NOTE: This disposition is nonprecedential.

# United States Court of Appeals for the Federal Circuit

SHENZHEN BUXIANG NETWORK TECHNOLOGY CO., LTD., Appellant

v.

SUN PLEASURE CO. LIMITED, Appellee

#### 2022 - 1912

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2021-00080.

Decided: July 18, 2024

ASHLEY E. LAVALLEY, Lee Sheikh & Haan LLC, Chicago, IL, argued for appellant. Also represented by DRAGAN GJORGIEV, BRIAN ERIK HAAN, CHRISTOPHER LEE; BRYAN JON LEMPIA, Lempia Summerfield Katz LLC, Chicago, IL.

JONATHAN A. WINTER, Farber LLC, Shelton, CT, argued for appellee. Also represented by FRITZ LOUIS SCHWEITZER, III.

Before STOLL, CUNNINGHAM, and STARK, Circuit Judges.

# CUNNINGHAM, Circuit Judge.

This is an appeal of the final written decision of the United States Patent and Trademark Office's Patent Trial and Appeal Board ("Board") in IPR2021-00080. Shenzhen Buxiang Network Tech. Co. v. Sun Pleasure Co., No. IPR2021-00080, 2022 WL 1093214 (P.T.A.B. Apr. 11, 2022) ("Decision"). In its decision, the Board found that Shenzhen failed to show by a preponderance of the evidence that claims 1–9 ("Challenged Claims") of U.S. Patent No. 7,353,555 were unpatentable. Decision at \*1. For the reasons explained below, we affirm the Board's decision.

#### I. BACKGROUND

Sun Pleasure Co. Ltd. ("Sun Pleasure") owns the '555 patent,<sup>1</sup> which is titled "inflatable mattress assembly." '555 patent; *see Decision* \*1. The invention seeks "to provide an attractive and comfortable inflatable mattress" with "a frame extending around the periphery of the mattress top that is . . . flat, smooth and immovable" and that is "economical to manufacture." '555 patent col. 1 ll. 26–36.

Claim 1 recites:

1. An inflatable mattress comprising:

top and bottom panels and a peripheral side panel with a bottom edge connected to said bottom panel;

a peripheral frame forming an upper tubular periphery of said inflatable mattress,

<sup>&</sup>lt;sup>1</sup> Ideal Time Consultants Ltd. assigned the '555 patent to Sun Pleasure in January 2022. *Decision* at \*1.

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said peripheral frame having an internal wall interconnecting said top panel to said side panel, said internal wall being within an interior volume of said inflatable mattress;

said internal wall being connected to said side panel along a first peripheral seam located substantially below a level of said top panel and being connected to said top panel along a second peripheral seam located substantially inwardly from said first peripheral seam;

said peripheral frame having an external wall interconnecting said first seam to said second seam, said external wall forming a boundary of said inflatable mattress and having a top portion disposed above a level of said second peripheral seam; and

said internal wall of said peripheral frame includes a fluid passage therethrough, said internal wall is in substantial pressure equilibrium within said interior volume, and said internal wall has a substantially linear cross-section between said first and second seams.

Id. col. 4 ll. 30-52 (emphases added). Claim 6, the other independent claim of the '555 patent, recites the same limitations as claim 1 but also includes the following additional limitation: "said peripheral frame is inflated by air pressure within said interior volume of said inflatable mattress and said external wall of said peripheral frame has a substantially arcuate cross-section between said first and second seams." Id. col. 5 ll. 27-31.

Shenzhen filed a petition for inter partes review ("IPR") of claims 1–9 of the '555 patent, asserting that the

Challenged Claims were unpatentable as anticipated or obvious. *Decision* at \*3. The Board instituted review of the patent on all Challenged Claims and concluded that Shenzhen failed to meet its burden to prove unpatentability on each of the five asserted grounds. *Id.* at \*20.

