

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FOX FACTORY, INC.,
Petitioner,

v.

SRAM, LLC,
Patent Owner.

Case IPR2016-01876
Patent 9,182,027 B2

Before MICHAEL W. KIM, FRANCES L. IPPOLITO, and
KEVIN W. CHERRY, *Administrative Patent Judges*.

CHERRY, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

Fox Factory, Inc. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 7–12 and 20–26 of U.S. Patent No. 9,182,027 B2 (Ex. 1001, “the ’027 patent”). Paper 2 (“Petition” or “Pet.”). Pursuant to 35 U.S.C. § 314(a), we determined the Petition showed a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of claims 7–12 and 20–26, and instituted an *inter partes* review of these claims on certain asserted grounds of unpatentability. Paper 8 (“Inst. Dec.”). Patent Owner SRAM, LLC (“SRAM” or “Patent Owner”) filed a Patent Owner Response. Paper 13 (“PO Resp.”). Petitioner filed a Reply to Patent Owner’s Response. Paper 32 (“Pet. Reply”). Pursuant to our authorization, Patent Owner also filed a Sur-Reply. Paper 38 (“PO Sur-Reply”).

Patent Owner filed Observations on Cross Examination. Paper 41 (“Obs.”). Petitioner filed a Response to Patent Owner’s Observations on Cross Examination. Paper 48 (“Response Obs.”). We have considered fully both the Observations and Response to Observations in reaching this Final Written Decision.

Petitioner also filed a Motion to Exclude certain evidence. Paper 45 (“Pet. Mot. Exclude”). Patent Owner filed an Opposition to Petitioner’s Motion to Exclude. Paper 51 (“PO Opp.”). Petitioner also filed a Reply in support of its Motion to Exclude. Paper 53 (“Pet. Mot. Reply”). Patent Owner also filed a Motion to Exclude certain evidence. Paper 46 (“PO Mot. Exclude”). Petitioner filed an Opposition to Patent Owner’s Motion to Exclude. Paper 50 (“Pet. Opp.”). Patent Owner filed a Reply in support of its Motion to Exclude. Paper 52 (“PO Mot. Reply”). An oral hearing was held on January 12, 2018. Paper 58 (“Tr.”).

We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine Petitioner *has not proven* by a preponderance of the evidence that claims 7–12 and 20–26 of the '027 patent are unpatentable. *See* 35 U.S.C. § 316(e).

I. BACKGROUND

A. RELATED PROCEEDINGS

Patent Owner has asserted infringement of the '027 patent in *SRAM, LLC v. Race Face Performance Products*, Case No. 1:15-cv-11362-JHL (N.D. Ill.). Paper 7, 3; Pet. 89.

The '027 patent is one of a number of related, issued patents and pending applications. *See* Paper 7, 1. The '027 patent is also at issue in the following post-grant proceedings: (1) *FOX Factory, Inc. v. SRAM, LLC*, Case IPR2017-00118; and (2) *FOX Factory, Inc. v. SRAM, LLC*, Case IPR2017-00472. Paper 7, 2. The '027 patent is currently undergoing *ex parte* reexamination proceedings under Reexamination Control No. 90/013,715, which was initiated on June 2, 2016. *Id.* We stayed this reexamination on April 3, 2017. *See* Paper 10.

B. THE '027 PATENT

The '027 patent relates generally to chainrings, and more particularly to a solitary chainring for use with a conventional chain in a bicycle drivetrain system that includes a bicycle crank. Ex. 1001, 1:5–7. Bicycles and other chain-driven vehicles typically employ one or more chainrings and set of rear hub-mounted sprockets connected by a chain. *Id.* at 1:8–10. According to the '027 patent, the management of chain and chainring engagement in bicycles is important, and various mechanisms are used to maintain the chain on the chainring and the sprockets, including chain

guards, chain tensioners, chain catchers, and derailleur configurations, among others. *Id.* at 1:10–13. The '027 patent explains that managing the connection between the chain and the chainring is particularly difficult in geared bicycles, which can experience severe changes in chain tension and energy motion of the chain, especially when riding over rough terrain. *Id.* at 1:14–20. Specifically, the '027 patent asserts that it is directed to a solution for the problem of chain management, especially for a bicycle that can successfully and reliably be ridden over challenging and rough terrain. *Id.* at 1:27–29.

Figure 3 of the '027 patent illustrates a drive chain and chainring, and is reproduced below:

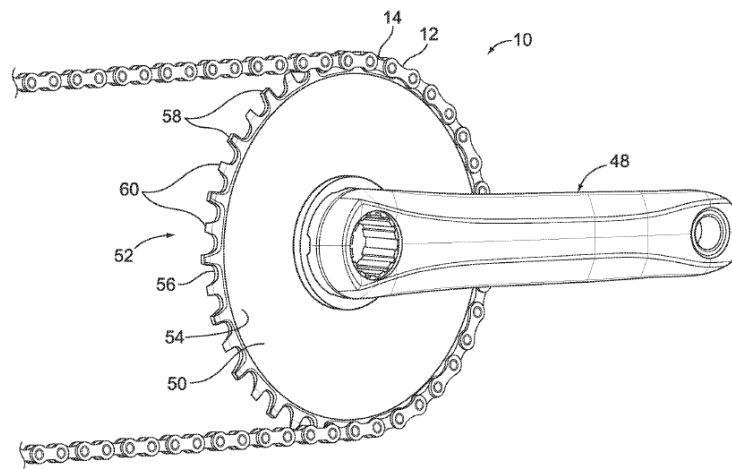


FIG. 3

Figure 3, reproduced above, is an isometric view of a combined drive chain and chainring, according to the purported invention, engaged by a drivetrain. *Id.* at 2:21–22. Figure 3 shows chainring 50 and conventional chain 10. *Id.* at 3:44–45. Crank or crank arm 48 attaches to chainring 50. *Id.* at 3:47–49. Force applied to crank arm 48 (typically, in a downward direction) causes rotation of chainring 50 in a like direction (clockwise). *Id.* at 3:55–57. The

rotation of chainring 50 causes chain 10 to be drawn over and advanced about chainring 50. *Id.* at 3:57–59.

As is illustrated in Figure 3, chainring 50 includes a plurality of teeth, including first group of teeth 58 and second group of teeth 60. *Id.* at 3:60–67. Drive chain 10 includes outer chain links 12 and inner chain links 14. *Id.* at 2:63–65. First group of teeth 58 is configured to be received by, and fitted into, the outer link spaces of drive chain 10, and second group of teeth 60 is configured to be received by, and fitted into, the inner link spaces. *Id.* at 3:66–4:3. Each tooth can have an optional tip portion that protrudes forwardly from a line drawn where rollers in the chain contact the tooth. *Id.* at 5:33–48. The '027 patent explains that this protruding tip portion “functions to engage a chain link earlier than a chain lacking the tip portion and provides better guiding of the chain.” *Id.* at 5:48–51.

C. ILLUSTRATIVE CLAIM

Claims 7 and 20, both apparatus claims, are the only independent claims of the '027 patent challenged in the Petition. Claims 8–12 each depend from claim 7. Claim 21–26 each depend from claim 20. Claim 7 is illustrative of the subject matter in this proceeding and is reproduced below.

7. A bicycle chainring for engagement with a drive chain, comprising:
 - a plurality of teeth formed about a periphery of the chainring,
 - the plurality of teeth including a first group of teeth and a second group of teeth,
 - each of the first group of teeth wider than each of the second group of teeth and at least some of

the second group of teeth arranged alternately and adjacently between the first group of teeth, wherein each of the plurality of teeth includes a tooth tip;

wherein a plane bisects the chainring into an outboard side and an inboard side opposite the outboard side; and

wherein at least the majority of the tooth tip of at least one of each of the first and second groups of teeth is offset from the plane in a direction toward the inboard side of the chainring.

Id. at 7:32–46.

D. INSTITUTED GROUNDS OF UNPATENTABILITY

We instituted an *inter partes* review of the '027 patent on the following grounds of unpatentability asserted in the Petition. Inst. Dec. 23.

Claims	Basis	References
7–12 and 20–26	§ 103(a) ¹	US 3,375,022 to Hattan (“Hattan”) (Ex. 1004) and JP S56-442489 to Shimano (“JP-Shimano”) (Ex. 1006) ²

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29 (2011), revised 35 U.S.C. §§ 102–103, effective March 16, 2013. Because the '027 patent has an effective filing date before March 16, 2013, we refer to the pre-AIA versions of §§ 102 and 103

² Exhibit 1006 includes both the published Japanese Patent Application (pages 1–10) and an English translation (pages 11–18). We will refer exclusively to the English translation.

II. ANALYSIS

A. CLAIM CONSTRUCTION

We interpret claims in an unexpired patent using the “broadest reasonable construction in light of the specification of the patent in which [they] appear[].” 37 C.F.R. § 42.100(b). Any special definition for a claim term must be set forth with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). “Under a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history.” *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016).

Only those terms which are in controversy need be construed, and only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

We determine that no terms require express construction for purposes of this Final Written Decision.

B. LEVEL OF SKILL IN THE ART

Petitioner asserts that a person of ordinary skill in the art, at the time of the effective filing date of the ’027 patent, “would have a skill level of at least a bachelor’s degree in mechanical engineering and/or at least three to five years’ experience in the development and design of chain drive systems and components thereof.” Pet. 1 n.1 (citing Ex. 1002 ¶ 14). Patent Owner contends that a person of ordinary skill would have a bachelor’s degree in mechanical engineering and at least one year of design experience with chainrings or related technologies. PO Resp. 12 n.3 (citing Ex. 2074 ¶ 25). Any difference between these two definitions is insignificant to this analysis.

On this record, however, we find Patent Owner’s definition of a person of ordinary skill in the art to be more persuasive given the well-developed, relatively simple nature of the art, and apply it for our analysis.

C. SCOPE AND CONTENT OF THE PRIOR ART

The instituted ground alleges that claims 7–12 and 20–26 of the ’027 patent are unpatentable as obvious over Hattan and JP-Shimano. Pet. 59–77; Inst. Dec. 10–23.

1. *Hattan (Ex. 1004)*

Hattan, titled “Drives for Bicycles,” relates to an improved pedal actuated drive for bicycles. Ex. 1004, 1:20–21. In particular, Hattan describes an elliptical main pedal driven sprocket wheel (i.e., chainring) carrying a correspondingly elliptical, and slightly oversized, deflector at the outer side of the sprocket wheel, with the teeth of the sprocket wheel having camming surfaces for camming an engaged chain laterally outwardly, while the deflector has a camming surface for deflecting the chain in an opposite laterally inward direction. *Id.* at Abstract. Hattan explains that a “major object” of its invention is to “provide improved and simplified means for preventing the chain from jumping off of the forward oblong sprocket wheel under any operating conditions.” *Id.* at 1:64–67. Hattan further explains that “the cam surfaces on the deflector structure and the teeth will function together to compensate for any out of line condition.” *Id.* at 2:25–26. Hattan states that its sprocket wheel “will prevent the chain from ever jumping off the sprocket wheel.” *Id.* at 2:34–35. Figure 2 of Hattan, reproduced below, shows the sprocket wheel of Hattan.

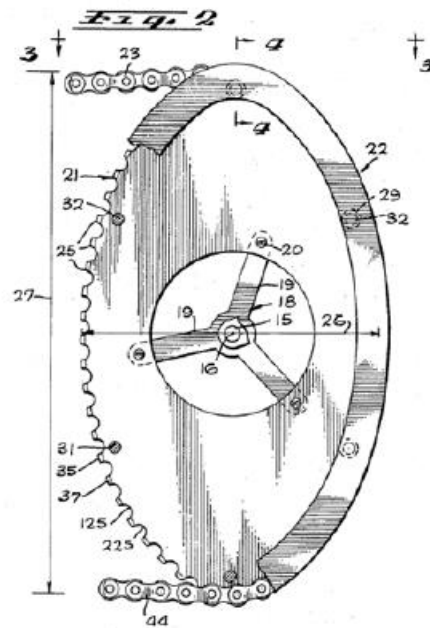
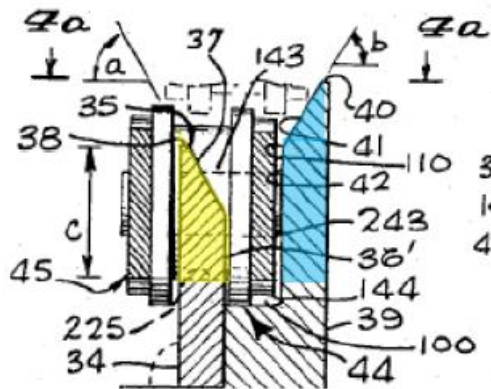


Figure 2 is an enlarged side view of the oblong sprocket wheel and deflector element of Hattan's invention, with the deflector element partially broken away to reveal the teeth of the sprocket wheel. *Id.* at 2:47–51. Hattan's sprocket wheel includes a plurality of teeth (labeled 25 in Figure 2) formed about the periphery of the sprocket wheel structure (labeled 21 in Figure 2). *Id.* at 3:15–23. Hattan explains that the shape of the teeth on the sprocket wheel and the deflector structure act to keep the chain in proper engagement with the sprocket wheel, regardless of the angle at which the chain approaches the sprocket wheel. *Id.* at 2:25–35. A side view of the sprocket wheel of Hattan, showing the teeth and deflector structure, is shown in Petitioner's annotated version of Figure 4 of Hattan, reproduced below.



