

NOTE: This disposition is nonprecedential.

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

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**NIKE, INC.,**  
*Appellant*

v.

**ADIDAS AG,**  
*Appellee*

**KATHERINE K. VIDAL, UNDER SECRETARY OF  
COMMERCE FOR INTELLECTUAL PROPERTY  
AND DIRECTOR OF THE UNITED STATES  
PATENT AND TRADEMARK OFFICE,**  
*Intervenor*

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2021-1903

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Appeal from the United States Patent and Trademark  
Office, Patent Trial and Appeal Board in No. IPR2013-  
00067.

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Decided: September 1, 2022

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MICHAEL JOSEPH HARRIS, Arnold & Porter Kaye  
Scholer LLP, Chicago, IL, argued for appellant. Also rep-  
resented by CHRISTOPHER J. RENK; BRIDGETTE BOYD,  
Washington, DC.

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BENJAMIN T. HICKMAN, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA, argued for intervenor. Also represented by PETER J. AYERS, THOMAS W. KRAUSE, FARHEENA YASMEEN RASHEED, MEREDITH HOPE SCHOENFELD.

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

CHEN, *Circuit Judge*.

This is an appeal from a third final written decision by the Patent Trial and Appeal Board (Board) in an *inter partes* review instituted in 2012. On two prior occasions, we affirmed-in-part, vacated-in-part, and remanded to the Board. *See generally Nike, Inc. v. Adidas AG*, 812 F.3d 1326 (Fed. Cir. 2016) (*Nike I*), *overruled on other grounds by Aqua Prods., Inc. v. Matal*, 872 F.3d 1290, 1296 n.1 (Fed. Cir. 2017) (en banc); *Nike, Inc. v. Adidas AG*, 955 F.3d 45 (Fed. Cir. 2020) (*Nike II*).

Nike, Inc. (Nike) now appeals the Board's determination that proposed substitute claim 49 of U.S. Patent No. 7,347,011 ('011 patent) is unpatentable under 35 U.S.C. § 103. Nike argues: (1) that the Board erred in finding that the Board, rather than the petitioner, bears the burden of persuasion for unpatentability challenges to proposed substitute claims raised sua sponte by the Board; (2) that the Board in this case effectively placed the burden of persuasion on Nike; and (3) that the Board's obviousness analysis is unsupported by substantial evidence and violates the Administrative Procedure Act (APA). We need not address Nike's first argument because both the Board and adidas AG (Adidas) met the burden of persuasion in

this case. As a result, the Board did not improperly place the burden on Nike. Finally, substantial evidence supports the Board's obviousness analysis and Nike's APA-based argument lacks merit. We therefore *affirm*.

## BACKGROUND

### I

Conventional athletic footwear comprises two primary elements: a sole structure and an upper. The sole structure cushions the foot and provides traction, while the upper covers and positions the foot. '011 patent col. 1 ll. 13–24.

The '011 patent discloses footwear with a knitted textile upper and a sole structure secured to the upper. *Id.* at col. 1 ll. 7–10, col. 3 ll. 20–47. The knitted textile upper may include areas formed from different stitch configurations with varying textures and may be formed using “flat knitting,” where the textile is knit as a sheet or flat piece of textile. *Id.* at col. 3 ll. 25–32, col. 7 ll. 5–8, col. 11 ll. 19–41. As discussed below, the only remaining claim at issue after our decisions in *Nike I* and *II* is proposed substitute claim 49, which depends from proposed substitute claim 47 and recites “a plurality of apertures in the flat knit textile element” that are “formed by omitting stitches in the flat knit textile element and positioned in the upper for receiving laces.” J.A. 19.

### II

The Board's first final written decision in this *inter partes* review granted a request from Nike to cancel claims 1–46 but denied Nike's request to enter substitute claims 47–50, finding those claims unpatentable under 35 U.S.C. § 103 over the combination of U.S. Patent No. 5,345,638 (Nishida) and U.S. Patent Nos. 2,178,941 and 2,150,730 (collectively, Schuessler References). *See Adidas AG v. Nike, Inc.*, No. IPR2013-00067, 2014 WL 1713368, at \*21 (P.T.A.B. Apr. 28, 2014) (*Final Written Decision*).

Nike appealed, and we found that substantial evidence supported the Board's finding that a skilled artisan would have been motivated to combine Nishida with the Schuessler References with a reasonable expectation of success to arrive at the textile upper recited in claims 47–50. *See Nike I*, 812 F.3d at 1335–38. We also affirmed the Board's conclusion that the patent owner bears the burden of proving patentability of substitute claims presented in a motion to amend. *Id.* at 1332–34.