Each asserted ground relies on Metzger.<sup>2</sup> *Id.* at \*3. First, Shenzhen argued that claims 1–4 and 6–8 were anticipated by Metzger. *Id.* The Board rejected this theory on the basis that Metzger did not disclose the requisite "internal wall" with "a fluid passage therethrough," a limitation appearing in independent claims 1 and 6. *Decision* at \*11; *see, e.g.*, '555 patent col. 4 ll. 48–49 ("said internal wall of said peripheral frame includes a fluid passage therethrough"); *id.* col. 5 ll. 22–23.

Second, Shenzhen asserted that claims 1-4 and 6-8 were obvious over Metzger "in combination with the common sense and experience of a person having ordinary skill in the art." *Decision* at \*11 (citing J.A. 141). The specific theory (now at issue on appeal) was that a continuous beam or internal wall with fluid passages therethrough "would have been an obvious design choice, among multiple options, well within the skill of a [person having ordinary skill in the art]," and "such a 'solution would have been obvious to try." Id. at \*12 (quoting J.A. 142). The Board rejected the "unsupported, conclusory assertion" that this modification would have been "obvious to try," finding that Shenzhen provided "no [supporting] explanation." Id. at \*13. Shenzhen also asserted that there were "several known advantages in using a single side support beam . . . over multiple, discontinuous side support beams." J.A. 143. Shenzhen's expert testimony "regarding the[se] alleged advantages [was] derived from the disclosure of

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<sup>&</sup>lt;sup>2</sup> U.S. Patent No. 7,089,618 (filed June 18, 2003; issued August 15, 2006), J.A. 1103–11 ("Metzger").

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Wu."<sup>3</sup> *Decision* at \*12. However, the Board determined "Wu is not prior art with respect to the challenged claims" and therefore did not credit Shenzhen's expert testimony regarding the alleged advantages. *Id.* 

The Board ultimately found that Shenzhen failed to meet its burden to show that claims 1–4 and 6–8 were obvious over Metzger.<sup>4</sup> *Id.* at \*13. Because ground three asserting claims 5 and 9 were obvious over Metzger and Wolfe<sup>5</sup>—relied on Metzger for the requisite fluid passages, the Board also found that Shenzhen failed to show that claims 5 and 9 were unpatentable as obvious based on Metzger and Wolfe. *Id.* 

For ground four, Shenzhen asserted that claims 1-4 and 6-8 were obvious based on Metzger and Wu. For ground five, Shenzhen argued that claims 5 and 9 were obvious based on Metzger, Wu, and Wolfe. *Id.* at \*3. The Board rejected both grounds on the basis that Wu is not prior art to the '555 patent. *Id.* at \*20. Accordingly, the Board determined that Shenzhen failed to demonstrate that any of the Challenged Claims were obvious over the combination of Metzger and Wu or Metzger, Wu, and Wolfe. *Id.* 

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

<sup>&</sup>lt;sup>3</sup> U.S. Patent Application No. 2006/0265810 (filed May 27, 2005; published November 30, 2006), J.A. 1031–41 ("Wu").

<sup>&</sup>lt;sup>4</sup> Although the Board's decision refers to the Challenged Claims, claims 1–4 and 6–8 were the specific claims under review for the second ground.

<sup>&</sup>lt;sup>5</sup> U.S. Patent No. 5,598,593 (filed February 10, 1995; issued February 4, 1997), J.A. 999–1014 ("Wolfe").

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#### II. DISCUSSION

Shenzhen raises two issues on appeal. First, Shenzhen challenges the Board's finding that Wu is not prior art to the '555 patent. Appellant's Br. 3; *see also id.* at 32–44. Second, Shenzhen argues the Board erred in its nonobviousness determination as to Metzger (claims 1–4 and 6–8) and the combination of Metzger and Wolfe (claims 5 and 9). *Id.* at 4; *see also id.* at 44–62.

