United States Court of Appeals for the Federal Circuit

JODI A. SCHWENDIMANN, FKA JODI A. DALVEY,
Appellant

v.

NEENAH, INC., AVERY PRODUCTS CORPORATION,
Appellees

JODI A. SCHWENDIMANN
Appellant

v.

NEENAH, INC.,
Appellee

2022-1333, 2022-1334, 2022-1427, 2022-1432

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2020-00628, IPR2020-00629, IPR2020-00634, IPR2020-00915.

Decided: October 6, 2023

DEVAN V. PADMANABHAN, Padmanabhan & Dawson PLLC, Minneapolis, MN, argued for appellant. Also represented by MICHELLE DAWSON, BRITTA LOFTUS, PAUL J. ROBBENNOLT.

JOSEPH J. RICHETTI, Bryan Cave Leighton Paisner LLP, New York, NY, argued for appellees. Also represented by ALEXANDER DAVID WALDEN; K. LEE MARSHALL, San Francisco, CA.

Before PROST, CLEVENGER, and CUNNINGHAM, *Circuit Judges*.

CLEVENGER, *Circuit Judge*.

Jodi A. Schwendimann owns U.S. Patent Nos. RE41,623 (the "'623 patent"), 7,749,581 (the "'581 patent"), 7,754,042 (the "'042 patent"), and 7,766,475 (the "'475 patent") (collectively, the "Appealed Patents"). Ms. Schwendimann appeals from four final written decisions of the U.S. Patent and Trademark Office Patent Trial and Appeal Board (the "Board") holding all claims of the '623 patent,[1] '042 patent,[2] and '475 patent[3] and claims 1–6, 8–21, and 24–31 of the '581 patent[4] (the "Challenged Claims") unpatentable as obvious in view of asserted prior art.

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[1] *Neenah, Inc. v. Schwendimann*, No. IPR2020-00628, 2021 WL 4877521 (P.T.A.B. Oct. 1, 2021).

[2] *Neenah, Inc. v. Schwendimann*, No. IPR2020-00629, 2021 WL 6297820 (P.T.A.B. Sept. 10, 2021).

[3] *Neenah, Inc. v. Schwendimann*, No. IPR2020-00915, 2021 WL 5203293 (P.T.A.B. Nov. 1, 2021) ("*Decision*").

[4] *Neenah, Inc. v. Schwendimann*, No. IPR2020-00634, 2021 WL 6299553 (P.T.A.B. Sept. 10, 2021).

After Ms. Schwendimann asserted the Appealed Patents, a fifth, related patent, U.S. Patent No. 7,771,554 (the "'554 patent"), and three other patents from a different, unrelated patent family against Neenah, Inc. and Avery Products Corporation (collectively, "Neenah"),[5] Neenah filed petitions for *inter partes* review with the Board for the Challenged Claims in the Appealed Patents and claims in the '554 patent. Neenah's petitions argued the claims were rendered obvious on multiple separate grounds based on different combinations of prior art, including grounds in each petition based on U.S. Patent No. 5,798,179 ("Kronzer") in view of U.S. Patent No. 5,655,476 ("Oez"). Although the Board did not institute an *inter partes* review for the '554 patent, the Board instituted *inter partes* review for all the Challenged Claims in the Appealed Patents and found them unpatentable as obvious over Kronzer in view of Oez. For the reasons below, we affirm.

BACKGROUND

A. The Appealed Patents

The Appealed Patents relate to transfer sheets and methods for transferring images onto dark-colored fabrics. '475 patent col. 1 ll. 17–19.[6] Multi-layer image transfer sheets for transferring images onto fabrics were well known in the prior art. *Id.* col. 1 l. 20–col. 2 l. 27. The prior art image transfer sheets generally included a base/substrate layer, typically made of paper, and one or more

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[5] Ms. Schwendimann brought suit against Neenah for infringement in the United States District Courts in Delaware and the Eastern District of Michigan.

[6] The Appealed Patents share a specification. For ease of reference and to be consistent with the parties' briefs, citations to the Appealed Patents' specification are made to the '475 patent. *See* Appellant's Br. 8 n.2; Appellees' Br. 7 n.4.

polymer or other layers coated on top of the base/substrate layer. '475 patent col. 1 l. 20–col. 2 l. 27. Using an ink-jet printer, one could print an image on the image transfer sheet, place the transfer sheet on fabric (e.g., a T-shirt), and using an iron or heat press, transfer the image onto the fabric. *Id.*

While such transfer sheets worked well when transferring images onto light-colored fabrics, there was a well-known problem with transferring dark images onto dark fabrics because the dark images could not be easily or clearly seen against the dark-fabric background due to the lack of contrast between the image and the fabric. *Id.* col. 3 ll. 37–50. The solution for this problem was a two-step process, in which one would first apply a white or light background onto the dark fabric and then apply the desired image on top of the white or light background. *Id.* col. 3 ll. 37–57.