We identified two errors in the Board's decision, however. First, the Board's analysis of objective indicia of non-obviousness failed to examine Nike's evidence of long-felt need. *Id.* at 1339–40. Second, the Board failed to determine if substitute claims 48 and 49, which Nike proposed to replace challenged claim 19, were patentably distinct from each other. *Id.* at 1341–42. Relevant to this appeal, we remanded for the Board to determine the patentability of substitute claim 49, explaining that “Nishida's specification never specifically discusses the lacing holes of its upper; they are only shown in Figure 3,” and that the Board neither “point[ed] to any disclosure in Nishida that explains the manner in which” the holes in Figure 3 were created, nor “address[ed] the presence of the holes in either claim 49 or Nishida.” *Id.* at 1344. We noted the Board may have “intended to convey that claim 49 was obvious in light of Nishida because *skipping stitches to form apertures, even though not expressly disclosed in Nishida, was a well-known technique in the art* and that understanding perhaps would be a basis to conclude that one of skill in the art would utilize this technique to create holes for accepting shoe laces.” *Id.* at 1344–45 (footnote omitted) (emphasis added). But the Board “did not articulate these findings,” and we thus remanded to the Board for further proceedings. *Id.*

## III

After our decision in *Nike I*, this court issued its en banc decision in *Aqua Products*, overruling *Nike I*'s holding that the patent owner bears the burden of persuasion with respect to the patentability of substitute claims. *See Aqua Prods.*, 872 F.3d at 1324–25. Both parties submitted briefs to the Board addressing the impact of *Aqua Products* on the remand proceedings. Adidas did not attempt to revise its invalidity arguments or assert any new prior art references to demonstrate the unpatentability of substitute claim 49.

The Board then issued a second final written decision addressing the two errors we identified in *Nike I*. The Board concluded that Adidas proved by a preponderance of the evidence that substitute claims 47–50 are unpatentable as obvious. *Adidas AG v. Nike, Inc.*, No. IPR2013-00067, 2018 WL 4501969, at \*13 (P.T.A.B. Sept. 18, 2018) (*Final Written Decision II*). Regarding substitute claim 49, the Board found that “Nishida does not disclose apertures ‘formed by omitting stitches,’ as recited in claim 49.” *Id.* at \*7. However, “another prior art document of record in the proceeding,” a textbook by David J. Spencer (Spencer),<sup>1</sup> “demonstrates that skipping stitches to form apertures was a well-known technique.” *Id.* at \*7–8, \*8 n.11. The Board concluded that “[b]ecause the omission of stitches was a well-known technique in the field of knitting for forming . . . apertures,” a skilled artisan “would have had reason to use such a known technique . . . to form the plurality of apertures taught by Nishida, as recited by substitute claim 49.” *Id.* at \*8 (first citing Spencer 57–58; then citing *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007); and then citing J.A. 1564 ¶ 107).

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<sup>1</sup> David J. Spencer, *Knitting Technology: A Comprehensive Handbook and Practical Guide* (3d ed. 2001).

Nike again appealed, arguing that the Board violated the APA by failing to give notice that it would rely on Spencer to support its conclusion that claim 49 is unpatentable as obvious. *Nike II*, 955 F.3d at 51. We agreed, explaining that although “the Board may sua sponte identify a patentability issue for a proposed substitute claim based on the prior art of record,” the Board nonetheless “must provide notice of the issue and an opportunity for the parties to respond before issuing a final decision under 35 U.S.C. § 318(a).” *Id.* at 51–52. Because “Adidas never argued that skipping stitches to form apertures was a well-known technique, let alone that Spencer taught this claim limitation”—even though “Spencer was undisputedly part of the record”—Nike did not have sufficient notice of or opportunity to respond to this issue on which the Board’s patentability determination rested. *Id.* at 52–53. As a result, we vacated the Board’s decision as to substitute claim 49 and remanded for the Board to determine its patentability after providing the parties an opportunity to respond. *Id.* at 53–54.