# A.

"We review the Board's legal conclusions de novo, and its factual findings for substantial evidence. A finding is supported by substantial evidence if a reasonable mind might accept the evidence as sufficient to support the finding." NFC Tech., LLC v. Matal, 871 F.3d 1367, 1371 (Fed. Cir. 2017) (citations omitted). Obviousness is a question of law based on underlying factual findings. Henny Penny Corp. v. Frymaster LLC, 938 F.3d 1324, 1331 (Fed. Cir. 2019). "Priority, conception, and reduction to practice are questions of law which are based on subsidiary factual findings." E.I. du Pont De Nemours & Co. v. Unifrax I LLC, 921 F.3d 1060, 1068 (Fed. Cir. 2019) (quoting Cooper v. Goldfarb, 154 F.3d 1321, 1327 (Fed. Cir. 1998)). Because the application from which the '555 patent issued has an earlier filing date than March 16, 2013, we apply the pre-AIA versions of § 102 and § 103. *Google LLC v. IPA Techs.* Inc., 34 F.4th 1081, 1084 n.1 (Fed. Cir. 2022) ("Because the patents at issue were filed before March 16, 2013, pre-AIA provisions apply.").

# В.

Shenzhen argues the Board erred in its determination that the inventor swore behind Wu. *See* Appellant's Br. 32–44. Specifically, Shenzhen asserts that the Board relied on "uncorroborated inventor testimony" and "interested-witness testimony," and lacked "contemporaneous

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evidence showing the internal structure" of the purported reduction to practice. Appellant's Br. 3. We disagree.

"[A] patentee bears the burden of establishing that its claimed invention is entitled to an earlier priority date than an asserted prior art reference." In re Magnum Oil Tools Int'l, Ltd., 829 F.3d 1364, 1376 (Fed. Cir. 2016). To establish an actual reduction to practice, a party must establish that the inventor constructed an embodiment that satisfied every claim limitation. E.I. du Pont, 921 F.3d at 1075. Where a party relies on inventor testimony to establish an actual reduction to practice, the testimony must be supported by corroborating evidence. See Fleming v. Escort Inc., 774 F.3d 1371, 1376–77 (Fed. Cir. 2014) (citing Woodland Trust v. Flowertree Nursery, Inc., 148 F.3d 1368, 1371 (Fed. Cir. 1998)). "Such evidence is evaluated under the rule of reason, whereby all pertinent evidence is examined in order to determine whether the inventor's story is credible." Id. at 1377 (internal quotation marks and citations omitted). Generally, "sufficient circumstantial evidence of an independent nature can satisfy the corroboration requirement," and establishing an actual reduction to practice "does not require corroboration for every factual issue contested by the parties." Cooper, 154 F.3d at 1330.

To meet its burden, Sun Pleasure relied on inventor testimony and multiple types of corroborating evidence. Sun Pleasure presented evidence that a mattress labeled the 92083 Product was "designed, manufactured, successfully tested, and sold at least to Walmart all well before Wu's May 27, 2005 filing date." *Decision* at \*16 (citing J.A. 291 (Patent Owner's Response)). Mr. Lau testified that the 92083 Product contained each of the limitations of the Challenged Claims. *Id.* at \*18 (citing J.A. 1843–54). To corroborate Mr. Lau's testimony as to the external features of this mattress, Sun Pleasure presented, among other things, photos of the 92083 Product. *See id.* As to the internal features, it relied on a combination of physical evidence and testimony. *Id.* at \*16.

On appeal, Shenzhen does not meaningfully develop its challenge to the Board's findings that the 92083 Product was designed, manufactured, and sold prior to Wu's filing date, and that this Product had the required external features to establish a prior reduction to practice. See Appellant's Br. 3 (asserting there was "no contemporaneous evidence showing the *internal* structure" (emphasis added)); see generally id. at 32–44. We conclude that substantial evidence supports the Board's finding that Mr. Lau's testimony regarding development, manufacture, testing, and selling of the 92083 Product prior to Wu's filing date was adequately corroborated by evidence of purchase orders, J.A. 2287-2351, a picture of a mass-production sample mattress, J.A. 2400-01, test reports and emails regarding testing, e.g., J.A. 2352–54, and sample packaging displaying the mattress, J.A. 2283, each dating to December 2004 or January 2005. See Decision at \*18–19; see also J.A. 2260–73 (pictures of a mattress prototype from December 2004); J.A. 2276 (same).