The Appealed Patents addressed this problem in the prior art and claimed a single-step solution whereby the white background was incorporated into the image transfer sheet, allowing the white background and dark image to be applied simultaneously onto the dark fabric. *Id.* col. 3 ll. 10–21. Specifically, the Appealed Patents claim multi-layer image transfer sheets where one or more of the layers contains a white pigment, such as titanium dioxide, and methods of making and using the same. *Id.* col. 2 l. 53–col. 3 l. 6.

Independent claims 1 and 19 are representative:

> 1. An ink-jet transfer article, comprising:
>
> a substrate member including a substrate surface;
>
> an opaque first layer overlaying the substrate surface, the opaque first layer including polyurethane and a white or luminescent pigment; and

a second layer overlaying the opaque first layer and configured to receive indicia, the second layer including polyurethane and a polymeric material.

Id. col. 11 ll. 34–41.

19. A method of transferring an image to a dark-colored or black receiving member, comprising:

providing an ink-jet transfer article, comprising

a substrate member including a substrate surface;

an opaque first layer overlaying the substrate surface, the opaque first layer including polyurethane and a white or luminescent pigment; and

a second layer overlaying the opaque first layer and configured to receive indicia printed using an ink-jet printer, the second layer including polyurethane and a polymeric material;

wherein the substrate member is peeled away from the opaque first layer and the second layer;

wherein the opaque first layer and the second layer are applied to the dark-colored or black receiving member such that received indicia face upwards;

wherein the substrate layer, when peeled, or an overlay release paper is positioned over the second layer and the opaque first layer; and

wherein heat is applied to one of the substrate layer or the overlay release paper, the second layer, and the opaque first layer so that received indicia and a substantially white background for received indicia, provided by the

> opaque first layer, are transferred to the colored or black receiving member at substantially the same time.

Id. col. 12 ll. 40–64.

B. The Prior Art

a. Kronzer

Kronzer is directed to "a heat transfer material, such as a heat transfer paper" for use in the "application of customer-selected design, messages, illustrations, and the like . . . on articles of clothing, such as T-shirts, sweat shirts, and the like." Kronzer col. 1 ll. 6–12. It discloses numerous multi-layered image transfer sheets with varying configuration of layers, as well as examples of polymers and other materials that can be used to create each layer and improve image transfer quality. *Id.* col. 3 l. 11–col. 9 l. 7. Kronzer also includes examples of its claimed image transfer sheets that were created and tested—by making the sheet, printing an image on the sheet, transferring the image to a T-shirt, and then subjecting the T-shirt to washing cycles—along with the results of those tests, which assessed the final product for image transfer, image quality, and washability. *Id.* col. 9 l. 11–col. 18 l. 6.

Kronzer discloses an image transfer sheet with four layers, wherein the first layer is a base/substrate layer, the second is a release layer, the third is a polymer layer, and the fourth is an ink/image receiving layer. *Id.* col. 2 ll. 33–67. The third and fourth layers include a "thermoplastic polymer," which would melt from about 65°C to about 180°C. *Id.* col. 2 ll. 45–48, 65–67. Further, the layers "may contain other materials, such as processing aids, release agents, *pigments*, deglossing agents, antifoam agents, and the like." *Id.* col. 8 ll. 46–48 (emphasis added).

Kronzer explains that, after printing the image on the transfer sheet and placing the transfer sheet on fabric, one can transfer the image using "heat and pressure" and then

remove the base/substrate layer. *Id.* col. 3 l. 67–col. 4 l. 15. Specifically, Kronzer uses a "peel-last" application method, meaning the user (1) prints the desired image as a mirror image onto the transfer sheet, (2) applies the transfer sheet to the fabric image-side down, (3) applies heat and pressure to transfer the image onto the fabric, and then (4) peels the base/substrate and release layers away to reveal the final product. *Id.* col. 1 ll. 1–45, col. 4 ll. 6–15; *see also* Appellant's Br. 11–12.