We also addressed Nike’s argument that the Board erred in concluding that Nike’s evidence of long-felt need was insufficient to find substitute claims 47–50 nonobvious. *Id.* at 54. We reiterated our statement in *Nike I* that skilled artisan would want to minimize waste in knitted shoe uppers (as disclosed in Nishida) and that Nishida and the Schuessler References relate to efficiently creating knitted articles. *Id.* at 55. We also concluded that substantial evidence supported the Board’s finding that other methods of minimizing waste existed before the date of the invention, including Nishida’s use of an inexpensive material for the cutting waste and Schuessler’s disclosure of knitting textile elements that do not require cutting. *Id.* We thus affirmed the Board’s finding that Nike failed to demonstrate a long-felt need for the features set forth in substitute claims 47–50. *Id.*

## IV

On remand after *Nike II*, the Board permitted additional briefing on three issues: (1) which party bears the burden of persuasion for the patentability issue the Board had raised sua sponte; (2) whether Spencer teaches or suggests the disputed limitation of substitute claim 49; and (3) whether a skilled artisan would have a reason to combine the teachings of Nishida, the Schuessler References, and Spencer to achieve the article of footwear recited in substitute claim 49. *Adidas AG v. Nike, Inc.*, No. IPR2013-00067, 2021 WL 793883, at \*4 (P.T.A.B. Mar. 1, 2021) (*Final Written Decision III*).

On the first question, the Board explained that *Nike II* held that the Board can raise an unpatentability challenge for substitute claims sua sponte, but neither *Nike II* nor this court's other precedents answered the question of whether the Board or the petitioner bears the burden of persuasion for a Board-raised issue. *Id.* at \*5–6 (citing *Aqua Prods.*, 872 F.3d at 1327; then citing *Bosch Auto. Serv. Sols., LLC v. Matal*, 878 F.3d 1027, 1040 (Fed. Cir. 2017);<sup>2</sup> and then citing *Nike II*, 955 F.3d at 53). The Board noted that it generally relies on the incentives created by the adversarial system, but the adversarial system may

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<sup>2</sup> Nike argues that our decision in *Bosch* held that the burden of proving proposed amended claims are unpatentable is always on the petitioner. Appellant's Br. 34, 38. *Bosch*, however, involved a petitioner-raised, not a Board-raised, unpatentability challenge. There, we faulted the Board for impermissibly assigning the burden to the patent owner, in violation of our decision in *Aqua Products*, and we noted only that the petitioner bore the burden for the challenges it raised. *Bosch*, 878 F.3d at 1040. Thus, *Bosch* did not address whether the Board or the petitioner bears the burden of persuasion for a Board-raised challenge to proposed substitute claims.

fail to provide the Board with potential unpatentability arguments for proposed substitute claims in some cases. *Id.* at \*6. This situation might occur, for example, when the petitioner ceases to participate in the *inter partes* review, or when the petitioner fails to raise certain evidence of unpatentability that is readily identifiable and persuasive such that the Board should take it up in the interest of supporting the integrity of the patent system. *Id.* (citing *Hunting Titan, Inc. v. Dynaenergetics Eur. GmbH*, IPR2018-00600, 2020 WL 3669653, at \*6 (P.T.A.B. July 6, 2020)). The Board concluded that the burden of persuasion cannot fall on petitioner for a challenge it did not raise, and thus “[w]here, as here, the Board raises a patentability challenge to a substitute claim *sua sponte*, the Board itself must consider the record in its entirety and justify any finding of unpatentability by reference to evidence of record.” *Id.*

On the merits, the Board determined that Spencer teaches the disputed limitation of substitute claim 49. *Id.* at \*8–12. Specifically, the Board agreed with Adidas that a skilled artisan “would have understood that the introduction of empty needles, as taught in Spencer, causes the omission of stitches, and that the creation of apertures in this manner was a well-known technique at the time of the invention of the ’011 patent.” *Id.* at \*8 (internal quotation marks omitted). The Board also found that there was adequate reason to combine the teachings of Nishida, the Schuessler References, and Spencer. *Id.* at \*12–14. Although Nishida does not specify how the apertures in its upper are formed, the Board agreed with Adidas that “there are a finite number of predictable solutions for forming holes,” and the “omission of stitches was a well-known technique in the field of knitting for forming such apertures.” *Id.* at \*12–13. Additionally, because a skilled artisan would have been motivated to minimize waste and eliminate cutting, the Board observed that omitting stitches to



create an aperture “accomplishes both, particularly as compared to punching out openings.” *Id.* at \*13–14.

