

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ENERGYSOURCE MINERALS, LLC,
Petitioner,

v.

TERRALITHIUM LLC,
Patent Owner.

IPR2019-01601
Patent 9,051,827 B1

Before HUBERT C. LORIN, GRACE KARAFFA OBERMANN, and
CHRISTOPHER G. PAULRAJ, *Administrative Patent Judges*.

LORIN, *Administrative Patent Judge*.

DECISION ON REQUEST FOR REHEARING
37 C.F.R. § 42.71

I. INTRODUCTION

EnergySource Minerals, LLC (“Petitioner”) filed a Petition requesting *inter partes* review of claims 9–16 of U.S. Patent No. 9,051,827 B2 (Ex. 1001, “the ’827 patent”). Paper 1 (“Pet.”). TerraLithium LLC (“Patent

Owner”) filed a Preliminary Response to the Petition. Paper 8 (“Prelim. Resp.”).

Upon consideration of the Petition and Preliminary Response, the Board concluded, under 35 U.S.C. § 314(a), that Petitioner had not demonstrated a reasonable likelihood that it would prevail in showing the unpatentability of at least one of claims 9–16 of the ’827 patent; that is, Petitioner had not demonstrated a reasonable likelihood that it would prevail in showing that

- claims 9–16 are anticipated by or would have been obvious over Jost¹ (Ground I);
- claims 9–16 are anticipated by or would have been obvious over Maimoni² (Ground II);
- claims 9–16 would have been unpatentable over the combination of Jost and Maimoni (Ground III);
- claims 9–16 are anticipated by or would have been obvious over Wilkins³ (Ground IV); and,
- claims 9–16 would have been obvious over the combination of Wilkins and Maimoni (Ground V).

and thus on March 17, 2020, the Board denied institution of an *inter partes* review with respect to claims 9–16. Paper 9 (“Dec.”; “Decision”).

¹ U.S. Patent No. 4,405,463 to Jost et al. (“Jost”) (Ex. 1005).

² Arturo Maimoni, “A Cementation Process for Minerals Recovery from Salton Sea Geothermal Brines,” Lawrence Livermore Laboratory (Jan. 26, 1982) (“Maimoni”) (Ex. 1004).

³ U.S. Patent No. 4,016,075 to Wilkins (“Wilkins”) (Ex. 1006).

On April 16, 2020, Petitioner filed a “Request for Rehearing” of the Decision. Paper 10 (“Req.”; “Request”).

On April 28, 2020, Patent Owner requested authorization to file a reply to the Request. Ex. 3001. We granted Patent Owner’s request and granted Petitioner authorization to file a sur-reply. Order of May 1, 2020, Paper 11. These were filed on May 11 and 26, 2020, respectively. Paper 12 (“Reply”) and Paper 13 (“Sur-Reply”).

A request for rehearing must identify specifically all matters that the requesting party believes the Board misapprehended or overlooked. 37 C.F.R. § 42.71(d). When rehearing a decision on institution, the Board will review the decision for an abuse of discretion. 37 C.F.R. § 42.71(c).

The Request challenges our decision as to Grounds II (Req. 3) and I and III (Req. 11).

II. ANALYSIS (GROUND II)

As to Ground II, the Request focuses only on the question of anticipation and then only with regard to claim 9. *See* Req. 3.

In our Decision, we concluded that “Petitioner insufficiently establishes that Maimoni anticipates, expressly or inherently, the claim 9 step of ‘maintaining the pH of the geothermal brine solution at an adjusted pH of between 4.5 and 6.5.’” Dec. 26. We gave two reasons:

- (1) Petitioner’s apparent inherency argument made in the Petition, supported by the Gallup Declaration, was inadequate (Dec. 21–25); and,
- (2) “the evidence provided by Patent Owner in support of its opposing argument; that is, the Hazen report (Ex. 2005)” “further undermined” Petitioner’s apparent inherency argument (Dec. 25).