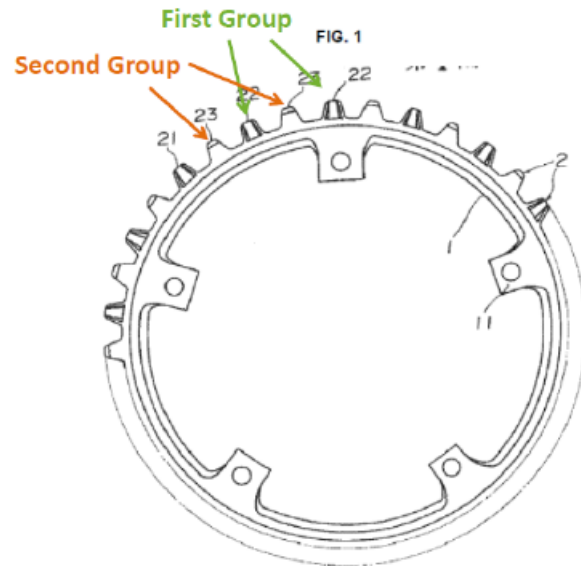
Pet. 15. Figure 4 of Hattan is an enlarged fragmentary section taken on line 4-4 of Figure 2, and this figure has been annotated by Petitioner to show a sprocket tooth in yellow and the deflector structure in blue. Ex. 1004, 2:53–54. Hattan describes the shape of teeth 25 formed about the periphery of sprocket wheel 21 as having a “short directly axially extending surface 38 at its outer extremity,” and camming surfaces 37 designed to deflect the bicycle chain “outwardly” (i.e., away from the bicycle frame). *Id.* at 2:18–35, 3:59–4:2. Hattan also discloses a “deflector” positioned farther from the bicycle frame than the sprocket wheel, and formed with camming surfaces designed to deflect the chain “inwardly” (i.e., toward the bicycle frame). *Id.* at 2:5–24, 3:24–37, 4:3–31. Hattan describes its “camming surfaces,” as follows:

Camming surfaces 37 preferably extend radially inwardly from the outer extremities of the teeth through at least about one-half of the radial extent *c* of the teeth, as shown. Desirably, each tooth has a short directly axially extending surface 38 at its outer extremity, and tapers inwardly from one edge of that surface. The angle of taper of surface 37, relative to axis 16, designated angle *a* in FIGS. 3 and 4, may desirably be between about 45 and 75 degrees, preferably approximately 60 degrees.

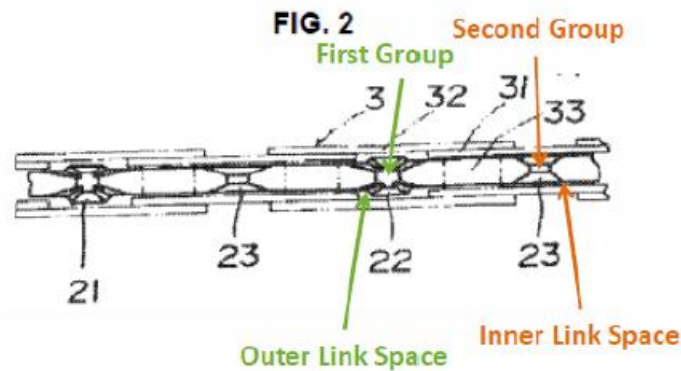
Id. at 3:64–74. Hattan describes preferred tooth dimensions for use with a 3/32 inch chain. *Id.* at 7:52–66.

2. *JP-Shimano (Ex. 1006)*

JP-Shimano is a Japanese Utility Model Application, titled “Chain Gear for a Bicycle,” and describes a chain gear for a bicycle designed to reduce chain drop. Ex. 1006, 15:49–60, 15:78–86. JP-Shimano discloses a chainring for a bicycle with alternating wide and narrow teeth. *Id.* at 15:55–60, 15:78–86, 15:108–115, Figs 1–2. JP-Shimano describes a chainring having “a plurality of teeth provided circumferentially on an outer periphery of the gear main body.” *Id.* at 15:64–67. Figure 1 of JP-Shimano, as annotated by the Petitioner, is reproduced below.



Pet. 61. Figure 1, as annotated by Petitioner, shows an embodiment of the chainring of JP-Shimano. *Id.* at 16:134–135. Figure 1 shows alternating wide and narrow teeth (teeth 22 and 23, respectively (labeled first group and second group by Petitioner)). *Id.* at 16:99–106. Figure 2 of JP-Shimano, as annotated by the Petitioner, is reproduced below.



Pet. 62. Figure 2, as annotated by Petitioner, shows teeth 22 and 23 engaging the bicycle chain. *Id.* JP-Shimano notes that wider teeth 22 may be wider than or equal to the space between inner link plates 31, and the thickness of wider teeth 22 is greater than narrower teeth 23 such that wider teeth 22 engage the chain between outer chain link plates 32.

Id. at 16:99–115. JP-Shimano summarizes its device as:

The present device focuses on the fact that spaces between the outer link plates in the chain become wider than the spaces between the inner link plates, and . . . is configured to eliminate dropping of the chain from between the outer link plates, and also to enhance durability. The present device accomplishes this by setting one specific tooth as a standard, from among the plurality of teeth provided circumferentially on the outer periphery of the gear main body, and by forming the thickness of the even-numbered teeth smaller than the spaces between the outer link plates of the chain, but greater than other teeth that engage between the inner link plates, so that the teeth with the greater thickness engage between the outer link plates.

Ex. 1006, 15:78–86.

D. DIFFERENCES BETWEEN THE PRIOR ART AND THE CLAIMED INVENTION

1. Claims 7, 8, 11, 12, 20–22, 25, and 26

With respect to independent claim 7, Petitioner asserts that Hattan discloses: (1) “[a] bicycle chainring for engagement with a drive train, comprising,” Pet. 22 (citing Ex. 1004, Abstract, 2:65–3:23, 4:32–46, 7:67–

8:17, Figs. 1–4a; Ex. 1002 ¶ 40); (2) “a plurality of teeth formed about a periphery of the chainring,” *id.* at 23 (citing Ex. 1004, Abstract, 2:9–24, 2:47–50, 3:10–23, 7:67–8:17, Figs. 1, 2, 4; Ex. 1002 ¶ 41); (3) “wherein each of the plurality of teeth includes a tooth tip,” *id.* at 26–27 (citing Ex. 1004, 3:67–70, 4:32–40, Fig. 4, Ex. 1002 ¶¶ 45, 46); and (4) “wherein a plane bisects the chainring into an outboard side and an inboard side opposite the outboard side,” *id.* at 27–30 (citing Ex. 1004, 3:46–59, 3:74–4:2, 4:40–46, Fig. 4; Ex. 1002 ¶¶ 47, 48). Petitioner also asserts that JP-Shimano accounts for (1) “the plurality of teeth including a first group of teeth and a second group of teeth,” *id.* at 66–67 (citing Ex. 1006, 15:55–60, 15:78–86, 16:99–117; Ex. 1002 ¶ 111); (2) “each of the first group of teeth wider than each of the second group of teeth,” *id.* at 67–68 (citing Ex. 1006, 15:81–86, 16:99–117, Figs. 1–2; Ex. 1002 ¶ 112); and (3) “at least some of the second group of teeth arranged alternately and adjacently between the first group of teeth,” *id.* at 68 (citing Ex. 1006, 16:99–117, Figs. 1–2; Ex. 1002 ¶ 113). Petitioner further relies on the combined teachings of Hattan, as modified in view of JP-Shimano, to account for “wherein at least the majority of the tooth tip of at least one of each of the first and second groups of teeth is offset from the plane in a direction toward the inboard side of the chainring.”³ Pet. 30–32, 68 (citing Ex. 1004, 2:5–40, 3:46–4:31, 5:47–6:16, Fig. 4; Ex. 1002 ¶ 49).

³ Patent Owner correctly notes that we erroneously stated in our Institution Decision (*see* Inst. Dec. 15) that Petitioner was relying on only Hattan for this element. PO Resp. 45 n.5.

Petitioner further asserts that Hattan and JP-Shimano account for the limitations of claims 8, 11, 12, 20–22, 25, and 26. Pet. 31–32, 37–52, 73–75.⁴

2. *Motivation to Combine*

To support its argument that a person of ordinary skill would have combined the teachings of Hattan and JP-Shimano, Petitioner argues that a person of ordinary skill in the art “would have known that it is critical to the operation of a bicycle for a bicycle chain to remain engaged with the bicycle chainring.” Pet. 62 (citing Ex. 1002 ¶ 106). Petitioner asserts that “[b]oth *Hattan* and *JP-Shimano* teach this motivation for their respective disclosed apparatuses: improving the engagement between the chain and chainring, and preventing the chain from detaching from the chainring.” *Id.* at 62–63. Petitioner contends that a person of ordinary skill in the art would have modified the offset-teeth sprocket wheel/deflector of Hattan, to include the alternating narrow and wide teeth of JP-Shimano, in order to “improve chain engagement and retention to the maximum extent possible, particularly for a solitary front chainring such as in *Hattan*” Pet. 63 (citing Ex. 1002 ¶ 107). Petitioner notes that “*Hattan* explains that its disclosed chainring

⁴ Claims 9 and 10 depend from claim 7 and claims 23 and 24 depend from claim 20. Patent Owner separately contests whether at least one of the references accounts for the limitations of these claims, and whether there would have been a motivation to modify the references as Petitioner suggests. PO Resp. 52–62. However, because we find below that Petitioner has failed to prove that claims 7 and 20 would have been obvious, and Petitioner relies on same reasoning to account for those claim limitations in its contentions regarding claims 9, 10, 23, and 24, there is no need to reach Patent Owner’s separate arguments, and we do not address them in this Decision.

(‘sprocket wheel’) and deflector combination is designed to ‘prevent the chain from ever jumping off of the sprocket wheel’ (Ex. 1004, 1:64–67, 2:25–35) and to ‘assure proper interengagement of the chain with each of the teeth of the sprocket wheel’ (*id.*, 5:69-6:2).” Pet. 63. Petitioner also submits that “JP-Shimano recognizes that the ‘large gap’ between narrow chainring teeth and the outer link plates can cause the chain to drop if a chain line is displaced, and solves this problem with its alternating narrow-wide tooth chainring that ‘is configured to eliminate dropping of the chain from between the outer link plates, and also to enhance durability.’” *Id.* (quoting Ex. 1006, 15–16, ll. 73–86, 122–130). Petitioner asserts that “[s]uch a combination would provide the chain engagement and retention benefits offered by both offset devices, and would not require modifying the structure of the *Hattan* apparatus beyond merely configuring its angled, offset sprocket wheel teeth to alternate between narrow and wide profiles.” *Id.* at 64 (citing Ex. 1002 ¶ 108). Petitioner argues that “[i]mplementing the alternating narrow and wide teeth teaching of *JP-Shimano* on the *Hattan* sprocket wheel would not require altering the structure of the *Hattan* deflector, since the wider teeth taught by *JP-Shimano* would fit within the outer links of the chain.” *Id.* Petitioner contends that such a modification would merely be the combination of familiar elements according to known methods to do no more than yield predictable results. *Id.* at 65 (citing *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007)).

Patent Owner argues that there is no rationale to modify *Hattan* in view of *JP-Shimano* for two reasons. PO Resp. 45–52. First, Patent Owner argues that Petitioner’s rationale does not make sense, because *Hattan* already purports to solve completely the problem of chain retention for all

operating conditions. *Id.* at 45–49 (citing Ex. 1004, 1:63–66, 2:26–7, 2:34–35; Ex. 2074 ¶¶ 45–51). Second, Patent Owner contends that the combination of Hattan and JP-Shimano would have rendered Hattan unsatisfactory for its intended purpose. *Id.* at 50–52.

Petitioner’s rationale for combining Hattan and JP-Shimano is based on an assumption that the chain retention techniques of Hattan and JP-Shimano are additive, and would “improve chain retention to the maximum extent possible.” Pet. 63, *see also* Tr. 8:6–9; Ex. 2074 ¶ 50. The Petition and Dr. Neptune’s opening declaration, however, contain no explanation to support or explain this underlying assumption. Ex. 2074 ¶ 50. This gap in Petitioner’s reasoning is problematic, at least in part, because, as Dr. Sturges explains, Hattan discloses that its device prevents the chain from jumping off the forward oblong sprocket under “any operating conditions,” Ex. 1004, 1:63–66, and that it will “compensate for any out of line condition” of the chain line and will “prevent the chain from ever jumping off of the sprocket wheel,” *id.* at 2:26–27, 2:34–35. Ex. 2074 ¶ 46.

In view of Hattan’s disclosure, Dr. Sturges testifies that a person of ordinary skill in the art would have understood that JP-Shimano would not have improved chain retention and engagement in Hattan, because both are directed to solving the same kind of problems that result in chain drop. Ex. 2074 ¶¶ 45–47. For example, Dr. Sturges testifies that Hattan specifically states that its solution prevents chain line displacement chain drops. *Id.* ¶ 47. Dr. Sturges also testifies that JP-Shimano seeks to address chain drop resulting from chain line displacement. *Id.* ¶ 45.

Petitioner responds by arguing that Hattan does not completely prevent chain drop, and identifies various situations where Dr. Neptune

contends that Hattan would not solve chain drop. Pet. Reply 3–5; *see* Ex. 1049 ¶¶ 16–19. Petitioner also asserts that JP-Shimano is not limited to solving only chain drop caused by chain line displacement, but also solves chain drop caused by worn or broken teeth. Pet. Reply 5–6. Petitioner now contends that a person of ordinary skill would have modified Hattan in view of JP-Shimano to improve durability, which in turn would have reduced chain drop. *Id.* (citing Ex. 1049 ¶¶ 20, 21).

We find that even though Patent Owner’s arguments do not amount to a teaching away, they do weaken the factual basis of Petitioner’s combination. *See Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1069 (Fed. Cir. 2018) (“But even if a reference is not found to teach away, its statements regarding preferences are relevant to a finding regarding whether a skilled artisan would be motivated to combine that reference with another reference.”). Although Petitioner has identified some situations where Hattan might not work to prevent all chain drop, these exceptions that Petitioner has identified (Ex. 1049 ¶¶ 15–19) suggest that rather than generally seeking to improve chain retention in Hattan, as the Petition contends, a person of ordinary skill would have sought to improve chain retention for the situations where Hattan would fail.

Moreover, even considering these exceptions, there are two other problems with Petitioner’s evidence and arguments. First, of the various situations where Petitioner contends that Hattan would not solve chain drop, Petitioner has only provided evidence that the combination Hattan and JP-Shimano would address one of those situations—worn and broken teeth. Pet. Reply 5–6; Ex. 1049 ¶¶ 20–22. Thus, Petitioner has not established that

the proposed combination would solve the problem of chain drop in the other situations.

