

NOTE: This disposition is nonprecedential.

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

OREN TECHNOLOGIES, LLC,
Appellant

v.

**PROPPANT EXPRESS INVESTMENTS LLC,
PROPPANT EXPRESS SOLUTIONS LLC,**
Appellees

2019-1778

Appeal from the United States Patent and Trademark
Office, Patent Trial and Appeal Board in No. IPR2017-
01918.

Decided: July 23, 2021

JOHN C. O'QUINN, Kirkland & Ellis LLP, Washington,
DC, for appellant. Also represented by CALVIN ALEXANDER
SHANK, JASON M. WILCOX; GIANNI CUTRI, MEREDITH
ZINANNI, Chicago, IL.

MARK T. GARRETT, Norton Rose Fulbright US LLP,
Austin, TX, for appellees. Also represented by STEPHANIE
N. DEBROW; JONATHAN S. FRANKLIN, PETER B. SIEGAL,
Washington, DC.

Before NEWMAN, O'MALLEY, and CHEN, *Circuit Judges*.

PER CURIAM.

Oren Technologies, LLC (“Oren”) appeals the decision of the Patent Trial and Appeal Board (“PTAB” or “Board”), ruling on *inter partes* review (“IPR”) that claims 1–7, 9, 10, and 12–20 (all the challenged claims) of U.S. Patent No. 9,403,626 (“the ’626 patent”) are unpatentable on the ground of obviousness.¹ Oren had charged Proppant Express Investments LLC (“PropX”) with infringement of the ’626 patent, together with continuation U.S. Patent No. 9,511,929 (“the ’929 patent”) and a third related patent, U.S. Patent No. 9,296,518 (“the ’518 patent”) in the United States District Court for the Southern District of Texas. While the district court case was pending, PropX filed this petition for IPR of the ’626 patent, and corollary petitions for the ’929 and ’518 patents. The PTAB found the ’626 patent invalid for obviousness. Oren appealed. We conclude that the PTAB erred in basing its obviousness finding on a ground of unpatentability not presented by petitioner and in its evidentiary analysis on the objective evidence of nonobviousness. We reverse-in-part, vacate-in-part, and remand.

BACKGROUND

The ’626 patent is for a “Proppant Storage Vessel and Assembly Thereof.” Proppant is particulate material, such as silica sand, used in the process of hydraulic fracturing that is commonly called “fracking.” Fracking is “the injection of fluid into shale beds at high pressure in order to free up petroleum resources (such as oil or natural gas).”

¹ *Proppant Express Inv., LLC v. Oren Techs., LLC*, No. IPR2017-01918, Paper 83 (P.T.A.B. Feb. 14, 2019) (“Board Op.”).

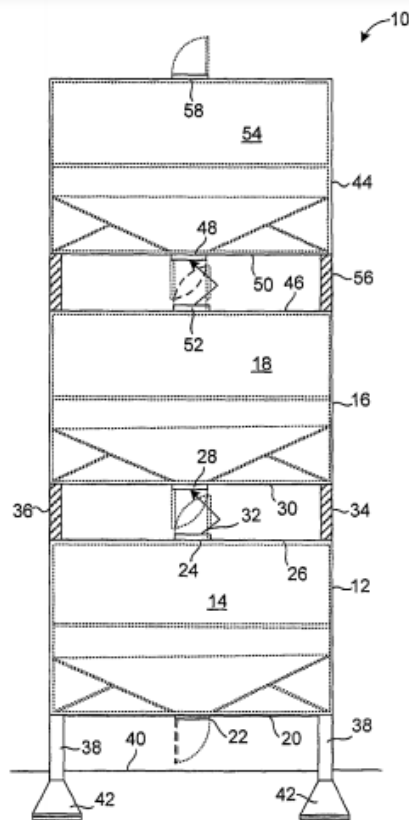
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Fracking, MERRIAM-WEBSTER DICTIONARY. Proppant is inserted into the well and shale rock to preserve the pressure-induced fractures in the rock and thus to facilitate flow of oil and gas into the well. The record states that a fracking well may require several tons of proppant.