Accordingly, the Board determined that a preponderance of the evidence established that substitute claim 49 is unpatentable as obvious and denied Nike’s motion to amend. *Id.* at \*14. Nike timely appealed. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

#### DISCUSSION

We review the Board’s legal determinations de novo and its factual findings for substantial evidence. *Arthrex, Inc. v. Smith & Nephew, Inc.*, 935 F.3d 1319, 1326 (Fed. Cir. 2019). “A finding is supported by substantial evidence ‘if a reasonable mind might accept a particular evidentiary record as adequate to support a conclusion.’” *Airbus S.A.S. v. Firepass Corp.*, 941 F.3d 1374, 1381 (Fed. Cir. 2019) (quoting *Dickinson v. Zurko*, 527 U.S. 150 (1999)).

The ultimate determination of obviousness under 35 U.S.C. § 103 is a question of law based on underlying factual findings. *In re Baxter Int’l, Inc.*, 678 F.3d 1357, 1361 (Fed. Cir. 2012) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)). These underlying factual considerations consist of: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of nonobviousness such as “commercial success, long-felt but unsolved needs, failure of others, etc.” *KSR*, 550 U.S. at 406 (quoting *Graham*, 383 U.S. at 17–18). Whether a skilled artisan would have had a reason to combine the teachings of prior art references also is a question of fact. *Pregis Corp. v. Kappos*, 700 F.3d 1348, 1353 (Fed. Cir. 2012) (citations omitted).

Under the APA, the Board’s actions are not set aside unless “arbitrary, capricious, an abuse of discretion, unsupported by substantial evidence, or otherwise not in accordance with law.” *In re Sullivan*, 362 F.3d 1324, 1326 (Fed.

Cir. 2004) (citing *In re McDaniel*, 293 F.3d 1379, 1382 (Fed. Cir. 2002)); 5 U.S.C. § 706(2)(A). We review the Board's compliance with notice requirements de novo. *In re NuVasive, Inc.*, 841 F.3d 966, 970 (Fed. Cir. 2016).

### I. Burden of Persuasion

Nike argues that the Board incorrectly assigned itself, rather than the petitioner, the burden of persuasion for an unpatentability challenge to a proposed substitute claim that the Board raises sua sponte. Appellant's Br. 34–55. Nike also argues that that Board effectively placed the burden on Nike to prove that Spencer did not teach the disputed limitation of substitute claim 49. Appellant's Br. 55–56. Adidas and the United States Patent and Trademark Office (as intervenor) disagree, arguing that the Board bears the burden on Board-raised patentability grounds and that the Board did not shift the burden to Nike. Appellee's Br. 26–37; Intervenor Br. 12–17, 12 n.7. Adidas also argues that any error with respect to who bears the burden of persuasion is harmless in this case given that the Board's analysis simply tracked the unpatentability case Adidas presented in its remand brief. Appellee's Br. 37–40.

Because we agree with Adidas that the Board and Adidas both met the burden of persuasion in this case, we need not reach Nike's argument on whether the Board or the petitioner bears the burden on Board-raised patentability challenges. We also find that the Board did not place the burden on Nike.

#### A. Board-Raised Grounds

The Board found that that Spencer teaches creating apertures by omitting stitches and that a skilled artisan would have been motivated to combine Spencer with Nishida and the Schuessler References. *Final Written Decision III*, 2021 WL 793883, at \*8–14. The Board relied on Spencer's teaching that an “*open-work structure* has

normal securely-intermeshed loops but it contains areas where certain adjacent wales are not as directly joined to each other by underlaps or sinker loops as they are to the wales on their other side,” and that the “*unbalanced tension causes them to move apart, producing apertures at these points.*” *Id.* at \*8 (first quoting Spencer 57; and then citing Spencer 95); *see also* Spencer 17 (“A *wale* is a predominantly vertical column of intermeshed needle loops . . .”). The Board also noted that Spencer explains that, in weft knitting, “open-work structures may be produced by the introduction of empty needles.” *Final Written Decision III*, 2021 WL 793883, at \*8 (first quoting Spencer 58; and then citing Spencer 91–92). Thus, a skilled artisan “‘would have understood that the introduction of empty needles,’ as taught in Spencer, ‘causes the omission of stitches, and that the creation of apertures in this manner was a well-known technique at the time of the invention of the ’011 patent.’” *Id.* (quoting *Final Written Decision II*, 2018 WL 4501969, at \*8).