To corroborate Mr. Lau's testimony that the 92083 Product contained the requisite internal features, Sun Pleasure relied on a unit of the Product purchased online in 2020 ("the 92083 Specimen"). *Decision* at \*16; J.A. 296– 300. Relying on inventor testimony and corroborating evidence, the Board determined Sun Pleasure had established that "the 92083 Specimen was shipped to [the United States] on or before April 25, 2005." *Decision* at \*19. Shenzhen does not dispute that the 92083 Specimen contains the internal features of the Challenged Claims. *See* Appellant's Br. 32–44. Shenzhen's central argument on appeal is that the Board erred in finding that the 92083 Specimen was shipped no later than April 2005. *See* Appellant's Br. 36.

Substantial evidence supports the Board's finding that Mr. Lau's testimony was sufficiently corroborated on this issue. Mr. Lau testified that April 25, 2005, was the last shipment date for all the 92083 Products. J.A. 1228. Sun

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Pleasure corroborated this testimony with independent documentary evidence in the form of purchase orders, J.A. 2287–2351, and an order summary, J.A. 2280–82. *Decision* at \*19. The latest shipping date for any 92083 Products in any of these documents is April 2005, consistent with Mr. Lau's testimony. *See J.A.* 2282; J.A. 2296. Both emails were authenticated by Mr. Lu in addition to Mr. Lau. *Decision* at \*19; *see also Sandt Tech.*, *Ltd. v. Resco Metal & Plastics Corp.*, 264 F.3d 1344, 1350–51 (Fed. Cir. 2001) ("Documentary or physical evidence that is made contemporaneously with the inventive process provides the most reliable proof that the inventor's testimony has been corroborated.").

The Board also noted that the sealed box in which the 92083 Specimen arrived, J.A. 2431-42, matched the box used for the 92083 Product produced and sold prior to the priority date, J.A. 2283 (package mock-up). Decision at \*19; see also J.A. 2410 ¶ 17 (Lu Declaration stating that the Specimen's packaging matched the product packaging for the 92083 Product). Finally, Mr. Lu's declaration explained that "[a]ny new design, re-design, or other modification to a design would be assigned a new product number, and such product numbers were never re-used." J.A. 2404–05 ¶ 6. Although the Board found the argument that the Product and Specimen shared a product number was "not particularly strong," the Board nonetheless found it gave credence to Mr. Lau's explanation in the rule of reason analysis. Decision at \*19. Taking "all pertinent evidence" into consideration, the Board's finding of corroboration is supported by substantial evidence. Fleming, 774 F.3d at 1377 (citation omitted).

Shenzhen makes several arguments to refute the evidence presented, but none of the arguments supports a reversal. First, Shenzhen contends that relying on the 92083 Specimen to corroborate Mr. Lau's testimony impermissibly and erroneously relies on circular corroboration because Mr. Lau's declaration is required to corroborate the

Specimen. Appellant's Br. 34. However, as discussed, the Board properly relied on evidence other than Mr. Lau's testimony to determine whether the Specimen was an accurate example of the 92083 Products actually shipped. Thus, this case can be distinguished from the cases Shenzhen cites.

In Apator Miltors ApS v. Kamstrup A/S, 887 F.3d 1293, 1296, 1298 (Fed. Cir. 2018), this court affirmed the Board's decision of anticipation where the appellant had failed to produce sufficient evidence to swear behind a particular reference where the only evidence of conception of the claimed invention came from the inventor's testimony and drawings that could only be dated with the inventor's testimony. In In re NTP, Inc., 654 F.3d 1279, 1291-92, 1305 (Fed. Cir. 2011), this court agreed with the Board that NTP failed to swear behind certain references where the argument was circular and the evidence that critical features had been reduced to practice was a non-contemporaneous document and the inventor's testimony that there were no relevant changes to the document since an earlier. prior-dated version was created. Here, independent evidence contemporaneous to the inventive process supports the inventor's testimony that the 92083 Specimen is an accurate example of the contemporaneous 92083 Product. Thus, neither case compels a different conclusion on this record.