The Request challenges reason (1), as follows:

In its Decision, the Board also held that “the Gallup Declaration insufficiently supports Petitioner’s argument that the Hazen process set forth in Maimoni inherently maintains the pH to an adjusted level of between 4.5 and 6.5 via the steps sparging and the addition of calcium hydroxide as disclosed in Maimoni.” (Decision, 24-25). Respectfully disagreeing with the Board’s holding, Petitioner contends that Dr. Gallup’s proffered expert testimony is properly grounded, well-reasoned, not speculative and is based on Dr. Gallup’s vast experience in this specific field. *Tassin v. Sears Roebuck*, 946 F. Supp. 1241, 1248 (M.D. La. 1996) (design engineer’s testimony can be admissible when the expert’s opinions “are based on facts, a reasonable investigation, and traditional technical/mechanical expertise, and he provides a reasonable link between the information and procedures he uses and the conclusions he reaches”); see also *Kumho Tire Co. v. Carmichael*, 119 S.Ct. 1167, 1178 (1999) (stating that “no one denies that an expert might draw a conclusion from a set of observations based on extensive and specialized experience.”). Petitioner points out that Dr. Gallup’s qualifications were not challenged by Patent Owner, and Dr. Gallup’s opinions were not rebutted by an expert acting on behalf of Patent Owner. Under the circumstances, it was error for the Board to discount Dr. Gallup’s expert testimony.

Req. at 10–11.

We do not dispute Dr. Gallup’s qualifications or the fact that his opinions have not been rebutted by an expert acting on behalf of Patent Owner.

The difficulty is that, as we stated in the Decision, Petitioner contended that “an adjusted pH of between 4.5 and 6.5 occurs *as a result of* Maimoni’s sparging and addition of calcium hydroxide” (Dec. 23, emphasis added) but this “apparent inherency argument” (Dec. 23) was inadequately supported.

The Petition stated, in full:

Maimoni discloses that the feed brine from the Magmamax No. 1 well has an initial pH of between 5.2 and 6.1 (Table 1) or 5.6 (Table 2). EX 1004, at 9-10. The Hazen process includes the steps of sparging the brine in the iron reactor with air (Stream 6) and adding calcium hydroxide to the iron reactor (Stream 5). *Id.*, at 16-17. Sparging the brine with air generally reduces the pH of the brine in the iron reactor. EX 1003, ¶162. The reduction of the pH is offset by the introduction of calcium hydroxide (Stream 5) to the iron reactor. *Id.* *Dr. Gallup explains that the Hazen process discussed by Maimoni describes a step of maintaining and controlling the pH of the geothermal brine at an adjusted pH of between 4.5 and 6.5, as required by Claim 9.* Given the pH of the feed brine, these pH values occur as a result of the air oxidation and introduction of calcium hydroxide. *Id.*

Pet. 43–44 (emphasis added).

We turned to ¶ 162 of the Gallup Declaration (Ex. 1003), looking for an explanation as to how “the Hazen process discussed by *Maimoni* describes a step of maintaining and controlling the pH of the geothermal brine at an adjusted pH of between 4.5 and 6.5, as required by Claim 9” (Pet. 44). But “[t]here is no explanation” (Dec. 24). We reproduced ¶ 162 of the Gallup Declaration in the Decision (*see* Dec. 23–24), which states in full that

The step in the Hazen process of sparging the brine with air (Stream 6) in the iron reactor will reduce the pH. The reduction of the pH is offset by the introduction of calcium hydroxide (Stream 5) to the iron reactor. In my opinion, the Hazen process discussed by *Maimoni* describes a step of maintaining and controlling the pH of the geothermal brine at an adjusted pH of between 4.5 and 6.5. Given the pH of the feed brine, these pH values occur as a result of the air oxidation and introduction of calcium hydroxide.

