

NOTE: This disposition is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

IN RE RICHARD ALAN HAASE

2012-1690

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Serial No. 10/413,849.

Decided: October 30, 2013

RICHARD A. HAASE, of Missouri City, Texas, pro se.

NATHAN K. KELLEY, Deputy Solicitor, United States Patent and Trademark Office, of Alexandria, Virginia, for appellee. With him on the brief were JAMIE L. SIMPSON, and FRANCES M. LYNCH, Associate Solicitors.

Before PROST, PLAGER, and TARANTO, *Circuit Judges*.

PER CURIAM.

Richard Haase appeals from a decision of the Board of Patent Appeals and Interferences (now the Patent Trial and Appeal Board) that sustained the Examiner's final rejection of all claims in a patent application as not patentable over several prior-art references. We affirm.

BACKGROUND

A

Mr. Haase filed Patent Application No. 10/413,849, entitled “Clarification of Water and Wastewater,” in April 2003. The application describes methods of clarifying waste water, or raw water, by removing solid contaminants that are suspended in the water. The first step is coagulation: chemical coagulants, mixed into the water, neutralize the charge on contaminant particles and lead them to join together in small clusters called microflocs. The second step is flocculation: the neutralized microflocs combine to form even larger clumps called macroflocs. The macroflocs either float to the top or settle at the bottom of the water—depending on the contaminants’ weight—and can be filtered out or otherwise removed.

The ’849 application acknowledges the existence of much prior art concerning these processes. Focusing on particular chemical coagulants, it states that “testing is required to determine the optimal and successful coagulant for a specific raw water - equipment combination.” The application claims water-clarification processes that use ammonium polymers, including polyacrylamides described as ammonium polymers, with specified molecular weights: medium (500,000 to 1,000,000), high (1,000,000 to 5,000,000), or very high (5,000,000 or more).¹

¹ The Board explained that the “molecular weight” of a “polymer product” is typically given as a distribution or range based on the varying weights of the individual polymer molecules in the product. Although there are different ways to determine molecular weight, nothing in this case turns on differences in measurement techniques. We therefore ignore such differences in referring to numerical ranges.

All but one of the independent claims now at issue covers a process that combines an ammonium polymer with an aluminum polymer. Thus, independent claims 1 through 3 require, in addition to an aluminum polymer, an “effective amount of at least one cationic ammonium polymer” that must include “at least one cationic ammonium polymer having a molecular weight of at least about 500,000 to 1,000,000” (claim 1) or “at least about 1,000,000 to about 5,000,000” (claim 2) or “at least about 5,000,000” (claim 3). Independent claims 56 and 75 are similar, but the ranges are broader: the “at least one” ammonium polymer must have “a molecular weight of at least about 500,000.” Independent claims 4 and 76 replace the “ammonium polymer” language with “at least one polyacrylamide” (described as one kind of ammonium polymer) having a molecular weight of “at least about 5,000,000.” Independent claim 22 stands apart from the other claims at issue here. Directed specifically to removing algae from water, it requires an ammonium polymer with a molecular weight of “at least about 1,000,000” but does not call for an aluminum polymer.

The application discusses several aspects of water clarity, including turbidity, which characterizes the concentration of solids in water—its cloudiness—and is quantified in nephelometric turbidity units (NTUs), with lower NTU meaning clearer water. The application states that its invention is based on the turbidity targets for drinking water that the EPA set in 1999. Independent claims 1-4, 56, 75, and 76, however, demand nothing more than that “at least one” of “total suspended solids, turbidity, color, TOC [total organic carbon] and any combination therein” be “reduc[ed]” through the claimed methods. None of the claims at issue requires a particular amount of reduction. Claim 22 requires a process that “produc[es] a separated water having less algae than the raw water.” The claim does not specify how much less.

B

The '849 application had an extensive prosecution history. Before the application wound its way up to the Board, it spent nearly six years in front of the Examiner. During that time, in response to the Examiner's rejections, Mr. Haase filed numerous affidavits and declarations from himself, experts, and people who work in the industry. Collectively, the submissions purported to show that Mr. Haase's use of particular molecular-weight ranges obtained unexpected results, that the prior art taught away from his claims, or that his invention was copied and met a long-felt need in the industry. Considering this evidence, the Examiner nevertheless concluded that the claims were unpatentable over prior art.

