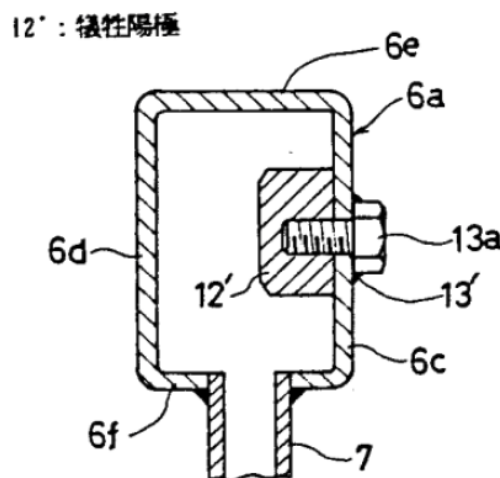
FIG. 3



Accordingly, the welding points 13, which hold the sacrificial anode 12 within the header pipe 6a, and the sacrificial anode 12 are therefore a “sacrificial anode and at least one other connected part that forms one unit.” *Id.*, ¶¶123, 261.

Even assuming, *arguendo*, that the welding points 13 are not connected to the sacrificial anode 12 forming one unit, a POSITA would have found it obvious to replace the welding points 13 with bolts, as taught by Hanazaki-196, that necessarily would be connected to the sacrificial anode 12 forming one unit. *Id.*, ¶262. For example, Hanazaki-196 states that “FIG. 5 depicts a modified example of an attaching structure for a case of a sacrificial anode 12’...where a bolt 13a that is screwed through the back wall 6c of the header pipe 6 is welded tightly 13’ from the outside, and *the threaded portion thereof screws together with the sacrificial anode 12’.*” EX1007, 4; EX1004, ¶¶127, 262.

FIG. 5

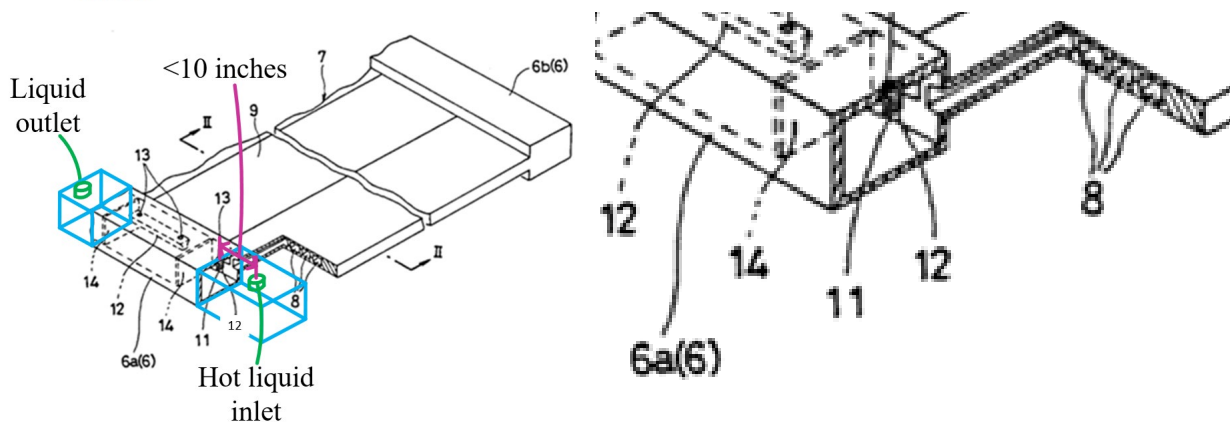


Accordingly, Hanazaki-196 discloses “installing a sacrificial anode assembly including a sacrificial anode within the radiator.” *Id.*, ¶263.

iii. ...

Hanazaki-196 teaches that the “heat exchanger is structured from a pair of header pipes 6 (6a and 6b)..., and heat exchanging pipe units 7, connecting between the header pipes 6a and 6b, *where a coolant supplying opening and coolant exhausting opening are provided at the two ends of the primary side header pipe 6a that is positioned on the upstream side, where heat is exchanged in the heat exchange region during the time until the coolant that is introduced from the supplying opening arrives at the exhaust opening 10....*” EX1007, 4; EX1004, ¶264. Thus, the heat exchanger includes a hot liquid inlet and a liquid outlet, as shown in the annotation of Figure 2A of Hanazaki-196 reproduced below. EX1004, ¶¶117–121, 264; *see id.*, ¶¶264–267.

FIG. 2A



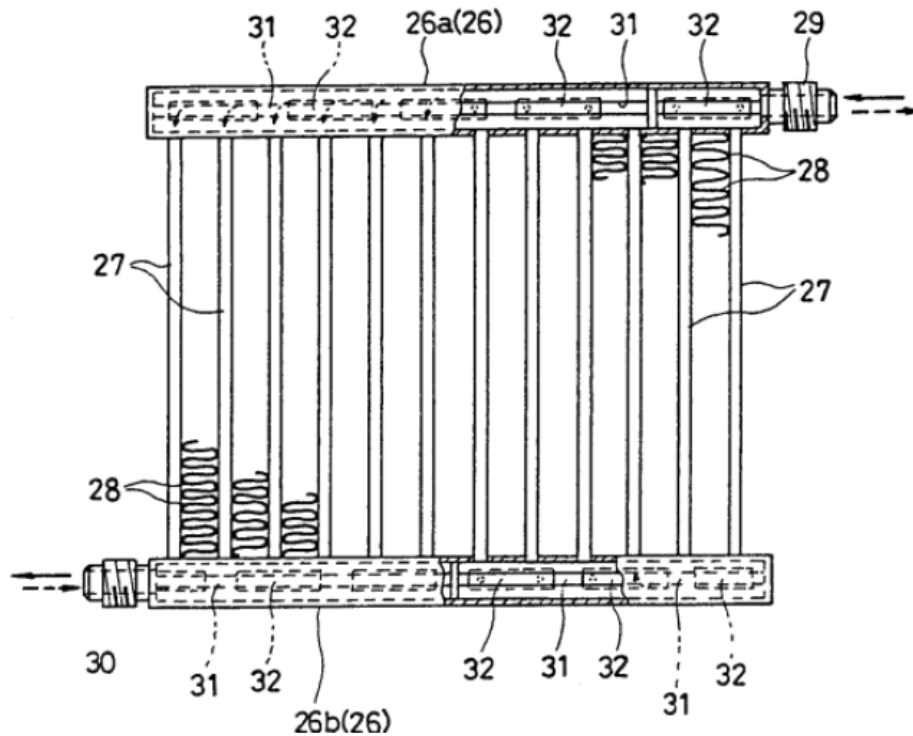
As explained by Dr. Medlin, a “POSITA would have understood at least one of the sacrificial anodes 12 depicted in Figure 2A to be within 10 inches of a center axis of the hot liquid inlet.” *Id.*, ¶265. This understanding of the hot liquid inlet is consistent with the definition of an inlet provided by the ’494 Patent and that applied by the Specialist during examination of the ’494 Patent. *See*, EX1010, 7:4–8. (“The specific inlet connection 16 varies by vehicle make, model and model year, but the inlet 17 is generally understood to refer to the vicinity of where hot water coming directly from the engine enters into the radiator 11”); EX1004, ¶120; EX1010, 395–96.

Even assuming, *arguendo*, that Hanazaki-196 does not teach that the sacrificial anode 12 is located within 10 inches of a center axis of the hot liquid inlet (which it does), a POSITA would have found it obvious to locate the sacrificial anode 12 within 10 inches of a center axis of the hot liquid inlet. *Id.*, ¶267. As established above in Section IX.A.2.iii., Dr. Medlin has provided a variety of reasons why a POSITA would have located a sacrificial anode within 10 inches of a center axis of a hot liquid inlet. *Id.*, ¶¶97–100, 171–74. These reasons include the influence of flow, temperature, and turbulence on anodic protection, and the lack of the ’494 Patent including any teachings as to the importance of 10 inches. *Id.*

Hanazaki-196 uses dividing plates 14 in the header pipe 6a to cause serpentine flow. EX1007, 4; EX1004, ¶267. Moreover, Hanazaki-196 teaches locating a

sacrificial anode 32 at a supplying opening 29 in another embodiment. EX1007, 5; EX1004, ¶267. As explained by Dr. Medlin, “[t]hese teachings would further motivate a POSITA to locate the sacrificial anode 12 within 10 inches of a center axis of the hot liquid inlet.” *Id.*

FIG. 11



Therefore, a POSITA would have understood the sacrificial anode 12 as being placed “within 10 inches of the center axis of a hot liquid inlet” or would have found it obvious to locate the sacrificial anode 12 “within 10 inches of the center axis of a hot liquid inlet.” *Id.*, ¶266, 267. Accordingly, Hanazaki-196 teaches “wherein the sacrificial anode is placed within 10 inches of a hot liquid inlet to the radiator.” *Id.*

3. Claim 15

See Section IX.A.3; EX1004, ¶¶175–177, 268–270.