On remand after our decision in *Nike II*, Adidas submitted briefs arguing that Spencer discloses skipping stitches to form apertures, relying on the same disclosures identified by the Board in *Final Written Decision II*. *See* J.A. 2616–17 (citing Spencer 57–58); J.A. 2629 (same). The Board juxtaposed its determinations from *Final Written Decision II* with Adidas’s arguments, including Adidas’s contention that Spencer “expressly discloses forming apertures by skipping stitches, e.g., by using ‘empty needles,’” and concluded “[w]e agree” with Adidas. *Final Written Decision III*, 2021 WL 793883, at \*9–10. Because the Board and Adidas relied on the same disclosures and arguments to demonstrate that Spencer taught the disputed limitation of substitute claim 49, the outcome below would have been the same regardless of whether the Board or Adidas was assigned the burden of persuasion.

The Board and Adidas also relied on the same disclosures and arguments in finding that a skilled artisan

would have been motivated to combine Spencer with Nishida and the Schuessler References. Adidas's briefing argued that a skilled artisan would have been motivated to combine Spencer with the other references because there are a "finite number of predictable solutions for forming holes" and the omission of stitches was a well-known technique in the field of knitting for forming apertures. J.A. 2619–20 (citing *KSR*, 550 U.S. at 421); *see also* J.A. 2630–31. Adidas further argued that there are "additional suggestions and motivations pointing to omitted stitches," including minimizing waste, which would have motivated a skilled artisan to use the fundamental principle of omitting stitches to create an aperture rather than punching out openings. J.A. 2620–21. After quoting Adidas's arguments, the Board again stated "[w]e agree." *Final Written Decision III*, 2021 WL 793883, at \*12–13 (quoting J.A. 2619–21). The Board concluded that because (1) "Nishida discloses an article of footwear having a plurality of apertures formed in an indeterminate manner, but for the same purpose as that recited in substitute claim 49," and (2) "the omission of stitches was a known technique of forming such apertures," a skilled artisan "would have had reason to use a known technique for forming apertures to form the one or more apertures taught by substitute claim 49." *Id.* at \*14 (citations omitted).

The Board and Adidas's arguments mirror each other, and therefore, the outcome below would have been the same regardless of whether the burden fell to Adidas or the Board. We thus find it unnecessary to determine here whether, in an *inter partes* review, the petitioner or Board bears the burden of persuasion for an unpatentability ground raised sua sponte by the Board against proposed substitute claims.<sup>3</sup>

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<sup>3</sup> We note, as the Board did, that the Patent Office amended 37 C.F.R. § 42.121(d) to allocate the burden of

## B. Burden Shifting

Nike also argues that the Board effectively placed the burden on Nike to prove the patentability of substitute claim 49. Appellant's Br. 55–56. Nike highlights three statements in the Board's decision finding that that Nike's argument is “unpersuasive,” “falls short of adequate consideration,” and “simply does not explain or articulate adequately” why forming an aperture via the introduction of an empty needle would not have been understood by a skilled artisan as a practice of omitting stitches. *Id.*; see also *Final Written Decision III*, 2021 WL 793883, at \*10–11. We disagree.

Nike misreads the Board's decision. In determining that Spencer taught the missing limitation of substitute claim 49, the Board explained its reasoning, recited Adidas's arguments, recited Nike's arguments, and explained why it agreed with Adidas and disagreed with Nike. *Id.* at \*8–12. The Board did the same with respect to motivation to combine. *Id.* at \*12–14. The Board thus never placed the burden on Nike.

Nike's comparison to our prior decisions in *In re Magnum Oil Tools International, Ltd.*, 829 F.3d 1364 (Fed. Cir. 2016), and *IPR Licensing, Inc. v. ZTE Corp.*, 685 F. App'x 933 (Fed. Cir. 2017), is inapt. In *Magnum Oil*, we found the Board erred in shifting the burden to Magnum where “it [was] clear that the Board did not require the petitioner to support its claim of obviousness by a preponderance of the evidence.” 829 F.3d at 1378. In *IPR Licensing*, we found that a statement by the Board that “Patent Owner

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persuasion in motions to amend filed on or after January 20, 2021. See *Final Written Decision III*, 2021 WL 793883, at \*5 n.6. Because Nike's motion to amend was filed before that date, the amended regulation is inapplicable here. *Id.*

has advanced no evidence” regarding motivation to combine “seem[ed] to shift the burden of proof.” 685 F. App’x at 939–40. Unlike *Magnum Oil*, Adidas supported its claim of obviousness by a preponderance of the evidence, and unlike *IPR Licensing*, the Board did not fault Nike for advancing no evidence. Instead, the Board disagreed with the evidence and argument that Nike advanced. This is not an improper burden shift.