Mr. Haase appealed to the Board, which affirmed the Examiner's rejection of all claims. On the independent claims—the only ones at issue here—the Board concluded, in 66 pages of analysis, that (1) claims 1, 2, 56, and 75 were anticipated and rendered obvious by U.S. Patent No. 4,800,039 (“Hassick”); (2) claim 3 was rendered obvious by Hassick; (3) claims 4 and 76 were rendered obvious by the combined teachings of U.S. Patent No. 5,830,388 (“Kigel”) and U.S. Patent No. 5,961,839 (“Simmsgeiger”); and (4) claim 22 was rendered obvious by the combined teachings of U.S. Patent No. 6,248,369 (“Nier”) and Hassick. *Ex Parte Haase*, No. 2010-009940, 2011 WL 4545863 (B.P.A.I. Sept. 29, 2011) (“*Haase*”). Mr. Haase filed a request for rehearing alleging 57 points of error. Upon “careful[] consider[ation]” reflected in an additional 55 pages of analysis, the Board concluded that it was “unconvinced of error in [its] Decision as to any ground of rejection” and denied the request. *Ex Parte Haase*, No. 2010-009940, 2012 WL 2991609 (B.P.A.I. July 17, 2012) (“*Haase Rehearing Decision*”).

Mr. Haase appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

A

We start with the anticipation rejections of claims 1, 2, 56, and 75 based on Hassick. An anticipatory reference must disclose every claim limitation, either expressly or inherently. *E.g.*, *Atofina v. Great Lakes Chem. Corp.*, 441 F.3d 991, 999 (Fed. Cir. 2006). When a claim recites a limitation that captures a range of values, it is anticipated if a specific example falling within that range is disclosed in the prior art. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 782 (Fed. Cir. 1985). But if the prior art itself also discloses only a range of values, and the new claim recites an overlapping but different range, we have said that the prior-art reference must “describe[] the claimed range with sufficient specificity to anticipate th[e] limitation” of the claim—a broad prior-art disclosure that encompasses a narrower claimed range is sometimes not enough for anticipation. *Atofina*, 441 F.3d at 999.

The Board’s anticipation analysis of claims 1, 2, 56, and 75 proceeded in two steps. First, the Board determined the scope of Mr. Haase’s claims, giving them their broadest reasonable construction consistent with the specification. *E.g.*, *In re Montgomery*, 677 F.3d 1375, 1379-80 (Fed. Cir. 2012). It construed claim 1 to recite a process of treating raw water with (1) “at least some amount, however small, of any manner of one of the specified aluminum polymers, including any manner of aluminum chlorohydrate” and (2) “at least some amount, however small, of any cationic ammonium polymer compound having a molecular weight falling within the molecular weight range ‘of at least about 500,000 to 1,000,000.’” *Haase*, at *3-4. The process also must “reduce to any extent, however small, at least one of total suspended solids, turbidity, color, and TOC.” *Id.* The constructions of claims 2, 56, and 75 differed only in their molecular-weight ranges. *Id.* Mr. Haase presents no

meaningful, let alone persuasive, challenge to those claim constructions.

Next, the Board determined what the prior art (specifically, Hassick) discloses and whether that disclosure includes every limitation of Mr. Haase's claims—questions of fact that we review for substantial evidence. *E.g., In re Antor Media Corp.*, 689 F.3d 1282, 1287 (Fed. Cir. 2012); *Montgomery*, 677 F.3d at 1379-80. As to the first question, the Board found that Hassick discloses a specific example of a raw-water-treatment process that reduces turbidity using an aluminum polymer (aluminum chlorohydrate) combined with a commercially available ammonium polymer product with a molecular weight of 1,000,000 to 2,000,000. *Haase*, at *5-6. The Board also found that the commercially available ammonium polymer “would inherently include at least one [ammonium] polymer compound that has a molecular weight of about 1,000,000”—a finding that Mr. Haase did not dispute. *Haase*, at *7; *Haase Rehearing Decision*, at *3, 8, 15. We have been presented no basis on which to conclude that the Board lacked substantial evidence to support those findings about Hassick.