Hanazaki-196 states that “[a]node electrodes that satisfy such conditions include, specifically, zinc (Zn) or magnesium (Mg) or metal alloys equivalent thereto, such as, for example, an Al-Zn-In-(other metal) alloy..., or the like” and provides an example where the “sacrificial anode is made from zinc” EX1007, 2; EX1004, ¶269.

4. Claim 16

See Sections IX.A.3 and IX.C.3; EX1004, ¶¶175–177, 268–272.

5. Claim 17 – “wherein installing the sacrificial anode assembly further comprises: installing the sacrificial anode assembly in a fitting hole in the radiator.”

See Section IX.C.2.ii; EX1004, ¶¶259–263, 273–277.

Hanazaki-196 states that “when welding or securing between the sacrificial anode and the pipeline inner wall of the header pipe and/or heat exchanging pipe, the welding or securing between some or all of the sacrificial anode that is provided within the attaching groove on the inside of the pipeline is carried out, *from outside of the header pipe and/or heat exchanging pipe*, through, for example, plug welding, spot welding, seam welding, bolting, or the like.” EX1007, 3; EX1004, ¶275.

FIG. 3

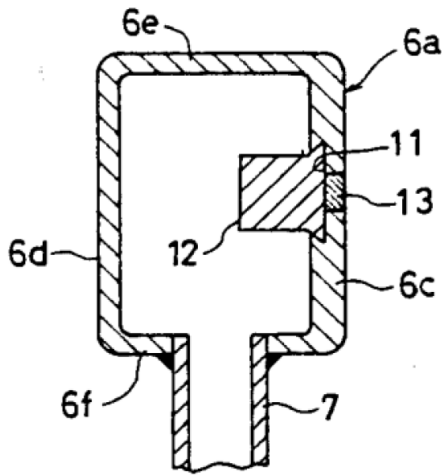
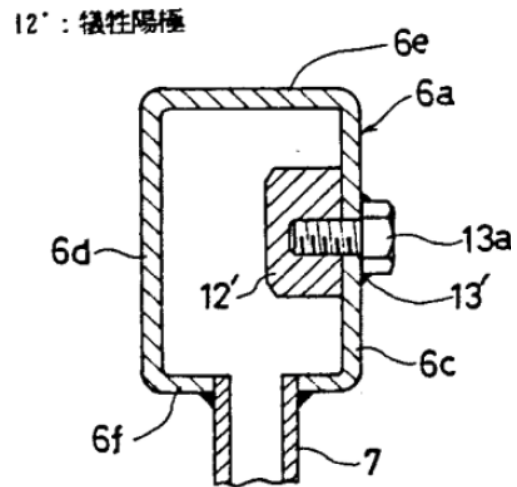


FIG. 5



As explained by Dr. Medlin, a POSITA would have understood that Hanazaki-196 teaches use of a fitting hole in the header pipe 6a of the heat exchanger to facilitate installation of the sacrificial anode 12 via the welding points 13 or bolts. *Id.*, ¶¶275–77.

6. Claim 19

See Section IX.C.2.ii; EX1004, ¶¶259–63, 278–80.

7. Claim 20

Hanazaki-196 teaches that the “FIG. 2A and FIG. 2B show an aluminum heat exchanger according to a first embodiment according to the present invention.” EX1007, 4; EX1004, ¶281.

8. Claim 21

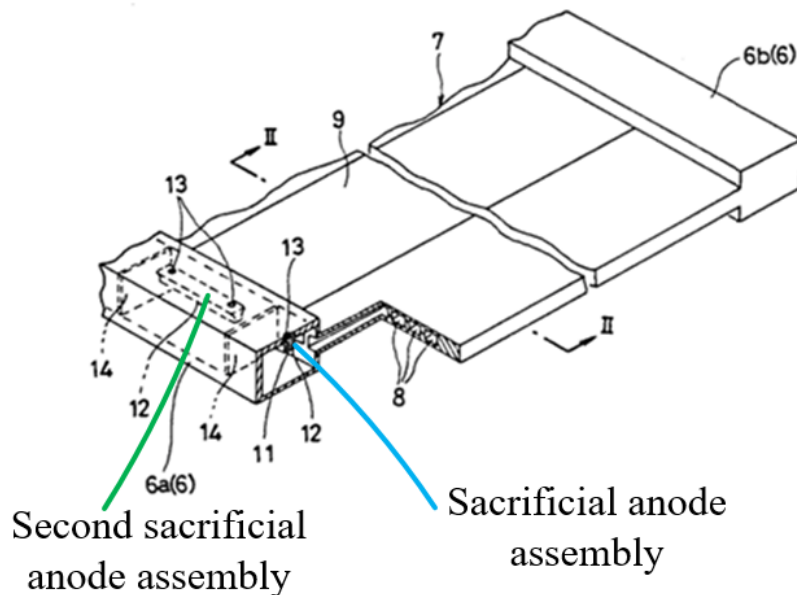
Hanazaki-196 states that the “heat exchanger is structured from a pair of header pipes 6 (6a and 6b)...and heat exchanging pipe units 7, connecting between

the header pipes 6a and 6b, where a *coolant* supplying opening and *coolant* exhausting opening are provided at the two ends of the primary side header pipe 6a..., where heat is exchanged in the heat exchange region during the time until *the coolant* that is introduced from the supplying opening arrives at the exhaust opening 10....” EX1007, 4; EX1004, ¶282; *see id.*, ¶283.

9. Claim 24

See Section IX.C.2.ii; EX1004, ¶¶259–63, 284–86. As explained by Dr. Medlin, “[a]s shown in Figure 2A, Hanazaki-196 includes two of the sacrificial anodes 12, each with its own welding points 13.” *Id.*, ¶285.

FIG. 2A



D. Ground 4: Claims 22, 23, 25–29, 31–40, and 42–47 Are Obvious Over Hanazaki-196 and Hanazaki-069

Claims 22, 23, 25–29, 31–40, and 42–47 of the '494 Patent are unpatentable under 35 U.S.C. §103 as obvious over Hanazaki-196 and Hanazaki-069.

1. The Predictable Combination of Hanazaki-196 and Hanazaki-069

As set forth below, a POSITA would have had reason to combine Hanazaki-196 and Hanazaki-069, and would have had a reasonable expectation of success in doing so. *See id.*, ¶¶132–40. Further, a POSITA would have understood that the combination would have been successful in being used in motor vehicle and in facilitating use of certain fluids in applications where use of these fluids are desirable. *Id.*, ¶135.

First, Hanazaki-196 and Hanazaki-069 are analogous art directed to the same field of endeavor as the '494 Patent (*i.e.*, corrosion prevention systems for radiators). *See, e.g.*, EX1001, 1:35–41; EX1007, 2; EX1006, ¶[0001]; EX1004, ¶132. Like the '494 Patent, Hanazaki-196 and Hanazaki-069 are directed to the same problem of how to prevent corrosion of a radiator due to dissimilar metals. *See, e.g.*, EX1001, 1:61–67; EX1007, 2; EX1006, ¶[0004]; EX1004, ¶133. A POSITA faced with the problem to be solved in the '494 Patent would have looked to other references involving solutions to the same problem and within the same field of endeavor, such as Hanazaki-196 and Hanazaki-069. *See id.*, ¶¶134–40.