We did not and still do not see Dr. Gallup providing any meaningful explanation as to why the steps of sparging and the addition of calcium hydroxide per the Hazen process set forth in *Maimoni necessarily* maintains

the pH to an adjusted level of between 4.5 and 6.5. All that Dr. Gallup testifies to is that the “[g]iven the pH of the feed brine [i.e., between 5.2 and 6.1 (Table 1) or 5.6 (Table 2). EX 1004, at 9-10], pH values [as claimed] occur as a result of the air oxidation and introduction of calcium hydroxide.” *Id.* As we stated in the Decision, we do not see how this statement is anything but a “conclusory assertion[] backed up by no objective evidence, such as experimental results establishing the adjusted pH of Maimoni’s geothermal brine.” Dec. 24.

Accordingly, we are unpersuaded as to error in our conclusion that “Petitioner insufficiently establishes that Maimoni anticipates, expressly or inherently, the claim 9 step of ‘maintaining the pH of the geothermal brine solution at an adjusted pH of between 4.5 and 6.5.’” (Dec. 26) based on reason (1); that is, Petitioner’s apparent inherency argument made in the Petition, as well as the Gallup Declaration upon which the argument relied, were inadequate (Dec. 21–25).

The Request also challenges reason (2), *inter alia*, as follows:

In denying Ground 2 based on *Maimoni*, the Board adopted Patent Owner’s unsupported contention and concluded, based on the disclosure of the Hazen report EX 2005, that Maimoni did not disclose “maintaining the pH of the geothermal brine solution at an adjusted pH of between 4.5 and 6.5” as required by Claim 9.

Req. 3.

The Hazen report (Ex. 2005) was cited by Patent Owner in its Preliminary Response and relied upon in support of its opposing argument. We indicated that said Hazen report “further undermined” Petitioner’s inherency argument. Dec. 25. It has now come to our attention that Patent Owner cited said Hazen report in error.

During a teleconference conducted on June 17, 2020, Patent Owner requested leave to file supplemental evidence (Ex. 2006 (“Tr.”)) in order to correct the record. Specifically, Patent Owner sought authorization to submit Berthold⁴ (Ex. 2007) as supplemental evidence and thereby, in effect, to correct the Preliminary Response’s reliance on the Hazen report.

According to Patent Owner,

In footnote 4 of patent owner's preliminary response, we indicated that the Hazen report was cited in Maimoni as reference 25, footnote 25. We have now unfortunately learned that that statement in footnote 4 is likely or was likely incorrect, and so we wanted to make sure that we clarified this to the Board.

We recently discovered another 1978 document, which I'll refer to as [Berthold], so as not to confuse it with the Hazen Report, Exhibit 2005.

Id., 6:19–7:3.

Given that our Decision relied in part on the Hazen report, and that Petitioner did not oppose the submission, we granted Patent Owner authorization to file a brief explaining the relevance of Berthold. *Id.*, 8:5–15. We also authorized Petitioner to file a responsive brief. *Id.*, 18:16–18.

On June 24, 2020, Patent Owner filed its “Motion to Submit Supplemental Evidence.” Paper 15 (“Mot.”; “Motion”). With said Motion, Patent Owner filed Berthold. Per said Motion, Patent Owner explains that “PO now believes that Berthold, rather than the Hazen Report, is more likely the document cited in Maimoni footnote 25.” Mot. 2.

⁴ “MAGMAMAX NO. 1 GEOTHERMAL MINERALS RECOVERY PILOT PLANT Engineering Design,” Prepared by: C. E. Berthold, Senior Process Engineer, Hazen Research, Inc., June 16, 1978, pp. 1–76.

On June 30, 2020, Petitioner filed a “Response” to the Motion. Paper 17 (“Resp.”; “Response”). According to said Response, “Petitioner agrees with Patent Owner that the Berthold reference (EX 2007) should be entered as supplemental evidence.” Resp. 1. According to Petitioner, “[t]here is simply no support for the position that Maimoni references the Hazen Report, or that the Hazen Report is at all relevant to an interpretation of Maimoni.” *Id.*, 1. Also,

[t]he discovery of the Berthold reference resolves in Petitioner’s favor any question regarding the relevance of the Hazen Report. As Patent Owner concedes, it is the Berthold reference – not the Hazen Report – that is referenced in footnote 25 of Maimoni.