The Appealed Patents all cite to Kronzer as prior art. '623 patent at (56); '581 patent at (56); '042 patent at (56); '475 patent at (56). Overall, the main difference between Kronzer and the Appealed Patents is that Kronzer does not expressly teach including a white pigment in one of its layers for transferring an image onto a dark fabric.

b. Oez

Like Kronzer, Oez is directed to multi-layered image transfer sheets and methods of using the same "for transferring photocopies to textiles, such as, in particular, T-shirts." Oez col. 1 ll. 7–18. Oez discloses an image transfer sheet with three layers, wherein the first layer is a base/substrate layer, the second layer is a release layer, and the third layer is plastic/polymer layer that can receive an image. *Id.* col. 3 ll. 14–60.

Critically, Oez teaches including a white pigment, such as titanium dioxide, in the plastic/polymer layer to provide a white background for the image and improve image quality when transferring images onto dark fabrics. Oez explains that "[c]onventional prints are not satisfactory in respect of the brilliance of the image transferred, especially on black textiles." *Id.* col. 1 ll. 19–21. To solve this problem, Oez teaches that one can incorporate a white pigment into the plastic/polymer layer when printing on dark fabrics. *Id.* col. 1 ll. 27–32; *see also id.* col. 1 ll. 52–56 (explaining that by incorporating titanium dioxide in the plastic/polymer layer, an image can be transferred to a

dark fabric in in a single-step instead of the previous two-step process for doing the same). Unlike Kronzer, Oez uses a "peel-first" application method, meaning the user (1) prints the desired image positively (i.e., not as a mirror image), (2) peels the base/substrate and release layers away before image transfer, (3) applies the transfer sheet to the fabric image-side up, and (4) applies heat and pressure to transfer the image onto the fabric. *Id.* col. 1 ll. 48–56, col. 2 l. 63–col. 3 l. 16, col. 3 ll. 30–59; *see also* Appellant's Br. 16.

PROCEDURAL HISTORY

Neenah filed petitions for *inter partes* review of the Appealed Patents and the '554 patent. *Decision*, 2021 WL 5203293, at *1;[7] Appellant's Br. 6; Appellees' Br. 22. Neenah asserted the Challenged Claims and the '554 patent's claims were rendered obvious on multiple separate grounds based on different prior art combinations, including grounds in each petition based on Kronzer in view of Oez, whereby a skilled artisan would incorporate the white pigment taught in Oez into Kronzer's transfer sheet. *Decision*, 2021 WL 5203293, at *3, *6–7. The Board instituted *inter partes* review on all the Challenged Claims for all the asserted grounds, *Neenah, Inc. v. Schwendimann*, No. IPR2020-00915, 2020 WL 6542027, at *12 (P.T.A.B. Nov. 6, 2020), and construed the term "white layer," which all the Challenged Claims required, to mean: "a layer comprising a concentration or configuration of pigment providing a white background for received indicia and which further comprises a polymer that *melts and mixes* with another layer or layers during application." *Id.* at *4 (emphasis

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[7] The Board's decisions at issue in this appeal are substantially similar to one another. For ease of reference and to be consistent with the parties' briefs, citations to the Board decisions are made to the Board's final written decision in IPR2020-00915. *See* Appellant's Br. 17 n.3; Appellees' Br. 7 n.3.

added).[8] The Board maintained the construction for "white layer" in its final written decisions. *Decision*, 2021 WL 5203293, at *4–5. Ultimately, the Board found Kronzer in view of Oez rendered the Challenged Claims obvious. *Id.* at *19. Because of this finding, the Board did not address the other grounds Neenah asserted against the Challenged Claims. *Id.* (citing *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018); *Bos. Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App'x 984, 990 (Fed. Cir. 2020) (nonprecedential)).

The Board explained that Ms. Schwendimann did "not dispute that Kronzer and Oez[] together teach or suggest all of the limitations recited in [the Challenged Claims]." *Id.* at *7. Instead, her only challenges to the combination were directed to whether a skilled artisan would have been motivated to combine the references and whether the combination would have yielded a reasonable expectation of success. *Id.* at *8. The Board meticulously considered and addressed each of Ms. Schwendimann's arguments, explaining why the record contradicted each argument.