Second, although the Petition mentions that JP-Shimano provides the benefit of improved durability, *see* Pet. 63, neither the Petition nor JP-Shimano ever tie improved durability to improved chain retention, and the Petition never contends that durability was the rationale to modify Hattan in view of JP-Shimano. *See* Pet. 62–66. Dr. Neptune admitted that these arguments were not contained in his original declaration. Ex. 2129, 96:16–97:5. A reply is not the place to raise an almost entirely new motivation to combine. *See* 37 C.F.R. § 42.23(b). While we will consider this argument, nevertheless, we find that Dr. Neptune’s shifting basis for the rationale to combine the references suggests that his reasoning is motivated heavily by hindsight, and not by what a person of ordinary skill at the time of the invention would have understood. *See InTouch Techs., Inc. v. VGO Commc’ns, Inc.*, 751 F.3d 1327, 1349 (Fed. Cir. 2014) (holding it is improper to combine references “like separate pieces of a simple jigsaw puzzle” without “explain[ing] what reason or motivation one of ordinary skill in the art at the time of the invention would have had to place these pieces together”). Accordingly, we give little weight to Dr. Neptune’s testimony on rationale to combine.

Patent Owner also argues that there is no rationale to combine, because the modification of Hattan’s teeth in view of JP-Shimano would have rendered Hattan unsuitable for its intended purpose. *See* PO Resp. 50–52; Ex. 2074 ¶¶ 46–58. Patent Owner explains that Hattan “accomplishes this goal of complete chain retention by providing two camming surfaces — one camming surface on the teeth opposite another camming surface on the

outboard deflector (i.e., chain guide) — such that ‘the cam surfaces on the deflector structure and the teeth will function together to compensate for any out of line condition, and to cam the chain into a proper relationship with the sprocket wheel teeth regardless of the angularity from which the chain approaches the sprocket wheel.’” PO Resp. 50 (quoting Ex. 1004, 2:25–30). Patent Owner argues that “the shape of the camming surface of the teeth, and thus, the shape of the teeth, in *Hattan*, are essential to the proper operation of *Hattan* to retain the chain.” *Id.* (citing Ex. 2074 ¶ 54). Patent Owner argues that a person of ordinary skill would not have considered modifying *Hattan*’s teeth to be wider while at the same time not altering the rest of the device, as Petitioner proposes, because “such a widening would alter important relationships of the various surfaces in *Hattan*.” *Id.* at 51. In particular, Patent Owner argues that the slope of the camming surface is essential to operation of *Hattan*, and that altering that would have caused chain drop and damage to the chainring. *Id.* at 51–52. Petitioner contends that *Hattan*’s teeth can be modified without altering the slope of the tooth. Pet. Reply 6–8 (citing Ex. 1019 ¶¶ 18–23; Ex. 1049 ¶ 23). Dr. Neptune testifies that there are ways to widen the teeth of *Hattan* without modifying the slope of the camming surface or “substantially impairing the function of the apparatus.” Ex. 1049 ¶ 23.

We are not persuaded that modifying *Hattan* in view of JP-Shimano would render *Hattan* unsuitable for its intended use, but we do find that the potential for problems in the operation of *Hattan* resulting from such combination weighs slightly against the combination. As Dr. Neptune testified, there may be ways to modify *Hattan*’s teeth without changing the slope of the camming surface. Ex. 1049 ¶ 23. This testimony is reasonable,

so we give it some weight. Dr. Neptune does not dispute the importance of the camming surface slope in Hattan, as testified by Dr. Sturges. Ex. 2129, 166:24–167:6. Indeed, we find Dr. Sturges’s testimony about the numerous problems arising from altering Hattan’s camming surface to be well-reasoned and persuasive, and give it substantial weight. Ex. 2074 ¶¶ 53–58. Thus, while the combination might not render Hattan inoperable, these limitations on what parts of Hattan and how Hattan can be modified further weigh against Petitioner’s contention that a person of ordinary skill would have modified Hattan in view of JP-Shimano.

Patent Owner’s unsuitability arguments also weigh against the combination for another reason. To salvage its combination from these problems identified by Dr. Sturges, Petitioner again materially alters its obviousness analysis from what was stated in the Petition in ways that seem driven by hindsight. The Petition states that the combination “would not require modifying the structure of the *Hattan* apparatus beyond merely configuring its angled, offset sprocket wheel teeth to alternate between narrow and wide profiles.” Pet. 64. However, in his Reply Declaration, Dr. Neptune now alters this simple proposed modification to include “changes to the geometry of the teeth,” which he does not testify would improve the performance of Hattan’s device. Ex. 1049 ¶ 23. Instead, he only testifies that these changes to the geometry of the teeth would not “*substantially* impair the performance.” *Id.* (emphasis added); Ex. 2129, 165:25–166:4 (testifying he does not “think it would significantly change the performance of the apparatus.”). But this is not the end of Dr. Neptune’s modifications to the combination originally proposed. He also now suggests incorporating the cross-shaped cross section of JP-Shimano’s tooth design.

Id. ¶ 24. We find that the accumulating number of apparently necessary changes suggests that the modifications may not have been as simple and routine as Dr. Neptune implies.

We also do not agree with Dr. Neptune’s contention that the geometric modifications that he proposes would not “impact[] the remaining tooth structure.” Ex. 1049 ¶ 23. Dr. Neptune’s drawings do not appear to be to scale, but even these crude drawings appear to show that the modifications result in other changes to shape of Hattan’s teeth, including the point where the tapering starts on the tooth and size of the tip. *See* Pet. Reply 8; Ex. 1019 ¶ 19; Ex. 1049 ¶ 23. Dr. Sturges testified the “shape of the teeth is essential to the proper operation of Hattan.” Ex. 2074 ¶ 54. Moreover, Dr. Neptune agreed that some of the modifications he proposed in his examples, in Paragraph 23 of Exhibit 1049, could have had undesirable effects, including encouraging a chain to ride on top of the tooth, as opposed to seated on top of it. Ex. 2129, 167:15–168:17.

In sum, while we determine that the evidence does not support a finding that the combination would have rendered Hattan unsuitable for its intended use, the evidence does suggest that modifying Hattan in the way proposed could have negatively affected its operation in some ways, which weighs slightly against the likelihood of a person of ordinary skill making the proposed modification.

Notwithstanding the above discussion, we recognize that bodily incorporation is not required to show obviousness. *See, e.g., In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) (“It is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of the elements.”). But,

Petitioner has stated that its combination “would not require modifying the structure of the *Hattan* apparatus beyond merely configuring its angled, offset sprocket wheel teeth to alternate between narrow and wide profiles.” Pet. 64. The Federal Circuit has instructed us that the obviousness inquiry cannot be met by conclusory statements, but rather must be “thorough and searching.” See *In re Nuvasive*, 842 F.3d 1376, 1383 (Fed. Cir. 2016) (holding conclusory statements insufficient if not supported by a reasoned explanation) (citing *In re Lee*, 277 F.3d 1338, 1342 (Fed. Cir. 2002) (“The factual inquiry whether to combine references must be thorough and searching.”)). Moreover, we must be careful not to allow hindsight reconstruction of references to reach the claimed invention, without adequate explanation as to how or why the references would have been combined to produce the claimed invention. See, e.g., *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1368 (Fed. Cir. 2012) (quoting *Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1374 n.3 (“We must still be careful not to allow hindsight reconstruction of the references to reach the claimed invention without any explanation as to how or why the references would be combined to produce the claimed invention.”)). Petitioner has made some showing that the prior art describes known bicycle components, used in a known way, to achieve predictable results. *KSR*, 550 U.S. at 416. But, given the problems identified above in Petitioner’s rationale to support its proposed modification, we determine that Petitioner has only shown, at best, that the evidence weighs slightly in favor of making the above modification of *Hattan* in view of *JP-Shimano*.

E. OBJECTIVE INDICIA OF NON-OBVIOUSNESS

Notwithstanding what the teachings of the prior art would have suggested to one skilled in the art, objective evidence of non-obviousness (so called “secondary considerations”) may lead to a conclusion that the challenged claims would not have been obvious. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). Objective evidence of non-obviousness “may often be the most probative and cogent evidence in the record” and “may often establish that an invention appearing to have been obvious in light of the prior art was not.” *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012). Patent Owner puts forth evidence of commercial success, licensing, copying, praise by others, and long-felt, unresolved need. We agree with Patent Owner that its evidence of secondary considerations weighs significantly in favor non-obviousness, as explained below.

1. *Nexus*

To be relevant, evidence of non-obviousness must be commensurate in scope with the claimed invention. *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011). Thus, to be accorded substantial weight, there must be a nexus between the merits of the claimed invention and the evidence of secondary considerations. *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995). Nexus is a legally and factually sufficient connection between the objective evidence and the claimed invention, such that the objective evidence should be considered in determining non-obviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). There is a “presumption of a nexus” when a product is “coextensive” with a patent claim. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 723 F.3d 1363, 1372 (Fed.

Cir. 2013). The Federal Circuit has held that “if the marketed product embodies the claimed features, and is coextensive with them, then a nexus is presumed and the burden shifts to the party asserting obviousness to present evidence to rebut the presumed nexus.” *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1130 (Fed. Cir. 2000).

Patent Owner presents evidence that each of the twelve families of X-Sync chainrings are covered by the challenged claims. *See* PO Resp. 15–16 n. 4. In particular, Patent Owner presents the testimony of its expert, supported by detailed claim charts, and the testimony of Mr. Ritzler and Mr. Wesling, that “each element of the challenged claims is practiced by each of these twelve (12) different versions of X-Sync chainrings.” Ex. 2074 ¶ 63; *see also id.* ¶ 64 (testimony of Dr. Sturges that all other sized chainrings in each family of the tested versions practice all the challenged claims); Ex. 2078–2089 (claim charts for all the challenged claims); Ex. 2076 ¶ 11 (explaining the families of products Patent Owner sells); Ex. 2073 ¶ 10 (explaining the families of products Patent Owner sells). As such, Patent Owner argues that it is entitled to a presumption of a nexus.

Petitioner does not dispute that the X-Sync chainrings are covered by the challenged claims; rather, Petitioner disputes whether the X-Sync chainring is coextensive with the claims. *See* Tr. 61:17–20 (“Your Honor, we don’t dispute that it’s covered by the patent, we dispute whether it’s coextensive.”). Petitioner argues that Patent Owner failed to demonstrate that the products are coextensive, because the X-Sync chainring includes unclaimed features, and “the majority of [Patent Owner’s] X-Sync chainrings are marketed and sold as mere *components* of cranksets and drivetrain groupsets.” Pet. Reply 19. As an initial matter, Petitioner argues

that “[t]he X-Sync chainring is not coextensive with the claimed invention because the X-Sync chainring includes ‘hundreds of features’ . . . not claimed in the ’027 patent, many of which are instead claimed by other SRAM patents.” *Id.* This argument misrepresents the law on two points. First, Petitioner is incorrect that the existence of unclaimed features in the commercial product prevents a Patent Owner from being able to claim a presumption of a nexus. Instead, the law provides that a Patent Owner is entitled to a presumption of a nexus if it 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*, 829 F.3d at 1329. The Federal Circuit has explained that “[t]his is true 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).

Unclaimed features do not prevent the presumption of a nexus, but they may be the basis for rebutting the presumption. *Id.* To do so, a person challenging patent validity must show that the commercial success, or other objective evidence of non-obviousness, was due to “extraneous factors” including “additional unclaimed features.” *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1072 (Fed. Cir. 2018). Merely pointing out unclaimed features in the X-Sync chainring is not enough. *Id.* (“However, a patent challenger cannot successfully rebut the presumption with argument alone—it must present evidence.”).

Second, Petitioner is incorrect that the existence of other patents necessarily obviates the presumption of a nexus. In this regard, Petitioner relies on a *Therasense, Inc. v. Becton, Dickinson & Co.*, 593 F.3d 1289, 1299 (Fed. Cir. 2010), for the proposition that “a product that embodies

more than one patent is not coextensive with any of them.” Pet. Reply 22. Petitioner has only identified two patents, both in the same family of continuations as the ’027 patent.⁵ *Id.* (identifying U.S. Patent Nos. 9,291,250 and 9,493,211, both of which are continuations of the ’027 patent). We do not agree that *Therasense* stands for so broad a proposition that the existence of continuations in the same patent family obviates a presumption of a nexus. Indeed, *Therasense* involves the far more conventional situation that a nexus may not exist when the merits of the claimed invention were “readily available in the prior art.” *ClassCo, Inc. v. Apple, Inc.*, 838 F.3d 1214, 1220 (Fed. Cir. 2016). In *Therasense*, the court found that the product was covered by both the claims of a prior art patent (U.S. Patent 4,545,382) and the asserted patent (U.S. Patent 5,820,551). *See Therasense*, 593 F.3d at 1299. The patents related to the ’027 patent have not been shown to be prior art to the ’027 patent, and so they do not fall into this situation. We decline to extend the language in *Therasense* so far from the conventional situation of prior art patents that it was contemplating, to include patents that have not been shown to be prior art to the claimed invention.

Having reviewed Patent Owner’s evidence, we agree with Patent Owner that it has shown that it is entitled to a presumption of a nexus between the evidence secondary considerations tied to the X-Sync chainring and the invention recited in the challenged claims. In particular, we find that

⁵ Petitioner contends that there are “possibly” other patents that cover Patent Owner’s commercial product (Pet. Reply 22), but does not identify them. Petitioner’s allegations of other patents are too insubstantial to be entitled to any weight.