As explained by Dr. Medlin, a “POSITA would have found it obvious to use water or antifreeze, as taught by Hanazaki-069, instead of coolant described by Hanazaki-196.” *Id.*, ¶135. The heat exchanger of Hanazaki-196 is capable of using fluids, such as water and antifreeze, as taught by Hanazaki-069, instead of coolant, as taught by Hanazaki-196. *Id.* Hanazaki-196 does not teach that the sacrificial anode includes any structure that would preclude use of other fluids. *Id.* As explained by Dr. Medlin, a “POSITA would have understood that there are certain types of applications where water is preferred, such as applications where the amount of cooling that the fluid is required to provide is relatively small (i.e., when the radiator is used with an engine that is relatively small)” also “would have understood that there are certain types of applications where antifreeze is preferred, such as applications where the radiator is exposed to relatively cold temperatures.” *Id.* Moreover, a POSITA would have had a reasonable expectation of success in making such a modification of Hanazaki-196. *Id.*, ¶136.

Additionally, Hanazaki-196 states that the “heat exchanger made from aluminum in the present invention may be used in heat exchanging *in any field....*” EX1007, 3; EX1004, ¶137. A POSITA would have found it obvious to use the heat exchanger of Hanazaki-196 in a motor vehicle, as taught by Hanazaki-069. *Id.*, ¶138; *see* EX1006, ¶[0002] (“heat exchangers [that are] mounted on vehicles such as automobiles...”). A POSITA would have understood that the benefits of the heat

exchanger described by Hanazaki-196 would be provided in various applications such as use in vehicles, as taught by Hanazaki-069. EX1004, ¶138. Moreover, a POSITA would have had a reasonable expectation of success in making such a modification of Hanazaki-196. *Id.*

Moreover, as explained by Dr. Medlin, “a POSITA would have found it obvious to use a sacrificial anode that is made from aluminum, magnesium, and zinc, as taught by Hanazaki-069.” *Id.*, ¶139. A POSITA would have understood that it would have been beneficial to control the potential difference, as described by Hanazaki-069, in various applications, such as where additional corrosion protection is desired. *Id.*, ¶139. Moreover, a POSITA would have had a reasonable expectation of success in making such a modification of Hanazaki-196. *Id.*, ¶140.

2. Claim 22

See Sections IX.B.2 and IX.D.1; EX1004, ¶¶102–08, 132–40, 287–89.

3. Claim 23

See Sections IX.B.2 and IX.D.1; EX1004, ¶¶102–08, 132–40, 287–91.

4. Claim 25

i. ...

See Section IX.C.2.i and IX.D.1; EX1004, ¶¶256–58, 292–94.

Hanazaki-196 states that the “heat exchanger made from aluminum in the present invention may be used in heat exchanging *in any field....*” EX1007, 3;

EX1004, ¶293. A POSITA would have understood that such a heat exchanger includes a “radiator for use in a motor vehicle.” *Id.*

Even assuming, *arguendo*, that the preamble is found to be limiting (which it should not be) and that a heat exchanger used in “any field” does not include a “radiator for use in a motor vehicle” (which it does), a POSITA would have found it obvious to implement the heat exchanger of Hanazaki-196 in a motor vehicle. *Id.*, ¶294. For example, Hanazaki-069 teaches “heat exchangers [that are] mounted on vehicles such as automobiles...” EX1006, ¶[0002]; EX1004, ¶294. As explained by Dr. Medlin, a “POSITA would have understood that the heat exchanger of Hanazaki-196 would be beneficial in applications such as use in vehicles, as taught by Hanazaki-069.” *Id.*

ii. ...

See Sections IX.C.2.i, IX.C.2.iii, IX.D.1, and IX.D.4.i; EX1004, ¶¶256–58, 264–67 292–98.

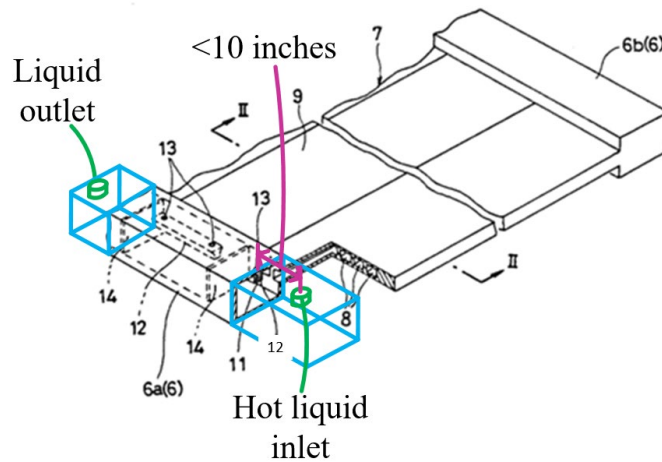
As explained by Dr. Medlin, a “POSITA would have understood that the hot liquid inlet of the radiator of Hanazaki-196 is necessarily from an engine of a motor vehicle.” *Id.*, ¶297.

iii. ...

See Sections IX.C.2.ii–IX.C.2.iii and IX.D.1; EX1004, ¶¶259–67, 299–01. As set forth above with respect to claim 12, Hanazaki-196 teaches that the sacrificial anode

12 is installed within 10 inches of a center axis of the hot liquid inlet of the heat exchanger. *Id.*, ¶300.

FIG. 2A



As also set forth above with respect to claim 12, even assuming, *arguendo*, that Hanazaki-196 does not teach that the sacrificial anode 12 is installed within 10 inches of a center axis of the hot liquid inlet of the heat exchanger, a POSITA would have found it obvious to locate the sacrificial anode 12 within 10 inches of a center axis of the hot liquid inlet of the radiator. *Id.*, ¶301.

5. Claim 26

See Sections IX.C.3 and IX.D.1; EX1004, ¶¶175–77, 268–70, 302–03.

6. Claim 27

See Sections IX.C.3 and IX.D.1; EX1004, ¶¶175–77, 268–70, 304–06.

Hanazaki-069 teaches an example where the sacrificial anode includes only a combination of aluminum, zinc, and magnesium. EX1006, Table 7; EX1004, ¶305.

7. Claim 28 – “wherein the sacrificial anode is installed in a fitting hole penetrating the radiator.”

See Sections IX.C.5 and IX.D.1; EX1004, ¶¶259–63, 273–77, 307–09.

8. Claim 29

See Sections IX.C.2.ii and IX.D.1; EX1004, ¶¶259–63, 310–12.

9. Claim 31

See Sections IX.C.7 and IX.D.1; EX1004, ¶¶281, 313–14.

10.Claim 32

As explained by Dr. Medlin, a POSITA would have understood that the heat exchanger is used for air-cooling the hot liquid. *Id.*, ¶¶77, 315.

11.Claim 33

See Sections IX.C.2.ii, IX.C.9, and IX.D.1; EX1004, ¶¶259–263, 284–286, 316–318.

12.Claim 34

See Sections IX.C.8 and IX.D.1; EX1004, ¶¶282–83, 319–20.

13.Claim 35

See Sections IX.B.2 and IX.D.1; EX1004, ¶¶102–08, 132–40, 287–89, 321–22.

14.Claim 36

See Sections IX.B.2 and IX.D.1; EX1004, ¶¶102–08, 132–40, 287–89, 323–24.

15.Claim 37

i. ...

See Sections IX.C.2.i and IX.D.1; EX1004, ¶¶256–58, 325–26. A POSITA would have understood that the sacrificial anode 12 is an “electrolysis prevention device” because the sacrificial anode 12 prevents corrosion due to electrolysis. *Id.*, ¶326.

ii. ...

See Sections IX.C.2.ii, IX.C.3, and IX.D.1; EX1004, ¶¶175–77, 259–63, 268–270, 327–28.

iii. ...

See Sections IX.C.2.ii–IX.C.2.iii and IX.D.1; EX1004, ¶¶259–67, 329–34.

As explained by Dr. Medlin, a “POSITA would have understood that the welding points 13 (or bolts) support the sacrificial anode 12 and are ‘adapted for installation in an engine radiator within 10 inches of a hot liquid inlet to the engine radiator.’” *Id.*, ¶332.