The sources of proppant tend to be remote from well sites, and the proppant must be contained, transported, stored, and delivered to the well site. Oren states that methods previously used, such as proppant storage in railroad cars and delivery by pneumatic trailers, were inconvenient, noisy, wasteful, dusty, and unsafe.

The '626 patent describes and claims a container structure that Oren states enables containment, transportation, storage, and efficient release of large volumes of proppant. Figure 1 of the '626 patent shows the containers stacked for transport, storage, and use:



'626 patent, Fig. 1.

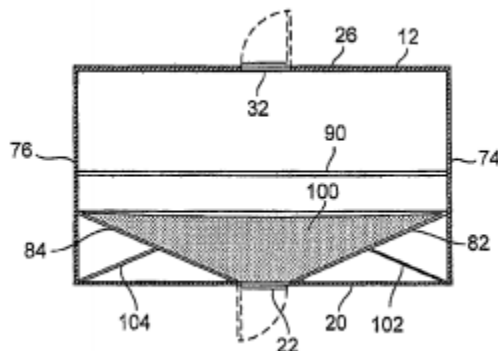
The containers are structured so that the proppant in each container can flow through hinged hatches, and is discharged at the well site through the outlet on the bottom container. The specification states that “the hatches 24 and 28 will form a unique and guided flowpath whereby the proppant in the interior volume 18 of the second container 16 can flow directly into the opening 24 and into the interior volume 14 of the first container 12.” '626 patent, col. 5, ll. 38–42.

Patent Figure 6 shows the structure of the individual container, with support members 102 and 104 and ramps

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82 and 84, described as providing support and strength for the heavy loads for which these containers are intended:



'626 patent, Fig. 6.

Figure 6 also shows hatches 22 and 32 through which the proppant flows from stacked container to container.

Claim 18 is representative:

18. A container structurally strengthened to transport and store large volumes of proppant effectively therein, the container comprising:

a top; a bottom, having an outlet formed therein; sidewalls coupled to the top and bottom, so as to define an interior volume of the container thereby to store the proppant therein;

a plurality of sidewall supports positioned to provide structural support to the sidewalls when large volumes of proppant are positioned within the interior volume, the proppant having a substantially spherical shape and a tightly graded particle distribution, the plurality of sidewall supports including a plurality of support braces extending in a substantially horizontal position, the container including a container frame structurally arranged to support another container when filled with large volumes of proppant and when positioned in a

vertically stacked arrangement thereabove, and the large volumes are at least 30,000 pounds;

ramps downwardly inclined and extending inwardly from the sidewalls to direct the proppant toward the outlet when the proppant is stored therein, a plurality of support members attached to a bottom surface of the ramps and extending downwardly toward the bottom, and at least one support brace of the plurality of support braces being positioned vertically higher than the ramps;

a plurality of support members attached to a bottom surface of the ramps and extending downwardly toward the bottom; and

a hatch positioned proximate the outlet, the hatch being moveable between open and closed positions.

'626 patent, col. 11, l. 52–col. 12, l. 16.

Other independent claims are directed to the system of multiple containers, an additional conveyor, and the method of delivering large quantities of proppant to the fracking site. Dependent claims add additional limitations.

I

Procedural Issues – Issue Preclusion

PropX filed IPR petitions against the '626 patent and its continuation, the '929 patent, and the same panel of the PTAB conducted separate trials. The Board first considered the '626 patent, and in a Final Written Decision dated February 14, 2019, the Board held all the challenged claims of the '626 patent unpatentable on the ground of obviousness. Board Op. at 52. Then, 27 days later, the PTAB issued a Final Written Decision on the continuation '929 patent and held that claims 4, 7, 10, 12, 15, 18, and 19, directed to the same claim limitations at issue in the '626 patent, were patentable. *Proppant Express Invs., LLC v.*

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Oren Techs., LLC, No. IPR2017-02103, Paper 100 (P.T.A.B. Mar. 13, 2019) (“’929 Board Op.”). Both sides, in their briefs filed on this appeal, recognized that the ’626 and ’929 patent decisions were in direct conflict and could not be reconciled. PropX advised the court that it had requested PTAB reconsideration of the ’929 decision.