Patent Owner has shown that the various X-Sync chainrings are covered by the challenged claims and are coextensive with them. *See* Ex. 2074 ¶¶ 63, 64 (testimony of Dr. Sturges that the products practice the claims); Ex. 2078–2089 (claim charts); Ex. 2076 ¶ 11 (explaining the families of products Patent Owner sells); Ex. 2073 ¶ 10 (explaining the families of products Patent Owner sells). Here, the claims are directed to chainrings, as well as cranksets and drivetrains that include chainrings. Thus, there is a presumption of a nexus between the evidence of secondary considerations tied to the X-Sync chainring, as well as to cranksets and drive trains that include the X-Sync chainring, and the challenged claims that recite these bicycle components. *See Polaris Indus.*, 882 F.3d at 1073 (“[The challenged claims] broadly cover the *entire* vehicle, rather than ‘only a component of a commercially successful machine.’ . . . Moreover, the Board did not point to any limitation it found missing in the RZR vehicles. On these undisputed facts, we hold that the Board erred in failing to find that Polaris’s eight RZR vehicles are the inventions disclosed in [the claims].” (citation omitted)).

Petitioner tries to rebut this presumption of a nexus by attempting to shift the burden of proof to Patent Owner to prove that the objective indicia is tied to certain claimed features rather than unclaimed features present in the commercial embodiments. Pet. Reply 26–27. We agree with Patent Owner that this argument improperly attempts to shift the burden to Patent Owner. Sur-Reply 8–9. Here, because Patent Owner has shown that it is entitled to a presumption of a nexus between the X-Sync chainring and the challenged claims, the burden is on Petitioner to rebut that nexus. *Demaco*, 851 F.2d at 1392.

With respect to the improved chain retention of the X-Sync chainring, Petitioner argues that there are numerous unclaimed features, many of which are touted in advertising materials, but Petitioner asserts that none of the claimed features are touted. Pet. Reply 32–33. Petitioner argues that “[i]n light of the unclaimed features touted by [Patent Owner] and the press, and in the absence of any touting/recognition for the claimed combination,” Patent Owner cannot establish a nexus between the claimed invention and the objective indicia. *Id.* at 33 (citing *Ethicon Endo Surgery, Inc. v. Covidien LP*, 812 F.3d 1023, 1035 (Fed. Cir. 2016)). Although Petitioner points to some evidence touting other features, *see id.* at 33 (citing Ex. 1055), 42 (citing Exs. 2005, 2008, 2027), we find that this evidence is insufficient to overcome the presumption of a nexus that Patent Owner has established. Moreover, much of the evidence is clearly broader than Petitioner acknowledges. In addition to pointing out unclaimed features, there is also praise pointing generally to the “unique tooth profile,” Ex. 2006, “tooth profile,” Ex. 2008, Patent Owner’s “adaptation of the narrow-wide chainring tooth profile,” Ex. 2019, and the “cleverly profiled chainring,” Ex. 2023.

We find that the evidence shows that, in addition to touting specific features, the praise is also broadly directed to X-Sync’s entire implementation of the narrow/wide tooth concept, including the claimed features. Weighing the evidence together, we find that Petitioner has failed to carry its burden of rebutting the presumption of a nexus. At best, Petitioner has offered conjecture that these unclaimed features could play a role in improved chain retention, but we find that this is insufficient to rebut the presumption of a nexus. *See Polaris*, 882 F.3d at 1072 (explaining that

to rebut presumption of nexus the patent challenger must “present[] evidence to show that the [objective evidence] was due to extraneous factors other than the claimed invention”).⁶

Petitioner also argues Patent Owner sells X-Sync chainrings in at least three different ways—(1) individual chainrings; (2) cranksets including the X-Sync chainring along with two crank arms and an axle; and (3) nine different 1X⁷ drivetrain groupsets that include a number of components including the X-Sync chainring. Pet. Reply 23. Petitioner asserts that the majority of sales data provided by Patent Owner is for cranksets, not individual chainrings. *Id.* at 23–25. Petitioner contends that Patent Owner has not shown that the claimed chainring is coextensive with the commercially sold cranksets and drivetrains, and, thus, concludes that there is no presumption of a nexus. *Id.* at 25–26. We agree with Petitioner that, to the extent that the sales of the X-Sync chainring were sales of cranksets and drivetrains, they are not coextensive with some of the claims. However, as Patent Owner correctly points out, these commercial products are coextensive with claims 11 and 25, which recite a bicycle crankset including a chainring, or claims 12 and 26, which recite a bicycle drivetrain including

⁶ This case is distinguishable from *Ethicon Endo* where the evidence demonstrated that the success was “primarily attributable to a single feature present in the prior art, varying staple size, rather than the combination of prior art features.” 812 F.3d at 1034. We find that no such evidence attributing the success or improved chain retention primarily to one or more features found in the prior art is present here.

⁷ “1X” is a term used to identify mountain bike drivetrains that use a single-chainring. See Ex. 1046 ¶¶ 8–14 (explaining mountain bike drivetrain market). For example, 1X11 would be a drivetrain with a front single chainring and a back 11 speed gear cassette. *Id.*

a chainring. Sur-Reply 7. Thus, while we agree with Petitioner that, to the extent that Patent Owner presents sales information for cranksets or drivetrain groupsets alone, that sales information is not coextensive with claims 7–10 and 20–24, which are directed only to chainrings, the same is not true for claims 11, 12, 25, and 26. *Demaco*, 851 F.2d at 1392 (“When the thing that is commercially successful is not coextensive with the patented invention—for example, if the patented invention is only a component of a commercially successful machine or process—the patentee must show prima facie a legally sufficient relationship between that which is patented and that which is sold.”).

As we discuss below, the same conclusion applies to evidence that only praises Patent Owner’s drivetrains, and does not focus on, or mention, the benefits of the X-Sync chainring. That broader evidence would also not have a nexus to claims 7–10 and 20–24. *Id.* However, as we stated above, Patent Owner’s expert has shown that cranksets incorporating the X-Sync chainring include the features recited in claims 11 and 25, and drivetrains incorporating an X-Sync chainring include the features recited in claims 12 and 26. *See, e.g.*, Ex. 2078, 3–4 (claims 11 and 12 for SRAM’s 004.000 X-Sync chainring), 8–9 (claims 25 and 26 for same chainring). Because those claims are coextensive with cranksets and drivetrains, respectively, we find that those claims are still entitled to a presumption of a nexus for evidence of secondary considerations tied to cranksets and drivetrains that include the X-Sync chainring, respectively.

Finally, Petitioner argues that Patent Owner’s wide-range rear cassettes are what drove the demand for and success of Patent Owner’s drivetrains, not the X-Sync chainring. Pet. Reply 27–32. There is no

dispute that the improved gearing of Patent Owner's rear cassette enabled more riders to use single chainring drivetrains. *Id.* at 28–29 (citing Ex. 1046 ¶¶ 8–13; Ex. 1045-A, 48:24–49:17; Ex. 1061, 2). However, Patent Owner has presented extensive testimony that, whatever the advantages of the rear cassette, it was the development of the X-Sync chainring that made it possible. Sur-Reply 10. As Mr. Ritzler explained at his deposition:

Q. . . . To what do you attribute the success of X-SYNC chainring sales?

A. I attribute the success of chainring sales directly to their ability to hold the chain on without a chain guide or chain management system. Before X-SYNC bicycles featured additional devices to control chain management. They featured guides and guards and rollers. All these things were complex. All of them added elements of friction or lower performance, and when we designed X-SYNC, we designed the guiding and guarding into the chainring, which prevents the chain from falling off and makes the one-by drivetrain possible. When you look at the initial success of X-SYNC chainrings, we were blown away, we were surprised, we were – I'd say critical of the potential ourselves internally, and then we started to experience a performance externally through test driving, through validation with athletes, through the media feedback. We were amazed with the potential that that product technology had to offer. Since we released product it's obviously appealed to a wide number of both our customers as well as competitors as it's been copied many, many times over.

* * *

Q. Do you attribute the success of the X-SYNC chainrings to the sales of assets or rear derailleurs associated with those chainrings?

A. I think that the success of the chainrings is largely independent of the success of the cassettes and the other components. We sell X-SYNC chainrings above and beyond or one-by drivetrains for mountain. You see one-by drivetrains made by many consumers

at home featuring chainrings that copy our design. I think it all comes down to the fact that the chainring offers up the possibility, the real estate and the potential to make a one-by drivetrain that does not lose its chain.

Ex. 1045-A, 103:3–104:21; *see also* Ex. 1045-A, 104:22–106:12 (providing further explanation). We have reviewed Mr. Ritzler’s testimony and find it well-reasoned, and supported by extensive evidence of praise that the X-Sync chainring has received. Thus, we give it substantial weight.

Petitioner’s evidence to the contrary is not persuasive. For example, Petitioner cites Exhibit 1037 for its statement that the rear cassette is the “heart” of Patent Owner’s XX1 drivetrain system (which includes an X-Sync chainring). Pet. Reply 29. However, this same article specifically mentions the X-Sync chainring and its “carefully engineered tooth profiles on the chainring that ensure the chain will engage the sprocket and remain secure at the wide input and output angles inherent to single-ring drivetrains as the system is shifted across the cassette.” Ex. 1037, 1. Instead of undermining Mr. Ritzler’s testimony, we find Petitioner’s article consistent with Mr. Ritzler’s statement on the importance of the X-Sync chainring to enabling the use of a 1X drivetrain. The same is true of Exhibit 2009, which is cited by Petitioner for its praise of the rear cassette, but also includes extensive praise of the X-Sync chainring, and mentions that it reduces friction in the system, which is consistent with Mr. Ritzler’s testimony. Ex. 2009, 2. Exhibit 2015, which is also cited by Petitioner for this point, praises the X-Sync chainring, and notes that one of the challenges of moving to a single ring setup is that you “[l]ose that front derailleur and you start losing the chain more often,” and that this is why “just about everyone who runs a single ring also runs some sort of guide.” Ex. 2015, 3. Exhibit 2015

concludes by noting that Patent Owner was also introducing “a special chainring that retains chains all by its lonesome” with “some oddly-shaped teeth on that chainring,” and that “being able to run a single-ring setup without the added friction and weight of a chain guide . . . it’d be a significant improvement.” *Id.* Thus, again, we find this evidence consistent with, and corroborative of, Mr. Ritzler’s testimony. Moreover, given the corroboration of Mr. Ritzler’s testimony and his detailed explanation, we give it more weight than the testimony of Petitioner’s witness, Mr. Marriott, to the contrary.

Petitioner attempts to rebut Mr. Ritzler’s testimony by contending that Patent Owner’s “Type 2 rear derailleur with Roller Bearing Clutch technology (known as ‘X-Horizon’ and included in the XX1 groupset) already minimized chain disengagement.” Pet. Reply 30 (citing Ex. 1044, 75:12–77:9). However, the fact that the rear derailleur might help the system perform better does not outweigh the extensive evidence that the X-Sync chainring is an essential part of chain retention in Patent Owner’s 1X drivetrain systems. Indeed, the evidence suggests that clutch derailleurs and larger cassettes had existed for many years, Ex. 1044, 76:6–17, Ex. 1045, 104:22–106:12, but, as Petitioner’s evidence notes, 1X drivetrain systems were not readily available before Patent Owner’s introduction of the XX1 drivetrain incorporating the X-Sync chainring, Ex. 1037, 1 (“In fact, the question most riders will ask after riding [Patent Owner’s] XX1 [drivetrain] will be, ‘Why has it taken so long for the industry to figure this out?’”). The importance of the X-Sync chainring is also not inconsistent with Patent Owner’s efforts to market and sell the chainring as part of a drivetrain system, which merely may suggest an effort to maximize profits. Indeed, it

may be rational given Patent Owner's presented evidence that competitors were not copying its derailleur, but instead they are copying its chainring. *See* Ex. 1045-A, 114:7–115:15; Ex. 2074 ¶¶ 75–79; Ex. 2076 ¶¶ 40–49; Ex. 2077.

Petitioner also argues that the X-Sync chainring did not entirely eliminate the need for a chainguide, as evidenced by Patent Owner's own statements and advertisements in Exhibit 2007 and Exhibit 1062. Pet. Reply 30–31. But the '027 patent only seeks to provide a bicycle that “can successfully and reliably be ridden over rough and challenging terrain,” Ex. 1001, 1:28–31, not to eliminate chain drop for all riders under all circumstances. Petitioner's evidence is not inconsistent with this objective and solution. Exhibit 2007 merely leaves it to the rider to determine whether they are comfortable without a chainguide. Ex. 2007, 2. Exhibit 1062 is a profile of a professional mountain bike racer whose bike is pictured with a chainguide. Ex. 1062, 1. Exhibit 1062 provides no explanation about the chain guide. *See id.* This evidence is entirely consistent with other evidence that aggressive riders may still require additional chain management, even with the X-Sync chainring. Ex. 2019, 3; Ex. 1045-A, 117:2–11.

Thus, considering the evidence in the record as a whole, we find that Petitioner has not rebutted Patent Owner's presumption of a nexus with respect to evidence of secondary considerations tied to the X-Sync chainring for all of the challenged claims, and to evidence of secondary considerations tied to a crankset or drivetrain groupset including the X-Sync chainring for claims 11, 12, 25, and 26.

2. *Commercial Success*

Patent Owner has presented extensive evidence that its X-Sync chainrings have achieved significant sales volumes, have achieved large sales growth, have grown to a majority of their chainring sales, and have allowed them to grow from a small share to a significant share of the single chainring market. PO Resp. 15–19.