Shenzhen also takes issue with the Board's reliance on shipping dates in the December 2004 purchase orders. See Decision at \*19 (citing J.A. 2287–2351 and J.A. 2282). According to Shenzhen, these shipping dates were at best projected dates, and they cannot show the actual date of any shipment that took place. Appellant's Br. 35. It is true that these purchase orders—dated December 2004—do not provide direct proof of actual shipping dates or the last shipping date. However, these purchase orders are independent circumstantial evidence that corroborates Mr. Lau's testimony that the 92083 Specimen was shipped no

later than April 2005. *See Cooper*, 154 F.3d at 1330. This is all our precedent requires.

Shenzhen also argues about the purported design changes to products with the label 92083 between 2004 and 2005. Appellant's Br. 37–38; Appellant's Reply Br. 6–9; see Decision at \*19 ("[T]here do appear to be differences, albeit relatively minor differences, between the prototype and the 92083 Product."). In light of these changes, Shenzhen argues that the shared product number and shared packaging provide insufficient evidence that the 92083 Specimen has the same internal structure as the 92083 Product. Appellant's Br. 38–39. As acknowledged by the Board, these changes do weaken the evidentiary role that the shared product number and packaging play in dating the 92083 Specimen. See Decision at \*19. However, the Board did not err in finding that the shared number and packaging lend some support to the claim that this was one of the mattresses shipped no later than April 2005 and together with other documentary evidence constitute substantial evidence to support the Board's finding of corroboration.

In sum, substantial evidence supports the Board's finding that Mr. Lau's testimony was adequately corroborated as to an actual reduction to practice that predated Wu and contained each of the limitations of the Challenged Claims. *See Decision* at \*20. Moreover, the Board did not err in its ultimate determination that Shenzhen had not met its burden of proving that Wu was prior art with respect to the '555 patent.

С.

Shenzhen also challenges the Board's determination regarding obviousness over Metzger (ground two) and the combination of Metzger and Wolfe (ground three). Appellant's Br. 4; *see also id.* at 44–62. According to Shenzhen, the Board impermissibly relied on its anticipation analysis "to decide the obviousness inquiry" and failed "to ascertain and discuss the differences between the prior art and the

challenged claims in its obviousness analysis." *Id.* at 47 (citations omitted). Shenzhen also argues the Board erred by discrediting all its expert testimony regarding alleged advantages because the expert relied in part on Wu. *Id.* at 53. Shenzhen further contends that the Board erred by failing to consider evidence regarding other background prior art references. *Id.* at 54. We disagree.

Shenzhen's arguments that the Board failed to properly engage in an obviousness inquiry by relying on its anticipation analysis are mistaken. See Appellant's Br. 47. It is true that the Board discussed these differences in the context of anticipation. See Decision at \*5–11. For its obviousness challenge, Shenzhen "relie[d] on the same teachings of Metzger relied on in connection with [anticipation]," except with respect to the limitation related to the fluid passage through the internal wall. Id. at \*11; see J.A. 141– 43. As to this limitation, the Board discussed at length precisely what Metzger disclosed and how Metzger differed from the Challenged Claims. See Decision at \*5–13.

Shenzhen cites no authority for the proposition that the Board must specifically repeat each of its factual findings again in the obviousness determination. See Appel-Rather, the cases cited explainlant's Br. 46–47. uncontroversially-that obviousness requires a different analysis than anticipation. See, e.g., CRFD Rsch., Inc. v. Matal, 876 F.3d 1330, 1345 (Fed. Cir. 2017). Here, the Board did conduct a distinct obviousness analysis. Having determined the differences between the prior art and the claimed invention and assessing the level of ordinary skill in the art, *Decision* at \*4, \*5–11, the Board then considered whether the subject matter would have been obvious to one of ordinary skill in the art based on these differences. Id. at \*11-13; see KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 406 (2007) (laying out the requirements for an obviousness inquiry).