While the present appeal was awaiting decision, the PTAB reconsidered its ’929 holding. The PTAB then held all claims except claim 4 of the ’929 patent unpatentable. *Proppant Express Invs., LLC v. Oren Techs., LLC*, No. IPR2017-02103, 2020 WL 2562742 (P.T.A.B. May 20, 2020) (“’929 Reconsideration Op.”). The PTAB stated that “we erred in our analysis of this limitation [of “at least 30,000 pounds” in the ’929 patent] given our prior analysis in the -01918 Proceeding [for the ’626 patent].” ’929 Reconsideration Op. at *2.

Meanwhile, two days before the PTAB issued the ’929 Reconsideration Decision, this court affirmed the district court’s claim construction of certain claims terms, reported at *Sandbox Logistics LLC v. Proppant Express Investment LLC*, 813 F. App’x 548 (Fed. Cir. 2020). On that claim construction, the parties had stipulated to non-infringement of the ’626, ’929, and ’518 patents, and the district court had entered final judgment in favor of PropX. *Id.* at 551. Following our affirmance of claim construction and non-infringement, neither party appealed from the ’929 Reconsideration Decision.

Both sides filed supplemental briefs in this appeal on issue preclusion. PropX argues that “the Board’s final written decision in IPR2017-02103 . . . , as modified on rehearing, has dispositive, preclusive effect on this appeal,” because “[Oren] did not appeal.” PropX Suppl. Br. 1. Oren responds that preclusion does not arise because the basic requirements of issue preclusion are not met and, further, because Oren did not have a meaningful incentive to appeal the ’929 Reconsideration Decision.

The Restatement (Second) of Judgments § 27 states:

When an issue of fact or law is actually litigated and determined by a valid and final judgment, and the determination is essential to the judgment, the determination is conclusive in a subsequent action between the parties, whether on the same or a different claim.

Issue preclusion requires not only identity of issues, but also adequacy of review and finality of decision. *Id.* This court has recognized that issue preclusion may apply to PTAB proceedings. For example, in *Papst Licensing GMBH & Co. KG v. Samsung Electronics America, Inc.*, 924 F.3d 1243 (Fed. Cir. 2019), this court applied issue preclusion to the meaning of a claim term that was “materially identical” to that construed by the Board for a related patent; the court explained that the Board’s claim construction “resolved [all the] issues now before us, and those resolutions were essential to the Board’s decision.” *Id.* at 1252.

PropX argues that the Board’s ’929 Reconsideration Decision precludes our review of the Board’s ’626 Decision, for the claims in both patents are the same or similar, and the “issues Oren raises here are identical to issues the Board resolved against Oren in the ’929 IPR final written decision.” PropX Suppl. Br. 2. PropX states that because Oren did not appeal the ’929 Reconsideration Decision, that decision became final for preclusion purposes.

Oren responds that the Board’s unappealed ’929 Reconsideration Decision does not preclude our review of the ’626 decision, and refers to the recognized equitable exceptions to issue preclusion, as recited in the Restatement (Second) of Judgments § 28. Preclusion does not apply when:

There is a clear and convincing need for a new determination of the issue . . . (b) because it was not

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sufficiently foreseeable at the time of the initial action that the issue would arise in the context of a subsequent action, or (c) because the party sought to be precluded, as a result of the conduct of his adversary or other special circumstances, did not have an adequate opportunity or incentive to obtain a full and fair adjudication in the initial action.