Petitioner argues that Patent Owner’s data fails to show commercial success, because it only shows that the X-Sync chainring sales “cannibalized” its other multi-chainring sales. Pet. Reply 33–34. Petitioner asserts that Patent Owner’s sales of X-Sync chainrings have not increased its market share of the mountain bike chainring market, but instead its market share has been falling since 2013. *Id.* at 34. Petitioner contends that “[i]n the absence of growth in [Patent Owner]’s mountain bike chainring market since the introduction of the X-Sync, [Patent Owner]’s purported evidence of commercial success does not require a holding that the claimed invention is nonobvious.” *Id.*

We have reviewed Patent Owner’s evidence of sales and market share, and find that it demonstrates substantial commercial success within the single chainring market. Ex. 2076 ¶¶ 16–29. In particular, we find the large growth in market share and sales volume, and resulting large market share in the single chainring market, to be indicative of commercial success. *Id.* ¶¶ 20–29. We find this evidence compelling and entitled to substantial weight. We do not agree with Petitioner’s argument that Patent Owner’s growth in the single-chainring market was primarily due to cannibalization of its multi-chainring market share, and that Patent Owner’s lack of achieved growth in the overall chainring market (single- and multi-) indicates that

there was no commercial success. As Patent Owner notes, cannibalization does not preclude commercial success. *See Medtronic, Inc. v. Daig Corp.*, 789 F.2d 903, 907 (Fed. Cir. 1986). Moreover, Patent Owner presented evidence that it has achieved this large market share, in the single-chainring market, while charging between two and eight times the prices of its competitors in the single chainring market. Ex. 2076 ¶13 (stating that Patent Owner’s X-Sync chainrings are sold for more than \$90, which is at least twice as expensive as the Race Face chainrings, and in some cases eight times more expensive). Patent Owner also noted that this large market share does not include the sales of its competitors who are licensees. *Id.* ¶¶ 26–29; *see also* Tr. 16:12–15 (agreeing that Patent Owner’s drivetrain as a whole was a commercial success). Thus, we find that Patent Owner has presented substantial evidence of commercial success.

As we noted above, Petitioner points to evidence that the sales information presented is primarily directed to sales of X-Sync chainrings as part of cranksets and drivetrain groupsets. *See* Pet. Reply 23–26. We found above that, for data related to cranksets and groupsets, Patent Owner has only established a nexus for claims 11, 12, 25, and 26. Thus, we find that a strong demonstration of a nexus that exists between claims 11, 12, 25, and 26 and this commercial success information. Accordingly, we find that commercial success weighs significantly in favor of non-obviousness of claims 11, 12, 25, and 26.

3. *Industry Praise and Skepticism*

a. *Industry Praise*

Praise from industry participants, especially competitors, is probative as to obviousness because such participants “are not likely to praise an

obvious advance over the known art. Thus, if there is evidence of industry praise of the claimed invention in the record, it weighs in favor of the non-obviousness of the claimed invention.” *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1053 (Fed. Cir. 2016) (en banc).

Patent Owner presents extensive evidence of industry praise and awards that its X-Sync chainring products have received. PO Resp. 22–35; Sur-Reply 5–6; Exs. 2076 ¶¶ 52–67; 2074 ¶¶ 67, 68; 2006, 2–3 (praising teeth design as “mechanical duct tape”); 2007, 4 (noting lack of chain drop and suggesting that bike can be trail ridden without a chain guide); 2008, 2 (noting lack of chain retention issues, discussing tooth shape); 2009, 2 (praising chainring); 2010, 1 (noting lack of chain drop); 2011, 1 (praising chainring); 2012, 2 (praising teeth design), 4 (noting chain retention); 2013, 2 (noting chain retention of X-Sync); 2014, 5 (praising X-Sync chainring as “unique” and noting it removes the need for a chain guide); 2015, 3 (praising X-Sync for potentially removing the need for a chain guide); 2016, 1 (noting X-Sync narrow and wide teeth the “was in part the catalyst” for the change to 1X transmissions); 2017, 4 (praising X-Sync chainring and noting “complicated design” of narrow-wide teeth); 2019, 3–4 (“Innovation of the Year Award” for “SRAM X-Sync Narrow-Wide Chainring”); 2023 (noting no need for a chain guide).

Petitioner argues that none of the articles cited mentions the “offset” feature or the combination of the narrow wide teeth and offset features. Pet. Reply 41. Instead, Petitioner argues that the praise is focused either explicitly on the 1X mountain bike drivetrain alone, or even when it mentions the X-Sync chainring, it does so only in the context of the entire drivetrain. *Id.* Petitioner also argues that the articles praise unclaimed

features such as the “tall,” “hooked,” and “asymmetric” teeth. *Id.* at 42. Finally, Petitioner asserts that some of the articles only praise the narrow/wide teeth, which are found in the prior art. *Id.*

We disagree with Petitioner that Patent Owner has failed to establish a nexus between the praise and the claimed inventions. Instead, as we discussed in detail above, we find that Patent Owner has established a strong presumption of a nexus between the claims and the evidence of secondary considerations tied to the X-Sync chainring. *See supra* II.E.1. As we discussed above, Patent Owner has shown that the X-Sync chainring embodies the claimed invention and is coextensive with it. Therefore, Patent Owner is entitled to a presumption of a nexus between the challenged claims and the X-Sync chainring. To the extent that the articles praise the entire drivetrain, we found above, in our discussion of commercial success, that claims 12 and 26 recite a drivetrain and are, thus, coextensive with the drivetrain and entitled to a presumption of a nexus regardless. Furthermore, as we explained above, Patent Owner has established that the X-Sync chainring technology is an essential part of what enabled it to develop the entire drivetrain, which outweighs the evidence that Petitioner presents to rebut the nexus, namely that the evidence of secondary considerations is tied to the rear cassette.

In any event, we find that Patent Owner has presented ample evidence of praise that is tied directly to the X-Sync chainring. *See Exs.* 2006, 2–3 (praising teeth design as “mechanical duct tape”); 2007, 4 (noting lack of chain drop and suggesting that bike can be trail ridden without a chain guide); 2008, 2 (noting lack of chain retention issues, discussing tooth shape); 2009, 2 (praising chainring); 2010, 1 (noting lack of chain drop);

2011, 1 (praising chainring); 2012, 2 (praising teeth design), 4 (noting chain retention); 2013, 2 (noting chain retention of X-Sync); 2014, 5 (praising X-Sync chainring as “unique” and noting it removes the need for a chain guide); 2015, 3 (praising X-Sync for potentially removing the need for a chain guide); 2016, 1 (noting X-Sync narrow and wide teeth the “was in part the catalyst” for the change to 1X transmissions); 2017, 4 (praising X-Sync chainring and noting “complicated design” of narrow-wide teeth); 2019, 3–4 (“Innovation of the Year Award” for “SRAM X-Sync Narrow-Wide Chainring”); 2023 (noting no need for a chain guide). Indeed, as the collection of quotes from the articles cited above makes clear, the praise focuses directly on the ability of the *chainring* to improve chain retention without a chainguard. *See id.* Thus, we do not agree with Petitioner that the praise is directed to unclaimed components of the drivetrain, and not the chainring. To the extent that some articles noted by Petitioner use words such as the “tall,” “hooked,” and “asymmetric” teeth, we find that those references, without more explanation as to their exact meaning, do not rebut the presumption of a nexus. Moreover, none of the articles that include the references to the “tall,” “hooked,” and “asymmetric” teeth purport to attribute all of the benefits of the X-Sync chainring to those attributes. Thus, we do not agree that those references alone can carry Petitioner’s burden of rebutting the presumption of a nexus.

As for the fact that some of the articles only mention wide narrow teeth, we do not agree with Petitioner that this establishes that the praise was only directed to the features found in the prior art. Indeed, Exhibit 2019 makes clear that it is not just wide-narrow teeth, but Patent Owner’s “adaptation of the narrow-wide chainring tooth profile,” as embodied in the

X-Sync, that was “the missing piece in the single-chainring drivetrain puzzle.” Ex. 2019, 3. Thus, even this article indicates that it is not merely the narrow-wide profile, but Patent Owner’s implementation of it in the X-Sync chainring—which we have found embodies and is coextensive with the claims—that resulted in the innovation. *Id.* Thus, we are not persuaded by Petitioner’s arguments that there is no nexus between the praise and the challenged claims. We find this evidence suggestive of non-obviousness and entitled to significant weight in our analysis.

b. Skepticism

Evidence of industry skepticism weighs in favor of non-obviousness. *See United States v. Adams*, 383 U.S. 39, 52 (1966). “If industry participants or skilled artisans are skeptical about whether or how a problem could be solved or the workability of the claimed solution, it favors non-obviousness.” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1335 (Fed. Cir. 2016).

Patent Owner presents evidence of skepticism from various magazine articles reviewing the X-Sync chainring. PO Resp. 24–28. Petitioner’s argument against this evidence is the same considered with respect to industry praise—i.e., that there is no nexus. Pet. Reply 41–42. As we explained above, Patent Owner is entitled to a presumption of a nexus between the evidence of secondary considerations tied to the X-Sync chainring and the claims, and Petitioner has failed to rebut that presumption. We have reviewed the evidence of skepticism presented by Patent Owner, and find that Patent Owner has made a significant showing of skepticism within the industry towards the effectiveness of the X-Sync chainring regarding chain retention. Exs. 2008, 2011, 2012, 2014, 2015. For instance,

one article noted that “[m]ore than a few editors on site were concerned about the lack of a chain guide on our test bikes” and that “one editor insisted that SRAM had embedded high-power magnets into the CNC-machined aluminum chainring (alas, there were none).” Ex. 2008. As summarized on pages 25 to 26 of the Patent Owner Response, this was not the only statement of skepticism by industry participants. *See* PO Resp. 25–26. We find this evidence suggestive of non-obviousness and entitled to significant weight in our analysis. *See WBIP*, 829 F.3d at 1335.

4. *Long-Felt Need*

“Evidence of a long felt but unsolved need that is met by the claimed invention is further evidence of non-obviousness.” *Millennium Pharms., Inc. v. Sandoz Inc.*, 862 F.3d 1356, 1369 (Fed. Cir. 2017). “Evidence of long-felt need is particularly probative of obviousness when it demonstrates both that a demand existed for the patented invention, and that others tried but failed to satisfy that demand.” *Id.*

Patent Owner argues that the problem of maintaining a chain on a chainring has existed for more than 100 years. PO Resp. 40–41 (citing Exs. 2048–2062; Ex. 2074 ¶¶ 15, 80, 81). Patent Owner contends that prior art attempts to solve the problem failed to address several issues. *Id.* at 41. Patent Owner argues that prior art solutions had issues with increasing one or all of complexity, weight, and drivetrain friction. *Id.* Patent Owner asserts that “[t]hese prior art devices have existed for more than 100 years, but have failed to improve chain retention without the known problems of increased complexity, weight, and/or drivetrain friction.” *Id.* Patent Owner contends that “[t]he claimed invention addressed the long-felt need for

improved chain retention without the known problems of increased complexity, weight, and/or drivetrain friction.” *Id.* at 42.

Petitioner argues that because “the market for 1X drivetrains was insignificant before [Patent Owner’s] 2012 introduction of its wide-range rear cassette that made 1X mountain biking available to the masses,” and “in a multi-chainring system, the front derailleur (which is indispensable) minimizes chain drop irrespective of the type of chainring,” there was “no ‘persistent’ need that was recognized ‘by those of ordinary skill in the art’ to solve the problem of chain drop without a chain guide in either a single- or multi-chainring drivetrain.” Pet. Reply 40 (citations omitted). Thus, in essence, Petitioner argues that there was no long-felt need. In addition, Petitioner argues that, even if we find there was a long-felt need, there is no nexus to the merits of the claimed invention, because Patent Owner has not “shown the alleged long-felt need was solved by the claimed combination, and not by the unclaimed chain-retention features of the X-Sync or by [Patent Owner’s] Type 2 rear derailleur.” *Id.* at 41.

We find that Patent Owner has shown strong evidence that a long-felt need existed in the bicycle industry for improved chain retention that did not increase the known problems of complexity, weight, and/or drivetrain friction. As Patent Owner’s evidence indisputably shows, skilled artisans in the bicycle arts have endeavored to address the problem of chain retention for over 100 years. *See* Ex. 2074 ¶ 81 (citing Exs. 2048–2062); Ex. 2076 ¶ 50; Ex. 2073 ¶ 12. Patent Owner also presents persuasive evidence that a significant shortcoming in these prior art solutions was that they each increased complexity, weight, and/or drivetrain friction. Ex. 2074 ¶ 82; Ex. 2076 ¶ 50; Ex. 2073 ¶ 12. Indeed, Petitioner’s expert, Dr. Neptune,

conceded that there was a long-felt need for “a multi-gear bicycle that could be reliably ridden over rough terrain without the aid of a chain retention device external to the chainring.” Ex. 2129, 78:12–17. Although Petitioner’s witness, Mr. Marriott, testified that there was no long-felt need regarding chain drop, because chain guides kept the chain on the chainring, Ex. 1075, 69:24–70:3, he did not address the narrower problem that Patent Owner articulated, and Dr. Neptune admitted. As for Petitioner’s other contention—based on other testimony by Mr. Marriott (*see* Ex. 1046 ¶ 16)—that there was no market for 1X chainrings, and hence no long-felt need, we find this belied by Dr. Neptune’s concession, and Mr. Ritzler’s testimony, that it was not that such systems were not wanted, but that they were not feasible, in part, due to the problems of increased complexity, weight, and/or drivetrain friction that were discussed above. *See* Ex. 1045-A, 103:2–104:21. As we discussed above, we find Mr. Ritzler’s testimony persuasive and give it substantial weight. Thus, we do not find Mr. Marriott’s testimony persuasive about long-felt need.

We also find that Patent Owner has demonstrated that the X-Sync chainring met this long-felt need. In particular, Dr. Sturges testified that the X-Sync chainring met this need. Ex. 2074 ¶¶ 78–84. We find this testimony reasoned and persuasive, and give it substantial weight. Moreover, this testimony is supported by and consistent with the effusive praise and awards discussed above with regard to industry praise that further supports this finding. *See, e.g.*, Exs. 2006, 2008, 2019. Moreover, the mere fact that there may be certain conditions when chainguards are still used, *see, e.g.*, Ex. 1075, 80:23–81:10, does not mean that the X-Sync chainring did not satisfy the long-felt need articulated, *id.* at 86:9–15 (Mr. Marriott conceding

that X-Sync chainrings do a “good job” of keeping the chain on the chainring).