Id., 2.

An Order granting said Motion accompanies this decision.

Thus, the parties agree that the Hazen report cited by Patent Owner in its Preliminary Response in support of its opposing argument was cited in error.

Given this, we agree with Petitioner that “[t]here is simply no support for the position that Maimoni references the Hazen Report, or that the Hazen Report is at all relevant to an interpretation of Maimoni.” Resp. at 1.

The record now shows that, contrary to our indication in the Decision, Petitioner’s inherency argument cannot be “further undermined” by “the evidence provided by Patent Owner in support of its opposing argument; that is, the Hazen report (Ex. 2005)” (Dec. 25), because Maimoni does not reference said Hazen report. This means that our reliance on said Hazen report to interpret Maimoni was an incorrect basis to conclude that “Petitioner insufficiently establishes that Maimoni anticipates, expressly or

inherently, the claim 9 step of ‘maintaining the pH of the geothermal brine solution at an adjusted pH of between 4.5 and 6.5.’” (Dec. 26).

As for Berthold itself, the Board could not have misapprehended or overlooked Berthold in reaching our decision as it was not before us. Accordingly, we do not reach the merits of the Board’s decision in light of what Berthold may disclose.

Accordingly, it is unnecessary to address the merits of the Request’s challenge as to reason (2), wherein Petitioner argues:

In denying Ground 2 based on Maimoni, the Board adopted Patent Owner’s unsupported contention and concluded, based on the disclosure of the Hazen report EX 2005, that Maimoni did not disclose “maintaining the pH of the geothermal brine solution at an adjusted pH of between 4.5 and 6.5” as required by Claim 9.

Req. 3.

Be that as it may, our position that the Petition “insufficiently establishe[d] that Maimoni anticipates, expressly or inherently, the claim 9 step of ‘maintaining the pH of the geothermal brine solution at an adjusted pH of between 4.5 and 6.5’” (Dec. 26) still remains and is fully supported by the record. It is unaffected by the error in citing the Hazen report or the introduction of Berthold into the record. As we have explained, neither the Petition nor the Gallup Declaration provides adequate reasoning in support of Petitioner’s apparent inherency argument.

For the foregoing reasons, we find no error in our determination that “[b]ased on the information presented, Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that independent claim 9 is anticipated by Maimoni” (Dec. 26).

III. ANALYSIS (GROUNDS I AND III)

The Request focuses only on claim 9. *See* Req. 11.

Petitioner's argument is directed to the claim 9 limitation "oxidizing the iron (II) salt to iron (III) hydroxide." As the Petition indicates, iron (III) hydroxide is the same as ferric hydroxide ($\text{Fe}(\text{OH})_3$ or FeH_3O_3). *See* Pet. 23.

According to the Request,

The Board failed to appreciate that Jost's method is identical to that taught in the '827 patent and would inherently produce the same product as that taught by '827 patent, i.e., $\text{Fe}(\text{OH})_3$.

Req. 11. Petitioner argues that "*Jost* teaches *exactly the same* oxidation step taught by the '827 patent, which the disclosure of the '827 patent unambiguously claims to produce $\text{Fe}(\text{OH})_3$." Req. 12. According to the Request,

Jost and the '827 patent teaches the same air oxidation of the same California Imperial Valley hot geothermal brines, under the same specified pH range, which are the only conditions required by Claim 9 of the '827 patent for the oxidation of iron (II) salt to iron (III) hydroxide. (EX 1001, Claim 9).