Id. § 28(5). The purpose of the equitable exceptions to issue preclusion is to “serve the twin goals of fairness and efficient use of private and public litigation resources.” *Nat’l R.R. Passenger Corp. v. Pa. Pub. Util. Comm’n*, 288 F.3d 519, 525 (3d Cir. 2002). The exceptions assure fairness and flexibility as circumstances warrant.

Oren argues that it lacked incentive to litigate the PTAB’s invalidation of all but one of the ’929 claims for two reasons: first, that validity of claim 4 had been sustained and provides some protection for the ’929 subject matter; and second, that after stipulated judgment of non-infringement, Oren “could not have obtained damages or an injunction” for infringement of the ’929 patent by PropX. Oren Suppl. Br. 5.

In *Power Integrations, Inc. v. Semiconductor Components Industries, LLC*, 926 F.3d 1306, 1312–13 (Fed. Cir. 2019), this court explained that principles of fairness negate imposing issue preclusion when the party sought to be precluded “had a considerably greater incentive to continue litigating” an issue in a second case than it had in a first case. *Id.* (citing *Papst*, 924 F.3d at 1251–52). We conclude that issue preclusion does not apply here, because of Oren’s lack of incentive to litigate the ’929 patent given the timing of this court’s decision affirming the district court’s stipulated judgment of non-infringement and because of the survival of a claim in the ’929 patent as compared to the invalidation of all challenged ’626 patent claims.

We turn to the merits of the appeal of the PTAB’s ’626 patent decision.

II

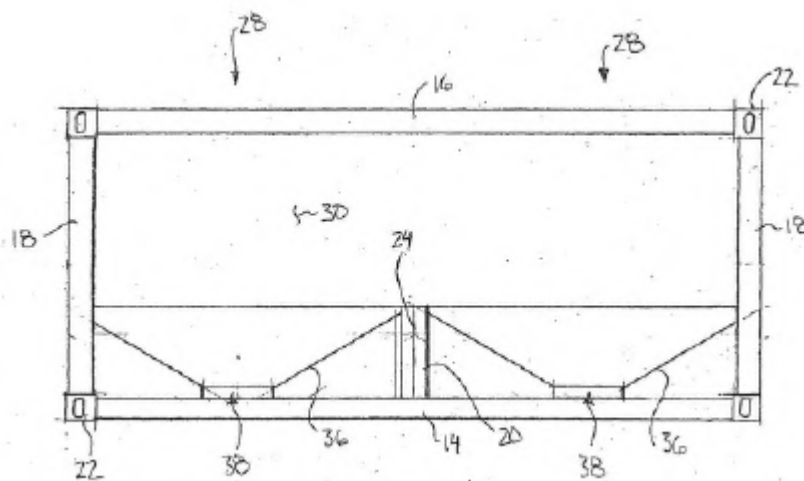
The Prior Art

The PTAB held all challenged claims of the '626 patent unpatentable as obvious. The Board relied in its final decision on five references, Smith, Claussen, Hedrick, Krenek, and Racy, in various combinations. Oren raises challenges to the Board's treatment of two of these references, Smith and Claussen. With respect to Smith, Oren argues that the Board improperly relied on a theory of modifying Smith that was never presented by the petitioner for the relevant limitation. With respect to Claussen, Oren states that there is no teaching or suggestion in Claussen of a support member and of including support members in the '626 container structure as claimed. Oren also argues that its container and system provide advantages that have been recognized in the industry and achieved significant commercial success.

Of the prior art, we need only discuss the Smith reference, U.S. Patent Publication No. 2008/0226434, to reach our decision. The Smith reference is the foundation of the Board's analysis. Smith shows "an intermodal hopper container" having two compartments and "a structural frame defining a rectangular volume suitable for stacking with conventional intermodal containers." Smith, Abstract. The Smith container has "plural compartments," each of which "has a hopper formed at a bottom end." Smith, Abstract. Figure 15 depicts the Smith two-compartment container:

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Smith, Fig. 15.

Smith states that its container has a “maximum payload of 52,500 pounds,” with each compartment holding a maximum of 26,250 pounds. Smith, ¶ 56.