As for Petitioner’s contention, discussed above, that there is no nexus between the evidence of secondary considerations tied to the X-Sync chainring and the claimed invention, we disagree. As we have found above, Patent Owner has shown that it is entitled to a presumption of a nexus between the evidence of secondary considerations tied to the X-Sync chainring and the challenged claims, and that presumption has not been rebutted. *See supra* Section II.E.1. We also further explained above, with regard to industry praise, that Petitioner has not rebutted this presumption. Thus, we find that the claimed inventions of the ’027 patent met the long-felt need of improved chain retention, without the known problems of increased complexity, weight, and/or drivetrain friction. We find that Patent Owner’s showing of long-felt need is entitled to significant weight in our analysis.

5. *Licensing*

Courts “specifically require affirmative evidence of nexus where the evidence of commercial success presented is a license, because it is often ‘cheaper to take licenses than to defend infringement suits.’” *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1324 (Fed. Cir. 2004) (quoting *EWP Corp. v. Reliance Universal Inc.*, 755 F.2d 898, 908 (Fed. Cir. 1985)). The Federal Circuit has explained that “[w]hen the specific licenses are not in the record, it is difficult for the court to determine if ‘the licensing program was successful either because of the merits of the claimed invention or because they were entered into as business decisions to avoid litigation, because of prior business relationships, or for other economic reasons.’” *In*

re Cree, Inc., 818 F.3d 694, 703 (Fed. Cir. 2016) (quoting *In re Antor Media Corp.*, 689 F.3d 1282, 1294 (Fed. Cir. 2012)).

Patent Owner argues that it offers “an open license program where any competitor may license the X-Sync technology for a reasonable royalty.” PO Resp. 35. Patent Owner asserts that “[w]ith this program, [Patent Owner] has already licensed the ’027 patent, as well as the X-Sync technology to at least eight different companies, some of whom are major market players.” *Id.* Specifically, Patent Owner contends that it has entered into a number of licenses with major bicycle manufacturers and bicycle component providers. *Id.* at 36–37 (citing Exs. 2091–2106; Ex. 2076 ¶¶ 32–37; Ex. 2074 ¶¶ 72–74).

Petitioner responds that five of the eight licenses (Exs. 2092–2100) provided by Patent Owner do not refer to the ’027 patent. Pet. Reply 35. Instead, Petitioner notes that “they are licenses to [Patent Owner’s] German Utility Model (DE 20 2012 012 533 U1, “Kettenring”) and corresponding patents/patent applications with claims differing from those of the ’027 patent.” *Id.* Petitioner argues that “the German claims do not recite the ‘offset’ feature, which is one of the alleged ‘principal features’ of the ’027 [patent] claims.” *Id.* Petitioner argues that because these licenses are not to the ’027 patent and “do not cover the invention claimed in the ’027 patent, [Patent Owner] does not (and cannot) show nexus between these licenses and the claimed invention.” *Id.* Petitioner also asserts that two other licenses (Exs. 2102 and 2104) “prove nothing about the value of the ’027 [patent] claims” because they cover numerous other continuations and international patents/applications. *Id.* Finally, Petitioner notes that the final

license (Ex. 2106) is irrelevant because it was entered into to settle a lawsuit. *Id.* at 36.

We determine that these licenses are entitled to some weight in our obviousness analysis. However, we agree, in part, with Petitioner that some of the licenses have limited probative value. For instance, we agree with Petitioner that the license with Wolf Tooth (Ex. 2106) is entitled to less weight because it was entered into to settle a lawsuit. There is no evidence suggesting that it was the merit of the '027 patent, as opposed to the desire to save litigation costs, that drove the license. *See EWP Corp. v. Reliance Universal Inc.*, 755 F.2d 898, 907–08 (Fed. Cir. 1985) (explaining that it is often “cheaper to take licenses than to defend infringement suits, or for other reasons unrelated to the unobviousness of the licensed subject matter”). As for the remaining licenses, while we agree with Petitioner that the fact that the licenses cover a number of patents affects the weight they should receive, we do not agree that the fact that the licenses cover more than just the '027 patent means that they are entitled to no weight. In particular, we note that the licenses with both Saris Cycling Group (Ex. 2102) and White Industries (Ex. 2104) both explicitly mention the '027 patent, and were not entered into to settle litigation. Ex. 2076 ¶ 37. Thus, we find that they are entitled to some weight.

Finally, as for the remaining licenses—Chromag Bikes (Ex. 2092), Accell Group N.V. (a.k.a Winora-Staiger) (Ex. 2094), KCNC International (Ex. 2096), Quality Bicycle Products, Inc. (Ex. 2098), Cannondale Bicycle (Ex. 2100), Petitioner is correct that they do not list the '027 patent, but cover “the invention(s) described in German Utility Model DE 2012 012 533

U1 – ‘Kettenring’⁸ and any patent applications corresponding to the above-described Utility Model that are issued, filed, or to be filed in any and all foreign countries and the know-how associated with the inventions defined by the patent.” *See, e.g.*, Ex. 2092, 1. Patent Owner has offered evidence that the disclosure of “Kettenring” is commensurate in scope with the ’027 patent. Ex. 2074 ¶ 73. Moreover, there is no dispute that the ’027 patent is an application “corresponding to [Kettenring]” and is within the scope of these licenses. *Id.*; Ex. 2076 ¶ 11; Ex. 2073 ¶ 10. Petitioner is correct that these licenses, which cover a number of applications and patents throughout the world, and entered into before the ’027 patent issued, have limited probative value into the non-obviousness of the claims of the ’027 patent. We disagree, however, with Petitioner that these licenses have no probative value. We find that these licenses do have some value in showing that the inventions covered by ’027 patent have had some acceptance in the industry, and thus, these licenses are entitled some weight.

In sum, we conclude that Patent Owner’s evidence of licensing is entitled to some, but not significant, weight.

6. Copying

“Copying may indeed be another form of flattering praise for inventive features.” *Crocs, Inc. v. Int’l Trade Comm’n*, 598 F.3d 1294, 1311 (Fed. Cir. 2010). Copying “requires evidence of efforts to replicate a specific product.” *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010). “This may be demonstrated either through internal documents; direct evidence such as disassembling a patented prototype, photographing

⁸ As Patent Owner explains, “Kettenring” is the German word for chainring. Ex. 2076 ¶ 36.

its features, and using the photograph as a blueprint to build a virtually identical replica; or access to, and substantial similarity to, the patented product (as opposed to the patent).” *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir. 2004) (internal citations omitted). “We note, however, that a showing of copying is only equivocal evidence of non-obviousness in the absence of more compelling objective indicia of other secondary considerations.” *Ecolochem, Inc. v. S. Cal. Edison Co.*, 227 F.3d 1361, 1380 (Fed. Cir. 2000); *see also In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995) (“[M]ore than the mere fact of copying by an accused infringer is needed to make that action significant to a determination of the obviousness issue.” (quoting *Cable Elec. Prods. v. Genmark, Inc.*, 770 F.2d 1015, 1028 (Fed. Cir. 1985))).

Patent Owner argues that it is “aware of at least seventeen (17) different companies who have copied its patented technology, copying the features of the Challenged Claims.” PO Resp. 38 (citing Ex. 2076 ¶¶ 40, 41, 46; Ex. 2074 ¶ 75–77; Exs. 2031–2047). Patent Owner submits that the “Race Face chainrings incorporate the patented features of the ’027 [patent] claims and further details of the X-Sync chainrings, and Race Face had sufficient access to the X-Sync chainrings.” *Id.* (citing Ex. 2076 ¶¶ 47, 48).

Petitioner responds that “Race Face’s chainring differs substantially from [Patent Owner’s] X-Sync chainring (the original X-Sync and X-Sync Eagle).” Pet. Reply 36. Petitioner offers photographs purporting to show that Race Face’s chainring does not include the “protruding tip portion,” the “hooked rear flank,” or the “asymmetric teeth” of Patent Owner’s chainring. *Id.* at 36–37. Petitioner also argues that “Race Face did not copy the claimed ‘offset’ feature . . . and thus there was *no copying of the claimed*

combination.” *Id.* at 39. Petitioner also asserts that Patent Owner “failed to show replication of its X-Sync chainring by other competitors.” *Id.* at 40.

Patent Owner has put forward some evidence of copying. Patent Owner bases its allegations of copying on allegations of access to, and substantial similarity to, the patented product (as opposed to the patent). *See* PO Resp. 37. Patent Owner has put forward un rebutted evidence of access, which Petitioner does not appear to dispute. Ex. 2076 ¶¶ 47–49. Petitioner does dispute, however, the “substantial similarity” of the Race Face chainring and Patent Owner’s X-Sync chainring. Pet. Reply 36–37. With respect to “substantial similarity,” Patent Owner has provided testimony from Dr. Sturges that the Race Face Narrow Wide chainring infringes the challenged claims of the ’027 patent, and an identification of various features common to the products. Ex. 2074 ¶ 77. Patent Owner also offers the testimony of Mr. Ritzler that there are similarities between Patent Owner’s and Race Face’s products. Ex. 2076 ¶¶ 39–49. The only evidence Petitioner offers in response are some photographs of two of Patent Owner’s chainrings and a Race Face chainring, and the testimony of Mr. Marriott that he “thinks” Race Face did not copy. Exs. 1036, 1070, 1073; Ex. 1075, 47:8–16. The photographs purport to illustrate features that are different between the various products, but Petitioner provides no testimony to support a finding that these differences are significant. Moreover, although it is apparent from the photographs and the labels that there are some differences between the products, the photographs that Petitioner offers are of low quality and it is difficult to ascertain the significance of those differences. As for Mr. Marriott’s testimony, the testimony of what he “thinks” is merely speculation, and while he asserts that there are “dozens” of differences, he

fails to identify any of them with specificity. Ex. 1075, 47:8–16. As a result, we give Petitioner’s evidence little to no weight. In comparison, although Dr. Sturges’s testimony does not go into great detail, we find it sufficient to establish that some copying by Race Face has taken place.

As for Petitioner’s argument that the Race Face products lack the claimed “offset,” Pet. Reply 39, Petitioner’s evidence supporting this contention is photographs of Patent Owner’s and Race Face’s products, with labels added to them purporting to show the lack of the claimed offset, in that there is an alleged admission by Mr. Ritzler that an “offset” is the spatial difference between the inboard/outboard side of the wide teeth and the inboard/outboard edge of the chainring. *Id.* at 39 n.5 (citing Ex. 1045-A, 129:17–132:9). However, we reviewed Mr. Ritzler’s testimony and find that the cited testimony of Mr. Ritzler does not support Petitioner’s contention that what they have labeled on page 39 of the Reply is necessarily what is claimed. Mr. Ritzler identifies that as an “offset,” but does not admit that is what the claim means. Ex. 1045-A, 129:17–132:9. In contrast, Patent Owner has provided the testimony of Dr. Sturges that the Race Face chainrings do include the claimed offset. We find this testimony persuasive. Ex. 2074 ¶¶ 75–77. Thus, Petitioner has not shown that the Race Face products lack the claimed offset.

As for the other competitors that Patent Owner contends copied its product, we find this evidence entitled to some weight. Petitioner argues that there is no nexus between this copying and the claimed invention, because Patent Owner position “[o]n the whole” is that any chainring with narrow and wide teeth is a copy, but that feature is found in JP-Shimano. Pet. Reply 40. However, Petitioner provides no evidence to support this

contention. Dr. Sturges testified that the Race Face chainring is representative of these other products, and has identified a number of features that he opines are copied from the SRAM X-Sync product, in addition to the narrow/wide teeth. Ex. 2074 ¶¶ 76, 77. Petitioner offers no evidence to rebut this testimony. Thus, we do not find Petitioner's contention that the other products merely copy the features found in JP-Shimano to be persuasive. As we noted above, the evidence that Patent Owner offers is not very detailed, so we find that Patent Owner's evidence of the 17 other copying products to be entitled to some weight, but not significant weight.

In sum, we determine that Patent Owner has shown some copying of its X-Sync chainring product, which is covered by the '027 patent. We find this evidence of copying overall is entitled to some weight in our analysis.

F. FINAL CONCLUSION OF OBVIOUSNESS

As we explained above, we find that Petitioner has, at best, shown that there would be some weak motivation to combine the references. *See supra* at II.D.2. In contrast, we find the Patent Owner has made an extremely strong overall showing of objective indicia of non-obviousness, which includes very strong showings on industry praise, skepticism, and long felt need, a strong showing on commercial success for claims 11, 12, 25, and 26, and weak showings on licensing and copying. Weighing all four *Graham* factors, we find that Petitioner has not shown, by a preponderance of the evidence, that claims 7–12 and 20–26 would have been obvious over the combination of Hattan and JP-Shimano.

We note that this is not a case as in *Intercontinental Great Brands LLC v. Kellogg North America Co.*, 869 F.3d 1336, 1342–47 (Fed. Cir.

2017), where the strong case of obviousness outweighs the objective indicia of non-obviousness. On the contrary, we find that the case of obviousness here is easily outweighed by the objective evidence of non-obviousness.

III. MOTIONS TO EXCLUDE

A. PETITIONER'S MOTION TO EXCLUDE

Petitioner moves to exclude SRAM Exhibit 2002 ¶¶ 51–55, 59–64, 65 (ll. 1–2), 68, and 69; Exhibit 2074 ¶¶ 61, 65–72, 74–79, 80 (ll. 1–2), 83 (ll. 7–9), 84 and 85; Exhibit 2004 ¶ 17; Exhibit 2076 ¶¶ 8, 19–29, 41–49, and 50; Exhibits 2005–2047; Exhibit 2073, ¶ 12; and Exhibits 2109 and 2110. Pet. Mot. Exclude 1.

1. Testimony of Dr. Sturges

a. Commercial Success, Long-Felt Need, Failure of Others, & Licensing

Petitioner seeks to exclude Paragraphs 51–53, 60, 61, 65, 68, and 69 of the First Sturges Declaration and Paragraphs 61, 65, 66, 72, 74, 80, and 83–85 of the Second Sturges Declaration under Federal Rules of Evidence 403, 602, and 702, and 37 C.F.R. § 42.65(a). Pet. Mot. Exclude 2–4; Pet. Mot. Reply 1–2. Petitioner argues that Dr. Sturges has no experience in the relevant market, and is not qualified to give expert opinions regarding commercial success, long-felt need, failure by others, and licensing. Pet. Mot. Exclude 2. Petitioner further asserts that Dr. Sturges lacks the requisite personal knowledge to give such testimony. *Id.* at 3.