First, the Board addressed Ms. Schwendimann's arguments that Neenah did not prove any reason to combine Kronzer and Oez because Oez does not teach a multi-layered transfer sheet with a distinct image receiving layer and the identity of the subject matter between the two references alone is insufficient to establish a motivation to

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[8] The Board, however, did not institute *inter partes* review of the '554 patent because, *inter alia*, the specific ground Neenah asserted in its petition based on Kronzer in view of Oez relied on replacing Kronzer's entire third layer with Oez's entire plastic/polymer layer. *Neenah, Inc. v. Schwendimann*, No. IPR2020-00636, 2020 WL 5539857, at *10 (P.T.A.B. Sept. 15, 2020) ("*'554 Decision*"). The Board found Neenah failed to show that such a combination would result in a transfer sheet whereby the white layer would melt and mix with another layer. *Id.*

combine the references. *Id.* at *8–9. The Board found Oez did teach multi-layered transfer sheets based on Oez's express disclosure describing multi-layered transfer sheets and admissions by Ms. Schwendimann's expert, Dr. Christopher Ellison, describing Oez's transfer sheets as having a second, optional layer. *Id.* at *8. The Board also found Neenah did not rely on the identity of the subject matter in Kronzer and Oez alone to establish a motivation to combine the references. *Id.* The Board concluded both references were directed to improving the image transfer quality of multi-layered transfer sheets, citing Kronzer, Oez, and Neenah's expert, Dr. Robert A. Wanat, and credited Dr. Wanat's testimony that Kronzer and Oez were "complementary and compatible" with one another "because Kronzer's image transfer sheet can be used *on any color fabric*." *Id.* at *9 (emphasis added).

Second, the Board addressed Ms. Schwendimann's argument claiming Neenah failed to explain *why* a skilled artisan would be motivated to combine Kronzer and Oez and thus improperly used the Appealed Patents as a hindsight roadmap to make the proposed combination. *Id.* at *9–10. The Board accepted Neenah's argument that a skilled artisan would be motivated to combine Kronzer and Oez by incorporating the white pigment taught by Oez into Kronzer's transfer sheet in order to improve the Kronzer transfer sheet when printing on a dark fabric. *Id.* at *9. The Board found this argument relied on Oez's express teachings that adding a white pigment improves image transfer quality on dark fabrics and Kronzer's express teaching that any of its layers may contain pigments. *Id.* at *10. The Board concluded these were sufficient rational underpinnings to explain why a skilled artisan would be motivated to combine Kronzer and Oez, as Neenah proposed, and Neenah's reliance on express teachings in both references undermined Ms. Schwendimann's argument that Neenah relied on hindsight in making the proposed combination. *Id.* at *9–10.

Third, the Board addressed Ms. Schwendimann's assertions that a skilled artisan would not have been motivated to combine Kronzer and Oez because Kronzer does not solve the problem of transferring an image onto dark fabric. *Id.* at *11–12. The Board explained Kronzer did not need to solve the specific problem addressed by the Appealed Patents because "[t]he test for obviousness is not whether any one or all of the references expressly suggests the claimed invention, but whether the claimed subject matter would have been obvious to [skilled artisans] in light of the combined teachings of those references." *Id.* at *12 (citing *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)). The Board repeated its previous findings as to Kronzer and Oez, including the "complementary and compatible" nature of the transfer sheets taught by the references, and determined the record supported "a finding that a [skilled artisan] would have recognized that the Oez[] technique would improve the similar transfer sheet disclosed in Kronzer, and would have had a reason to combine the teachings of Kronzer and Oez[]." *Id.* at *12 (citing *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007)).

Fourth, the Board addressed Ms. Schwendimann's argument claiming that a skilled artisan would not be motivated to combine Kronzer and Oez because they involved "fundamental differences in their structures and manufacturing." *Id.* at *14. Referencing its prior findings, which cited to Kronzer, Oez, and Dr. Ellison's testimony, the Board disagreed and again found both references "describe[d] a multi-layered image transfer structure." *Id.* The Board also disagreed with Ms. Schwendimann's assertion that there were "fundamental differences" in the problems Kronzer and Oez solved and the technologies used to solve these problems. *Id.* at *15. Referencing its prior findings, which cited to Kronzer, Oez, and Dr. Wanat's testimony, the Board again found both references were "aligned with a common goal of improving the quality of transferred images." *Id.* Moreover, the Board concluded that

"Dr. Wanat's testimony regarding Oez[] and Kronzer being complementary and compatible, which Kronzer supports because it teaches the use of pigments and is not limited to fabric color, undermines [Ms. Schwendimann]'s bare assertion that the technology in the two references is so different that a [skilled artisan] would not have had any reason to combine the teachings of the references." *Id.*