FIG. 2A

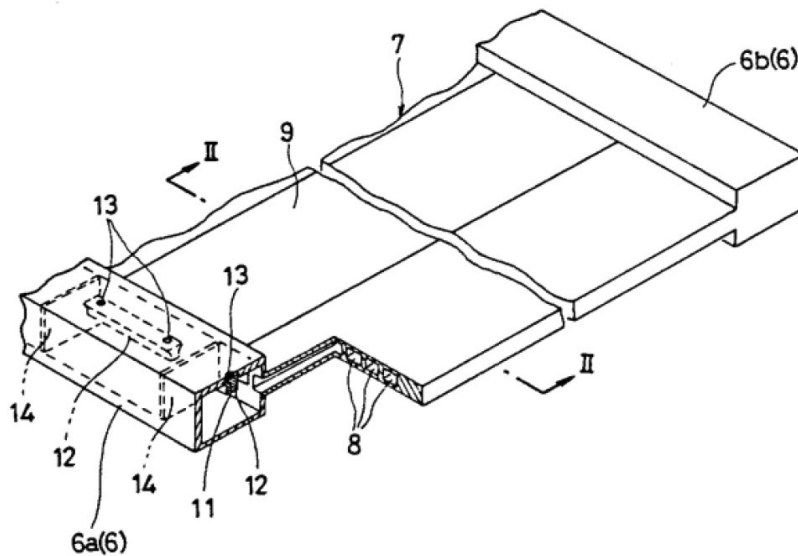
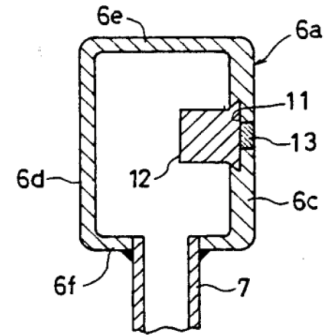


FIG. 3



16.Claim 38

Hanazaki-196 also teaches that “the sacrificial anode is made from an aluminum alloy.” EX1007, 2; EX1004, ¶335.

17.Claim 39

Hanazaki-196 also teaches a “sacrificial anode 12’ that is made from zinc (Zn) or magnesium (Mg)....” EX1007, 4; EX1004, ¶336. Hanazaki-196 also teaches that “the sacrificial anode is made from magnesium....” EX1007, 3; EX1004, ¶336.

18.Claim 40

See Sections and IX.D.1 and IX.D.17; EX1004, ¶¶336–38.

19.Claim 42

See Sections IX.C.7 and IX.D.1; EX1004, ¶¶281, 339–40.

20.Claim 43

See Sections IX.C.2.ii–IX.C.2.iii, IX.C.6, IX.D.1, and IX.D.15.iii; EX1004, ¶¶259–63, 278–80, 329–34, 341–43.

21.Claim 44 – “wherein the anode holder is installed in a fitting hole penetrating the engine radiator”

See Sections IX.C.2.ii–IX.C.2.iii, IX.C.5, IX.D.1, and IX.D.15.iii; EX1004, ¶¶259–63, 273–77, 329–34, 344–46.

22.Claim 45

See Sections IX.C.8 and IX.D.1; EX1004, ¶¶282–83, 347–48.

23.Claim 46

See Sections IX.B.2 and IX.D.1; EX1004, ¶¶102–08, 132–40, 287–89, 349–50.

24.Claim 47

See Sections IX.B.2 and IX.D.1; EX1004, ¶¶102–08, 132–40, 287–89, 351–52.

E. Ground 5: Claims 12, 15–17, 19–21, 24–29, 31–34, 37–40, and 42–45 Are Anticipated by and/or Obvious Over Godefroy

Claims 12, 15–17, 19–21, 24–29, 31–34, 37–40, and 42–45 of the ’494 Patent are unpatentable under 35 U.S.C. §102 as anticipated by Godefroy and/or under 35 U.S.C. §103 as obvious over Godefroy.

1. Godefroy

Godefroy is directed to a “device for protecting the aluminum walls of a heat exchanger against corrosion by an aggressive medium to which these walls are exposed.” EX1008, 2; EX1004, ¶141.

Godefroy discloses a “manifold 10 [that] can be part of a cooling radiator of a motor vehicle engine ” and a “pipe 12...intended for the inlet or the outlet of a heat transfer liquid.” EX1008, 8; EX1004, ¶143. Godefroy states that “[t]o prevent any risk of corrosion, inside the pipe 12, there is a sacrificial resist 14 made here in the form of a tubular insert applied against the internal wall of the pipe 12. .” EX1008, 8; EX1004, ¶144. As explained by Dr. Medlin, a “POSITA would have understood based on the teachings of Godefroy the term ‘sacrificial resist’ to mean ‘sacrificial anode.’” *Id.*, ¶142.

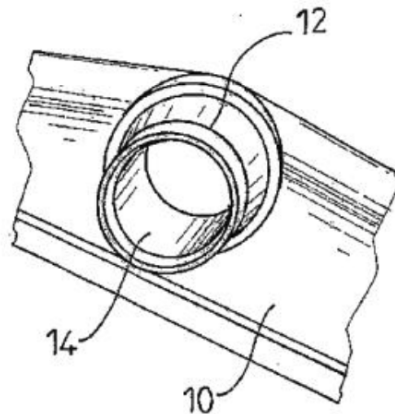


FIG.1

2. Claim 12

i. ...

To the extent the preamble is found limiting, Godefroy discloses such a method. *See, e.g.*, EX1008, 2 (the “[invention] relates...to a device for protecting the aluminum walls of a heat exchanger against corrosion by an aggressive medium to which these walls are exposed ”); EX1004, ¶353; *see id.*, ¶354.

ii. ...

Godefroy discloses a “manifold 10 can be part of a cooling radiator of a motor vehicle engine ” and a “pipe 12... intended for the inlet or the outlet of a heat transfer liquid.” EX1008, 8; EX1004, ¶355. Godefroy teaches a “sacrificial resist 14 made here in the form of a tubular insert [that] applied against the internal wall of the pipe 12.” EX1008, 8; EX1004, ¶355; *see id.*, ¶¶355–58.

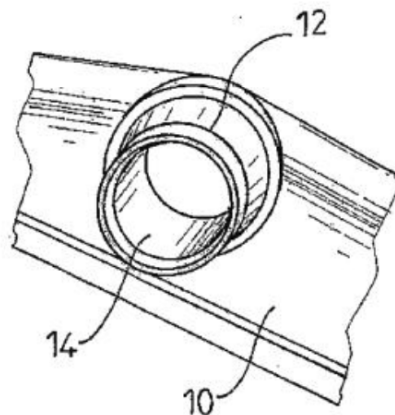
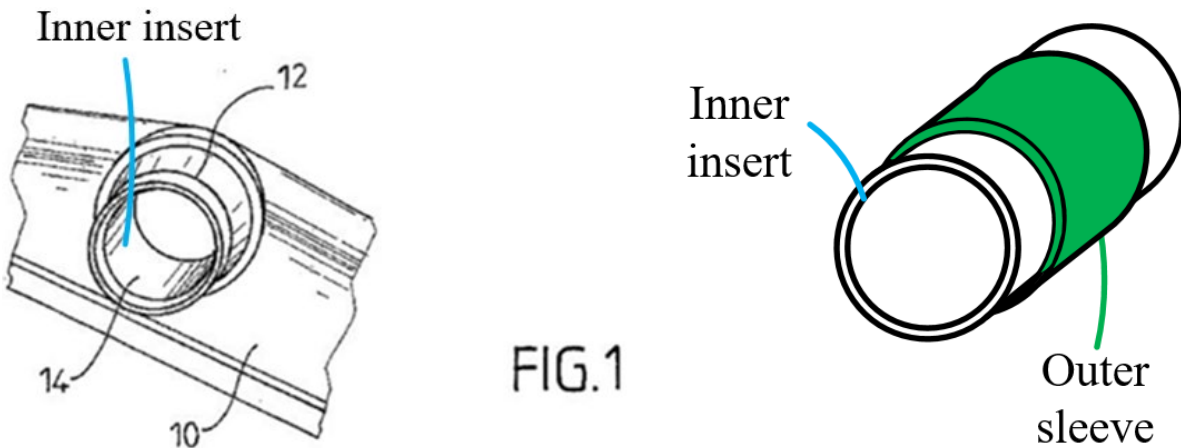


FIG.1

Godefroy states that “[t]his insert is formed from a renewable sacrificial resist consisting of elements capable of lowering at least locally the electrochemical potential of the aluminum contained in the walls of the heat exchanger.” EX1008, 8;

EX1004, ¶355. As explained by Dr. Medlin, a “POSITA would have understood Godefroy as showing that the sacrificial anode 14 (formed as an insert) includes an inner insert that is a sacrificial anode, or that includes sacrificial anodes, and an outer sleeve within which the inner insert is placed.” *Id.*, ¶357; *see id.*, ¶¶141–47.