With respect to Paragraphs 51–53, 60, and 61 of the First Sturges Declaration and Paragraphs 61, 65, 66, 72, and 74 of the Second Sturges Declaration, we did not rely on this testimony in reaching our decision. So, we dismiss this portion of the motion as moot.

As for Paragraphs 65, 68, and 69 of the First Sturges Declaration and Paragraphs 80 and 83–85 of the Second Sturges Declaration, we agree with Patent Owner that this testimony is admissible. To begin with, we note that the portion of 37 C.F.R. § 42.65(a) relied on by Petitioner deals only with the weight that can be given evidence, not its admissibility. Thus, it is not a proper basis for a motion to exclude. As for the objections based on the Federal Rules of Evidence, we do not see how, nor has Petitioner met its burden of demonstrating, that even if Federal Rule of Evidence 403 applies to a non-jury trial like these proceedings, Petitioner is prejudiced by this testimony. Thus, Petitioner’s Rule 403 objection is without merit. As for the Rule 702 objection, we determine that Dr. Sturges has sufficient expertise and has provided sufficient analysis to offer opinions regarding long-felt need. *See* Ex. 2074 ¶¶ 80, 83–85. Long-felt need is viewed from the perspective of a person of ordinary skill in the art. *In re Gershon*, 372 F.2d 535, 538 (CCPA 1967). In this case, we did not find that the level of ordinary skill in the art required special knowledge of marketing in the bicycle industry, as Petitioner suggests. *See* Section II.B. Dr. Sturges testified he has reviewed the art and cited to the evidence he relied upon, including a number of references involving the problem of chain drop. *See* Ex. 2074 ¶¶ 80, 83–85. As for Rule 602, it is well-established that “an expert’s opinion need not be based on personal knowledge.” *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 592 (1993). As we explained, Dr. Sturges testified about the references he reviewed, and explains why he concludes that there a person of ordinary skill in the art would have understood that there was a long-felt need in the art at the time of the invention. Thus, we deny Petitioner’s Motion to Exclude Paragraphs 65, 68,

and 69 of the First Sturges Declaration and Paragraphs 80 and 83–85 of the Second Sturges Declaration.

b. Copying

Petitioner seeks to exclude Paragraphs 62–64 of the First Sturges Declaration and Paragraphs 75–79 of the Second Sturges Declaration under Federal Rules of Evidence 403 and 702, and 37 C.F.R. § 42.65(a). Pet. Mot. Exclude 4–5; Pet. Mot. Reply 3–4. Petitioner contends that Dr. Sturges fails to perform a “product-to-product comparison required to demonstrate the alleged copying” and focuses on the similarities and ignores “the many differences between the two products.” Pet. Mot. Exclude 4–5. Petitioner further argues that Dr. Sturges’s testimony is conclusory, that Dr. Sturges provides no factual support for his opinion, and offers no explanation of why or how the particular chainring he relied on is representative. Pet. Mot. Reply 3–4. Patent Owner responds that Dr. Sturges explained the evidence he relied upon, and properly relied on the Race Face chainring as representative of the “copycat chainrings.” PO Opp. 7.

We agree with Patent Owner that Dr. Sturges’s testimony is admissible. To begin with, as we noted above, the portion of 37 C.F.R. § 42.65(a) relied on by Petitioner deals only with the weight that can be given evidence, not its admissibility. Thus, it is not a proper basis for a motion to exclude. As for the objections based on the Federal Rules of Evidence, we do not see how, nor has Petitioner met its burden of demonstrating, that even if Federal Rule of Evidence 403 applies to a non-jury trial like these proceedings, Petitioner is prejudiced by admitting this testimony. Thus, Petitioner’s Rule 403 objection is without merit. As for the Rule 702 objection, we determine that Dr. Sturges provides sufficient

analysis to support his opinions regarding copying. *See* Ex. 2074 ¶¶ 75–79. Dr. Sturges cited to the evidence he relied upon, including Patent Owner’s infringement contentions from the underlying district court litigation and Mr. Ritzler’s testimony. Petitioner’s arguments go more to the weight that Dr. Sturges’s testimony should be given, not its admissibility. Thus, we deny Petitioner’s Motion to Exclude Paragraphs 62–64 of the First Sturges Declaration and Paragraphs 75–79 of the Second Sturges Declaration.

c. Professional Approval and Praise

Petitioner seeks to exclude Paragraphs 54, 55, and 59 of the First Sturges Declaration and Paragraphs 67–71 of the Second Sturges Declaration under Federal Rules of Evidence 403 and 702, and 37 C.F.R. § 42.65(a). Pet. Mot. Exclude 5–6; Pet. Mot. Reply 2–3. Petitioner contends that Dr. Sturges fails to cite any specific text in the various magazine articles he relies upon, and does not provide any specific analysis why the praise is driven by the features of the challenged claims. Pet. Mot. Exclude 5. Petitioner also argues that “[t]o the extent Dr. Sturges relies on the magazine articles to demonstrate the alleged benefits of the X-Sync (*see, e.g.*, Ex. 2074, ¶¶ 67, 68), such testimony should be excluded as hearsay under [Federal Rule of Evidence] 802.” *Id.* at 6. Patent Owner argues that Dr. Sturges did provide a detailed analysis by demonstrating that the X-Sync chainrings are covered by the patents and provides citations to the evidence he relied upon. Pat. Opp. 8. Patent Owner further argues that Dr. Sturges is permitted to rely on hearsay in forming his opinions. *Id.*

To begin with, as we noted above, the portion of 37 C.F.R. § 42.65(a) relied on by Petitioner deals only with the weight that can be given evidence, not its admissibility. Thus, it is not a proper basis for a motion to exclude.

As for the objections based on the Federal Rules of Evidence, we do not see how, nor has Petitioner demonstrated, that even if Federal Rule of Evidence 403 applies to a non-jury trial like these proceedings, Petitioner is prejudiced by this testimony. Thus, Petitioner’s Rule 403 objection is without merit. As for the Rule 702 objection, we determine that Dr. Sturges provides sufficient analysis to support his opinions that the X-Sync chainring has received praise and there is a nexus between the evidence of secondary considerations tied to the X-Sync chainring and the challenged claims of the ’027 patent. *See* Ex. 2074 ¶¶ 63, 64 (explaining how the X-Sync chainring is covered by the patent), ¶¶ 68–71 (citing to Ex. 2076 (testimony of Mr. Ritzler); Exs. 2005–2030). Finally, we agree with Patent Owner that Petitioner’s hearsay objection is without merit. *See* Fed. R. Evid. 703 (explaining experts may rely on hearsay in forming their opinions). Thus, Petitioner’s Motion to Exclude Paragraphs 54, 55, and 59 of the First Sturges Declaration and Paragraphs 67–71 of the Second Sturges Declaration is *denied*.

2. *Testimony of Mr. Ritzler*

a. *Commercial Success*

Petitioner seeks to exclude Paragraphs 8 and 19–29 of the Declaration of Ron Ritzler (“Ritzler Declaration”), an employee of Patent Owner, regarding commercial success. Pet. Mot. Exclude 6–10. Petitioner argues that Mr. Ritzler’s testimony is vague and conclusory and “provides no details of his methodologies or application to whatever underlying data he may have considered.” *Id.* at 7–8. Petitioner argues that because it has not been shown that “Mr. Ritzler’s market share calculations are based on reliable principles or methodologies, or that Mr. Ritzler reliably applied his

chosen methodologies,” Paragraphs 8 and 19–29 of the Ritzler Declaration should be excluded. *Id.* at 8; Pet. Mot. Reply 4. Patent Owner responds that Mr. Ritzler provided sufficient evidence of his methodologies and experience. PO Opp. 10.

We agree with Patent Owner that Mr. Ritzler has provided sufficient explanation of his methodologies and principles that he applied in providing his testimony regarding commercial success. Ex. 2076 ¶¶ 16–17, 28; Ex. 2121 ¶¶ 1–9. Mr. Ritzler explained the sources of the data and the way he reached the conclusions stated in his testimony. We find this testimony persuasive and give it substantial weight. *Id.* Accordingly, we deny Petitioner’s Motion to Exclude Paragraphs 8 and 19–29 of the Ritzler Declaration.

b. Copying and Long-felt Need

Petitioner seeks to exclude Mr. Ritzler’s testimony regarding copying and long-felt need (Ex. 2004 ¶ 17; Ex. 2076 ¶¶ 41–50) as “speculative and unsupported” under Federal Rules of Evidence 702 and 602. Pet. Mot. Exclude 10–11; Pet. Mot. Reply 5. Patent Owner contends that Mr. Ritzler is qualified to offer his testimony on copying and long-felt need, and that he is permitted to testify about his personal observations. PO Opp. 11.

We agree with Patent Owner that Mr. Ritzler’s testimony regarding copying and long-felt need is admissible. Mr. Ritzler has extensive experience in the industry and with bicycles generally. *See* Ex. 2076 ¶¶ 3, 4. With respect to copying, his testimony is clear that he is testifying based on his personal knowledge as Patent Owner’s vice president of product development. *See* Ex. 2076 ¶¶ 41–49. As for long-felt need, Mr. Ritzler explains the basis for his opinion that there was a long-felt need in the

industry. We determine that Petitioner's arguments go to the weight we should give Mr. Ritzler's testimony, not its admissibility. Thus, Petitioner's Motion to Exclude Paragraph 17 of Exhibit 2004 and Paragraphs 41–50 of Exhibit 2076 is denied.

3. *Exhibits 2005–2030*

Exhibits 2005–2030 are various articles that Patent Owner contends are evidence of industry praise of the products that embody the '027 patent. *See Exs. 2005–2030*. Petitioner moves to exclude Exhibits 2005–2030 under Federal Rules of Evidence 401, 403, and 802, as irrelevant, unduly prejudicial, and hearsay, respectively. Pet. Mot. Exclude 11–12. Patent Owner responds that Petitioner ignores its nexus showing and that its briefs point to specific passages that discuss the industry's recognition of the claimed features. Pat. Opp. 12. Patent Owner also argues that the articles are offered for a non-hearsay purpose and are, therefore, admissible. *Id.* at 13.

We agree with Patent Owner that Petitioner has failed to show these exhibits should be excluded as irrelevant. Evidence is relevant if it has *any tendency* to make a fact more or less probable than it would be without the evidence and the fact is of consequence in determining the action. Fed. R. Evid. 401 (emphasis added). It is well-established that “[l]audatory statements by third parties regarding an invention are relevant to the question of obviousness.” *Asetek Danmark A/S v. CMI USA, Inc.*, NO. 13-cv-00457-JST, 2014 WL 12644295, at *1 (N.D. Cal. Nov. 19, 2014) (collecting cases). Petitioner's arguments about nexus go more to the weight this evidence should be given, rather than its admissibility.

As for Petitioner's arguments that the evidence should be excluded under Federal Rule of Evidence 403, Petitioner has offered no concrete assertions of prejudice, so we deny this request on that basis alone. Further, we do not discern any prejudice to Petitioner, under Federal Rule of Evidence 403, in allowing this exhibit into evidence. In a non-jury trial, such as before the Board, the risk that a decision by the trier of fact will be unfairly affected by the admission of improper evidence is far less than in a jury trial. *See E.E.O.C. v. Farmer Bros. Co.*, 31 F.3d 891, 898 (9th Cir. 1994). As the factfinder, we are able to consider this evidence, in light of the parties' arguments, and give it appropriate weight. *See* 22 CHARLES ALAN WRIGHT & KENNETH W. GRAHAM, JR., FEDERAL PRACTICE AND PROCEDURE § 5213 (1978 & Supp 1999) ("Since the judge must hear the evidence in ruling on the motion to exclude the evidence under Rule 403, exclusion of the evidence on grounds of prejudice in a [non-jury] trial is described as a 'useless procedure.'"); *see also Schultz v. Butcher*, 24 F.3d 626, 632 (4th Cir. 1994) (finding court should not exclude evidence under Rule 403 in non-jury trial on grounds of unfair prejudice); *Gulf States Utilities Co. v. Ecodyne Corp.*, 635 F.2d 517, 519 (5th Cir. 1981) (finding unfair prejudice portion of Rule 403 "has no logical application to [non-jury] trials").

As for Petitioner's hearsay objection, it is without merit because the articles are not offered for the truth of the matters asserted in them, but to show that the statements were made. Because the existence of the statements themselves is relevant, "courts have properly found that articles showing the receipt of 'awards and accolades' are admissible over a hearsay

objection.” *Asetek Danmark A/S*, 2014 WL 12644295, at *2 (collecting cases).

Thus, we deny Petitioner’s Motion to Exclude Exhibits 2005–2031.

4. *Exhibits 2031–2047*

Exhibits 2031–2047 are company product descriptions or store webpages showing pictures of various competing products that Patent Owner contends are copies of its product. *See* Exs. 2031–2047. Petitioner moves to exclude Exhibits 2031–2047 under Federal Rule of Evidence 401 as irrelevant. Pet. Mot. Exclude 12–13. Petitioner argues that Patent Owner “failed to show that each of the chainrings in these exhibits includes every feature of the allegedly copied X-Sync chainrings, beyond a bare and unsupported assertion by Dr. Sturges.” *Id.* Petitioner contends that the only other evidence cited also has no supporting explanation, so “[a]s a result, beyond bare assertions, [Patent Owner] presents no evidence that the chainrings in Exhibits 2031–2047 are copies of the X-Sync chainring.” *Id.* at 13. Patent Owner argues that the exhibits are relevant because copying was extensively discussed by Dr. Sturges and Mr. Ritzler. PO Opp. 13.