The anticipation rejections of claims 1, 2, 56, and 75 follow directly from those findings. As construed, claims 1, 2, 56, and 75 require, among other things, just one ammonium polymer compound that falls within the claimed ranges—500,000 to 1,000,000 (claim 1); 1,000,000 to 5,000,000 (claim 2); or over 500,000 (claims 56 and 75)—and just some reduction in turbidity. The Board reasonably read Hassick to disclose examples that meet those limitations, which means that Hassick anticipates claims 1, 2, 56, and 75.

Mr. Haase challenges the anticipation rejections, but he offers no persuasive argument for reversal. He principally contends that the allegedly “critical” molecular-weight ranges for ammonium polymers in his application

do not exist in Hassick. *See Atofina*, 441 F.3d 991, 999-1000. But that misstates the relevant inquiry given the Board's claim construction. All that is required to meet claims 1, 2, 56, and 75 is one individual ammonium polymer compound within the claimed range, no matter what else is in the composition or how much of the molecular-weight distribution disclosed in Hassick overlaps with the claimed ranges. Because Mr. Haase's claims 1, 2, 56, and 75 undoubtedly "cover[] several compositions," and because at least one such composition was disclosed in Hassick for each of those claims, Hassick anticipates. *Titanium Metals*, 778 F.2d at 782.

Mr. Haase also alleges flaws in Hassick's methods—claiming, for example, that the anticipating disclosures do not work as intended or that the particular example using aluminum and high-weight ammonium polymers performs worse than other examples in Hassick. Mr. Haase's objections along those lines are beside the point. Substantial evidence supports the Board's finding that Hassick discloses polymers that come within the claim limitations, and the only "result" required by Mr. Haase's claims is a reduction in turbidity—regardless of how large that reduction is or how well it compares to other results in Hassick. *See Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368, 1378 (Fed. Cir. 2001). The anticipatory disclosure in Hassick shows a reduction in turbidity. Nothing more is needed.

Having reviewed all of Mr. Haase's arguments, we affirm the anticipation rejections of claims 1, 2, 56, and 75.²

² The Board also affirmed the Examiner's rejections of those claims based on obviousness. *Haase*, at *2, 35. We need not address those rejections because we affirm the rejections based on anticipation. But some of the Board's analysis of Mr. Haase's evidence on obviousness

B

The Board rejected the remaining claims at issue— independent claims 3, 4, 22, and 76—on the ground of obviousness. The PTO bears the initial burden of showing a *prima facie* case of obviousness. *E.g.*, *In re Sullivan*, 498 F.3d 1345, 1351 (Fed. Cir. 2007). If the relevant comparison between disputed claim limitations and the prior art pertains to a range of overlapping values, “we and our predecessor court have consistently held that even a slight overlap in range establishes a *prima facie* case of obviousness.” *In re Peterson*, 315 F.3d 1325, 1329 (Fed. Cir. 2003); *see In re Geisler*, 116 F.3d 1465, 1469 (Fed. Cir. 1997) (overlap only at the end points). Where a variable is known to affect a particular desirable result, *i.e.*, is what has been called a “result-effective” variable, the “overlap itself provides sufficient motivation to optimize the ranges,” and “it is not inventive to discover the optimum or workable ranges by routine experimentation,” because the desire to improve results would motivate skilled artisans to experiment with, and improve upon, known conditions in the prior art. *In re Applied Materials, Inc.*, 692 F.3d 1289, 1295-96 (Fed. Cir. 2012).

After a *prima facie* case of obviousness is established, an applicant may present evidence to rebut it. *Sullivan*, 498 F.3d at 1351. Such rebuttal evidence comes in many forms, but common-sense principles guide its persuasiveness. For example, an applicant claiming a particular range for a result-influencing variable may offer proof that the claimed range leads to unexpected results, but that evidence “must be commensurate in scope with the claimed range.” *Peterson*, 315 F.3d at 1330; *Geisler*, 116 F.3d at 1469-70. The applicant may also try to show that the prior art teaches away from the claimed invention.

was applicable to the anticipated claims as well as the others, which we discuss next.