A POSITA would have understood the sacrificial anode 14 as being a “sacrificial anode and at least one other connected part that forms one unit” and would have understood the sacrificial anode 14 as including a “piece of metal used to protect another piece of metal by preferentially corroding.” *Id.*, ¶358. Accordingly, Godefroy discloses “installing a sacrificial anode assembly including a sacrificial anode within the radiator.”

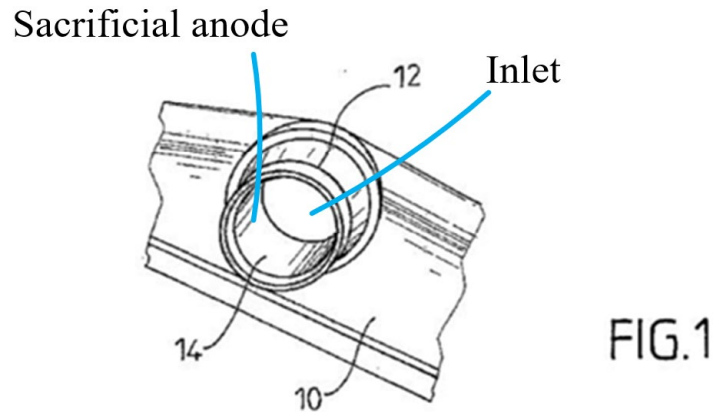
iii. ...

See Section IX.E.2.ii; EX1004, ¶¶355–61.

As explained by Dr. Medlin, “the sacrificial anode 14 [of Godefroy] (formed as an insert) is applied to the pipe 12” [which Godefroy discloses is intended for the inlet]

and a “POSITA would have understood that the sacrificial anode 14 is therefore necessarily placed within 10 inches of a center axis of a hot liquid inlet to the radiator.”

Id., ¶361; *see id.*, ¶¶144, 360; *see* EX1008, 8.



Accordingly, Godefroy teaches “wherein the sacrificial anode is placed within 10 inches of a hot liquid inlet to the radiator.” EX1004, ¶361.

3. Claim 15

See Section IX.A.3; EX1004, ¶¶175–77, 362–64.

Godefroy states that “[t]he elements in question advantageously comprise zinc and/or magnesium.” EX1008, 6; EX1004, ¶363. Similarly, Godefroy states that the “it may be in particular zinc alloys, magnesium alloys or even zinc and magnesium alloys.” EX1008, 6; EX1004, ¶363.

4. Claim 16

See Sections IX.A.3 and IX.E.3; EX1004, ¶¶175–77, 362–66.

5. Claim 17

See Sections IX.E.2.ii–IX.E.2.iii; EX1004, ¶¶355–61, 367–68.

As explained by Dr. Medlin, a “POSITA would have understood that the pipe [12 of Godefroy]...is a fitting hole in the radiator of Godefroy.” *Id.*, ¶368.

6. Claim 19

See Sections IX.E.2.ii–IX.E.2.iii; EX1004, ¶¶355–61, 369–70.

Godefroy teaches that the “sacrificial resist 14...[is] applied against the internal wall of the pipe 12” and that “[g]iven its location, the insert is completely bathed in the cooling fluid.” EX1008, 8; EX1004, ¶370.

7. Claim 20

According to Godefroy, the “[sacrificial anode 14 is] for protecting the *aluminum* walls of a heat exchanger against corrosion by an aggressive medium to which these walls are exposed.” EX1008, 2; EX1004, ¶371.

8. Claim 21

Godefroy provides that the “the manifold 10 can be part of a cooling radiator of a motor vehicle engine, which is traversed by the engine *coolant*.” EX1008, 8; EX1004, ¶372.

9. Claim 24

See Sections IX.E.2.ii; EX1004, ¶¶355–58, 373–75.

Godefroy teaches that the “pipe 12 is...intended for the inlet *or the outlet* of a heat transfer liquid.” EX1008, 8; EX1004, ¶374; *see* EX1008, 5 (discussing “at least one renewable sacrificial resist”). As explained by Dr. Medlin, a “POSITA

would have understood the heat exchanger of Godefroy as including an inlet and an outlet, and that teachings of the pipe 12 as including a sacrificial anode assembly 14 (formed as an insert) apply to both the inlet and the outlet.” EX1004, ¶374.

Therefore, a POSITA would have understood the Godefroy as disclosing a second “sacrificial anode and at least one other connected part that forms one unit.” *Id.*, ¶375. Accordingly, Godefroy discloses “installing a second sacrificial anode assembly within the radiator.” *Id.*

10.Claim 25

i. ...

See Section IX.E.2.i; EX1004, ¶¶353–54, 376–77.

Godefroy teaches that the “manifold 10 can be part of a cooling radiator of a motor vehicle engine.” EX1008, 8; EX1004, ¶377.

ii. ...

See Sections IX.E.2.i–IX.E.2.iii, and IX.E.10.i; EX1004, ¶¶353–61, 376–80.

As explained by Dr. Medlin, “Godefroy teaches that its heat exchanger includes a hot liquid inlet (the inlet of the heat transfer liquid)” and a “POSITA would have understood that the inlet necessarily provides fluid communication for fluid flow of hot liquid from the engine.” *Id.*, ¶379.

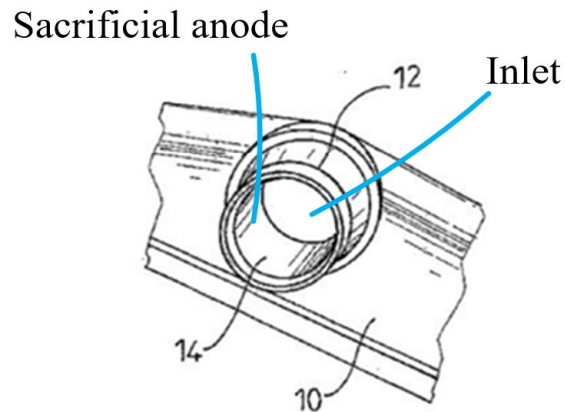


FIG.1

iii. ...

See Sections IX.E.2.ii–IX.E.2.iii; EX1004, ¶¶355–61, 381–82. As set forth above with respect to claim 12, Godefroy teaches that the sacrificial anode 14 includes a sacrificial anode that is installed within 10 inches of a center axis of the hot liquid inlet of the heat exchanger. *Id.*, ¶382.

11.Claim 26

See Section IX.E.3; EX1004, ¶¶175–77, 362–64, 383–84.

12.Claim 27

Godefroy teaches that protection is provided by “adding zinc or zinc-aluminum or magnesium-aluminum or *zinc-aluminum-magnesium* alloys which lower (i.e. make them more electronegative) the potential of the protective strip aluminum alloy by approximately 30 to 200 millivolts.” EX1008, 3; EX1004, ¶385.

Additionally, as explained by Dr. Medlin, a “POSITA would have also found it obvious to construct the sacrificial anode 14 (formed as an insert) out of an aluminum-magnesium-zinc alloy, as described in Godefroy....” *Id.*, ¶386.