Smith was cited during examination of the ’626 application, and Oren argued that a significant distinction of Oren’s container was its ability to hold and manage a greater weight than the limit stated in Smith. Claims 1–6, 9, 15, and 18–20 of the ’626 patent recite that the container includes sidewall supports “to provide structural support to the sidewalls when large volumes of proppant are positioned within the interior volume” wherein “*the large volumes are at least 30,000 pounds.*” The examiner allowed the claims over Smith after Oren’s amendment adding the “at least 30,000 pounds,” limitation.

In this IPR proceeding, PropX argued that despite an explicit limitation in Smith to a maximum capacity of 26,250 pounds per compartment, the Smith container “would be capable of holding 30,000 pounds of proppant” because it “would have had to have been designed using a *safety factor* of 1.15 with respect to maximum payloads.”

Board Op. at 34 (quoting Wooley Decl. ¶ 181). The Board observed, however, that Smith does not mention a “safety factor” that would allow Smith’s capacity beyond the recited maximum of 26,250 pounds.²

Nevertheless, the Board reasoned that the 30,000 pounds limitation was met by the combined references because the Board agreed with PropX that a skilled artisan would have been motivated to modify Smith to carry more proppant than the disclosed 26,250 pounds. The Board reasoned:

[E]ven if Smith’s 20-foot container is only capable of carrying 52,500 pounds, or 26,250 pounds per compartment, the claimed limitation is satisfied through the proposed modification of Smith, in which Petitioner proposes to modify and reinforce Smith’s container to carry more proppant, possibly above 80,000 pounds, or about 40,000 pounds per compartment.

Board Op. at 34–35. The Board concluded that: “Because Petitioner proposes to modify Smith’s container to be capable of holding about 80,000 pounds of proppant, or 40,000 pounds per compartment, the claimed limitation is satisfied.” Board Op. at 35.

As Oren points out, this modification theory was not advanced to the Board by PropX in relation to the 30,000 pound limitation. J.A. 141–42. The modification theory was presented in the context of providing a motivation to add Hedrick’s bracing structure to Smith’s container to meet the limitation of a “plurality of structural supports positioned to provide structural support to the first plurality of sidewalls.” ’626 patent, col. 9, ll. 4–5; Board Op. 18–

² We understand the Board to have thus rejected the safety factor theory, a conclusion that is supported by substantial evidence.

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19, 22–24; J.A. 128–33. PropX’s expert calculated that the full volume of the Smith container of proppant would weigh around 79,000 to 84,000 pounds, which is greater than the maximum payload of 52,500 pounds disclosed by Smith. J.A. 1722, 1726–27 (¶¶ 130–31, 140–42). PropX argued, therefore, that a skilled artisan would have been motivated to increase the payload capacity beyond Smith’s disclosed maximum to take advantage of the unused volume. J.A. 129. But those arguments were not specifically directed to the 30,000 pound limitation. J.A. 141–42. It was error by the Board to rely on this unrepresented theory for finding the 30,000 pound limitation obvious.

The “Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016); *Emera-Chem Holdings, LLC v. Volkswagen Grp. of Am., Inc.*, 859 F.3d 1341, 1348 (Fed. Cir. 2017) (noting that the APA imposes particular procedural requirements on the USPTO regarding timely notice and the opportunity to respond to matters of fact and law asserted). We have held that the Board erred when it relied on a prior art reference that was unasserted for meeting a particular limitation, even though the passage from the reference that the Board relied on for disclosing the limitation had been block quoted in the petition and institution decision, in a different context. *EmeraChem*, 859 F.3d at 1350. Petitioner’s identification of the reference as a motivation to combine was also insufficient for the Board on its own to rely on the reference for teaching a missing limitation. *Id.* at 1352. *In M & K Holdings, Inc. v. Samsung Elecs. Co., Ltd.*, we held that the Board erred in finding a claim was anticipated when the petitioner asserted only obviousness because the Board’s decision deprived the patent owner of an opportunity to respond to a claim interpretation that underlay the anticipation theory. 985 F.3d 1376, 1385 (Fed. Cir. 2021).