But a prior-art reference that discloses alternatives does not, simply by preferring some alternatives, “teach away” from the non-preferred alternatives, *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004), and a particular reference’s mere silence about a particular feature does not tend to teach away from it, especially if it is disclosed elsewhere in the prior art, *Syntex (U.S.A.) LLC v. Apotex, Inc.*, 407 F.3d 1371, 1380 (Fed. Cir. 2005). In addition, an applicant may try to show non-obviousness based on evidence beyond a comparison of claims with prior art, *i.e.*, through objective indicia (secondary considerations), but any such evidence must, at a minimum, be tied to the particular claims so as to be a sound indicator that skilled artisans would not have found obvious what is actually claimed. *E.g.*, *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010). The Board’s factual findings on these issues are reviewed for substantial evidence. *See, e.g.*, *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 723 F.3d 1363, 1372 (Fed. Cir. 2013); *Geisler*, 116 F.3d at 1469.

1

The Board rejected independent claim 3 as obvious over Hassick. As construed, claim 3 recites a process for treating raw water with (1) “at least some amount, however small, of any manner of one of the specified aluminum polymers” and (2) “at least some amount, however small, of any cationic ammonium polymer compound having a molecular weight falling within the molecular weight range” of “at least about 5,000,000.” *Haase*, at *3-4. The process must improve water clarity, which may be achieved by reducing turbidity “to any extent, however small.” *Haase*, at *3.

Hassick discloses water-treatment processes for reducing turbidity that combine an aluminum polymer with an ammonium polymer, the latter having a “molecular weight [that] preferably ranges from about 1,000 to about 5,000,000.” ’039 patent, col. 2, lines 63-65. Based on the

disclosure of a preferred range, the Board found that Hassick teaches that “molecular weight ranges are a result-effective variable in reducing turbidity” and that “one of ordinary skill in the art routinely following the teachings of Hassick would have determined workable or optimum molecular weight ranges . . . to obtain a desired result.” *Haase*, at *8.

Substantial evidence supports the Board’s view of Hassick, and that is enough to establish a prima facie case of obviousness. Hassick not only discloses a preferred molecular weight range for the ammonium polymer, as the Board explained; it also discusses the use of different molecular weights in different ratios—all with the aim of “reduc[ing] turbidity in the system being treated.” ’039 patent, col. 3, lines 15-18. Those disclosures provide substantial evidence to support the finding that skilled artisans would have been motivated to optimize the ammonium polymer’s molecular weight and that those artisans would have been led to claim 3’s range based on its overlap with the end point in Hassick. *Geisler*, 116 F.3d at 1471.

We also find substantial evidence to support the Board’s conclusion that Mr. Haase’s rebuttal evidence seeking to overcome this prima facie case of obviousness was unpersuasive. The first category of rebuttal evidence pertains to unexpected results, for which Mr. Haase submitted data allegedly showing that his claimed methods outperformed Hassick’s in various comparisons of water-clarity results. But for much of that evidence—specifically, the data derived from side-by-side tests directly comparing the results of both methods—the Board found that “no tested composition contains a cationic ammonium polymer falling within [claim 3’s] molecular weight range” and that Mr. Haase “present[ed] [no] arguments” on rehearing to support a contrary finding. *Haase*, at *20; *Haase Rehearing Decision*, at *21. The Board thus concluded that the evidence of unexpected

results “is not commensurate in scope with claim 3 and Hassick.” *Haase*, at *20; *see generally Peterson*, 315 F.3d at 1330 (so requiring). Mr. Haase does not directly challenge that finding here, let alone give us a reason to overturn it.

