NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

KERRY GROUP SERVICES INTERNATIONAL LTD.,
Appellant

v.

FLORIDA FOOD PRODUCTS, LLC,
Appellee

2023-2092

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2022-00006.

Decided: February 24, 2025

MICHAEL GREGORY RAUCCI, Sughrue Mion, PLLC, Washington, DC, argued for appellant. Also represented by MARK BOLAND, RAJA SALIBA.

BRIAN E. FERGUSON, Winston & Strawn LLP, Washington, DC, argued for appellee. Also represented by MICHAEL A. BITTNER, MICHAEL B. JOHNSON, Dallas, TX; LOUIS CAMPBELL, Redwood City, CA.

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

CHEN, *Circuit Judge*.

Patent owner Kerry Group Services International Ltd. (Kerry) appeals an *inter partes* review (IPR) final written decision of the United States Patent and Trademark Office Patent Trial and Appeal Board (Board). *Fla. Food Prods., LLC v. Kerry Grp. Servs. Int'l Ltd.*, No. IPR2022-00006, 2023 WL 12026763 (P.T.A.B. Apr. 26, 2023) (*Decision*). The Board held claims 1–5 of U.S. Patent No. 11,071,304 ('304 patent) unpatentable under 35 U.S.C. § 103 over the combined disclosures of Voorde[1] and Hara.[2] For the following reasons, we *vacate* and *remand*.

BACKGROUND

I

The '304 patent is titled "Method and Composition for Preparing Cured Meat Products" and generally relates to using a curing agent to preserve meat. In the background section, the patent explains that a known method for preparing cured meat involved exposing the meat to a "nitrate-containing substance" and adding "[b]acteria or other organisms that are capable of converting the nitrate to nitrite . . . to the mixture of the meat . . . and the nitrate-containing substance." '304 patent col. 1 ll. 10–16. The conversion of nitrate to nitrite is important because nitrite is responsible for "giv[ing] the meat a distinct color and flavor, in addition to preventing the growth of harmful microorganisms." *Id.* col. 1 ll. 16–18.

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[1] Belgian Patent App. Pub. No. 1014557A6. An English translation of Voorde was submitted in the IPR. *See* J.A. 718–34.

[2] U.S. Patent No. 3,911,146.

The patent identifies two primary issues with the prior art approach, which converts nitrate to nitrite directly on the meat. First, "[t]he number and sensitivity of the steps involved in such curing processes leads to variable curing of the meat, resulting in an inconsistent product." *Id*. col. 1 ll. 19–22. Second, "the process of converting nitrate to nitrite using bacteria or another organism requires additional processing time, thus slowing the prior art processes." *Id*. col. 1 ll. 22–24.

To address these problems, the patent's proposed solution is to prepare the curing agent "outside the meat curing process." *Id*. col. 1 ll. 37–41. Preparing the curing agent in this manner "simplifies the number of steps involved in the curing process, increases the speed at which the process occurs, and generally results in a more consistent product." *Id*. col. 1 ll. 41–44. The curing agent comprises a plant-based nitrite derived from plant material, *see id*. col. 2 ll. 14–18, and an added organism capable of converting nitrate to nitrite, *see id*. col. 3 ll. 15–20. Prior to conversion of nitrate to nitrite, the plant-based material can be subjected to additional processing steps, including "heat treatment, filter sterilization, or a process which reduces the initial microbial load." *Id*. col. 3 ll. 4–8.

Independent claim 1 is illustrative of claims 1–5 (the challenged claims) and recites:

> 1. A process for preserving a meat or meat product comprising
>
> > contacting the meat or meat product to be preserved with a curing agent comprising a plant-based nitrite and an added organism,
> >
> > the plant-based nitrite being derived from a plant material comprising at least about 50 ppm nitrate and the organism,
> >
> > *wherein the plant material is heat treated prior to addition of the organism so as to*

> *have a reduced microbial load relative to a naturally occurring microbial load of the plant material*,
>
> the organism inactivated, wherein the organism was capable of converting nitrate to nitrite before the inactivation, and
>
> preserving the contacted meat or meat product.