Likewise, here, the Board erred by repurposing the theory of a motivation to modify Smith to increase its capacity as a basis for finding the 30,000 pound limitation met. PropX did not assert this theory of obviousness in its petition. *See Magnum Oil Tools*, 829 F.3d at 1381. Nor was the theory raised by the Board's institution decision (or at any time before the final written decision). *See Emera-Chem*, 859 F.3d at 1348, 1352. Therefore, relying on this theory in finding claims obvious was reversible error because the petitioner bears the burden of proving obviousness and Oren had no notice or opportunity to respond. *See Magnum Oil Tools*, 829 F.3d at 1380–81.

Moreover, we do not think the theory of modifying Smith achieves the result stated by the Board. The Board found a skilled artisan would have been motivated to modify Smith to increase its load capacity and would have found it obvious to accomplish the increased capacity by including Hedrick's support braces in Smith's container. Board Op. 19, 22–24. But that theory and the evidence supporting it do not address any specific capacity that Smith's container, modified with Hedrick's support braces, would have had, whether it would have been greater than 30,000 pounds, or the obviousness of any specific increased capacity to a skilled artisan. Although the container could volumetrically hold more than 30,000 pounds of proppant, as argued in support of the motivation to modify, that does not necessarily mean Smith modified by Hedrick's support braces would, without more, be enough to structurally support the weight of 30,000 pounds. These gaps only further illustrate that the Board's unilateral modification of Smith to purportedly meet the 30,000 pound limitation was an "unpatentability theor[y] never presented by petitioner and not supported by record evidence." *Magnum Oil Tools*, 829 F.3d at 1381.

Claims 1–6, 9, 15, 18–20 recite the 30,000 pound limitation, and we reverse the Board's decision on these claims. Although Oren also challenges the Board's reliance on the

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Claussen reference for meeting the support members limitation, because all of the claims at issue that recite the support members limitation also recite the 30,000 pound limitation, and given our reversal on the 30,000 pound limitation, we need not address Claussen.³

III

Objective Indicia of Nonobviousness

The remaining claims at issue, which do not recite the 30,000 pound limitation, are claims 7 and 10–14. For these claims, the Board failed to properly analyze the objective indicia evidence and, therefore, we remand.

As discussed in *Graham v. John Deere Inc.*, 383 U.S. 1 (1960), objective indicia are an integral part of the obviousness analysis. *Id.* at 18–19. Commercial success and industry praise are recognized evidence of nonobviousness, for the way persons in the field of an invention perceive its advantages “may often be the most probative and cogent evidence in the record.” *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1071 (Fed. Cir. 2018). Such evidence may establish that a new device having relatively small difference in a crowded field was not obvious to persons of skill in that field. The objective indicia are part of the totality of evidence concerning obviousness. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538–39 (Fed. Cir. 1983).

“For objective evidence of secondary considerations to be accorded substantial weight, its proponent must establish a nexus between the evidence and the merits of the claimed invention.” *ClassCo, Inc. v. Apple, Inc.*, 838 F.3d

³ Oren does not raise any arguments related to Hedrick, Krennek, or Racy, and whether it would have been obvious to modify Smith according to those prior art references. Therefore, we do not address those portions of the Board’s decision.

1214, 1220 (Fed. Cir. 2016) (internal quotation marks omitted). That is, “objective evidence of non-obviousness must be commensurate in scope with the claims which the evidence is offered to support.” *Polaris Indus.*, 882 F.3d at 1072. There can be “a presumption of nexus for objective considerations when the patentee shows that the asserted objective evidence is tied to a specific product” and that product “is the invention disclosed and claimed in the patent.” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1329 (Fed. Cir. 2016) (internal quotation marks omitted); *see also Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1374 (Fed. Cir. 2019) (“[W]hat we do require is that the patentee demonstrate that the product is essentially the claimed invention.”). The presumption can apply “even when the product has additional, unclaimed features.” *PPC Broadband, Inc. v. Corning Optical Commc’ns RF, LLC*, 815 F.3d 734, 747 (Fed. Cir. 2016); *see also Fox Factory*, 944 F.3d at 1374–75. Once established, this presumption of nexus is rebuttable with evidence showing the objective evidence is “due to extraneous factors other than the patented invention.” *WBIP*, 829 F.3d at 1329 (quoting *Demaco*, 851 F.2d 1387, 1393 (Fed. Cir. 1988)).