We reach the same conclusion regarding the evidence comparing Mr. Haase’s own test results against data from Hassick’s specification—which the Board and the parties refer to as “indirect” comparisons. *Haase*, at *15. The Board found that Mr. Haase did not present enough information—including information about the molecular weights used—to make a meaningful assessment of that evidence. *Haase*, at *20-22; *Haase Rehearing Decision*, at *21. Here, too, rather than systematically pointing out where to find the information that the Board said was missing, Mr. Haase just states that the data exist and directs us back to the expert reports. We see no basis, in such loose assertions or otherwise, for overturning the Board’s detailed findings as unsupported by substantial evidence.

Mr. Haase fares no better with the remainder of his rebuttal evidence on claim 3. He argues, for example, that Hassick teaches away from the claimed invention because it shows better turbidity results when using an aluminum polymer by itself than when using an aluminum polymer with an ammonium polymer. The Board was not convinced that this established a teaching away from Mr. Haase’s invention, rather than a disclosure of multiple processes that all reduce turbidity, and we see no reason to upset that finding as unsupported by substantial evidence. *Haase*, at *35; *Haase Rehearing Decision*, at *30; *see, e.g., Fulton*, 391 F.3d at 1201. Nor do we think that the Board lacked substantial evidence in finding that Mr. Haase failed to establish a meaningful connection between his particular claims and various objective indicia of non-obviousness or in finding such evidence unpersuasive more generally. *Haase*, at *32-35.

In sum, the PTO established a prima facie case of obviousness for claim 3, and Mr. Haase's rebuttal evidence failed to overcome it. We affirm the Board's rejection of claim 3.

2

We reach the same conclusion for independent claims 4 and 76. The Board interpreted those claims to recite a method that improves water clarity through the use of an aluminum polymer and "at least one polyacrylamide (PA) compound having an open-ended molecular weight range of 'at least about 5,000,000.'" *Haase*, at *4. Mr. Haase does not dispute the Board's construction.

The Board rejected the claims as obvious over Kigel and Simmsgeiger. It read Kigel to disclose a method for separating suspended particles in waste water using an aluminum polymer and a polyacrylamide in order to reduce turbidity. *Haase*, at *10, 13; *Haase Rehearing Decision*, at *12. It read Simmsgeiger to teach the use of polyacrylamides to clarify water, where those polyacrylamides have a preferred molecular weight in the range of 6,000,000 to 18,000,000, with molecular weight said to be a "key factor[] affecting the clearing results." *Haase*, at *10. Those findings sufficed to make out a prima facie case of obviousness because Simmsgeiger reveals that molecular weight, especially high molecular weight, was a result-influencing variable, and the references combine to teach all of the limitations in Mr. Haase's claims. *E.g.*, *Applied Materials*, 692 F.3d at 1295-96; *Haase*, at *10, 31.

Mr. Haase brought forward rebuttal evidence, but the Board reasonably discounted it. As to the evidence purporting to show unexpected results, the Board found a critical flaw—that Mr. Haase did not demonstrate that his tests compared his claims with the Kigel-Simmsgeiger

combination, rather than with Kigel alone.³ *Haase*, at *25; *Haase Rehearing Decision*, at *22. We discern no error in the Board's treatment of Mr. Haase's evidence; indeed, if Mr. Haase is right that Kigel's turbidity results were poor, that is all the more reason to think that a skilled artisan would have tried to improve on those results using Simmsgeiger's teachings about higher molecular weights and polyacrylamides. *See Haase*, at *31. Mr. Haase has not established that the Board's unexpected-results findings lacked sufficient evidentiary support.

Nor has Mr. Haase shown that the Board erred with respect to any other rebuttal evidence pertaining to claims 4 and 76. His argument that the prior art taught away from his invention misunderstands the basis for the Board's rejection. By pointing out what he thinks is missing from each of Kigel and Simmsgeiger on its own—namely, that Kigel does not discuss molecular weight and does not produce good results, or that Simmsgeiger does not expressly say that the high-weight polyacrylamide should be used with other coagulants—Mr. Haase does not show any affirmative teaching away from the cited combination. *Syntex*, 407 F.3d at 1380; *see also, e.g., Ricoh Co. v. Quanta Computer Inc.*, 550 F.3d 1325, 1332 (Fed. Cir. 2008); *Baxter Int'l, Inc. v. McGaw, Inc.*, 149 F.3d 1321, 1328 (Fed. Cir. 1998). On the contrary, he highlights the potential benefits of that combination, as the Board recognized. *Haase*, at *35; *Haase Rehearing Decision*, at *30. Mr. Haase does not identify any other objective indicia of non-obviousness in his discussion of claims 4 and 76, and we again see no reason to upset the

³ Mr. Haase does the same thing in this court, repeatedly highlighting comparisons between his methods and Kigel, rather than with the combination of Kigel and Simmsgeiger.