Fifth, the Board addressed Ms. Schwendimann's claims that a skilled artisan lacked a reasonable expectation of success in combining Kronzer and Oez because Oez "teaches away from using white pigment alone or that Oez[] requires a cross-linking polymer for the white pigment to function." *Id.* at *12–13. The Board explained that for a reference to teach away, it "must discourage [a skilled artisan] from following the path set out in the reference, or lead that [skilled artisan] in a direction divergent from the path taken by the applicant." *Id.* at *13 (citing *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994)). The Board found that Ms. Schwendimann did "not identify any teaching in Oez[] that either requires use of a cross-linking polymer with its white pigment or discourages using a white pigment without a cross-linking polymer" and its own "review of Oez[] [did] not reveal any such teaching." *Id.* at *13. Accordingly, the Board concluded Oez does not teach away from the proposed combination. *Id.*

The Board also concluded Ms. Schwendimann's argument that a skilled artisan lacked a reasonable expectation of success when adding the white pigment to Kronzer because such an addition would be "unpredictable" to be "similarly unavailing," because there was no evidence to support that titanium dioxide would do anything other than provide a white background when incorporated into Kronzer. *Id.*; *see also id.* at *14 ("[T]itanium dioxide is well-studied, well-understood, and the most widely-used white pigment."). The only evidence Ms. Schwendimann proffered was Dr. Ellison's testimony, which the Board found to be "inconclusive," "conclusory," and "based on an

incomplete understanding of the referenced articles," and accordingly it was "entitled to little or no weight." *Id.* at *13–14; *see also id.* at *13 (noting Dr. Ellison's testimony concerning the possibility of titanium dioxide chemically reacting with Kronzer's layers was "inconclusive and, at best, describes possible interactions in a reactive system—not a non-reactive system," like the one Neenah proposed (emphasis omitted)). The Board also rejected Ms. Schwendimann's unpredictability arguments based on the "failures" in Kronzer's examples because, even accepting this characterization of Kronzer, none of the identified "failures" included layers with a pigment—a fact even Ms. Schwendimann acknowledged—and thus were not significant "to the question of unpredictability based on adding a pigment to Kronzer." *Id.* at *14.

Sixth and finally, the Board addressed Ms. Schwendimann's argument claiming a skilled artisan lacked a reasonable expectation of success in combining Kronzer and Oez because the references use "opposite methods of application" (i.e., Kronzer uses the peel-last method, but Oez uses the peel-first method). *Id.* at *15–16. The Board found that, because Oez "teaches that the printed image should be oriented on top of the white/opaque background," a skilled artisan "would have understood from the references themselves that the image in Kronzer should be positioned such that it does not end up underneath the white/opaque layer when printed." *Id.* at *16. The Board noted that Ms. Schwendimann acknowledged that incorporating a white pigment into Kronzer without modifying Kronzer's peel-last method would obscure the image. *Id.* But the Board disagreed this fact would dissuade a skilled artisan from making the proposed combination "because the '[skilled artisan] is also a person of ordinary creativity, not an automaton,' and does not abandon common sense when considering the combination of references." *Id.* (quoting *KSR*, 550 U.S. at 421).

Thus, the Board found the record supported "that a [skilled artisan] would have had reason to combine the teachings of Kronzer and Oez[], and would have had a reasonable expectation of successfully doing so to arrive at the subject matter recited in [the Challenged Claims]" and ultimately concluded Kronzer in view of Oez rendered the Challenged Claims unpatentable as obvious. *Id.*

Ms. Schwendimann timely appealed the Board's final written decisions, and we have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

Ms. Schwendimann makes three arguments on appeal: (1) substantial evidence does not support the Board's finding that a skilled artisan would have been motivated to combine Kronzer and Oez, (2) substantial evidence does not support the Board's finding that a skilled artisan would have had a reasonable expectation of success in making the proposed combination, and (3) Neenah and the Board were required to explain why Kronzer (and not Oez) was the primary reference for the proposed combination. Neenah argues that the record amply demonstrates substantial evidence to support the Board's findings on motivation to combine and reasonable expectation of success in making the proposed combination. Neenah further argues that Ms. Schwendimann forfeited her third argument by failing to present the argument to the Board. We will address Ms. Schwendimann's first two arguments together followed by her third argument.

"We review the Board's legal conclusions de novo and its factual findings for substantial evidence." *MCM Portfolio LLC v. Hewlett-Packard Co.*, 812 F.3d 1284, 1293 (Fed. Cir. 2015). "Obviousness is a question of law based on underlying facts, including the scope and content of the prior art, differences between the prior art and the claims at issue, the level of ordinary skill, and relevant evidence of secondary considerations." *Henny Penny Corp. v. Frymaster*

LLC, 938 F.3d 1324, 1331 (Fed. Cir. 2019) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)); *see also KSR*, 550 U.S. at 427. Accordingly, the subsidiary obviousness questions of whether a skilled artisan would be motivated to combine prior art references and whether a skilled artisan had a reasonable expectation of success in making such a combination are factual, and we review them for substantial evidence. *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1196–97 (Fed. Cir. 2014). "Substantial evidence is more than a mere scintilla. It means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *Consol. Edison Co. v. NLRB*, 305 U.S. 197, 229 (1938).