Id. at claim 1 (emphasis added to highlight the disputed limitation and line breaks added to increase readability).

II

There are two prior art references relevant to this appeal: Voorde and Hara.

Voorde, like the '304 patent, discloses a solution that involves preparing a curing agent before adding it to the meat. Voorde begins by discussing natural nitrite treatment processes, including the prior art process found in Hara, which applies the plant material directly to the meat without first converting nitrate to nitrite. *See* J.A. 720–21 (citing "US-A-3 911 146," referring to Hara). Voorde identifies similar drawbacks to this process as those noted in the background of the '304 patent. Specifically, Voorde highlights the lengthy aging process and the lack of a homogeneous result. J.A. 721. Accordingly, Voorde's method uses a "vegetable material containing at least nitrate" as a "starting material," and, "before treating the meat product with the liquid [vegetable material], nitrate is converted into nitrite." J.A. 722.

Voorde explains that "[t]he nitrate can be converted into nitrite by allowing the natural enzymatic and/or microbiological conversion processes to run their course for a certain period of time." J.A. 725. Voorde also explains that "[o]ptionally, additional micro-organisms or, in other words, so-called starter cultures can be added for this

purpose." *Id.* In addition, Voorde specifies preferred temperatures for the conversion process. For instance, Voorde discloses that temperatures above 40°C are preferred for "the conversion of nitrate into nitrite," with temperatures "higher than 50°C, for example . . . 52°C," being even more desirable "because at these temperatures undesired microorganisms are killed and the material is thus (partially) sterilized." *Id.* However, Voorde warns against heating "higher than 80°C, and more preferably not higher than 70°C, in order not to excessively reduce the enzymatic and microbiological conversion processes necessary for the conversion of nitrate into nitrite." J.A. 726.

Hara, referenced in Voorde's opening paragraphs, describes the use of water-soluble plant ingredients to effectively preserve the color of animal tissue. J.A. 3509 col. 1 ll. 20–30. Hara explains that suitable water-soluble ingredients can be extracted from the solids of the plant by boiling or otherwise heating the vegetables. *See, e.g.*, J.A. 3510–11 col. 3 ll. 13–16 ("The second potion of each sample was heated in a container on a steam bath at about 100°C for 30 minutes, and solids were removed thereafter . . . ."), col. 5 ll. 10–16 ("boiling"). Hara further discloses that "[u]nless the water-soluble plant ingredients are to be used immediately after their preparation, it is preferred to sterilize the material to prevent its decomposition." J.A. 3509 col. 1 ll. 59–62.

III

Florida Food Products, LLC (FFP) filed a petition for IPR presenting five grounds of unpatentability, only the first of which is relevant to this appeal. Ground one asserted that claims 1–5 "are obvious over Voorde in view of Hara." J.A. 84; *see also* J.A. 85 ("Ground I: Obvious Over Voorde and Hara"). FFP argued that Voorde discloses every limitation in claim 1 except for the heating limitation, which recites: "wherein the plant material is heat treated *prior to* addition of the organism so as to have a

reduced microbial load relative to a naturally occurring microbial load of the plant material." '304 patent at claim 1 (emphasis added). In its petition, FFP acknowledged that Voorde does not disclose adding the "starter cultures *after* heating the vegetable," but argued that it would have been obvious to heat the plant material alone using the methods disclosed in Hara. J.A. 89–90 ("The *combination* [of Voorde and Hara] merely adds the known step of heating the vegetable to predictably kill germs." (emphasis added)). Specifically, FFP explained that a skilled artisan "would have found it obvious to: 1) boil or heat a plant material to kill unwanted germs, 2) let the resulting plant material cool, and then 3) add the starter culture." J.A. 90–91. Thus, ground one required a combination of Voorde and Hara.