Nike focuses on the words used by the Board, but we explained in *Magnum Oil* that “[i]t is not the language employed with which we are concerned, it is the placement of the burden of persuasion that matters.” 829 F.3d at 1378. Based on our review of the Board’s decision, we find that both Adidas and the Board met the burden of persuasion, and the Board did not shift the burden to Nike.

## II. Obviousness

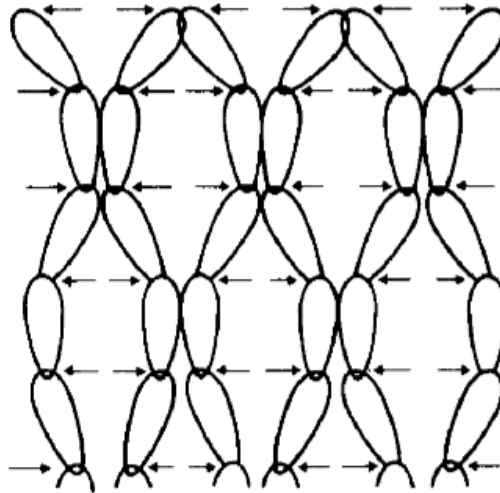
Nike further contests three aspects of the Board’s obviousness analysis, arguing that: (1) the Board’s determination that Spencer teaches creating apertures by omitting stitches is not supported by substantial evidence, Appellant’s Br. 56–58; (2) the Board’s determination that a skilled artisan would be motivated to combine Spencer with the other prior art references based on minimizing waste is not supported by substantial evidence, Appellant’s Br. 65–66; and (3) the Board’s motivation to combine analysis violated the APA, Appellant’s Br. 59–65. We disagree and address each contention in turn.

### A. Omitting Stitches

The Board determined that Spencer teaches “apertures formed through the omission of stitching material (i.e., underlaps or sinker loops) between wales of the open work structure.” *Final Written Decision III*, 2021 WL 793883, at \*11. Nike argues that this finding is not supported by substantial evidence because Spencer teaches forming apertures by joining certain wales with sinker loops or

underlaps more or less closely, not by the absence of sinker loops or underlaps joining wales together. Appellant's Br. 56–58. We disagree.

Spencer teaches that apertures are formed in knitted material when unbalanced tension causes wales that “are not as directly joined to each other by underlaps or sinker loops as they are to the wales on the other side” to move apart, as shown below in Figure 6.12.



**Fig. 6.12** The movement of loops to form open work.

Spencer 57–58; *see also* Spencer 39 (explaining that a “sinker loop” is “the piece of yarn that joins one weft knitted needle loop to the next”). Spencer also teaches that open-work structures in weft knitting “may be produced by the introduction of empty needles . . . to produce loop displacement.” Spencer 58. The Board interpreted these disclosures to find that Spencer teaches “apertures formed through the omission of stitching material (i.e., underlaps or sinker loops) between wales of the open work structure.” *Final Written Decision III*, 2021 WL 793883, at \*11. In other words, wales are joined tightly where sinker loops or underlaps are used and are joined less tightly where sinker loops or underlaps are omitted, including, for example, by

knitting with an empty needle. Because a reasonable mind might accept the Board's interpretation of Spencer, the Board's factual determinations are supported by substantial evidence. *Innogenetics, N.V. v. Abbott Lab'ys*, 512 F.3d 1363, 1378 n.6 (Fed. Cir. 2008) ("What a prior art reference discloses is, of course, a question of fact.").

Nike's reliance on *In re Zurko*, 258 F.3d 1379 (Fed. Cir. 2001), is misplaced. There, we found that the Board's conclusions relying on "basic knowledge" and "good common sense" were "not based on any evidence in the record and, therefore, lack[ed] substantial evidence support." *Id.* at 1385. Here, the Board relied on specific disclosures in Spencer to determine that Spencer teaches forming apertures through the omission of stitching material between wales, and unlike *Zurko*, the Board did not rely on basic knowledge or common sense to fill in a missing limitation. Thus, the Board's findings are supported by substantial evidence.

#### B. Motivation to Combine

The Board also found that a skilled artisan would have been motivated to combine Spencer with Nishida and the Schuessler References for two separate reasons: (1) Spencer teaches a well-known technique for forming apertures and (2) forming apertures by omitting stitches is less wasteful than punching holes in existing fabric. *Final Written Decision III*, 2021 WL 793883, at \*12–14. Nike argues that the Board's theories are not supported by substantial evidence. Appellant's Br. 60, 65–66; Appellant's Reply Br. 15–18. We disagree with Nike.