Shenzhen next argues that the Board failed to consider all the evidence before it. Shenzhen contends that the Board should have considered its expert testimony that relied on Wu-even if Wu is not prior art-"as evidence of the knowledge of a [person having ordinary skill in the art] or motivation to modify Metzger." Appellant's Br. 53. Our precedent recognizes that non-prior art can play certain supporting roles. See, e.g., Yeda Rsch. v. Mylan Pharms. Inc., 906 F.3d 1031, 1041 (Fed. Cir. 2018) (finding consideration of non-prior art references permissible to explain the views of a person having ordinary skill in the art on frequency of dosing as of the priority date); see also Syntex (U.S.A.) LLC v. Apotex, Inc., 407 F.3d 1371, 1379 (Fed. Cir. 2005) (holding that a report published five days after a patent's priority date provided evidence as to what "was known in the art at the relevant time"). But this precedent cannot help Shenzhen because Wu does not play a proper supporting role.

On appeal, Shenzhen asserts it relies on Wu for known disadvantages of a discontinuous wall, band, or beam. See Appellant's Br. 56; Appellant's Reply Br. 24 (citing J.A. 143); see also J.A. 1040 ¶¶ [0008]–[0010] (discussing flaws in the existing art). However, this argument impermissibly "defin[es] the problem" Wu addresses "in terms of [the] solution" Wu discloses. Insite Vision Inc. v. Sandoz, Inc., 783 F.3d 853, 859 (Fed. Cir. 2015). Moreover, Shenzhen contradicts this assertion in its own briefing before this court. See Appellant's Reply Br. 24 ("Shenzhen cited its expert's discussion of Wu supporting the knowledge of a [person having ordinary skill in the art] including several known advantages in using a single, continuous internal wall ....").

Even if the Board considered Wu as knowledge of a person having ordinary skill in the art at the relevant time, it still would not be enough to support a finding of obviousness on the present record. Wu does not provide evidence that a skilled artisan was aware of the advantages of a

continuous wall, band, or beam but instead supports the opposite conclusion. See J.A. 1040 ¶ [0011] (claiming the continuous band as its "breakthrough" invention); J.A. 757–61 ¶¶ 83–89 (Shenzhen's expert explaining that Wu disclosed that the solution to existing flaws was a continuous band or wall).<sup>6</sup> Shenzhen fails to otherwise support its assertions that a continuous wall or beam would have been obvious. Because Shenzhen failed to meet its burden to prove obviousness, any error the Board made was at most harmless. See In re Watts, 354 F.3d 1362, 1369 (Fed. Cir. 2004) ("[T]he harmless error rule applies to appeals from the Board ....").

Shenzhen also argues the Board erred by "fail[ing] to consider numerous other prior art references submitted by Shenzhen as describing the state of the art." Appellant's Br. 58; see J.A. 83–105 (discussing the state of the art and additional prior art references). We disagree. "To satisfy its burden of proving obviousness, ... [t]he petitioner must ... articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness." Magnum Oil, 829 F.3d at 1380 (emphasis added). Shenzhen does not explain the relevance of any of these additional background references in its obviousness discussion. See J.A. 141–43. On appeal, Shenzhen now argues that these references support its theories of obviousness. See Appellant's Br. 58–61. However, "the Board should . . . not have to decode a petition to locate additional arguments beyond the ones clearly made." Netflix, Inc. v. DivX, LLC, 84 F.4th 1371, 1377 (Fed. Cir. 2023). We decline to find the Board erred by failing to do so here.

<sup>&</sup>lt;sup>6</sup> Shenzhen asserts that Wu's "pull bands" are "strikingly similar to" Metzger's "side support beams," and refers to both as the "internal walls" of the mattresses. J.A. 150.

#### III. CONCLUSION

We have considered the Appellant's remaining arguments and find them unpersuasive. For the above reasons, we *affirm* the Board's decision.

# AFFIRMED

COSTS

No costs.