The Board instituted review, characterizing FFP's petition as asserting that the challenged claims "would have been obvious over the *combined* disclosures of Voorde and Hara." J.A. 278 (emphasis added). After summarizing the parties' arguments, the Board determined that FFP had sufficiently established, for purposes of instituting the IPR, why a skilled artisan "would have modified Voorde's process to use Hara's sterilization step." J.A. 280.

In its patent owner response, Kerry spent considerable effort arguing that it would not have been obvious to a skilled artisan to combine the teachings of Voorde and Hara. Kerry argued that "FFP proposes a significant modification of Voorde's process," and that these modifications "are not taught by the actual disclosures of Voorde or Hara" and "are counter to Voorde's teaching." J.A. 347, 349; *see also* J.A. 347–74. As just one example, Kerry contended that a skilled artisan "would have understood that Voorde purposely excluded Hara's initial heating step," because Voorde "explicitly discouraged" a skilled artisan from heating to temperatures in excess of 70°C. J.A. 364–66 (emphasis omitted).

Subsequently, FFP in its reply stated that Hara's role in the asserted unpatentability ground was limited to evidence of the general knowledge of a skilled artisan, rather than being expressly relied upon as part of a combination with Voorde. FFP's reliance on this theory became evident at the IPR oral hearing, where FFP asserted that "Hara is relied on, not for a physical combination of Voorde and Hara," but as "objective evidence that support[s]" the knowledge of a skilled artisan. Record of Oral Hearing at 12:1–13:1, *Fla. Food Prods.*, No. IPR2022-00006, Paper No. 42.

In its final written decision, the Board determined that a skilled artisan "would have had reason to modify Voorde in the manner FFP suggests." *Decision*, 2023 WL 12026763, at *8. The Board acknowledged some confusion regarding Hara's role in the asserted unpatentability ground, noting that it "is not so clear" whether Hara was relied upon for a physical combination or as evidence of the routine heating of vegetables before use. *Id.* at *9. Nonetheless, regardless of whether heating to 100°C was required by the combination, the Board found that modifying Voorde to perform the heating step first before adding the starter culture would not "have been beyond the ordinary level of skill in the art," and would not "have made Voorde's process unsuitable for its intended purpose." *Id.*

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

DISCUSSION

Obviousness is a legal question based on underlying questions of fact. *Virtek Vision Int'l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 886 (Fed. Cir. 2024). "We review the Board's ultimate determination of obviousness de novo and its underlying findings of fact for substantial evidence." *Id.* "What the prior art teaches, whether a person of ordinary skill in the art would have been motivated to combine references, and whether a reference teaches away

from the claimed invention are questions of fact." *Chemours Co. FC, LLC v. Daikin Indus., Ltd.*, 4 F.4th 1370, 1374 (Fed. Cir. 2021) (citation omitted).

I

As an initial matter, Kerry argues that the Board relied on a new theory of unpatentability not presented in the IPR petition—Voorde alone. *See* Appellant's Br. 32–37. An IPR must proceed "in accordance with or in conformance to the petition." *SAS Inst., Inc. v. Iancu*, 584 U.S. 357, 365 (2018) (cleaned up); *see* 35 U.S.C. § 312(a)(3). Our court has explained that "[b]ecause of the expedited nature of IPR proceedings, it is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify with particularity the evidence that supports the grounds for the challenge to each claim." *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1330 (Fed. Cir. 2019) (cleaned up). Accordingly, "the Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016); *see also EmeraChem Holdings, LLC v. Volkswagen Grp. of Am., Inc.*, 859 F.3d 1341, 1349 (Fed. Cir. 2017) ("Where the petitioner uses certain prior art references to target specific claims with precision, or the Board does the same in its decision to institute, the patent owner is directed to particular bases for alleged obviousness.").