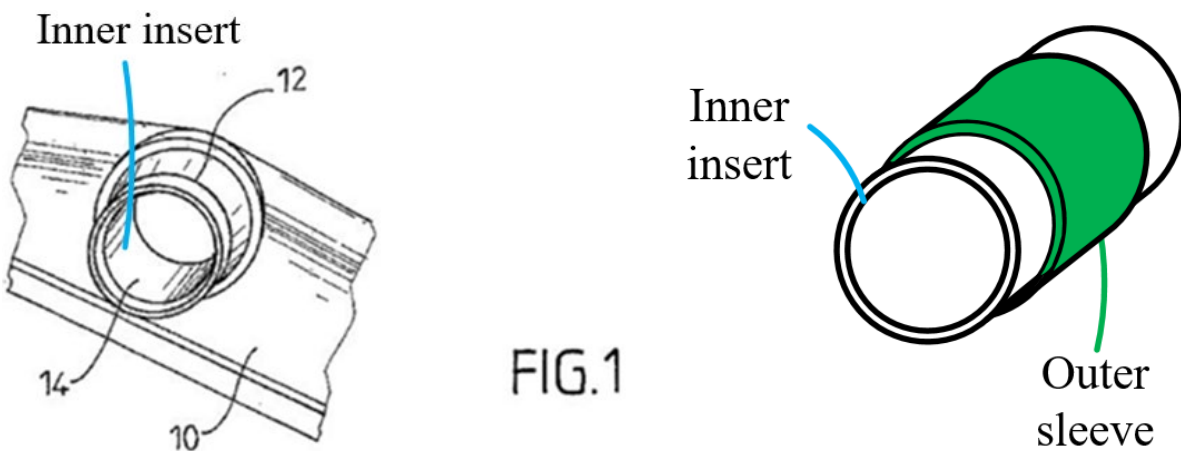
13.Claim 28

See Sections IX.E.2.ii and IX.E.5; EX1004, ¶¶355–61, 367–68, 387–88.

14.Claim 29

See Section IX.E.2.ii; EX1004, ¶¶355–61, 389–92.

Godefroy discloses that the sacrificial anode 14 is disposed “inside the pipe 12.” EX1008, 8; EX1004, ¶390. As explained by Dr. Medlin, a “POSITA would have understood that the outer sleeve is installed onto the pipe 12, which is a surface of the radiator.” *Id.*, ¶391.



15.Claim 31

See Section IX.E.7; EX1004, ¶¶371, 393–94.

16.Claim 32

As explained by Dr. Medlin, a “POSITA would have understood that a common application for a radiator, such as that of Godefroy, is use in an automobile to air-cool an engine of the automobile.” *Id.*, ¶395; *see id.*, ¶¶77, 395–96.

17.Claim 33

See Sections IX.E.2.ii and IX.E.9; EX1004, ¶¶355–358, 373–75, 397–99.

18.Claim 34

See Section IX.E.8; EX1004, ¶¶372, 400–01.

19.Claim 37

i. ...

See Section IX.E.2.i; EX1004, ¶¶353–54, 402–03. As explained by Dr. Medlin, a “POSITA would have understood that the sacrificial anode 14 is an ‘electrolysis prevention device’ because the sacrificial anode 14 prevents corrosion due to electrolysis.” *Id.*, ¶403.

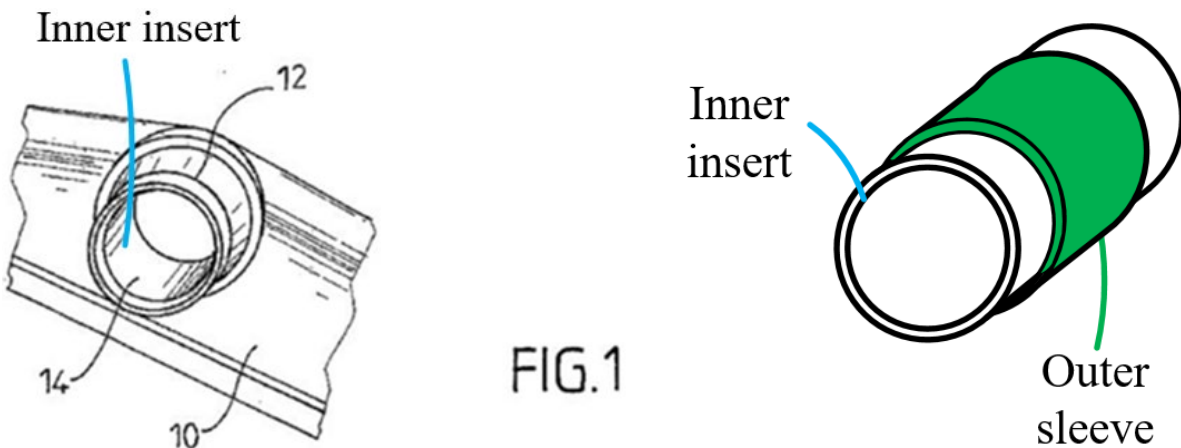
ii. ...

See Sections IX.E.2.ii and IX.E.3; EX1004, ¶¶355–58, 404–05.

iii. ...

See Sections IX.E.2.ii–IX.E.2.iii; EX1004, ¶¶355–61, 406–08.

As explained by Dr. Medlin, the “outer sleeve holds the inner insert, and therefore is an “anode holder supporting the sacrificial anode.” *Id.*, ¶408.



20.Claim 38

See Section IX.E.12; EX1004, ¶¶385–86, 409–10.

Godefroy teaches “zinc-aluminum or magnesium-aluminum or zinc-aluminum-magnesium alloys which lower (i.e. make them more electronegative) the potential of the protective strip aluminum alloy by approximately 30 to 200 millivolts.” EX1008, 3; EX1004, ¶410.

21.Claim 39

See Sections IX.E.3 and IX.E.12; EX1004, ¶¶362–64, 385–86, 411–12.

22.Claim 40

See Section IX.E.3 and IX.E.12; EX1004, ¶¶362–64, 385–86, 413–14.

23.Claim 42

See Section IX.E.7; EX1004, ¶¶371, 415–16.

24.Claim 43

See Sections IX.E.2.ii and IX.E.19.iii; EX1004, ¶¶353–61, 406–08, 417.

25.Claim 44

See Sections IX.E.2.ii–IX.E.2.iii, IX.E.5, and IX.E.19.iii; EX1004, ¶¶353–61, 367–68, 406–08, 418.

26.Claim 45

See Section IX.E.8; EX1004, ¶¶372, 419–20.

F. Ground 6: Claims 22, 23, 35, 36, 46, and 47 Are Obvious Over Godefroy and Hanazaki-069

Claims 22, 23, 35, 36, 46, and 47 of the '494 Patent are unpatentable under 35 U.S.C. §103 as obvious over Godefroy and Hanazaki-069.

1. The Predictable Combination of Godefroy and Hanazaki-069

As set forth below, Petitioner has established that a POSITA would have had reason to combine Godefroy and Hanazaki-069, and would have had a reasonable expectation of success in doing so. *See id.*, ¶¶148–52. Further, a POSITA would have understood that the combination would have been successful in facilitating use of certain fluids in applications where use of these fluids is desirable. *Id.*, ¶151.

First, Godefroy and Hanazaki-069 are analogous art directed to the same field of endeavor as the '494 Patent (*i.e.*, corrosion prevention systems for radiators). *See, e.g.*, EX1001, 1:35–41; EX1008, 2; EX1006, ¶[0001]; EX1004, ¶148. Like the '494 Patent, Godefroy and Hanazaki-069 are directed to the same problem of how to prevent corrosion of a radiator due to dissimilar metals. *See, e.g.*, EX1001, 1:61–67; EX1008, 2; EX1006, ¶[0004]; EX1004, ¶149. A POSITA faced with the problem to

be solved in the '494 Patent would have looked to other references involving solutions to the same problem and within the same field of endeavor, such as Godefroy and Hanazaki-069. *See id.*, ¶¶150–152.

As explained by Dr. Medlin, a “POSITA would have found it obvious to use water or antifreeze, as taught by Hanazaki-069, instead of coolant described by Godefroy.” *Id.*, ¶151. The radiator of Godefroy is capable of using fluids, such as water and antifreeze, as taught by Hanazaki-069, instead of coolant, as taught by Godefroy. *Id.* Godefroy does not teach that the sacrificial anode includes any structure that would preclude use of other fluids. *Id.* A POSITA would have understood that these benefits are desirable for certain applications. *Id.* Moreover, a POSITA would have had a reasonable expectation of success in making such a modification of Godefroy. *Id.*, ¶152.

2. Claim 22

See Sections IX.B.2 and IX.F.1; EX1004, ¶¶102–08, 148–52, 421–24.

3. Claim 23

See Sections IX.B.2 and IX.F.1; EX1004, ¶¶102–08, 148–52, 236–40, 421–26.