We agree with Patent Owner that Exhibits 2031–2047 are relevant and admissible. Evidence is relevant if it has *any tendency* to make a fact more or less probable than it would be without the evidence and the fact is of consequence in determining the action. Fed. R. Evid. 401 (emphasis added). Given Dr. Sturges’s testimony that these chainrings are copies of Patent Owner’s products, this is sufficient to establish that these exhibits are relevant under the low standard of Rule 401. *See United States v. Whittington*, 455 F.3d 736, 739 (6th Cir. 2006) (“[T]he district court correctly noted that the relevance threshold is very low under Rule 401.”)

(internal quotation marks omitted). Petitioner’s arguments go more to the weight this evidence should be given, rather than its admissibility. Thus, we deny Petitioner’s Motion to Exclude Exhibits 2031–2047.

5. *Testimony of Mr. Wesling*

Petitioner seeks to exclude ¶ 12 of Exhibit 2073 (“Wesling Declaration”) under Federal Rule of Evidence 702 and 37 C.F.R. § 42.65(a). Pet. Mot. Exclude 13. In that paragraph, Mr. Wesling testifies that there was a long-felt need for the X-Sync chainring, because existing products did not provide the solution that the market allegedly desired to prevent chain disengagement. Ex. 2073 ¶ 12. Petitioner argues that he provides no facts or data to support his assertion, and that this “speculative and conclusory testimony should be excluded under FRE 702 for failure to provide sufficient facts or data supporting his opinion.” Pet. Mot. Exclude 13; Pet. Mot. Reply 5. Patent Owner responds that Mr. Wesling does provide citations to various patents, and also relies on his over twenty years of personal experience in the industry in offering this testimony. PO Opp. 14. We agree with Patent Owner that Mr. Wesling’s testimony is admissible. Contrary to Petitioner’s arguments, Mr. Wesling does provide citations and has detailed his extensive experience in this field. *See* Ex. 2073 ¶¶ 2, 3, 12. This is sufficient support for the testimony. Moreover, to the extent that the reasoning provided by Mr. Wesling is insufficient or faulty, Petitioner’s arguments go more to the weight that should be given the testimony than its admissibility. *See Microfinancial, Inc. v. Premier Holidays Int’l.*, 385 F.3d 72, 81 (1st Cir. 2004) (“When the factual underpinning of an expert’s opinion is weak, it is a matter affecting the weight and credibility of the

testimony—a question to be resolved by the [factfinder].”). Thus, we deny Petitioner’s request to exclude Paragraph 12 of the Wesling Declaration.

6. *Exhibits 2109 and 2110*

Exhibits 2109 and 2110 are videos showing the operation SRAM X-Sync chainrings. Petitioner moves to exclude them under Federal Rules of Evidence 401–403, 702, 901, and 37 C.F.R. §§ 42.63 and 42.65. Pet. Mot. Exclude 13. We did not rely on Exhibits 2109 or 2110, so we dismiss this portion of Petitioner’s Motion to Exclude as *moot*.

B. PATENT OWNER’S MOTION TO EXCLUDE

Patent Owner moves to exclude Exhibits 1036–1037, 1039–1042, 1047–1048, 1057–1058, 1061, 1069–1070, and 1073, as well as ¶¶ 9–11 and 13–16 of Exhibit 1046 and ¶ 26 of Exhibit 1068. PO Mot. Exclude 17. Petitioner withdraws Exhibits 1042 and 1057, but otherwise opposes Patent Owner’s Motion. Pet. Opp. 1. We consider Patent Owner’s Motion below.

1. *Exhibit 1036*

Patent Owner seeks to exclude Exhibit 1036 under Federal Rule of Evidence 901 as not authenticated. PO Mot. Exclude 4. Patent Owner contends that “[n]o witness has authenticated the collection of photographs set forth in Exhibit 1036 or the statements contained therein purporting to tie the photographs to a specific member of a SRAM X-Sync chainring family.” *Id.* Patent Owner submits that “[t]o the extent this exhibit was used at Mr. Wesling’s deposition, he was unable to authenticate the photographs because of their poor quality and because he did not take the photographs in question.” *Id.* Petitioner responds that Mr. Wesling did authenticate the exhibits in his deposition. Pet. Opp. 4 (citing Ex. 1044, 12:22–13:11, 15:19–20:5, 23:4–24:10). Furthermore, Petitioner submits that the photographs in

Exhibit 1035 are identical to those contained in Exhibit 1073, and authenticated in Exhibits 1069 and 1070. *Id.* at 4–5. In its Reply, Patent Owner argues that Mr. Wesling did not authenticate the exhibits. PO Mot. Reply 2.

Documents are authenticated by evidence “sufficient to support a finding that the item is what the proponent claims it is.” Fed. R. Evid. 901(a). Authenticity is, therefore, not an especially high hurdle for a party to overcome. *See United States v. Patterson*, 277 F.3d 709, 713 (4th Cir. 2002); *see also United States v. Ceballos*, 789 F.3d 607, 617–18 (5th Cir. 2015) (noting “low” burden for authentication); *United States v. Isiwela*, 635 F.3d 196, 200 (5th Cir. 2011) (noting flaws in authentication go to weight not admissibility).

We have reviewed Mr. Wesling’s testimony. Although he was vague in his testimony regarding the photographs, we find his review of the actual chainrings and confirmation that the photographs resembled the actual chainrings to be more than sufficient to meet the low bar for authentication. Ex. 1044, 12:22–13:11, 15:19–20:5, 23:4–24:10. Patent Owner’s arguments go to the weight that should be given the evidence, not its admissibility.

2. *Exhibits 1037, 1039, 1047, 1048, 1058, and 1061*⁹

Exhibits 1037, 1039, 1047, 1048, 1058, and 1061 are printouts and videos from various non-governmental websites. Patent Owner moves to exclude these exhibits for lack of authentication under Federal Rule of Evidence 902. PO Mot. Exclude 5–6. Patent Owner also argues that these exhibits should be excluded as hearsay. *Id.* at 6. Petitioner argues that these

⁹ Exhibit 1057 has been withdrawn. Pet. Opp. 1.

web printouts are properly authenticated by the testimony of Ms. Arpita Bhattacharyya and the cross examination testimony of Mr. Ritzler. Pet. Opp. 5–6 (citing Ex. 1068 ¶¶ 3, 5, 9, 10, 16, 19; Ex. 1045-A, 59:12–21; Ex. 2076 ¶¶ 53, 56, 57). As for the hearsay objection, Petitioner asserts that Exhibits 1037 and 1058 include “Opposing Party Statements,” which are admissible under Rule 801(d)(2), and Petitioner contends that all of these exhibits are not relied upon for the truth of the matter asserted. *Id.* at 6–7. However, Petitioner submits that, to the extent it does rely on the truth of the matter asserted in the articles, they should be admitted under Federal Rule of Evidence 806, because they “undermine and are inconsistent with secondary considerations positions taken by [Patent Owner’s] witnesses and in its pleadings based upon articles from the same or similar magazines/sources.” *Id.* at 8. Petitioner also seeks to have them admitted under the residual hearsay exception of Federal Rule of Evidence 807, because the sources for these exhibits have been shown to be reliable. *Id.* at 9.

With respect to Exhibit 1039, Petitioner did not cite or rely on this exhibit in any of its papers, so we dismiss this portion of Patent Owner’s Motion to Exclude as moot. As for the remaining documents, although we considered them, we did not rely on them in reaching our decision. Thus, we dismiss this portion of the Motion as moot.

3. *Exhibits 1040 and 1041*¹⁰

Exhibits 1040 and 1041 are email chains between employees of Patent Owner and persons from other companies. *See* Exs. 1040, 1041. Patent Owner moves to exclude these exhibits as not authenticated, under Federal

¹⁰ Exhibit 1042 has been withdrawn. Pet. Opp. 1.

Rule of Evidence 901, as hearsay, under Federal Rule of Evidence 802, and as irrelevant, under Federal Rule of Evidence 402. PO Mot. Exclude 6–8. With respect to authentication, Petitioner argues that Mr. Ritzler authenticated these exhibits at his deposition, and that Ms. Bhattacharyya also authenticated these exhibits in her Declaration. Pet. Opp. 10. As for the hearsay objection, Petitioner argues that the statements are opposing party statements exempt from the hearsay rule under Federal Rule of Evidence 801(d)(2). *Id.* at 9. Petitioner argues that the exhibits are relevant to its nexus arguments. *Id.* at 9–10.

We have no reason to rely on these exhibits. Petitioner relies on these exhibits to show that Patent Owner has a policy of selling only complete drivetrain Eagle groupsets. Pet. Opp. 9. However, Mr. Ritzler, Patent Owner’s witness, confirmed at his deposition that Patent Owner’s policy is to require OEM customers to purchase complete drivetrain Eagle groupsets. Ex. 1045-A, 88:12–17. These exhibits are merely cumulative of Mr. Ritzler’s testimony. Thus, we *dismiss* this portion of Patent Owner’s Motion as moot. Patent Owner’s arguments about relevance go more to the weight that should be accorded the evidence, not its admissibility.

4. *Paragraphs 9–11 and 13–16 of Exhibit 1046*

Exhibit 1046 is the Declaration of Adam Marriott. *See* Ex. 1046. Mr. Marriott is a senior product manager at RFE Holding (Canada) Corp., which is the parent company of Petitioner. *Id.* ¶ 1. Paragraphs 9–11 and 13–16 offer Mr. Marriott’s opinions on whether he believes that the success of Patent Owner’s product is a result of the rear cassette, and not the chainring. *See id.* ¶¶ 9–11, 13–16. Patent Owner seeks to exclude these opinions for lack of personal knowledge under Federal Rule of Evidence

602, and also seeks to exclude certain other paragraphs under Federal Rules of Evidence 401, 402, 403, 701, 702, 801, 802, and 805. PO Mot. Exclude 8–10; PO Mot. Reply 4–5. Petitioner responds that Mr. Marriott made these statements based on his extensive experience in the field of mountain bikes, and his opinions should be admitted. Pet. Opp. 10–13.

We agree with Petitioner that Mr. Marriott has sufficient experience in the bicycle industry to offer these opinions on state of the industry and Patent Owner’s products. Patent Owner’s arguments go more to the weight we should give this testimony rather than its admissibility. Therefore, we deny Patent Owner’s Motion to Exclude Paragraphs 9–11 and 13–16 of Exhibit 1046 (Marriott Declaration).

5. *Paragraph 26 of Exhibit 1068*

Exhibit 1068 is the Declaration of Arpita Bhattacharyya, who is one of Petitioner’s attorneys in this proceeding. In Paragraph 26, Ms. Bhattacharyya testifies that she reviewed Exhibits 2005–2030 “in detail,” and that none of the articles in those exhibits mentioned certain claimed features. Ex. 1068 ¶ 26. Patent Owner argues that this testimony should be excluded because it is improper expert testimony. PO Mot. Exclude 11. Petitioner argues that this is merely fact testimony. Pet. Opp. 13–14.

Because we can review the articles “in detail” ourselves, there is no need for us to rely on this testimony. Accordingly, we dismiss this portion of Patent Owner’s Motion as *moot*.

6. *Exhibits 1069, 1070, and 1073*

Exhibit 1069 is the Declaration of Christopher B. McKinley (“McKinley Declaration”), one of Petitioner’s attorneys, and, in addition to

certain testimony of Mr. McKinley authenticating certain pictures submitted, it also contains tables of pictures purporting to compare various features of the Race Face chainring, SRAM X-Sync chainring, and the SRAM Eagle chainring. Ex. 1069. The table includes labeling that points out certain features of the various chainrings. *Id.* at 3–4. Exhibit 1073 consists solely of a table of pictures of various SRAM chainrings, labeled by part number, with close-up pictures of the teeth of the chainring with similar labels as the McKinley Declaration. *See* Ex. 1073, 1–6. Exhibit 1070 is the Declaration of Daniel F. Klodowski (“Klodowski Declaration”), one of Petitioner’s attorneys. Ex. 1070. The Klodowski Declaration purports to authenticate the pictures of Exhibit 1073, and asserts that they are representative of the twelve families of X-Sync chainrings. *Id.* ¶¶ 3, 4.

Patent Owner seeks to exclude this evidence as irrelevant under Federal Rules of Evidence 401 and 402. PO Mot. Exclude 11–12. Petitioner argues that the McKinley and Klodowski Declarations serve to authenticate the pictures of the various chainrings. Pet. Opp. 14–15. Petitioner also asserts that Exhibit 1069 is relevant to copying, because it shows ‘that Race Face’s chainring differs substantially from [Patent Owner]’s chainrings, i.e., that Race Face’s chainring does not include the ‘protruding tip portion,’ the ‘hooked rear flank,’ or the ‘asymmetric teeth’ of SRAM’s chainrings.’ *Id.* at 15. As for Exhibit 1073, Petitioner argues that its relevant to its argument that Patent Owner is not entitled to a presumption of a nexus, because Petitioner contends that it “demonstrates that X-Sync chainrings are not coextensive with the claimed invention.” *Id.* Petitioner further argues that there has been no demonstration of prejudice. *Id.*

We agree with Petitioner that these exhibits cross the low bar of relevance. We agree that they are relevant to the issues of copying and nexus. Thus, we deny Patent Owner's Motion to Exclude Exhibits 1069, 1070, and 1073. However, as we explain above, though admissible, these pictures, without any other substantive analysis or explanation for the labels or their significance, are entitled to very little weight.

IV. CONCLUSION

For the reasons given, based on the arguments and evidence of record, Petitioner has not met its burden to prove by a preponderance of the evidence that claims 7–12 and 20–26 of the '027 patent are unpatentable under 35 U.S.C. § 103(a) over Hattan and JP-Shimano. *See* 35 U.S.C. § 316(e). We deny-in-part and dismiss-as-moot-in-part Petitioner's and Patent Owner's Motions to Exclude.

IV. ORDER

Accordingly, it is:

ORDERED that claims 7–12 and 20–26 of the '027 patent have *not been proven unpatentable*;

Petitioner's Motion to Exclude is *denied-in-part* and *dismissed-as-moot-in-part*;

Patent Owner's Motion to Exclude is *denied-in-part* and *dismissed-as-moot-in-part*; and

FURTHER ORDERED that, because this is a Final Written Decision, any party to the proceeding seeking judicial review of this Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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