We find the Board's decision unclear as to whether it relied on a new obviousness theory based on Voorde alone. This lack of clarity stems largely from the Board's own confusion as to whether Hara was being relied upon for a combination with Voorde or whether Hara served as evidence of a skilled artisan's general knowledge. *See Decision*, 2023 WL 12026763, at *9. At times, the Board appeared to read Voorde's disclosure of partial sterilization as itself satisfying the heating limitation. *See, e.g.*, *id.* ("[W]e find that

Voorde would have taught the person of ordinary skill to heat treat a medium to around 50°C."); *id.* ("At the very least, the skilled artisan would have looked to Hara *as evidence* that pre-treatment using heat could be beneficial to reduce microbial load, *a disclosure confirmed by Voorde*." (emphases added)).

That said, ground one in FFP's petition relied on a combination of Voorde and Hara for disclosing the heating limitation. *See* J.A. 84–85, 89–91. FFP's petition did not present an obviousness ground that was based on Voorde alone. In its institution decision, the Board appropriately understood FFP's petition to assert a combination of the two references. *See, e.g.*, J.A. 278 ("FFP contends that claims 1–5 . . . would have been obvious over the *combined* disclosures of Voorde and Hara." (emphasis added)).

To the extent the Board found the challenged claims to be unpatentable based on an obviousness ground that was not presented in the petition, this was error. *See Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1336–37 (Fed. Cir. 2020) (holding that the Board erred by instituting IPR based on a combination of references that the petitioner "did not advance in its petition."). On remand, the Board must hold FFP to the obviousness theory articulated in ground one.

II

Next, we address the Board's analysis of the combination of Voorde and Hara. "Our precedent dictates that the [Board] must make a finding of a motivation to combine when it is disputed." *In re Nuvasive, Inc.*, 842 F.3d 1376, 1382 (Fed. Cir. 2016); *see also Virtek*, 97 F.4th at 887 ("[T]here must exist a motivation to combine various prior art references in order for a skilled artisan to make the claimed invention."); *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) ("[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or

modifications of prior art to arrive at the claimed invention."). Conclusory statements by the Board are insufficient. *Nuvasive*, 842 F.3d at 1383. Rather, "the finding must be supported by a 'reasoned explanation." *Id.* (citation omitted); *see also id.* at 1381–82 ("[T]he factual inquiry whether to combine references must be thorough and searching, and the need for specificity pervades our authority on the [Board's] findings on motivation to combine." (cleaned up)).

We hold that the Board's finding that a skilled artisan would have combined Voorde and Hara in the manner FFP lacks a reasoned explanation that is supported by substantial evidence.

The Board found that heating to 100°C would not "be inconsistent with Voorde or destroy its intended purpose, as Kerry argues" because Voorde discloses "a starter culture, which would have replaced any microbes destroyed by Hara's sterilization." *Decision*, 2023 WL 12026763, at *9 (citing J.A. 357–69 (Kerry's patent owner response)). The Board's rationale—that the addition of a starter culture after sterilization of Voorde's vegetable material would "replace" any destroyed microbes—is insufficient in this case. Voorde discloses that the starter culture is optionally added and never discloses that it replaces microbes, let alone replaces destroyed microbes. *See* J.A. 725. The Board cited no evidence for its finding.

While the Board does not need to address every piece of evidence, here, the Board's single statement is particularly problematic for failing to address a multitude of arguments Kerry raised in its patent owner response addressing why a skilled artisan would not have been motivated to make the proposed combination. These arguments include, for example, that: both Voorde and Hara disclose an option of end-product sterilization, which cuts against initial sterilization, *see* J.A. 353–56; Hara's heating is for making a plant juice, not killing germs, *see* J.A. 357;

Voorde referenced Hara, yet looked to provide a better process, *see* J.A. 358–59; Voorde discloses heating up to a moderate temperature and warns against heating above 80°C, *see* J.A. 359–61; Voorde discloses that the optional starter culture is additional to the natural enzymes and microbes, not a substitute, *see* J.A. 362–63.