Req. 14. "It must be emphasized that Claim 9 adds no differing processing conditions or steps such that the indigenous ferrous ions would react and oxidize differently than *Jost*." *Id.*

Thus, if it is said that the claimed method of the '827 patent produces $\text{Fe}(\text{OH})_3$ during the oxidation step, it must be accepted that *Jost*'s method did the same. As such, *Jost* must inherently anticipate at least this step of Claim 9 of the '827 patent.

Id.

In a nutshell, Petitioner looks to the challenged ‘827 patent to interpret Jost’s oxidation step as, like claim 9, “unambiguously [] produc[ing] Fe(OH)₃.” Req. 12.

But the challenge is over Jost alone. In that regard, Jost expresses doubts about Fe(OH)₃ being produced and therefore, according to Jost, iron (III) hydroxide as claimed is *not* unambiguously produced. As we stated in the Decision,

Jost discloses that if “ferric ions and water produced by [oxidizing ferrous ions to ferric ions] combine to produce hydrated ferric oxyhydroxide” (Ex. 1005 at 6:58–59), then “intermediate formation of” (*id.* at 59–60) iron (III) hydroxide is possible, yet doubtful (given that “the actual existence of [iron (III) hydroxide] appears widely questioned” (*id.* at 61–62)).

Dec. 18.

Petitioner seems to be suggesting that we ignore the doubt expressed in Jost of “the actual existence of [iron (III) hydroxide],” a doubt that appears to be “widely” accepted. But, as a matter of law, an ambiguous reference cannot anticipate a claim. As we stated in the Decision:

[u]nder these circumstances, where Jost raises the possibility of forming iron (III) hydroxide, while raising a doubt that iron (III) hydroxide even exists – we find that Jost does not describe, expressly or inherently, oxidizing to iron (III) hydroxide as claimed. At best, Jost is ambiguous about oxidizing to iron (III) hydroxide. But ambiguous references do not, as a matter of law, anticipate a claim *See Wasica Finance GmbH v. Cont’l Auto. Sys., Inc.*, 853 F.3d 1272, 1284 (Fed. Cir. 2017) (emphasis added) (“Anticipation requires that a single reference ‘describe the claimed invention with sufficient precision and detail to establish that the subject matter existed in the prior art.’ *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1120 (Fed. Cir. 2002) (emphasis added). For this reason, it has long been understood that ambiguous references do not, as a matter of law, anticipate a claim. *See, e.g., W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554

(Fed. Cir. 1983) (refusing to find claims anticipated when the prior art references were ‘unacceptably vague’); *see also In re Hughes*, 52 CCPA 1355, 345 F.2d 184, 188 (1965); *In re Turlay*, 49 CCPA 1288, 304 F.2d 893, 899 (1962) (‘It is well established that an anticipation rejection cannot be predicated on an ambiguous reference.’)).

Because Jost discloses only the possibility of iron (III) hydroxide and no other evidence has been provided to show that Jost nevertheless necessarily oxidizes to iron (III) hydroxide as claimed, based on the information, Petitioner has not shown sufficiently that the Jost reference anticipates, expressly or inherently, the claim step of “oxidizing the iron (II) salt to iron (III) hydroxide.” “Inherency . . . may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981).

Dec. 14–15. The Request does not address this point.

Accordingly, notwithstanding that, when read in light of the challenged ‘827 patent, Jost’s oxidation step may produce iron (III) hydroxide, Jost expressly describes that, although iron (III) hydroxide is possible, it is doubtful (given that “the actual existence of [iron (III) hydroxide] appears widely questioned” (Ex. 1005, 6:57–65)). *See* Dec. 13. In this situation, Petitioner does not show sufficiently that Jost anticipates the claimed subject matter.

No other arguments having been raised, Petitioner’s request for reversal of the Board’s denial of institution of an *inter partes* review based on Ground I, i.e., claims 9–16 are anticipated by or would have been obvious over Jost, and Ground III, i.e., claims 9–16 would have been unpatentable over the combination of Jost and Maimoni, is denied.

IV. CONCLUSION

Petitioner’s Request for Rehearing is *denied*.

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