After our second remand, Adidas submitted briefs to the Board asserting both motivation to combine theories at issue here. Adidas first cited *KSR*'s instruction that "[w]hen there is a design need . . . and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." J.A. 2619 (quoting *KSR*,



550 U.S. at 421). Adidas explained that there are a finite number of predictable solutions for forming apertures, including “punching out the openings,” as Nike’s expert suggested, or omitting stitches, as taught by Spencer. J.A. 2619–20 (citing J.A. 1564 (Decl. of Mr. Tonkel on behalf of Nike) ¶ 107). Adidas argued that Spencer was well-known because it included a copyright date three years before the ’011 patent’s earliest priority date, a first publication date nearly twenty years earlier, and is titled a “comprehensive handbook and practical guide” that aims to “combine in a single volume *the fundamental principles* of weft and warp knitting.” J.A. 2620 (citing Spencer Preface); *see also* J.A. 2630–31. Adidas then explained that “[t]here are *additional* suggestions and motivations pointing to omitted stitches,” including a motivation to minimize waste and reduce cutting, which would lead a skilled artisan “to use the ‘fundamental principle’ of omitting stitches to create an aperture, which accomplishes both, particularly as compared to punching out openings.” J.A. 2620–21 (emphasis added).

The Board cited these arguments by Adidas in its final written decision and stated “[w]e agree.” *Final Written Decision III*, 2021 WL 793883, at \*12–13. The Board explained that Nishida and the Schuessler References share the same preference for minimizing waste, and Spencer teaches omitting stitches to create apertures, “a less wasteful technique for creating such apertures than punching.” *Id.* at \*14 (citations omitted). The Board also found that Nishida “discloses an article of footwear having a plurality of apertures formed in an indeterminate manner,” that omitting stitches “was a known technique of forming such apertures,” and that a skilled artisan “would have had reason to use a known technique for forming apertures to form the one or more apertures taught by substitute claim 49.” *Id.* (first citing Spencer 57–58; then citing *KSR*, 550 U.S. at 421; then citing J.A. 1564 ¶ 107; and then citing *Nike I*, 812 F.3d at 1344–45).

We find that the Board’s determination that there are a finite number of ways to form apertures in knitted material and that a skilled artisan would consult a textbook like Spencer in determining ways to form the apertures disclosed in Nishida is supported by substantial evidence. We also find that the Board’s determination that a skilled artisan would be motivated to minimize waste, including forming apertures by omitting stitches rather than punching holes in existing fabric, is supported by substantial evidence.

Nike again cites *Zurko* to argue that the Board cannot rely on basic knowledge or common sense to support the Board’s motivation to combine. We disagree. Although a mere invocation of “common sense” without more would be problematic, we have held, consistent with *KSR*, that common sense can be used to support a motivation to combine, including motivations to reduce waste and increase efficiency. *See, e.g., KSR*, 550 U.S. at 418 (“[C]ommon sense . . . can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine elements in the way the claimed new invention does.”); *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016) (“[C]ommon sense is typically invoked to provide a known *motivation to combine* . . . .”); *DyStar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1365 (Fed. Cir. 2006) (“[A]n implicit motivation to combine exists not only when a suggestion may be gleaned from the prior art as a whole, but when the ‘improvement’ is technology-independent and the combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient.”).

For example, in *Sandt Technology Ltd. v. Resco Metal & Plastics Corp.*, we held invalid for obviousness a patent claim directed to a stainless steel cover for pay telephones. 264 F.3d 1344, 1354–55 (Fed. Cir. 2001). The only relevant difference between the claim-at-issue and the prior art

covers was that the former attached the steel cover to the telephone via studs and the latter attached it with welds. *Id.* We noted that the difference between attaching with welds and studs was merely a “slight variation that produced convenience” and that “use of such studs in the context of telephone housing was common.” *Id.* at 1355. We thus found a clear motivation to alter the prior art welded cover because “[u]sing studs was a cheaper, faster, and more convenient method of attachment.” *Id.*

To the extent the Board relied on common sense or basic knowledge to support its finding that a skilled artisan would be motivated to minimize waste, in accordance with Nishida’s teachings, by forming apertures by omitting stitches rather than punching holes in existing fabric, as taught by Spencer, the Board did not err. *See also Nike II*, 955 F.3d at 54–55 (“In addressing the issue of motivation to combine prior art references, we previously noted in *Nike I* that there is no question that skilled artisans knew of the desire to reduce waste when producing wearable, knitted show uppers because that problem is expressly recognized in Nishida.” (internal quotation marks citation omitted)). Thus, substantial evidence supports the Board’s findings that a skilled artisan would be motivated to combine Spencer with Nishida and the Schuessler References because (1) omitting stitches to form apertures was well-known and among a finite number of options and (2) omitting stitches is less wasteful than punching holes in existing fabric.