One of Kerry's key arguments before the Board and on appeal is that Voorde teaches away from boiling the plant at 100°C, as disclosed in Hara, because Voorde explains that "[p]referably, the heating is not higher than 80°C . . . in order not to excessively reduce the enzymatic and microbiological conversion processes necessary for the conversion of nitrate into nitrite." J.A. 726. Yet, the Board failed to address the merits of Kerry's teaching away argument, along with its other arguments outlined above. Although the Board acknowledged a few of Kerry's arguments at a high level while summarizing the parties' arguments, *see Decision*, 2023 WL 12026763, at *8, "it is not adequate to summarize and reject arguments without explaining why the [Board] accepts the prevailing argument." *Nuvasive*, 842 F.3d at 1383. The Board's lack of meaningful engagement with these arguments precludes us from being able to affirm its finding.

The Board also passed over the timing of the heating limitation, finding that a skilled artisan would have "modified [Voorde's] process to add the starter culture subsequent to Hara's sterilization step." *Decision*, 2023 WL 12026763, at *9. As support, the Board cited only Kerry's expert, Dr. Milkowski, who testified that if he was adding a starter culture, he would do so after heating. *Id.* (citing J.A. 4461 at 88:19–89:6). However, the Board failed to articulate "a *reason why* the [skilled artisan] would have been motivated to modify" Voorde in light of Hara. *Nuvasive*, 842 F.3d at 1384. The testimony of Dr. Milkowski does not supply that missing reason.

Furthermore, we note that the Board references "Hara's sterilization" and "Hara's sterilization step." *Decision*, 2023 WL 12026763, at *9. However, Hara discloses boiling the plant material as part of its preparation process for extracting liquids from the solid plant—not necessarily for sterilization. *See, e.g.*, J.A. 3511 col. 5 ll. 10–16. Hara separately discloses that it is preferred to sterilize the end products by heating to 90°C if they are not "used immediately after their preparation." J.A. 3509 col. 1 ll. 59–62. Accordingly, the Board's vague references to "Hara's sterilization" are insufficient. A more thorough explanation is needed to address whether, and why, a skilled artisan would be motivated to combine Voorde's process, which also discloses end-product sterilization, with Hara's initial step of boiling or heating the vegetable material—the step expressly relied upon in FFP's petition. *See* J.A. 89 (FFP's petition) ("In each of Hara's examples 2–7, the plants are prepared using a process that includes boiling or heating."); J.A. 353–56 (Kerry's patent owner response) ("[B]oth Voorde and Hara explicitly provide a step of sterilizing at the end, after making their products." (emphasis omitted)).

Finally, the Board found that a skilled artisan "*seeking* to reduce microbial load in a plant material *prior to* converting nitrate to nitrite, would have combined Voorde and Hara's disclosures." *Decision*, 2023 WL 12026763, at *9 (emphases added). Here, the Board did not explain why a skilled artisan would have been seeking to reduce microbial load in a plant material *prior to* converting nitrate to nitrite.

FFP argues that testimony from its expert, Dr. Baldwin, provides substantial evidence to support the Board's finding. *See* Appellee's Br. 28–29, 48–49. We disagree. Within its analysis, the Board does not cite to Dr. Baldwin or otherwise discuss his rationale that "heating, boiling, or steaming the vegetable would be as common as washing one's hands before cooking a meal—a matter of routine sanitization." J.A. 674 ¶ 119. Accordingly, this uncredited

testimony does not change the Board's analysis, nor does it provide substantial evidence for its findings.

At bottom, the Board erred by not addressing Kerry's evidence and arguments against a motivation to combine and by failing to provide an adequate explanation for that finding.

CONCLUSION

We have considered the parties' remaining arguments and find them unpersuasive. For the foregoing reasons, we *vacate* and *remand* for additional findings and explanations regarding a skilled artisan's motivation to combine Voorde and Hara consistent with ground one presented in FFP's petition.

VACATED AND REMANDED

Costs

Costs to Appellant.