Oren presented evidence that mapped its commercialized SandBox container to the claimed container of the ’626 patent, J.A. 6954–7010, and we conclude the Board’s finding that Oren had established a presumption of nexus is supported by substantial evidence. Board Op. 30. PropX’s arguments that the application of this presumption was unwarranted are not persuasive. SandBox is a commercialized product that Oren showed is the claimed container of the ’626 patent. *See Fox Factory*, 944 F.3d at 1373–74 (holding that the patentee is required to “demonstrate that the product is essentially the claimed invention”); *WBIP*, 829 F.3d at 1331 (“[Patentee] was entitled to the presumption of nexus for its objective evidence of non-obviousness because it established that the specific products . . . are embodiments of the invention in the asserted claims.”).

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The Board next found that PropX rebutted the presumption of nexus with evidence showing that aspects of a broader SandBox system other than the claimed container product were responsible for the system's success. Board Op. 30–33. The Board credited the fact that Oren “leases an equipment set that includes boxes, a conveyor (as part of [Oren’s] cradle . . .), rig mats, a fork lift, a light-duty loader, and chassis (plural, which are trailers).” Board Op. 30 (citing J.A. 691); *see* J.A. 691–92 (citing evidence that Oren leases or rents “an equipment set,” “the entire set,” and “the entire equipment set”). In addition, the Board found persuasive the testimony of Oren’s own witnesses regarding the importance of the non-container aspects to the success of the overall system. The Board concluded that Oren’s commercial success and industry praise were “largely” a result of these non-container features “rather than the features of the challenged claims.” Board Op. 33.

However, in doing so, the Board did not contend with and weigh any of the evidence potentially showing that the SandBox container itself is *also* an important contributor to the commercial success and praise of the system. Board Op. 30–33. Oren presented significant revenue numbers generated from the lease and license of the SandBox product. J.A. 557 n.3; J.A. 7572 ¶ 6; J.A. 7574 (“Equip lease/license/other”). A PropX real-party-in-interest, Liberty Oilfield Services, LLC, (“Liberty”) entered into a 5-year contract with Oren’s operating subsidiary, SandBox Logistics, for the “patented sand delivery process and containerization equipment.” J.A. 557; J.A. 7575–76. The containerized sand solution, specifically, was noted to be effective. J.A. 560; J.A. 7590. And a market analyst declared that the “sand in a big box” was a “disruptive technology” for the fracking industry. J.A. 561–62; J.A. 6223–24.

The Board should have addressed this evidence. Although the evidence the Board did consider showed that other features of Oren’s system are important to the

system's success, and Oren has not disputed that finding, "[i]t is not necessary . . . that the patented invention be solely responsible for the commercial success, in order for this factor to be given weight appropriate to the evidence, along with other pertinent factors." *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1273 (Fed. Cir. 1991). Thus, failure to address the Sandbox container-specific evidence was legal error by the Board. On remand, the Board must consider this evidence to properly decide the issue of obviousness.

CONCLUSION

We reverse on claims 1–6, 9, 15, 18–20 the Board's finding of obviousness because the Board impermissibly relied on a theory not raised by petitioner and which Oren had no notice of and opportunity for responding to, and remand on claims 7 and 10–14 for further analysis of the objective indicia consistent with this opinion.

REVERSED-IN-PART, VACATED-IN-PART, AND REMANDED

COSTS

The parties shall bear their own costs.