Board's factual findings on those issues. With no persuasive evidence to rebut the prima facie case of obviousness, we affirm the rejections of claims 4 and 76.

3

The last independent claim on appeal is claim 22, which is specifically directed to a method for removing algae from raw water. The process includes the use of "at least one cationic ammonium polymer," which the Board construed to mean "at least some amount, however small, of any cationic ammonium polymer compound having an open-ended molecular weight range of 'at least about 1,000,000.'" *Haase*, at *4. The use of the word "comprising," the Board held, "opens the claim to include processes which include any additional steps, materials, and process conditions." *Id.*

The Board rejected claim 22 based on the combined teachings of Nier and Hassick. The Board read Nier to teach a process for removing algae using an algaecide, an acidic flocculant, and a polymer flocculant aid. The disclosed polymer flocculant aids included ammonium polymers and, according to Nier, "*usually* hav[e] molecular weights in the range of 100,000 to 800,000." *Haase*, at *9. The Board also found that those polymer flocculant aids led to improved flocculation and were therefore result-influencing variables. *Id.* Based on those findings, the Board concluded that a skilled artisan "would have found that Hassick's high molecular weight [ammonium polymer] meets Nier's requirements for a water soluble polymer flocculant aid." *Id.* That is, the combination of Nier's teachings to improve water clarity by reducing algae, along with Hassick's teaching that higher weight ammonium polymers (including a commercially available one with a molecular weight range of 1,000,000 to 2,000,000) increase effectiveness and reduce turbidity, would have led to "the combination of the[ir] similar teachings." *Haase*, at *32; *Haase Rehearing Decision*, at

*9. Those findings, which are supported by substantial evidence, establish a prima facie case of obviousness.

The Board reasonably found Mr. Haase's rebuttal evidence unconvincing. At the outset, Mr. Haase resists the combination of Nier and Hassick on the ground that it would not work and thus "[t]here is no reason" to do it. The Board rejected this argument as lacking persuasive support, specifically noting its inability "to find in Nier and Hassick factual support for [Mr. Haase's] contention that the combination would result in a material change in Nier's process." *Haase*, at *32; *Haase Rehearing Decision*, at *27. We see no basis for reversing the Board's factual finding on this point.

Mr. Haase's other arguments relate to his general contention that the prior art teaches away from the cited combination. First, he argues that Nier's disclosure of polymers that "usually" have molecular weights below 800,000 teaches away from using Hassick's polymer with a weight of 1,000,000 to 2,000,000. But the Board found that the word "usually" means that Nier "neither criticizes, discredits, or would have discouraged one of ordinary in the art" from using a flocculant aid having a slightly higher molecular weight—a finding that was supported by substantial evidence. *Haase*, at *31. Second, Mr. Haase repeats an argument that he made regarding claims 4 and 76—simply pointing out what he thinks is missing from Nier and Hassick individually in an effort to criticize their combination. But such assertions do not establish that the prior art teaches away from the combination, or otherwise help Mr. Haase's rebuttal case. *See, e.g., Syntex*, 407 F.3d at 1380. We affirm the rejection of claim 22.

CONCLUSION

For the foregoing reasons, we uphold the Board's rejection of independent claims 1-4, 22, 56, 75, and 76. Because Mr. Haase makes no separate argument about

his dependent claims, we need not consider them. *See, e.g., Geisler*, 116 F.3d at 1471. We therefore affirm the Board's decision rejecting all of the '849 application's claims.

No costs.

AFFIRMED