4. Claim 35

See Sections IX.B.2 and IX.F.1; EX1004, ¶¶102–08, 148–52, 236–40, 421–24, and 427–28.

5. Claim 36

See Sections IX.B.2 and IX.F.1; EX1004, ¶¶102–08, 148–52, 236–40, 421–24, and 429–30.

6. Claim 46

See Sections IX.B.2 and IX.F.1; EX1004, ¶¶102–108, 148–152, 236–240, 421–424, and 431–432.

7. Claim 47

See Sections IX.B.2 and IX.F.1; EX1004, ¶¶102–08, 148–52, 236–40, 421–24, and 433–34.

X. NO BASIS TO DENY PETITION UNDER 35 U.S.C. §§325(d), 314(a), OR 324(a)

As established above, the merits of the Petition are compelling, and the Board should institute trial. The facts do not support the Board exercising its discretion to deny institution.

A. Denial under §325(d) is Inappropriate

As established below, the Board should not exercise discretion to deny institution under §325(d).

1. Denial under *Advanced Bionics* is inappropriate

In applying §325(d), “the Board uses the following two-part framework: (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 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, 8 (PTAB Feb. 13, 2020) (precedential).

Prongs 1 and 2 are evaluated by analyzing the Factors set forth in *Becton, Dickinson and Company v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8, 17–18 (PTAB Dec. 15, 2017) (informative, precedential as to Section III.C.5, first para.). Factors A, B, and D are typically handled under Prong 1, while Factors C, E, and F are typically handled under Prong 2.

i. Prong 1

a. Factor A

While Hanazaki-196 was considered during examination, Tomosada, Hanazaki-069, and Godefroy were not.

Tomosada and Godefroy each include teachings that, as established above, are more relevant to certain Challenged Claims than Hanazaki-196. For example, Tomosada explicitly describes “a radiator for an automobile” (EX1005, 2; EX1004, ¶195) and Godefroy explicitly describes “cooling radiator of a motor vehicle engine” (EX1008, 5; EX1004, ¶354), whereas Hanazaki-196 states that the “heat exchanger made from aluminum in the present invention may be used in heat exchanging *in*

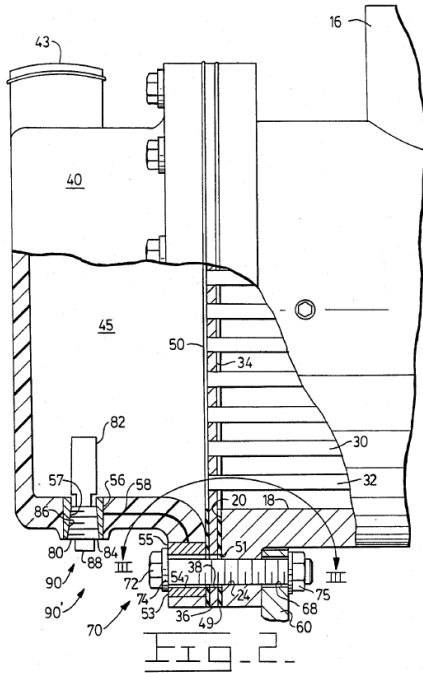
any field....” (EX1007, 3; EX1004, ¶257).

While the Challenged Claims are anticipated by and/or obvious over Hanazaki-196 for the reasons established above, Tomosada and Godefroy each present additional disclosure which was not considered. *See Palo Alto Networks, Inc. v. Centripetal Networks, Inc.*, IPR2022-00182, Paper 11, 44 (PTAB May 25, 2022) (“Because [prior art not considered by the Examiner] is closer and more pertinent prior art than the references Patent Owner identifies as the closest prior art considered by the Examiner, ‘the same or substantially the same art’ was not previously considered by the Examiner under the *Advanced Bionics* framework”). For example, Godefroy discloses a sacrificial anode that is disposed on the inside of the connector 12, which is “intended for the inlet...of a heat transfer liquid” (*see* EX1004, ¶145; EX1008, 8), and Tomosada discloses a sacrificial anode that is installed in a heat exchanger tube directly underneath a hot liquid inlet (*see* EX1004, ¶166; EX1005, Figure 1).

b. Factor B

Tomosada and Godefroy are not cumulative to the prior art evaluated by the Office during examination.

During prosecution of the ’145 Patent, the Examiner initially variously rejected all of the claims under §§ 102 or 103 in view of U.S. Patent No. 4,776,392 (“Loyd”) and Green. EX1009, 51–57.



Loyd

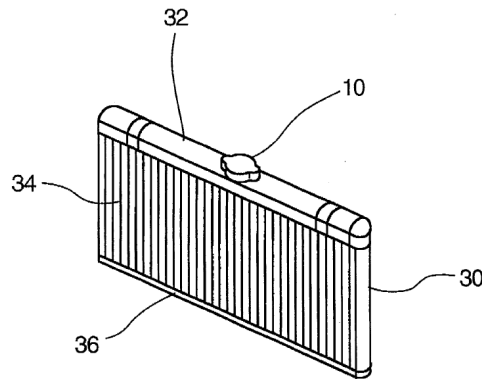
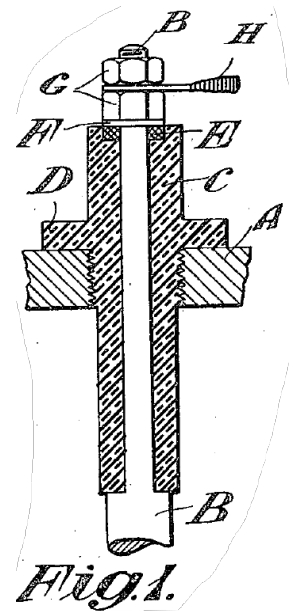


FIG. 3

Green



Gush

The Specialist also initially variously rejected several claims under §§ 102 or 103 in view of Green and Gush. EX1010, 110–14; EX1010, 169–71. The Specialist then variously rejected several claims under §§ 102 or 103 in view of Watanabe, Gush, and Green. *Id.*, 221–23. The Specialist then variously rejected several claims under §§ 102 or 103 in view of Guo, Watanabe, Gush, and Green. *Id.*, 249–52. The Specialist then variously rejected several claims under § 103 in view of Guo, Gush, and Green. *Id.*, 333–338. The Specialist then variously rejected several claims under § 103 in view of Gush, Fahnstock, Guo, and Green. *Id.*, 397–405.

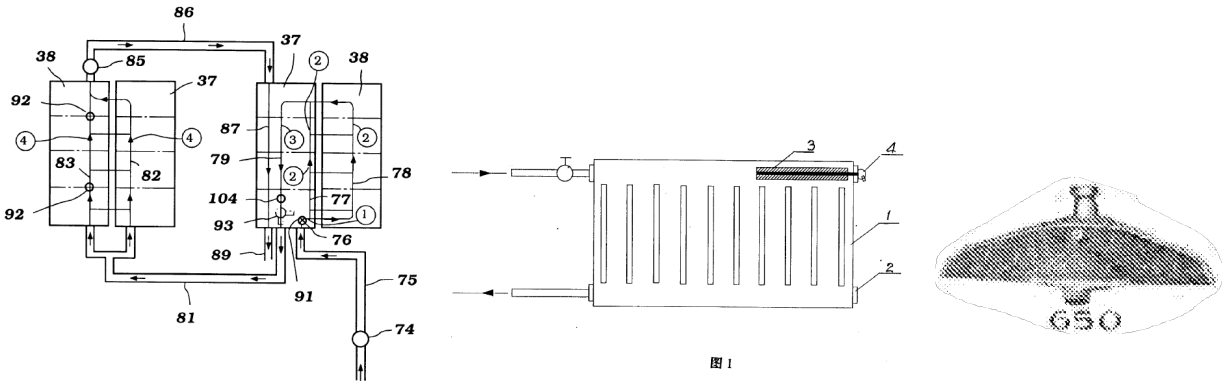


Figure 6

Watanabe

Guo

Fahnestock

Loyd, Green, Gush, Watanabe, Guo, and Fahnestock are not relied upon in the Petition, and there are significant differences between these references and Hanazaki-196, Tomosada, and Godefroy, which form the basis for the strong Grounds set forth above. Tomosada and Godefroy present additional disclosure that was not considered. For example, Tomosada teaches a turbulator 2 inserted in a heat exchanger tube 1 which differs from what is taught in Loyd (a sacrificial anode 80 attached to covers 40, 42 (EX1017, 4:66–5:56)), Green (a sacrificial anode 26 on a radiator cap 10 (EX1011, 2:22–33)), Gush (an electrode B extending across within a top of a radiator (EX1012, 2:12–19)), Watanabe (a sacrificial anode 91 in an exhaust manifold (EX1013, 7:32–37)), Guo (a sacrificial anode 3 mounted on a bleed valve 4 (EX1014, Figure 1)), or Fahnestock (a radiator (EX1015, 4)), because it is within 10 inches of a hot liquid inlet of a radiator, as explained by Dr. Medlin. EX1004, ¶¶157, 166–70. Similarly, Godefroy teaches a sacrificial anode 14 that is