"[F]orfeiture is the failure to make the timely assertion of a right." *United States v. Olano*, 507 U.S. 725, 733 (1993). A party forfeits "an argument that it 'failed to present to the Board' because it deprives the court of 'the benefit of the Board's informed judgment.'" *In re NuVasive, Inc.*, 842 F.3d 1376, 1380 (Fed. Cir. 2016) (quoting *In re Watts*, 354 F.3d 1362, 1367–68 (Fed. Cir. 2004)). Absent exceptional circumstances, *see In re DBC*, 545 F.3d 1373, 1379–80 (Fed. Cir. 2008), we do not consider such forfeited arguments on appeal. *In re Google Tech. Holdings LLC*, 980 F.3d 858, 863 (Fed. Cir. 2020); *In re Baxter Int'l, Inc.*, 678 F.3d 1357, 1362 (Fed. Cir. 2012).

I

First, Ms. Schwendimann argues a skilled artisan would not be motivated to combine Kronzer and Oez because their teachings are "diametrically opposed" and "flatly inconsistent." Appellant's Br. 31. This argument is unpersuasive as it fails to address the substantial evidence supporting the Board's finding that a skilled artisan would be motivated to combine Kronzer and Oez. *Decision*, 2021 WL 5203293, at *8–12, *14–15. Kronzer and Oez expressly disclose multi-layered transfer sheets, which is further supported by Dr. Ellison's testimony. The references share

the common goal of improving image transfer characteristics, and Dr. Wanat explained how Kronzer and Oez are "complementary and compatible" because Kronzer is applicable to any color fabric. *Id.* at *9. Critically, Kronzer expressly teaches that pigments can be included in any of its layers, and Oez expressly teaches that including a white pigment in the transfer sheet provides advantages for transferring images onto dark fabrics. As the Board found, the motivation to add the white pigment in Oez into Kronzer's transfer sheet comes from the express teachings in both references. Clearly, the teachings of Kronzer and Oez are not "diametrically opposed" or "flatly inconsistent," and the express teachings in both references providing a motivation to make the proposed combination negates any hindsight-based argument. *See In re Gartside*, 203 F.3d 1305, 1319 (Fed. Cir. 2000). Thus, Kronzer's and Oez's disclosures as well as Dr. Ellison's and Dr. Wanat's testimonies are substantial evidence supporting the Board's finding that a skilled artisan would be motivated to combine the references.

Second, Ms. Schwendimann argues a skilled artisan would not have had a reasonable expectation of success combining Kronzer and Oez because Oez teaches away from any combination with Kronzer, the proposed combination would be unpredictable, and Kronzer's modified transfer sheet would require significant reengineering. Ms. Schwendimann argues Oez teaches away from the proposed combination because Oez requires using a cross-linking polymer for the white pigment to function. This teaching away argument is the same one the Board considered and rejected. "[A] reference does not teach away if a skilled artisan, upon reading the reference, would *not* be 'discouraged from following the path set out in the reference,' and would *not* be 'led in a direction divergent from the path that was taken by the applicant.'" *Adapt Pharma Operations Ltd. v. Teva Pharms. USA, Inc.*, 25 F.4th 1354, 1370 (Fed. Cir. 2022) (quoting *DePuy Spine, Inc. v.*

Medtronic Sofamor Danek, Inc., 567 F.3d 1314, 1327 (Fed. Cir. 2009)). Although Oez used a white pigment with a cross-linking polymer, it does not discourage a skilled artisan from using the white pigment without a cross-linking polymer or lead the skilled artisan in a direction divergent from the path taken in the Appealed Patents. Thus, Oez's disclosure is substantial evidence that supports the Board's finding that Oez does not teach away from the proposed combination.