### C. The APA

Nike argues that the Board violated the APA by including two “see also” citations to two pages of Spencer that were not previously cited by the parties or the Board. Appellant’s Br. 62–66; *see also Final Written Decision III*, 2021 WL 793883, at \*14 (citing Spencer 86, 167). Although Nike appears to be correct that these citations were not previously raised by the parties or the Board, we find no

APA violation here because neither citation was essential to the Board's motivation to combine analysis as the Board had already sufficiently established that Nishida would have motivated a skilled artisan to minimize waste.

Before the Board referenced the two citations at issue, the Board disagreed with a conclusory opinion by Nike's expert that Nishida's openings were created by punching out the openings, explaining that "Nishida's preference for minimizing waste is inconsistent with punching out openings in the knitted layout." *Final Written Decision III*, 2021 WL 793883, at \*13–14; *see also id.* at \*14 (explaining that "Nishida and Schuessler II, as well as the '011 Patent, share the same preference for minimizing waste"). The Board reasoned that a skilled artisan would instead be motivated to use Spencer's well-known technique of omitting stitches to create apertures, "a less wasteful technique for creating such apertures than punching." *Id.* at \*14. The Board then cited directly to its findings in Section II.C.2 of its opinion—i.e., explaining Spencer's disclosures—before including the two disputed "see also" citations at issue here. Read in context, the two citations were not central to the Board's analysis; they only reinforce the Board's determination that omitting stitches is less wasteful than punching out openings in existing fabric.

For that reason, Nike errs in relying on our decisions in *NuVasive*, *Dell Inc. v. Acceleron, LLC*, 818 F.3d 1293 (Fed. Cir. 2016), and *EmeraChem Holdings LLC v. Volkswagen Group of America*, 859 F.3d 1348 (Fed. Cir. 2017). In *NuVasive*, we found that the Board violated the APA when it refused to allow NuVasive the opportunity to reply to a prior-art figure first raised in the petitioner's reply, where the prior-art figure formed an "essential part" of the Board's obviousness findings. 841 F.3d at 969–71. In *Dell*, we vacated the Board's finding because the Board "relied exclusively" on "slides" shown in a prior-art figure to find a claim limitation was anticipated, where that "structure was first identified as meeting the . . . claim limitation

during oral argument before the Board.” *Dell*, 818 F.3d at 1300–01. And in *EmeraChem*, we found an APA violation where the Board rejected three claims over prior-art reference Stiles despite “[t]he fact that neither party ever mentioned Stiles in the context of discussing claims 3, 16, and 20.” *EmeraChem*, 859 F.3d at 1351–52. In each case, the new evidence relied on by the Board was essential to the Board’s findings, unlike the two disputed Spencer citations at issue here.

Instead, our decision in *Novartis AG v. Torrent Pharmaceuticals Limited*, 853 F.3d 1316 (2017), is instructive. There, we disagreed with Novartis that a prior-art reference was the “missing link” and “linchpin” of the Board’s obviousness analysis. *Id.* at 1326. We found that the reference was “one of several independent grounds supporting the motivation to combine” analysis, that two other prior-art references “alone” strongly suggested a motivation to combine, and that the disputed prior-art reference was used to “bolster [the Board’s] analysis with additional evidence.” *Id.* We therefore found no APA violation, and the same is true here. The Board provided sufficient reason to combine Spencer’s well-known technique with Nishida and the Schuessler References. The Board then explained that a skilled artisan also would be motivated to use this well-known technique to minimize waste, which was a preference disclosed in Nishida. The “see also” citations only bolster the Board’s analysis that omitting stitches is less wasteful than punching holes in existing fabric. These citations are not the linchpin of the Board’s analysis, and thus we find that the Board’s decision did not violate the APA.

#### CONCLUSION

We have considered Nike’s remaining arguments and do not find them persuasive. For the foregoing reasons, the Board did not err in finding that substitute claim 49 is

unpatentable as obvious and in denying Nike's motion to amend. We therefore affirm the Board's decision.

**AFFIRMED**