disposed on the inside of a pipe 12 which differs from what is taught in Loyd, Green, Gush, Watanabe, Guo, or Fahnestock because it is within 10 inches of a hot liquid inlet of a radiator, as explained by Dr. Medlin. EX1004, ¶¶355, 360–61. Thus, Tomosada and Godefroy are not cumulative with respect Loyd, Green, Gush, Watanabe, Guo, or Fahnestock.

c. Factor D

The Specialist determined that Loyd, Green, Gush, Watanabe, Guo, and Fahnestock do not disclose a sacrificial anode that is placed within 10 inches of a center axis of a hot liquid inlet to a radiator. However, as established in Sections IX.A.2.iii, IX.A.9.iii, and IX.A.16.iii, Tomosada discloses such a sacrificial anode, as established in Sections IX.C.2.iii, IX.D.4.iii, and IX.D.15.iii, Hanazaki-196 discloses such a sacrificial anode, and as established in Sections IX.E.2.iii, IX.E.10.iii, and IX.E.19.iii, Godefroy discloses such a sacrificial anode. Therefore, there is a significant lack of overlap between the Specialist's interpretations of Loyd, Green, Gush, Watanabe, Guo, and Fahnestock, and the Grounds established in the Petition.

ii. Prong 2

a. Factor C

Tomosada, Hanazaki-069, and Godefroy were not considered.

Hanazaki-196 was identified along with seven other documents on a Notice

of References Cited. EX1010, 116. While the Specialist indicated that Hanazaki-196 was considered, the Specialist never discussed or applied Hanazaki-196 in any actions nor in the Notice of Allowance. *See Scientific Design Co., Inc. v. Shell Oil Co.*, IPR2022-00159, Paper 7, 30 (PTAB Apr. 4, 2022) (“The Examiner did not indicate a substantive evaluation of the asserted art and, therefore, we credit Petitioner’s argument [with respect to Factor C] that although all references but Ullmann ‘were cited in an IDS, together with 111 references, none of them was used in any rejections, or otherwise addressed by the examiner’”). Moreover, the only English portion of Hanazaki-196 that is of record is an Abstract. EX1010, 117. As a result, the Examiner did not appreciate the full teachings of Hanazaki-196, as set forth in Sections IX.C–IX.D. *See Osteomed LLC v. Stryker European Ops. Holdings LLC*, IPR2022-00488, Paper 8, 9–10 (PTAB Aug. 12, 2022) (“While the Petition relies on an English language translation of Arnould, the original reference is in French. The row of the IDS in which Arnould was identified during prosecution of the ’751 patent states ‘English language translation of Abstract only.’...In contrast, the Petition primarily relies on Arnould’s figures and specification. See generally Pet. 62–89 (discussing the teachings in Arnould). *This suggests the Examiner may not have been able to consider the portions of Arnould on which Petitioner’s challenges are based.*”).

b. Factor E

As set forth in Section IX, the Petition establishes that the Challenged Claims are unpatentable under the Grounds presented above, and therefore Petitioner has shown that the Office committed material error in allowing the Challenged Claims. *See Samsung Elects. Co., Ltd. et al. v. Power2B Inc.*, IPR2022-00405, Paper 12, 9 (PTAB July 18, 2022) (“Petitioner analyzes the challenged claims of the [challenged] patent in view of [prior art that was considered by the Examiner], and shows, *inter alia*, how they teach these two limitations of the challenged claims.... We thus find that Petitioner sufficiently points out how the Examiner materially erred. Thus, this factor [E] weighs against exercising our discretion to deny institution”); *see also Haliburton Energy Services, Inc. v. U.S. Well Services, LLC*, IPR2022-00074, Paper 9, 15 (PTAB May 12, 2022) (“Because we find that the Office materially erred, we decline to exercise our discretion to deny under § 325(d)”).

With only an English Abstract to consider, the Specialist understandably misapprehended or overlooked the teachings of Hanazaki-196 with respect to the Challenged Claims. For example, the Specialist failed to consider the teachings of Hanazaki-196 as to the sacrificial anode 12 and the welding points 13 with relation to the embodiment of Figure 2A. EX1007, 4; EX1004, ¶260. *See Juniper*, Paper 10, 16 (finding that an Examiner overlooked disclosure in prior art that was considered).

c. *Factor F*

Tomosada, Hanazaki-069, and Godefroy were not considered and, combined with the Declaration, amount to additional evidence which is more than sufficient to warrant reconsideration of the patentability of the Challenged Claims. Moreover, the Petition and Declaration set forth careful analysis of Hanazaki-196 which amounts to additional evidence which is more than sufficient to warrant reconsideration of Hanazaki-196.

iii. Conclusion

The *Becton Dickinson* factors do not support denial of this Petition under 35 U.S.C. §325(d). *Becton*, Paper 8, 17–18. Unlike in *NHK Spring Co. v. Intrix-Plex Techs., Inc.*, IPR2018-00752, Paper 8 (PTAB Sept. 12, 2018) (precedential), the issues presented in the Petition are not duplicative of those considered during prosecution.

2. Denial under *Fintiv* is inappropriate

Denial in view of the North Carolina Action under *Fintiv* is also inappropriate. *Apple Inc. v. Fintiv Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”). As established above, Petitioner is not a party to the North Carolina Action and is not currently a party to any district court action with EPS.

B. Denial under §314(A) is Inappropriate

As established above, Petitioner has set forth strong Grounds that overwhelmingly establish that the Challenged Claims are not patentable.

The Board has authority to determine whether to institute an IPR. *See Apple Inc. v. Telefonaktiebolaget LM Ericsson*, IPR2022-00337, Paper 7, 2 (PTAB Sep. 7, 2022). Based on the compelling merits, denial of the Petition under 35 U.S.C. §314(a) is inappropriate. Moreover, Petitioner’s use of alternatives with respect to Grounds 1, 3, and 5 is proper and consistent with the interests of efficiency. *See Adaptics Ltd. v. Perfect Co.*, IPR2018-01596, Paper 20, 15, 24 (PTAB Mar. 6, 2019) (informative) (finding that a petition which was alleged to present hundreds of combinations lacked particularity); *Infineon Techs. AG v. Feinics Amatech Teoranta*, IPR2022-00235, Paper 13, 6, 20 (PTAB June 13, 2022) (instituting on alternative grounds).

C. Discretionary Denial is Inappropriate

Discretionary denial is inappropriate and the Board should institute trial.

XI. CONCLUSION

Petitioner respectfully requests that *Inter Partes* review be instituted and that Claims 12, 15–17, 19–29, 31–40, and 42–47 of the ’494 Patent be canceled.

Petition for *Inter Partes* Review
of U.S. Patent No. RE47,494

Respectfully submitted,

Dated: May 17, 2023

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Certificate Under 37 C.F.R. §42.24(d)

The undersigned certifies that the foregoing Petition for *Inter Partes* Review, excluding any table of contents, mandatory notices under 37 C.F.R. §42.8, certificates of service or word count, or appendix of exhibits, contains 13,876 words according to the word-processing program used to prepare this document (Microsoft Word), which is less than the 14,000 allowed under 37 C.F.R. §42.24(a)(1)(i).

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing Petition for *Inter Partes* Review together with all exhibits and other papers filed therewith was served on May 17, 2023 to counsel of record by mail to:

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Petition for *Inter Partes* Review
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