Ms. Schwendimann also argues a skilled artisan would not have had a reasonable expectation of success in combining Kronzer and Oez because adding titanium dioxide into Kronzer's transfer sheet could cause unpredictable chemical reactions that interfere with the transfer process. The only evidence Ms. Schwendimann cites to support this argument is testimony by Dr. Ellison and the "failures" in Kronzer's examples. The Board found Dr. Ellison's testimony was "entitled to little or no weight," because it was "inconclusive," "conclusory," and "based on an incomplete understanding of the referenced articles." *Decision*, 2021 WL 5203293, at *13–14. For example, Dr. Ellison testified that adding titanium dioxide to Kronzer's transfer sheet could lead to possible chemical reactions because titanium dioxide can chemically interact with other components of reactive systems—but the record is clear that including titanium dioxide in Kronzer's layers results in a non-reactive system. The Board also ascribed little weight to the "failures" in Kronzer's examples in assessing Ms. Schwendimann's unpredictability claims because, even accepting Ms. Schwendimann's characterization of Kronzer's examples, the failed trials did not include transfer sheets with pigments—a fact Ms. Schwendimann conceded. The Board instead found that adding titanium dioxide to Kronzer's layers would do nothing more than provide a white background, citing to Dr. Wanat's testimony and other scientific literature in the record. Overall, there was no error in the Board's analysis, and substantial evidence supports the

Board's conclusion that making the proposed combination would not lead to unpredictable results.

Ms. Schwendimann next argues a skilled artisan would not have had a reasonable expectation of success in making the proposed combination because the resulting transfer sheet would need to be significantly reengineered since Kronzer used a peel-last application method, but Oez used a peel-first application method. Although Kronzer teaches printing a mirror image on its transfer sheet and using a peel-last application method, Oez teaches printing a positive image on its transfer sheet and using a peel-first application method to ensure the transferred image is on top of the white background. If Oez relied on a peel-last application method, the white background would obscure the printed image, as Ms. Schwendimann acknowledged. The Board found a skilled artisan would understand that an image printed on a Kronzer transfer sheet containing white pigment must be positioned to be on top of the white layer to avoid obscuring the image "because the '[skilled artisan] is also a person of ordinary creativity, not an automaton,' and does not abandon common sense when considering the combination of references." *Id.* at *16 (quoting *KSR*, 550 U.S. at 421). Again, the Board's analysis is sound, and substantial evidence supports the Board's finding that a skilled artisan would use their common sense when making the proposed combination to arrive at an operable transfer sheet.

Thus, the disclosures of Kronzer, Oez, and the scientific literature in the record along with Dr. Wanat's testimony are substantial evidence supporting the Board's conclusion that a skilled artisan would have had a reasonable expectation of success in making the proposed combination.

II

Ms. Schwendimann's third argument is that Neenah failed to explain—and the Board erred by not explaining—why a skilled artisan would have chosen Kronzer as the

"primary reference"[9] for the proposed combination (the "Primary Reference Argument").[10] Ms. Schwendimann argues that justification for selection of a primary reference is a necessary step to guard against hindsight bias for the motivation to combine references. Neenah responds that Ms. Schwendimann did not raise her Primary Reference Argument to the Board in her Preliminary Responses, Patent Owner Responses, or Sur-Replies, and consequently forfeited the opportunity to present the argument on appeal. Appellees' Br. 42–43. On reply, Ms. Schwendimann asserts that her admitted failure to present her argument directly to the Board is "irrelevant" because the argument was indirectly preserved in three ways: (1) her written arguments to the Board that a skilled artisan would not have

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[9] The parties use the phrases "lead reference," "lead prior art reference," and "primary reference" interchangeably. *See* Appellant's Br. 28–31; Appellees' Br. 42–50. For clarity and to be consistent with the terminology that occasionally appears in the case law, we will only use "primary reference."

[10] Ms. Schwendimann also makes multiple references to the Board's *'554 Decision* denying *inter partes* review of the '554 patent to support her argument that the Board committed reversable error in the current appeal. *See, e.g.*, Appellant's Br. 30–31, 34. The proposed combination of Kronzer and Oez at issue in the *'554 Decision*, however, required replacing Kronzer's entire third layer with Oez's entire plastic/polymer layer, which the Board found would not result in a white layer that melts and mixes with another layer. This is unlike the proposed combination of Kronzer and Oez at issue in the current appeal, which only required adding Oez's white pigment to one of Kronzer's layers. While both proposed combinations use Kronzer and Oez, they are different grounds for assessing obviousness and, accordingly, the *'554 Decision* has no bearing on the outcome of this appeal.

looked to Kronzer *at all* to solve the problem addressed by the Appealed Patents, (2) a discussion during the oral hearing before the Board, and (3) a footnote in the Board's decision.

First, Ms. Schwendimann asserts she did not forfeit her Primary Reference Argument because she "expressly and repeatedly" argued to the Board that a skilled artisan would not look to Kronzer *at all* to solve the problem addressed by the Appealed Patents. Appellant's Reply Br. 4–5. This is not persuasive because such an argument concerns whether Kronzer is analogous art.[11] That is plainly not the same as and did not preserve her Primary Reference Argument she now makes on appeal, which concerns whether Neenah (and the Board) sufficiently explained why Kronzer was the appropriate primary reference.

Second, Ms. Schwendimann claims she preserved her Primary Reference Argument by raising it to the Board during the oral hearing. During the oral hearing, in a discussion with Neenah's counsel, the Board noted that Ms. Schwendimann contended it was counterintuitive to start with Kronzer instead of Oez, and asked Neenah to explain why a skilled artisan would start with Kronzer. Neenah responded by explaining that the law does not recognize "that you have to give a basis for starting with one reference as the primary," J.A. 567, but that here there was a basis: adding a white pigment to Kronzer's layers would improve Kronzer's transfer sheets for application to dark fabrics. Under these circumstances, the law is clear that arguments raised to the Board at an oral hearing are not

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[11] Ms. Schwendimann did not appeal the Board's finding that Kronzer is analogous art, and, during oral argument, Ms. Schwendimann's counsel stated that "Kronzer is analogous art." Oral Arg. at 10:14–10:22, https://oralarguments.cafc.uscourts.gov/default.aspx?fl=22-1333_08072023.mp3.

preserved. *See Dell Inc. v. Acceleron, LLC*, 884 F.3d 1364, 1369 (Fed. Cir. 2018). But even if arguments raised to the Board at oral hearing could be preserved, Neenah replied to the argument in terms of findings the Board itself made in its decision.

Third, Ms. Schwendimann contends the Board preserved her Primary Reference Argument by describing it as a "red herring." *Decision*, 2021 WL 5203293, at *9 n.8. This footnote, however, related to Ms. Schwendimann's contention that Oez is a preferred primary reference because it directly deals with printing on dark fabrics, and her argument that Neenah failed to show that Kronzer "provide[d] something beneficial that [was] lacking in Oez[]." *Id.* The Board concluded that this argument was "a red herring, as [Neenah did] not propose to modify or improve anything in Oez[] based on Kronzer," *id.*, but instead successfully proposed to improve Kronzer by adding the white pigment taught by Oez. The Board's "red herring" comment was directed to Ms. Schwendimann's argument that Neenah failed to explain why Kronzer might improve Oez, not to her argument on appeal that the Board must justify using Kronzer as the primary reference. In short, the Board's "red herring" comment was not describing the Primary Reference Argument.

Ms. Schwendimann does not cite any exceptional circumstances that could warrant consideration of her Primary Reference Argument. Therefore, we hold Ms. Schwendimann forfeited her Primary Reference Argument before this court. *See Google*, 980 F.3d at 863.

But to any extent Ms. Schwendimann's Primary Reference Argument was not forfeited, the argument has no basis in our case law. In the context of an obviousness challenge with two or more references, describing one of the references as "primary" means that it is the reference to be modified by the "secondary" or other references. *See, e.g.*, Manual of Patent Examining Procedure § 2677(I)(I)(4)

(9th ed. Rev. 5, Feb. 2023). Using Kronzer and Oez as placeholders, an obviousness challenge based on "Kronzer in view of Oez" means the challenge is based on Kronzer being modified by Oez to reach the claimed invention. In other words, Kronzer is the primary reference and Oez is the secondary reference.

We have made clear that "where the relevant factual inquiries underlying an obviousness determination are otherwise clear," characterizing references "as 'primary' and 'secondary' is merely a matter of presentation with no legal significance." *In re Mouttet*, 686 F.3d 1322, 1333 (Fed. Cir. 2012); *see In re Bush*, 296 F.2d 491, 496 (CCPA 1961) (Rich, J.); *see also In re Cowles*, 156 F.2d 551, 554 (CCPA 1946); *In re Krammes*, 314 F.2d 813, 816–17 (CCPA 1963); *In re Walker*, 324 F.2d 977, 984–85 (CCPA 1963). Although we have acknowledged "that there may be some cases in which relevant factual determinations inhere in such characterization of prior art references," *Mouttet*, 686 F.3d at 1333, Ms. Schwendimann has not brought any such case to our attention, and we could find none. Regardless, this case is certainly not one because, as we explained above, the relevant factual determinations supporting the Board's obviousness conclusions are clear, supported by substantial evidence, and refute any concern of hindsight bias.

CONCLUSION

We have considered Ms. Schwendimann's remaining arguments and find them unpersuasive. Accordingly, and for the foregoing reasons, we affirm the Board's final written decisions.

AFFIRMED